บทเรียนคอมพิวเตอร์ช่วยสอนภาษาอิงวิชาเนื้อหาเรื่องกรรม

พระมหาสุริยาวุธ สุวรรณบุบผา

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญามหาบัณฑิต
สาขาวิชาภาษาอังกฤษศึกษา
มหาวิทยาลัยเทคโนโลยีสุรนารี
ปีการศึกษา 2549
ISBN 974-533-585-1

CONTENT-BASED LANGUAGE LEARNING SOFTWARE ON KAMMA

Phramaha Suriyawuth Suwannabubpha

A Thesis Submitted in Partial Fulfillment of the Requirements

for the Degree of Master of Arts in English Language Studies

Suranaree University of Technology

Academic Year 2006

ISBN 974-533-585-1

CONTENT-BASED LANGUAGE LEARNING

SOFTWARE ON KAMMA

Suranaree University of Technology has approved this thesis submitted in partial fulfillment of the requirements for the Degree of Master of Arts.

Thesis Examining Committee

_____

(Dr. Sarit Srikhao)

Chairperson

_____

(Assoc. Prof. Songphorn Tajaroensuk)

Member

_____

(Dr. Dhirawit Pinyonatthagarn)

Member (Thesis Advisor)

_____

(Dr. Sirinthorn Seepho)

Member

_____ _____

(Assoc. Prof. Dr.Saowanee Rattanaphani) (Assoc. Prof. Dr. Prapawadee Suebsonthi)

Vice Rector for Academic Affairs Dean of Institute of Social Technology

สุริยาวุธ สุวรรณบุบผา : บทเรียนคอมพิวเตอร์ช่วยสอนภาษาอิงวิชาเนื้อหาเรื่องกรรม (CONTENT-BASED LANGUAGE LEARNING SOFTWARE ON KAMMA) อาจารย์ที่ปรึกษา : อาจารย์ ดร.ธีรวิทย์ ภิญโญณัฐกานต์, 148 หน้า.
ISBN 974-533-585-1

วัตถุประสงค์ของงานวิจัยคือ 1) เพื่อพัฒนาบทเรียนคอมพิวเตอร์ช่วยสอนภาษาอิงวิชาเนื้อหาเรื่องกรรม 2) เพื่อเปรียบเทียบผลสัมฤทธิ์ทางการเรียนของพระนิสิตในกลุ่มทดลองและกลุ่มควบคุม 3) เพื่อศึกษาทัศนะของพระนิสิตที่มีต่อการเรียนโดยใช้บทเรียนคอมพิวเตอร์ช่วยสอนภาษาอิงวิชาเนื้อหา

ประชากรได้แก่พระนิสิตชั้นปีที่ 3 สาขาวิชาภาษาต่างประเทศ วิชาเอกภาษาอังกฤษ คณะมนุษยศาสตร์ มหาวิทยาลัยมหาจุฬาลงกรณราชวิทยาลัย วิทยาเขตนครราชสีมา จำนวน 17 รูป ซึ่งแบ่งเป็นกลุ่มทดลองและกลุ่มควบคุม เมื่อทั้งสองกลุ่มได้ทำการทดสอบก่อนเรียนแล้ว กลุ่มทดลองได้เรียนโดยใช้บทเรียนคอมพิวเตอร์ช่วยสอนภาษาอิงวิชาเนื้อหาเรื่องกรรม ส่วนกลุ่มควบคุมได้เรียนแบบปกติ หลังจากเรียนจบแล้ว ให้พระนิสิตทั้งสองกลุ่มทำแบบทดสอบหลังเรียน จากนั้น เฉพาะกลุ่มทดลองรับการสัมภาษณ์และตอบแบบสอบถามทัศนะต่อการเรียนโดยใช้คอมพิวเตอร์ช่วยสอนภาษาอิงวิชาเนื้อหาเรื่องกรรม สถิติที่ใช้ในการวิเคราะห์ข้อมูลได้แก่ การวิเคราะห์ความแปรปรวนร่วม (ANCOVA) การหาค่าเฉลี่ย (Mean) และค่าร้อยละ (Percentage)

ผลการวิจัยพบว่า ดัชนีประสิทธิภาพของบทเรียนคอมพิวเตอร์ช่วยสอนภาษาอิงวิชาเนื้อหาเรื่องกรรมมีค่า 82.53/80.53 กลุ่มทดลองมีผลสัมฤทธิ์ทางการเรียนสูงกว่ากลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติที่ระดับ 0.01 และพระนิสิตมีทัศนะที่ดีมากต่อการเรียนโดยใช้บทเรียนคอมพิวเตอร์ช่วยสอนภาษาอิงวิชาเนื้อหาเรื่องกรรม

สาขาวิชาภาษาอังกฤษ
ปีการศึกษา 2549

ลายมือชื่อนักศึกษา_____
ลายมือชื่ออาจารย์ที่ปรึกษา_____
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม_____

SURIYAWUTH SUWANNABUBPHA : CONTENT-BASED LANGUAGE LEARNING SOFTWARE ON KAMMA. THESIS ADVISOR : DHIRAWIT PINYONATTHAGARN, Ph.D. 148 PP. ISBN 974-533-585-1

CALL/CBI/CONTENT-BASED SOFTWARE

The objectives of this research were (1) to develop the content-based language learning software on kamma, (2) to compare students' learning achievement of both experimental group and control group, and (3) to explore students' views on learning through content-based language learning software on kamma.

The population in the study was seventeen third-year English major students who were enrolled to learn Reading in Buddhism II course at Mahachulalongkorn-rajavidyalaya University Nakhon Ratchasima Campus, in the second semester of the academic year 2005. They were randomly assigned into two groups: experimental and control. Before learning, both groups did a pretest. Then the experimental group was taught by the content-based language learning software on kamma. Whereas the control group was taught by the regular teacher-directed instruction. The classroom observation was conducted with the students in the experimental group while they were learning. When finished learning, both groups were asked to do a posttest. After that, the students in the experimental group were interviewed and they responded to the questionnaire. The statistics used to analyze data were ANCOVA, arithmetic means, and percentage.

The results of this research showed that the efficiency of the content-based language learning software on kamma was 82.53/80.53. The learning achievement of

the students in the experimental group was higher than that of the students in the control group with statistically significant differences at 0.01, and the students had very good views on learning through content-based language learning software on kamma.

School of English

Academic Year 2006

Student's signature_____

Advisor's signature_____

Co-advisor's signature_____

ACKNOWLEDGEMENTS

I would like to express my gratitude to the following people for their help, advice, and encouragement which I received in the conducting of this research.

First, I wish to express my grateful thanks to my advisor, Dr. Dhirawit Pinyonatthagarn, for his valuable comments, assistance, and support throughout the study. I would like to thank my co-advisors, Prof. Dr. Chaiyong Brahmawong and Dr. Sirinthorn Seepho, for their useful advice on the teaching methodology and educational technology needed to develop the instruments in this research.

I also wish to give my sincere thanks to Dr. Phramaha Aphichai Dhammajayo, Asst. Prof. Dr. Pannatorn Sangarun, Mr. Satidchoke Phosa-ad, Assoc. Prof. Dr. Kanit Khaimook, Asst. Prof. Dr. Puangpen Intaprawat, Dr. Maneepen Apibalsri, Dr. Banjert Chongapiratanakul, and Mr. Chamnong Puphala for their kindness and support for my work.

My thanks go to Mr. Greg Seats and Mr. William Reyland, the native English teachers, for their kind help and advice on English language in the learning software development. My grateful thanks also go to Suranaree University of Technology for financial support in the research study.

Finally, I would like to give my very grateful thanks to my abbot, parents, older sisters and brother, and my close friends for their kind assistance and constant encouragement which always bring about the success to my life.

Suriyawuth Suwannabubpha

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

Page

TABLE OF CONTENTS (Continued)

Page

TABLE OF CONTENTS (Continued)

Page

LIST OF TABLES

Table **Page**

LIST OF FIGURES

Figure **Page**

CHAPTER 1

INTRODUCTION

This chapter provides a background and context of the present study. It includes the rationale and significance of the study, purposes of the study, research hypothesis, scope and limitations of the research, definitions of key terms, and finally the expected outcomes. In the conclusion of the chapter, an outline of the thesis is stated.

1.1 Introduction

Mahachulalongkornrajavidyalaya University is a Buddhist university with 11 campuses and 5 centers around Thailand. It is an ecclesiastical university founded by King Chulalongkorn (Rama V) for the Buddhist Canon studies and higher education of monks, novices, and general people. The University aims to develop students' desirable characteristics including faithful manner, curiosity, spiritual and intellectual leadership, resourcefulness, faithfulness, devotion to Buddhism and social benefits, ability to follow social change, wide vision, and ability to improve one's morality (Mahachulalongkornrajavidyalaya University, 1995).

The Nakhon Ratchasima campus consists of four main faculties; Buddhism, Humanities, Education, and Social Sciences. Students can choose to take one of the six majors; (1) Buddhism, (2) English, (3) Social Studies, (4) Teaching Thai, (5) Educational Administration, and (6) Political Science. The University was founded on Buddhist principles, and the curriculum of each faculty consists of 33 percent core subjects in Buddhism and 67 percent in other subjects. These subjects consist of

general, major, and free electives (Mahachulalongkornrajavidyalaya University, Department of Academic Affairs, 2000).

The English Major curriculum of the Faculty of Humanities follows the educational guidelines mentioned above. The monk students, majoring in English, are required to take 50 credits of core subjects in Buddhism, 66 major credits, 30 general credits, and 4 free-elective credits. The 50 credits of core subjects in Buddhism are classified into three subject-groups; 8 credits for Pali, 32 credits for Buddhism, and 10 credits for Applied Buddhism.

For the first two groups, Pali and Buddhism, English majors are required to learn the same subjects as other majors. In Applied Buddhism, however, English majors have to learn the five subjects (2 credits each) specified for them; (1) Reading in Buddhism I, (2) Reading in Buddhism II, (3) Reading Tipitaka in English, (4) Writing articles on Buddhism, and (5) Dhamma Talk and Meditation. The primary goal of these five subjects is to use English to acquire knowledge of subject matters. The content of the aforementioned subjects utilizes English as a medium to develop language skills according to content-based language instruction.

1.2 Rationale and Significance of the Study

The content-based language instruction is the integration of content learning with language teaching aims. Specifically, it refers to the concurrent study of language and subject matter, with the form and sequence of language presentation dictated by content material. A content-based approach fulfills a number of conditions which are found in the literature on language teaching and second language acquisition. They are; (1) that content-based language curriculum takes into account the interests and needs of the learners, (2) it incorporates the eventual uses the learner

will make of the target language, (3) it builds on the students' previous learning experiences, (4) it allows a focus on use as well as on usage, and (5) it offers learners the necessary conditions for second language learning by exposing them to meaningful language in use (Brinton, Snow, & Wesche, 2003).

For language education in Thailand, the Ministry of Education (2002) indicated that foreign language learning was lacking in effectiveness and did not enable learners to use foreign languages, especially the English language, in communicating and searching for knowledge from various learning resources. This point is congruent with English language education of English majors at Mahachulalongkornrajavidyalaya University Nakhon Ratchasima Campus (MCUN). Some of the factors that contribute to the current problems regarding teaching and learning English at MCUN include low student motivation and inadequate or insufficient teaching materials.

Recently, Thanok and others (2003) studied conditions and problems of teaching and learning at MCUN. They reported that MCUN did not have enough teaching materials and that the materials utilized were mostly instructional texts. Regarding teaching and learning problems, the researchers found that lecturers did not use teaching materials which motivated learning or enhanced attention. Lecturers also lacked teaching techniques, knowledge of teaching-material production, and textbooks. More importantly, the humanities students majoring in English experienced a higher degree of problems from the lack of these materials and techniques than students of other faculties. With regards to levels of the study, first year students had a lower degree of problems than others.

At present, the application of technology plays an important role in the realm of education. Especially computer technology, which continues to be developed in terms of its capacity, can be widely utilized in language teaching and learning according to user's needs. Computers as a research tool provide assistance to the learner even without the presence of the teacher (Pennington and Steven, 1992). New technologies have seen computers become smaller, faster, and easier for the teacher to use (Levy, 1997). Technologies allow computers to do multimedia applications, incorporating videos, sound, and texts. This capacity allows the learner to interact with both the program and other learners (Felix, 1998). In addition, computers can provide a meaning-focused, communicative learning environment which serves the purposes of communicative language teaching. It offers great flexibility for class scheduling and the pacing of individual learning, and choosing activities and content to suit individual learning styles.

Computer-assisted language learning (CALL) can accomplish conditions for an optimal language learning environment. They include (1) opportunities for the student to interact and negotiate meaning, (2) students interact in the target language with an authentic audience, (3) students are involved in authentic tasks, (4) students are exposed to and encouraged to produce varied and creative language, (5) students have enough time and feedback, (6) learners are guided to attend mindfully to the learning process, (7) learners work in an atmosphere with an ideal stress/anxiety level, and (8) learner autonomy is supported (Egbert and Hanson-Smith [Eds.], 1999).

In the study, the application of technology in teaching English language reading on Kamma in Buddhism promotes the principle of Thailand's educational reform. Since Thailand's 1997 constitution paves the way for educational reform, the

National Education Act 1999 (NEA) lays down a solid foundation to initiate the reform. The NEA serves as the master legislation for educational reform in Thailand. The major components of the NEA include: (1) learning reform, (2) reform of educational administrative structure, and (3) legal measures. For the first one, learning reform, the importance of the learner-centered teaching process is promoted and developed in order to allow learners to develop learning and thinking skills with consideration for individuals' interests, aptitudes, pace and potential. In terms of the second one, reform of educational administrative structure, the teaching profession is developed through reorganizing systems for teachers, faculty, staff and educational personnel, and for efficient utilization of resources and investment for education. In the final component, legal measures, a number of legislative actions and implementing regulations need to be prepared and/or amended, particularly in regards to structural changes. From these components, the learning reform is at the heart of the educational reform to achieve the Thais' desirable characteristics including physical and mental health, intellect, knowledge, morality, integrity, and a harmonious life style (Atagi, 2002).

Based on the conditions and problems of learning and teaching English at MCUN, as well as the advantages of the content-based approach and computer-assisted language learning, the researcher is interested in the design and development of content-based language learning software on Kamma. Kamma (or Karma in Sanskrit), the main content studied in Applied Buddhism, could benefit greatly from this technology.

1.3 Purposes of the Study

The three main purposes of the study are:

1. to develop content-based language learning software on Kamma,
2. to compare English learning achievement of students in both an experimental group and a control group, and
3. to explore students' views on the content-based language learning software.

1.4 Research Hypotheses

Following are the research hypotheses of the present study:

1. The learning achievement of students taught by the content-based language learning software is higher than that of students taught in the regular teacher-directed classroom.
2. Students have positive views on learning through content-based language learning software.

1.5 Scope and Limitation of the Study

The present study aims at developing content-based language learning software on Kamma and determining the learning achievement and attitudes of the third-year Humanities students. The students, majoring in English, are enrolled in the Reading in Buddhism II course in the second semester of the Academic Year 2005 at Mahachulalongkornrajavidyalaya University Nakhon Ratchasima Campus. The study group consisting of Buddhist monks may not be a representative of the third-year students studying in other majors at this campus or at other institutes.

1.6 Definitions of Key Terms

1. "**Students**" refers to Buddhist monks who learn Reading in Buddhism II (302311) in the second semester in the academic year 2005 at Mahachulalongkorn-rajavidyalaya University Nakhon Ratchasima Campus. Those are third-year English majors of School of Foreign Languages in the Faculty of Humanities.

2. "**Content-based language learning software**" is an educational computer program designed to teach English reading in Buddhism II on the topic of Kamma for third-year English major students at Mahachulalongkornrajavidyalaya University Nakhon Ratchasima Campus. This software was designed and developed by the researcher using the authoring program. The software is an application that can be installed and used with PC and Notebook computer.

3. "**Views**" refers to opinions about learning through the content-based language learning software on Kamma.

4. "**Kamma**" (or karma in Sanskrit) is a Buddhist principle involving one's actions and results of actions. It is believed that good actions lead to good states; bad actions lead to bad states.

1.7 Expected Outcomes

Following are the results expected from this study.

1. The content-based language learning software on Kamma is developed based on 80/80 standard criterion.
2. Students learning through the content-based language learning software have better English learning achievement.
3. Students have positive views on learning through the content-based language learning software on Kamma.

1.8 Summary

The study of conditions and problems of teaching and learning at MCUN in 2003 by Thanok and others reported that the Buddhist university lacked of teaching materials which motivated learning and English major students in the Faculty of Humanities experienced a higher degree of problems than students of other faculties. Based on this report, the researcher is interested in designing and developing an English teaching material for third-year English major students through computer technology. The application of computer technology in language teaching is called computer-assisted language learning (CALL) which is able to accomplish conditions for optimal language learning environment. In the study, the researcher chooses a content-based instruction course of English major curriculum as a subject matter for the development of CALL software, which is called content-based language learning software. So, the present study aims to develop content-based language learning software, compare students' learning achievement, and explore students' views on learning through the software.

CHAPTER 2

LITERATURE REVIEW

This chapter contains the related literature on content-based instruction (CBI), reading theory and computer-assisted language learning (CALL). Firstly, background, rationale, and formats of CBI are described. Secondly, reading process, factors affecting reading comprehension, and phases to teach reading are reviewed. Thirdly, CALL is reviewed in terms of its definition, essential principles, development, and criteria for CALL development based on SLA theory. Finally, the chapter concludes with previous research on CALL software-based learning.

2.1 Background and Rationale of CBI

Content-based instruction (CBI) is one of the language teaching approaches. It refers to teaching content or subject matter using language as a medium. Students will be able to acquire knowledge of subject content together with a language. There are three prototype models of CBI: (i) theme-based, (ii) sheltered, and (iii) adjunct. In the theme-based course, the language class is organized around content modules and the language teacher functions as the subject matter teacher. Sheltered instruction involves a subject matter course taught to a segregated class of second language learners by a content area specialist to assist the students with second language problems. Finally; in adjunct instruction, students are enrolled concurrently in two linked courses including a language course and a content course (Brinton, et al., 2003).

The CBI courses (Richards & Rogers, 2001), theme-based, sheltered, and adjunct, are strongly influenced by earlier types of CBI programs at other levels of education, including first language (L1) and L2 school instruction. Career-related adult language instruction is also a strong influence, and consists of:

- the language across the curriculum movement of the 1970s and 1980s in Britain and the United States.
- The Immersion language programs, initially applied to K-6 French second language instruction for majority English-speaking children in Canada.
- Language for specific purposes (LSP) courses and programs including English for Specific purposes [ESP] and English for Academic Purposes [EAP].

The primary rotation of a CBI curriculum (Stryker & Leaver (Eds.), 1997) is to offer learners the necessary conditions for second language learning by exposing them to meaningful language. Other rationales include the fact that CBI:

- builds on the learner's previous learning experiences in the subject matter, the target language, and in formal educational setting;
- takes into account the interests and needs of the learners through their engagement with the academic subject matter and discourse patterns that they need to master;
- allows a focus on (communicative language) use as well as on (accurate) usage; and

- incorporates the eventual uses the learner will make of the language through engagement with relevant content and L2 discourse with a purpose other than language teaching.

As is clear from these rationales, a content-based curriculum, because it incorporates a broad range of L2 knowledge and cognitive skills known to contribute to academic success, can be a particularly useful vehicle for language learners preparing for or involved in academic study through their L2 at any educational level.

2.2 Diverse Formats of CBI

CBI is now an established approach to language teaching in both ESL and EFL contexts. This leads to diverse formats of CBI. Through the three prototype models (i.e. theme-based, sheltered, and adjunct), CBI is adapted and modified to a wider range of context. A modified model may combines features of sheltered and adjunct models or of theme-based and sheltered models. The key point to be made is that, depending on the setting, the configuration of the model may differ significantly, and the features of the three models may tend to blend together (Brinton et al., 1989).

At MCUN, the CBI courses, which are core subjects in Buddhism of the English major curriculum, are in the modified model. The courses have the features of theme-based and sheltered models. These courses are organized around Buddhist content or topics relating to Buddhist principles. The objectives of the CBI courses focus on both English language and Buddhist contents. Some courses aim to enable students to acquire knowledge of both English language skills and Buddhist disciplines, while some aim to master the Buddhist disciplines only. Language teachers will function as the content teachers who teach Buddhism in English. In this setting, English teachers and English major students have background knowledge in

Buddhism because they are required to study Buddhism according to the Buddhist curriculum specified for the Thai monks. This curriculum is not in the university system. It is a specific curriculum which every Thai Buddhist monk has to study for three years. Therefore, it is not too difficult for English language teachers who will teach the subject matter relating to Buddhism.

2.3 Reading

Reading is a complex process which relies on the interaction between the reader and the text. In the reading, the writer produces the linguistic features in the written form, then the reader constructs the meaning for comprehension (Goodman, 1988). In addition, reading is an interactive process between the reader's prior knowledge and the text. That is, the reader does not use only the linguistic knowledge to comprehend the text, but also his or her background knowledge about the text (Carrell and Eisterhold, 1988). Therefore, reading is a meaning construction process of the linguistic features through linguistic knowledge, prior knowledge, and critical thinking to comprehend the text according to the writer's intention.

2.4 Reading Process

In reading a text, the reader employs three different processes discussed by many researchers—such as Eskey and Grabe (1988), Bensoussan (1990), and Aebersold and Field (1997). First, the reader reads the text using the buttom-up process. In this process, the reader starts with analyzing the letters, vocabulary, phrases, and sentences, then he or she decodes the text messages through linguistic knowledge (such as vocabulary, grammar, etc.). For this process, the reading comprehension relies on what appears in the reading text. The information in the reading text will guide the reader to comprehend the text. Second, the reader uses the

top-down process in reading comprehension. This process involves the reader's prior knowledge. The reader tries to comprehend the reading text using background knowledge and experiences as the most important factor in meaning construction and comprehension. The prior knowledge is employed to make assumptions or predictions about the text in order to form the meaning and comprehension (Day and Bamford, 1998). And third, the reader employs the interactive process in reading. This process refers to the integration of the bottom-up and top-down processes. In Reading, the reader uses linguistic knowledge to analyze the letters, vocabulary, grammar, sentences and passages. At the same time, the reader uses his or her background knowledge to facilitate the comprehension of the text (Aebersold and Field, 1997). In conclusion, since reading is an interactive process between the reader and the text, the reader needs to employ both linguistic knowledge and the world knowledge to help comprehend the reading text.

2.5 Factors Affecting Reading Comprehension

In reading a second language(L2) or foreign language, there are many factors that affect the comprehension of a reading text. Firstly, first language (L1) reading strategies affect the readers' second/foreign language reading comprehension. That is, the efficient L1 readers use their L1 reading skills to facilitate L2 reading (Royer and Carlo, 1991). Secondly, learners who have solid metacognitive knowledge in their first language will apply such knowledge in second language learning and reading. The metacognitive knowledge makes the learners aware of their reading purposes, helps them know how to achieve those purposes, and enables them to perform appropriate behaviors in order to enhance their comprehension (McNeil, 1984). Thirdly, inadequate linguistic, cultural and historical knowledge of the second/foreign

language causes reading problems. In other words, the reader must have certain level of target language proficiency to be able to read the text in that language. Fourthly, the differences between the first and the second language affect learners' reading comprehension. That is, the readers will find it easier to read in another language when their L1 writing features and rhetorical structures are similar to those of second or foreign language. Finally, motivation is an efficient agent in reading. The more readers find reading in another language relevant and meaningful to their needs and interest, the more they are eager to read (Diaz-Santos, 2000).

In addition, the schema or the reader's prior knowledge plays an important role in reading comprehension (Carrell, 1987). There are two groups of schema: the content schema and the formal schema. For the content schema, the readers have knowledge of the subject matter. They have background knowledge or experience about what they read, so it is easy for them to understand the content in the text. In terms of the formal schema, the readers have knowledge of linguistic forms and organizational structures of the different text types. They recognize the information of language and the organization of the text, so they find it easier to understand the gist of the texts. Furthermore, the limited vocabulary and structural knowledge can obstruct the foreign language readers from comprehension of the reading text (Nuttall, 1996). In Buddhism, particular words and technical terms are often used. Text types are also considered to cause reading comprehension. Readers have different efforts in reading the two text types: narrative texts and expository texts. In order to read the narrative texts (newspaper, fables, short stories, advertisements, and drama), the readers take less effort than reading the expository texts—just like religious articles and educational research (McNeil, 1984).

2.6 Phases to Teach Reading

To teach reading, Yopp and Yopp (1992) propose three phases of teaching: (1) pre-reading, (2) while-reading, and (3) post-reading. The first phase, pre-reading, is to prepare learners before reading. This phase is conducted to arouse learners' prior knowledge, to elicit their feeling, to set purpose in reading, and to motivate learners. In the second phase, while-reading, the learners are assisted using the activities which are created in order to promote reading comprehension, to keep learners' attention, and to raise their reaction. For the final phase, post-reading, the learners are provided with the activities conducted to promote the analysis and synthesis, to link prior knowledge with new knowledge, and to react to the reading text. Therefore, these three phases are used to teach reading in general in order to facilitate reading.

2.7 Definition of CALL

Computer-Assisted Language Learning (CALL) is defined as "the search for and study of applications of the computer in language teaching and learning." (Levy, 1997,p. 1) The main aim of CALL is to find ways for using computers for the purpose of teaching and learning the language. More specifically, CALL is represented by the use of computer technologies that promote educational learning; including word processing, presentation packages, guided drill and practice, tutor, simulation, problem solving, games, multimedia CD-ROM, and internet applications such as e-mail, chat and the World Wide Web (WWW) for language learning purposes. There are several terms associated with CALL. CALL is variously known as Computer-Aided Language Learning (CALL), Computer-Assisted Language Instruction (CALI)

and Computer-Enhanced Language Learning (CELL). The first two terms generally refer to computer applications in language learning and teaching, while CELL implies using CALL in a self-access environment (Hoven, 1999).

2.8 Essential Principles of CALL

The following findings flow from various research studies in learning, language learning, and computer- or technology-mediated learning as being critical to effective CALL:

1. Interaction and negotiation are important features of communication, and therefore of L2 learning (Doughty, 1987);
2. Computers with appropriately designed software can play a mediating role between L2 learners and their sociocultural context (Chapelle, 1994; Jonassen, 1992);
3. Software can be designed to facilitate L2 learners' interaction with the computer, and negotiation of meaning from texts (Bickel & Truscello, 1996; Meskill, 1992);
4. The essential characteristic of software is to enable learners to take control of both the content of the learning material, and their approach to making meaning from it (Robinson, 1991; Stevens, 1992); and
5. Not all L2 learners, especially in the initial stages of L2 acquisition, want to or are able, to take control of their learning (Candy, 1987; Robinson, 1991).

2.9 CALL Development

The CALL development can be categorized into three major phases including behaviorist CALL, communicative CALL, and integrative CALL (cf. Barson & Debski, in press). The first phase of CALL is behaviorist CALL. It was conceived in

the 1950s and implemented in the 1960s and '70s, and was based on the then dominant behaviorist theories of learning. Programs of this phase entailed repetitive language drills and can be referred to as "drill and practice". The second phase of CALL is communicative CALL. This was based on the communicative approach to teaching which became prominent in the 1970s and 80s. Proponents of this approach felt that the drill and practice programs of the previous decade did not allow enough authentic communication to be of much value. So, the learning software in this phase has the features of the communicative approach to language teaching. The software, for example, assigns students to work in pairs and then lets them compare and discuss their answers. The final phase is integrative CALL. The development in this phase is based on the technological developments of the last decade. There are two important technologies, multimedia computers and the Internet, and these are the two steps toward Integrative CALL.

Multimedia technology--exemplified today by the CD-ROM-- allows a variety of media (text, graphics, sound, animation, and video) to be accessed on a single machine. What makes multimedia even more powerful is that it also incorporates hypermedia. That means that the multimedia resources are all linked together and that learners can navigate their own path simply by pointing and clicking a mouse.

In terms of Internet, computer-mediated communication (CMC) is probably the single computer application to date with the greatest impact on language teaching. This communication can be asynchronous (not simultaneous) through tools such as electronic mail (e-mail), or can be synchronous (real time) using programs such as MOOs which allow people all around the world to have a simultaneous conversation by typing at their keyboards. Using the World Wide Web (WWW), students can

search through millions of files around the world within minutes to locate and access authentic materials (e.g., newspaper and magazine articles, radio broadcasts, short videos, movie reviews, book excerpts) exactly tailored to their own personal interests. They can also use the Web to publish their texts or multimedia materials to share with partner classes or with the general public.

In this study, the content-based language learning software will be designed and developed in the form of CD-ROM using the multimedia technology. Text, sound, pictures, and moving pictures will be assembled using an authoring program for the presentation of Buddhist content. The authoring program used for producing the learning software in the study is Macromedia Authorware. This program is an authoring tool that can help English teachers who do not know more about computer codes or languages.

2.10 From SLA to Criteria for CALL Development

Each of the following extends hypotheses that come from the study of face-to-face oral communication between learners or between learners and proficient L2 speakers.

(1) Making key linguistic characteristics salient.

Experimental research has shown that highlighting input in materials to prompt learners to notice particular syntactic forms positively influenced their acquisition (Doughty, 1991). Linguistic features can be made salient in CALL activities by highlighting them in a different color when they appear in writing on the screen. When they occur in aural input, phrases containing linguistic elements may be transcribed on the screen, again with highlighting of the significant parts. Relevant linguistic features can be chosen by the CALL designer or the teacher. Alternatively,

the software might be constructed to allow the learner to choose to see highlighted features such as the forms that are associated with formality in travel business transactions, expressions associated with evaluation of the potential sites and travel plans, or the expressions associated with travel arrangements.

(2) Offering modifications of linguistic input.

In a CALL software, linguistic input can be provided through either written or aural language. Modifications of input can come in the form of repetition, simplification through restatements, non-verbal cues, decreased speed, reference materials, and change of input mode (Larsen-Freeman & Long, 1991). CALL materials that provide these types of linguistic modifications are distinct from the "authentic" materials found on the Web because they hold the potential to provide learners with comprehensible input rather than just general input.

(3) Providing opportunities for "comprehensible output."

Comprehensible output (Swain, 1985)--either written or spoken--must be produced with the expectation that it is going to be "understood." Under these conditions, the learner is expected to attempt to use target language forms that may stretch his or her competence. The speech recognition software would need to recognize acceptable responses to the advisor's question in order to compose a reply. It is important that learners expect their responses to be comprehended if they are syntactically well-formed and pragmatically appropriate. This expectation pushes them to attempt to use the target language forms attentively and constructively.

(4) Providing opportunities for learners to notice their errors.

Noticing a problem 'pushes' the learner to modify his/her output (Swain and Lapkin, 1995).The output learners produce in CALL needs to be analyzed by the

computer and/or reflected upon by the learner to identify errors. Output containing errors indexes areas in which the learners' linguistic system contains gaps or misconceptions about target language use, and therefore mark the key areas to which their attention should be drawn. The fact that the learner has the opportunity to recheck the question before entering it provides the opportunity to notice errors.

(5) Providing opportunities for learners to correct their linguistic output.

Error correction affords the opportunity to "focus on form" (Long, 1988). When learners have focused their attention on their errors, they need to have the opportunity to correct themselves. They might be left to their own devices to make the corrections, but they might also be provided detailed error-specific help or access to more general reference materials. The program would then need to highlight this form to help the learner notice it and provide another opportunity to edit the question.

(6) Supporting modified interaction between the learner and the computer.

Modification of the interactional structure of conversation or of the written discourse during reading is a good candidate for a necessary condition for acquisition (Larsen-Freeman and Long, 1991). This implies that the learner engages in some form of interaction with the computer. These interactions need to move the learner toward a task goal and stop progress along the way when necessary to focus on the language. Interaction can be accomplished through mouse clicks and hypertext links or through the learner's linguistic output and the software's speech recognition system. The quality of the interaction will depend in part on the speech recognition capability of the software.

(7) Acting as a participant in L2 tasks.

The details of interaction need to be viewed within the larger context of the task; particularly the task goal and interactions. Interactions are hypothesized to be valuable when they occur in communication tasks, and particular types of communication tasks are expected to be best (Pica, Kanagy, and Falodun, 1993). This means that the tasks must focus the learner's attention on accomplishing a goal through the use of language rather than on solving problems of linguistic form. Such useful interactions occur when linguistic difficulties must be resolved in order to solve a non-linguistic problem.

2.11 Previous Research on CALL Software-Based Learning

Many research studies have been conducted to prove the effectiveness of CALL use in language learning and teaching. The studies regarding the efficacy of CALL software tend to investigate leaning outcomes and students' attitudes after using the software. According to Ehsani and Knodt (1998), this study investigated using computers to enhance speaking a foreign language. The results showed that computer could assist learners to analyze words and to monitor voice interaction. It was suggested that CALL software should be developed in terms of interaction with learner and voice interaction. A study on reading English as a second language was conducted by Alkahtani (1999). For this study, students would read texts on computer screens and respond to questions. It was found that students had progress in reading. The researcher purposed that English teachers should use computers in the learning environment. The reading software could reduce student anxiety and help meet the learning goals.

Groot (2000) studied students' word acquisition through CAVOCA (Computer-Assisted Word Acquisition program) at Utrecth University. The findings

indicated that the program could help students who learn a second language improve their acquisition of words. The program enabled students to have a higher degree of learning achievement.

In Thailand, Pokapanichwong (2000) developed a computer program to teach Technical English II on the topic of Signs and Instructions at King Mongkut's Institute of Technology Lardkrabang. The study showed positive results in terms of students' learning outcomes and attitudes.

In the same year, Sukamolson (2000) constructed a multimedia computer-assisted instruction program for assisting first-year Chulalongkorn University students to learn Foundation English 2 by themselves. The researcher found that the constructed program could assist students to learn by themselves in the areas of reading comprehension, vocabulary items, listening comprehension and semi-writing.

In 2002, Torut and Torut (Torut S. & Torut B., 2002) developed a multimedia English lesson to assist graduate students learn English for Academic Purposes at the Faculty of Education in Silpakorn University. They found that the students learning the multimedia English lessons together with ordinary paper-and-pencil lessons did better than those who learned only the ordinary paper-and-pencil lessons. They also reported that the students have high positive opinions toward the computer multimedia lessons.

More recently, Lin (2004) assessed international students' attitudes toward technology-based learning and the impact that English as a second language (ESL) has on such learning. The population of the study was 560 international students enrolled for courses at Mississippi State University of the Fall 2003. The results

showed that the students' attitudes toward ESL were positively related to their attitudes toward computers.

From the research studies reviewed above, it can be clearly understood that computer technology is used to enhance language learning. Teachers designed and developed a computer-assisted language learning software in order to improve students' language skills in the area of listening, speaking, reading and writing as well as vocabulary. With the authoring programs, the language teachers will be able to create their own language learning software in accordance with their need. Obviously, the research findings mostly showed that students' learning achievement in computer-assisted language learning environment was higher. In addition, students' attitudes toward learning through the language learning software were generally positive.

2.12 Summary

In the study, the development of content-based language learning software on Kamma relies on three areas: (1) content-based instruction, (2) reading theory, and (3) computer-assisted language learning (CALL). First, content-based instruction (CBI) refers to teaching subject matter using language as a medium via three models: (i) theme-based model, (ii) sheltered model, and (iii) adjunct model. In implementation of this teaching approach, the features of each model may be combined as modified models. The CBI offers learners the conditions for second language learning by exposing them to meaningful language learning. Second, reading is an interactive process between reader and the text. The reader needs to employ both linguistic knowledge and prior knowledge about the text in order to comprehend the text through three processes—bottom-up, top-down, and interactive. To teach reading, three phases are taken into account in order to facilitate reading. They are, pre-

reading, while-reading, and post-reading. And third, computer-assisted language learning (CALL) is the applications of computer in language teaching and learning through essential principles of CALL. The principles are, interaction and negotiation, mediating role, and learning control. Many CALL software-based studies have proved the effectiveness of CALL use in language studies. Especially in terms of students' learning achievement and attitudes, the researchers found positive results.

CHAPTER 3

RESEARCH PROCEDURE

The purpose of this chapter was to describe how the study will be carried out. The chapter explains the research methodology, population and samplings, and research design. Then, variables and instruments will be presented. The construction and efficiency of research instruments are also described. In the last part of the chapter, it deals with how to analyze and interpret the obtained data.

3.1 Research Methodology

The present study was a quasi-experimental design with both quantitative and qualitative data analysis. The study included two groups; the control and the experimental group. Prior to the experiment, both groups were measured in their learning achievement by a pre-test. Then, the control group was taught with the regular teacher-directed instruction, whereas the experimental group was instructed using the content -based language learning software on kamma. While the students in the experimental group were learning, a classroom observation was administered to them. After conducting the experiment, a post-test was administered to both groups. And then, a questionnaire and semi-structured interview were performed with the experimental group only. The obtained data was analyzed to find out whether the two groups were significantly different from each other and to explore their views on content-based language learning software.

3.2 Population and Samplings

The population was seventeen third-year Humanities students, majoring in English, enrolled in the Reading in Buddhism II course in the second semester of the Academic Year 2005 at Mahachulalongkornrajavidyalaya University Nakhon Ratchasima Campus.

Other than general courses, the students have taken the Buddhist courses according to the curriculum of Buddhist Studies for the Thai Buddhist monks. Seventy-five percent of the test groups have graduated within the advanced level of dhamma studies.

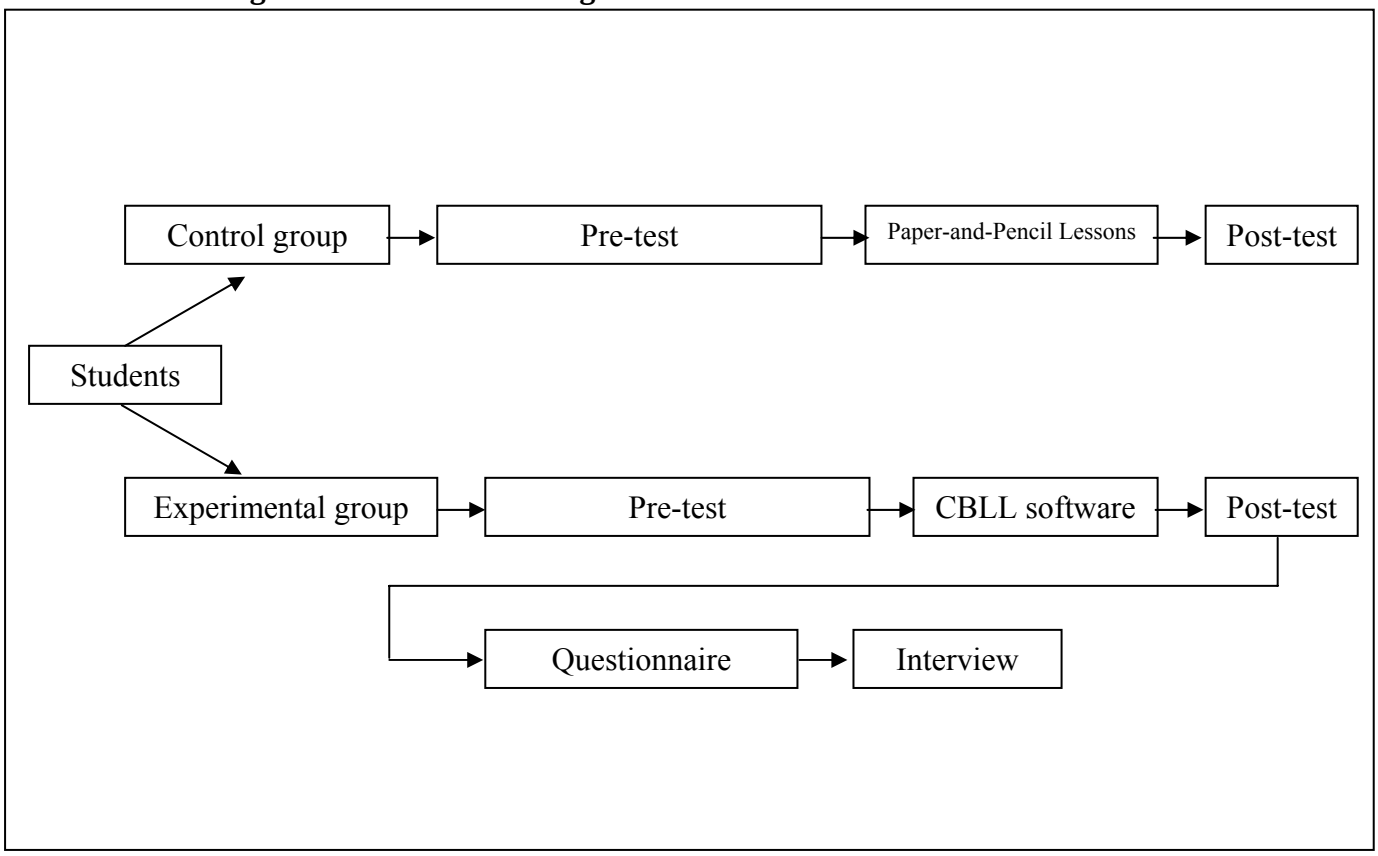
In the study, seventeen participants were assigned into the control and experimental group by simple random sampling. In sampling, the researcher divided seventeen students into two groups. The name of each student was written in small papers and put in a cup. Each paper with a name was chosen randomly for the experimental and control groups. The result was that eight students were assigned to the experimental group and nine students were assigned to the control group.

In the study, the experimental group was taught by the content-based language learning software on Kamma, while the control group was taught by the instruction based on the paper-and-pencil lessons with the content of Kamma in the regular teacher-directed classroom. Each group was taught for six 50-minute periods.

3.3 Research Design

The experimental group was instructed by the researcher using the content-based language learning software, whereas the control group was instructed by the English language teacher who was responsible for Reading in Buddhism II class. Both groups were instructed during the second semester of the Academic Year 2005. The control group was traditionally taught by the paper-and-pencil lessons, while the experimental one was taught by the content-based language learning software. Students of the experimental group were trained in basic computer skills for six hours in order to ensure a level of computer literacy for language learning. Since the researcher intended to explore students' opinions about learning through content-based language learning software, the questionnaire was administered to them and a small group interview was conducted. The research design can be illustrated in Figure 3.1.

Figure 3.1 : Research Design



3.4 Variables

3.4.1 Independent variables

The independent variables included two types of instruction; regular teacher-directed instruction and instruction based on the content-based language learning software.

3.4.2 Dependent variables

Dependent variables affected by independent variables consisted of students' learning achievement and views on learning through content-based language learning software.

3.5 Instruments

The following instruments were used to collect data in the study.

3.5.1 Content-based language learning software on Kamma

The content-based language learning software on Kamma constructed by the researcher was employed by the students after responding to questionnaire. The software was designed and developed to help students improve English reading skill on the topic of Kamma in Buddhism.

3.5.2 Classroom Observation

A classroom observation was conducted by the researcher to observe the behaviour of students during the learning through content-based language learning software in a class.

3.5.3 Tests

The tests constructed by the researcher were employed as a pre-test and post-test. The parallel tests consist of multiple choices. The purpose of testing was to assess students' learning achievement in reading comprehension. Through comparing

pre-test and post-test scores, the researcher can see whether students improve their learning.

3.5.4 Questionnaire

In order to explore students' opinions regarding learning through content-based language learning software on Kamma, questionnaire was administered to collect data.

3.5.5 Semi-structured Interview

Interview was used to elicit students' opinions about learning through content-based language learning software. Students were asked to express their opinions or comments about learning through content-based language learning software.

3.6 Construction and Efficiency of the Instrument

In order to construct the instruments and examine its efficiency, the researcher consulted the research professionals and specialists in terms of technology and language education, educational technology, English teaching methodology, and Buddhist content. The standard criterion used to determine the efficiency of content-based language learning software on Kamma was 80/80 (Brahmawong, 1978). This criterion, used for content-based subject, could be 80/80 to 90/90. It was also stated that the criterion of skill-based subject could be 75/75. A low criterion should not be specified (Tanhikorn, Rodpotong, Pichitpornchai, and Saengsap, 2001). The procedures of instrument construction and determination of its efficiency were as follows:

3.6.1 Content-based language learning software on Kamma

In construction of the software and examination of its efficiency, the researcher has followed three major stages of design and development, including planning, design, and development. These stages consist of fifteen steps adapted from Alessi & Trollip (2001).

Stage I: Planning

(1) Define the Scope

-Goal

The researcher studied MCUN's English major curriculum along with the syllabus of Reading in Buddhism II in order to define the goal of the content-based language learning software. The goal indicates the desired outcomes of the software, target audience, and level of competence.

-Content specification

In addition to the goal of the software, the researcher specified the scope of the content relevant to Kamma from the course syllabus of Reading in Buddhism II course.

(2) Identify Student Characteristics

In order to design software according to student characteristics, these characteristics must be determined: Age, educational level, motivation, prerequisite knowledge, prerequisite language skills, facility with a computer, typing ability, access to computers, and time availability. To do this, the researcher produced a student characteristics chart and had students respond to it.

(3) Determine and Collect Resources

The resources to be determined and collected could be categorized as follows.

-Subject matter resources

After the content on Kamma was specified in step 1, the researcher collected resource material regarding information about Kamma. These materials included textbooks, reference materials, film and television programs, tape and other multimedia programs, and the accessible subject matter experts. The researcher organized the information into the best possible presentation for the students. The content of the educational software was organized and based on the content of Kamma in the course syllabus of Reading in Buddhism II.

-Instructional design resources

The researcher reviewed resource materials relevant to the instructional development process, including texts and manuals about instructional design in content-based and CALL environment. Finally, and most importantly in terms of development, the researcher consulted various experts for instructional design and development.

-Delivery system resources

The researcher used his own personal computer prepared for the study. In terms of development of the software such as design and construction, the researcher studied how to implement these from manuals, CD-ROMs, and textbooks.

The development software consisted of; (a) Word and Publisher (Microsoft, 2004a; 2004b) for producing of texts, (b) Sound Forge (Sonic Foundry, 2002) for editing sound, (c) Photoshop and Illustrator (Adobe, 2004a; 2004b) for creating the pictures or graphics, (d) Flash (Macromedia, 2004a) for producing the animation, and

(e) Movie Maker (Microsoft, 2004c) and Premiere (Adobe, 2004c) for video editing. Finally, Authorware (Macromedia, 2004b), the main software of the study, was used for constructing a content-based language learning software and assembling the created media including texts, sound, pictures, and moving pictures.

(4) Conduct self-conceptual formulating

The researcher has generated ideas about the subject on the topic of Kamma without regard to whether they were useful. The ideas include an instructional methodology (such as tutorial, simulation, game, etc.), the use of a particular medium (text, sound, picture, or moving picture), and a type of learner interaction (e.g. clicking, typing, dragging, speaking or recording, etc.). To do this, the researcher studied other educational software packages of language learning and used them as guidelines or samples to help in a brainstorming process of the design of the software.

Stage II: **Design**

(5) Develop initial content ideas

The researcher refined and grouped the ideas in step 4 as well as eliminated some less useful ideas. The elimination of ideas was done on five bases : (1) characteristics of the student population, (2) the relationship of ideas to the subject matter and goals, (3) the amount of time needed to learn the content, (4) restrictions of the delivery system, and (5) the researcher's ability of production.

In addition, the researcher conducted a lesson analysis. The lesson analysis was done in order to determine an effective sequence for learning the content.

(6) Create storyboards

-Write and revise primary text

The researcher used the obtained data from previous steps to write a primary text which was an instructional text message that learners would see in the educational software. The primary text would display only primary information, questions and feedback. It did not display directions, help messages, hints, or cues because these would be contained in secondary text displays. The researcher used a word processor to write a primary text.

The presentation of text was concise and to the point. The special features such as large letters or underlining were used appropriately for drawing attention to the important information. The information was arranged in lists when appropriate. The analogy and metaphor were used to explain a principle or rule. Frequent and active learner participation was incorporated. The content was organized in such a way that it was clear. The researcher stated information clearly and included brief but obvious statements of transition when changing the topic or moving from one logical point to another. The researcher was attentive to grammar, spelling, and sentence construction as well as vocabulary use familiar to the students and appropriate in terms of language proficiency. In writing questions and feedback, the researcher considered the appropriateness of different questions. The questions were asked clearly. When writing feedback, the researcher considered giving feedback regarding the form and content of the response. Feedback was clear, concise, and positive for both correct and incorrect responses.

Once the researcher has produced drafts of the primary text information, the researcher proofread and had experts review it. Then, the researcher made revisions as needed.

-Write and revise secondary text

Having completed the primary text, the researcher wrote the secondary text messages, which were supportive of the primary text. The secondary text included directions, menus, transitions, hints, review material, help, score and progress information, and exit message. The secondary text was complete, clear, accurate, and concise

When finished writing the secondary text, the researcher reviewed it and had experts review it as well. The researcher also made revisions where necessary.

-Produce storyboard

On completion of writing the texts, both the primary and secondary texts were written in draft form. The text information will be rewritten. Primary and secondary text displays were divided to accommodate the computer display capacity.

-Draw and revise graphic displays and plan other output

In the draft form of storyboard, the researcher drew graphics including simple line drawings, more complicated pictures, cartoons, animations, videos, and menu bars.

For other outputs, sound was the most frequent and important. The researcher wrote comments regarding music, songs, or sound effects needed.

-**Review the storyboard**

This procedure involved assembling all of the completed storyboards in the approximate order they will occur in the educational software. They were laid out side by side so that the researcher could see them simultaneously.

In order to do this, the researcher located and took notes on problems including:

-Missing or incomplete directions

-Directions that were unavailable when needed

-Lack of learner interaction

-Topics inadequately discussed

-Overlapping, overcrowded, or poorly spaced displays

-Seldom or never-used displays

-Redundant or irrelevant displays

-Displays that emphasize minor points

-Question loops in which learner may get stuck

-Poor transitions

-Poor learner control

-Text passages that could be enhanced with graphics

The researcher will revise these problems when necessary.

-**Have experts review the storyboards**

Primary review was conducted by the researcher and followed by experts.

-**Make revisions**

After being reviewed by the experts, the researcher made revisions where necessary.

(7) Prepare scripts

-Prepare an audio script

The researcher has prepared a script of both written and spoken texts read by a native speaker.

-Prepare a video script

The researcher prepared a video script needed in the educational software. It used both written and spoken texts read by a native speaker.

Both audio and video scripts were reviewed by experts.

Stage III: Development

(8) Prepare media

-Prepare text

The researcher typed the parts of text using Microsoft Word.

-Create graphics

The graphics relevant to the pictures of texts or anything else were created using Photoshop CS and Illustrator CS.

-Produce Video

The video clips were edited and created using Premiere Pro V. 7 and Microsoft Movie Maker II for Windows XP.

-Record Audio

Audio was recorded or edited using Sound Forge V. 7.

(9) Assemble the pieces of all media

All of completed media were assembled using Macromedia Authorware V.7.01 to produce the content-based language learning software.

(10) Do an alpha test

In doing an alpha test, the researcher had experts in the area of content, educational technology, technology and language learning to do the followings:

- Check auxiliary information
- Check the subject matter
-Check affective considerations
-Check the interface
-Check navigation
-Check pedagogy
-Check invisible features
-Check robustness
-Check the supplementary materials

The researcher gave the experts an evaluation form containing the mentioned items and let them rate the software according to 10 scales of quality.

(11) Revise material

The researcher revised where needed according to the evaluation results and experts' comments.

(**12) Do a beta test**

-Select the participants

Three third-year English major students, other than the research population, were selected purposively from the Faculty of Humanities, Mahachulalongkornrajavidyalaya University, Surin Campus. Before using the content-based language learning software on Kamma, these participants were asked to do a pre-test of Reading in Buddhism II on the topic of Kamma; the researcher

explained the procedure to them and had them learn using the software. The researcher observed the three test-students as they engage the software. The participants took six 50-minute periods to finish learning. When finished, they were asked to response to the questionnaire and interviewed concerning their opinions relevant to the educational software. Finally, they were asked to do a post-test to assess learning. The data obtained will be used to make revisions.

After the first test group of the individual trial, another six third-year English major students were selected purposively. They were from the Faculty of Humanities, Mahachulalongkornrajavidyalaya Khon Kaen Campus. The same procedure was followed as the previous test group.

Finally, the researcher examined the efficiency of the content-based language learning software. The other 25 third-year English major students were selected purposively from Mahachulalongkornrajavidyalaya University at Bangkok. During class hours, the students were asked to do the exercises in the learning software. After learning through content-based language learning software on Kamma for 6 hours, the students did a post-test and responded to the questionnaire . The scores from all exercises during learning and the post-test were used to examine the efficiency of the software based on the 80/80 standard using E1/E2 formula (Brahmawong, 1978) as shown below.

Effectiveness Index = E1/E2

$$\mathbf{E1} = \frac{\overline{X}}{A} \times 100$$

E1 = Efficiency of the process

$\overline{X}$ = Average score that all students obtain from exercises during learning through the software.

A = Total score of the exercises in the lesson

$$\mathbf{E2} = \frac{\overline{X}}{B} \times 100$$

E2 = Efficiency of the learning outcomes

$\overline{X}$ = Average score that all students obtain from the post-test

B = Total score of the post-test.

(13) Make final revisions

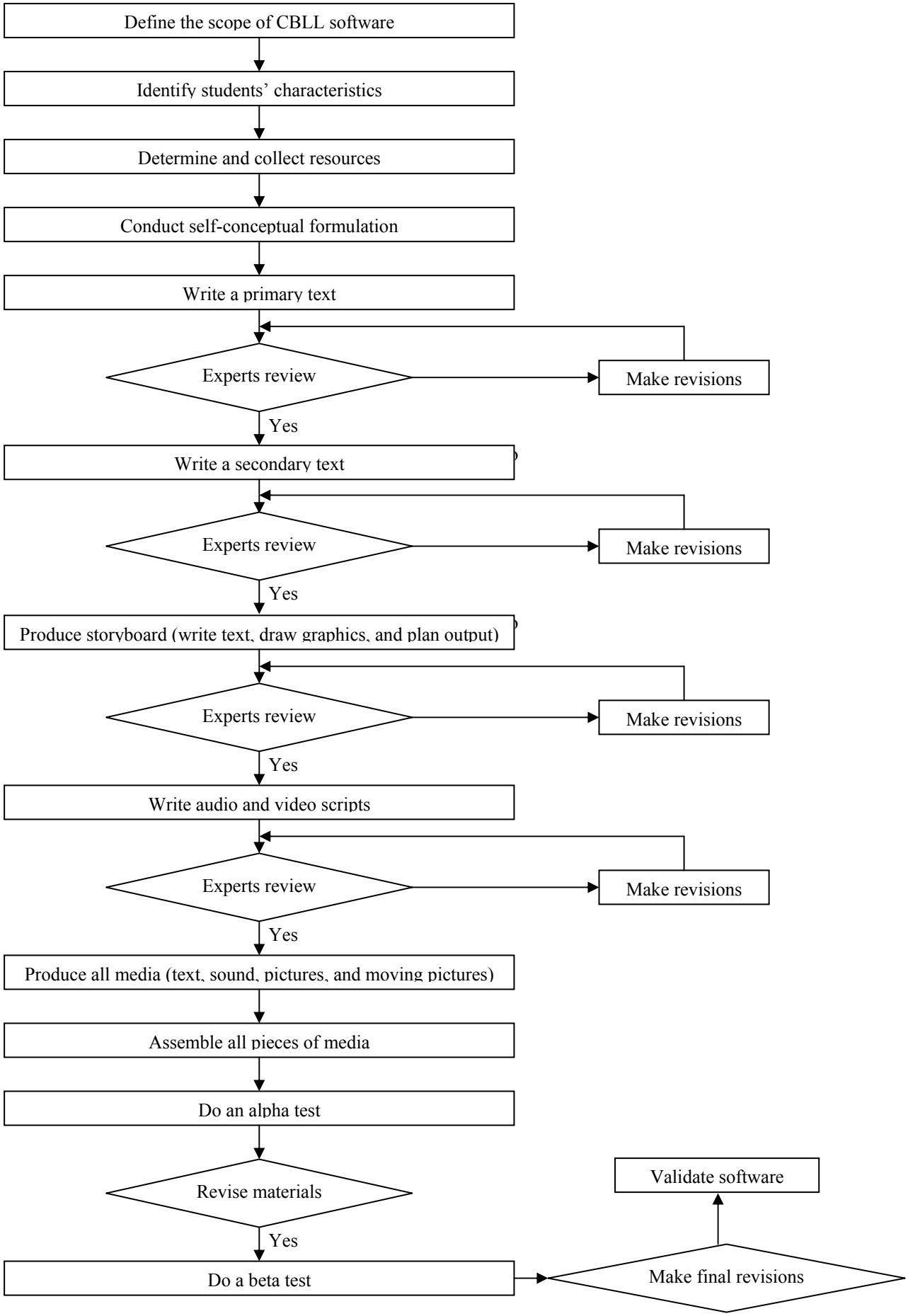
The researcher used the data obtained from step 12 to make final revisions of the software.

(14) Validate the software

In this step, the content-based language learning software was ready to be tested whether it meets its goals in the real learning environment. This means checking whether real intended users have accomplished the learning goals of the software. Real users referred to the student population in the present study.

Therefore, the process of construction of the software and examination of its efficiency could be drawn in the flowchart in Figure 3.2 (See next page).

Figure 3.2: Process of Software Development



3.6.2 Classroom Observation

The researcher has observed students' behavior in a natural classroom setting. The classroom observation was required to examine how students perform during learning through the content-based language learning software and how they interact with the software, classmates and teacher. Video camera was used to videotape what students performed while they were engaged in the learning process.

The categories used for describing and analyzing the data from classroom observation were the learning interest, interaction, and control of learning.

3.6.3 Tests

There were two sets of tests: pre-test and post-test. The researcher used a parallel structure to construct both pre-test and post-test. The test type was a multiple choice with thirty questions in each. The researcher constructed the tests as follows:

(1) The researcher studied English major curriculum of Mahachulalongkornrajavidyalaya University (MCU) and course syllabus of Reading in Buddhism II on the topic of Kamma.

(2) The researcher reviewed related literature on Kamma.

(3) The researcher constructed the test items with four choices each.

(4) The researcher had experts examine the tests.

(5) A pilot study was conducted with third-year English major students at MCU: Khon Kaen Campus.

(6) The data obtained from (5) were analyzed to find out the difficulty index (p) and discrimination power (r) using Microsoft Office Excel 2003. The criteria used to develop the test items were (a) $0.3 \leq p \geq 0.7$ and $r \geq 0.2$.

Thus sixty test items were selected as a pre-test and post-test with 30 items in each. (See Appendix C)

(7) The level of difficulty (p) and discrimination index (r) of the sixty test items met the criteria for test development. (See Appendix D)

(8) Finally, the researcher used Kuder Richardson Formula 20 (KR-20) to examine reliability of the tests using Microsoft Office Exel 2003. For the reliability of the test according to KR-20, the accepted value was KR-20 > 0.7. In the study, the reliability of the pretest was 0.83 and of the posttest was 0.81. (See Appendix D)

3.6.4 Questionnaire

The questionnaire was used to examine how students go about learning through content-based language learning software on Kamma. The questionnaire served as pre-and post-questionnaire. It contained two main parts: five-point rating scale questions and open-ended questions. Likert's rating scale was used to construct the questionnaire form. The Likert's scale consisted of five categories and two parts including an initial statement and a list of responses categories ranging from "strongly agree" to "strongly disagree". The scale categories were labeled using numbers from 1 to 5. Each number refers to different levels of quality, for example; 1 means strongly disagree and 5 means strongly agree, etc. (Peterson, 2000).

Through Likert's scale method, the researcher constructed a view questionnaire according to the following procedures:

(1) The researcher reviewed related literature on how to construct a questionnaire based on Likert's method.

(2) The researcher compiled possible issues concerning learning through content-based language learning software on Kamma.

(3) The researcher constructed the positive and negative statements based on the possible issues compiled from learning through content-based language learning software on Kamma.

(4) The rating scale for the positive statements was followed:

5 means 'strongly agree'

4 means 'agree'

3 means 'uncertain'

2 means 'disagree'

1 means 'strongly disagree'

(5) The rating scale for the negative statements was followed:

1 means 'strongly agree'

2 means 'agree'

3 means 'uncertain'

4 means 'disagree'

5 means 'strongly disagree'

(6) The researcher had experts examine the questionnaire.

(7) The researcher made revisions where needed.

(8) The researcher tried out with 30 samples.

(9) The t-test for each item of the five-point rating scale questionnaire was calculated. When analyzed, the researcher chose the items which have the most significant difference at the level 0.05 to be included in the

questionnaire. Then the questionnaire with chosen items was re-tried out to ascertain reliability.

(10) The method of Coefficient Alpha of Cronbach was used to examine reliability of questionnaire. To accept the reliability of the questionnaire, the reliability coefficient value must be more than 0.80 (A-kakul, 1999). The reliability coefficient value calculated was 0.812(See Appendix G).

Data obtained from the questionnaire trial was analyzed using SPSS software program.

3.6.5 Semi-Structured Interview

Guided questions were performed to help the researcher to carry out a group interview. The guided questions contained the topics and subtopics to be covered and they asked about students' opinion relating to learning through content-based language learning software. The thesis advisor and co-advisors will examine the guided questions.

3.7 Data Collection

The present study used the pre-post quasi-experimental design. The procedures for collecting data were as follows.

(1) The researcher gave a pre-test to both control and experimental groups at the beginning of class to determine if their existing knowledge was similar, more or less.

(2) The researcher had participants in the experimental group learn about Kamma using the content-based language learning software. For the control group, the participants were taught by the English language teacher who was responsible for

the Reading in Buddhism II class using the paper-and-pencil lessons. Both groups learned the same content for six 50-minute periods.

(3) The participants in the experimental group were videotaped while studying with content-based language learning software.

(4) Three days after the last class, the researcher had all participants do a post-test.

(5) The researcher had the participants in the experimental group respond to the questionnaire. After that, each student in the experimental group was interviewed in Thai. One student took fifteen or twenty minutes. A tape recorder was used while the interview was taking place.

3.8 Data Analysis

The data obtained from each method were analyzed and interpreted in two main ways: quantitative and qualitative.

3.8.1 Pre-test and Post-test

Analysis of Covariance or ANCOVA was used to compare both groups of students' learning achievement. The Analysis of Covariance would remove extraneous variability that derived from pre-existing individual differences including students English proficiency level and background knowledge in English language and Buddhist content. SPSS software program for Windows was used for the analysis.

3.8.2 Questionnaire

In terms of the questionnaire, the data of open-ended questionnaire in part 2 were categorized in groups based on the similarities and differences of opinions or comments. The data of the five-point rating scale questionnaire were calculated for arithmetic means in order to describe students' views after using the software. The

criteria of means were from a range divided by numbers of levels; this was (5-1)/5 = 0.80. So, each level will be added up with 0.80 as shown in the Table 3.1.

Table 3.1 : The Criteria for the Interpretation of Five-Point Rating Scale Questions

Means	**Interpretation**
1.00 – 1.80	Students have very bad views.
1.81 – 2.60	Students have bad views.
2.61 – 3.40	Students have neutral views.
3.41 – 4.20	Students have good views.
4.21 – 5.00	Students have very good views.

3.8.3 Semi-Structured Interview

Data obtained from Interview were categorized and interpreted to support the data gained from the other methods or instruments.

3.8.4 Classroom Observation

Data obtained from classroom observation and videotaping were categorized and interpreted to investigate students' behavior during learning through content-based language learning software.

3.9 Summary

A quasi-experimental design was used to prove the learning achievement of students in both control and experimental groups. The population was seventeen third-year English major students in the Faculty of Humanities at Mahachulalongkorn-rajavidyalaya University Nakhon Ratchasima Campus during the second semester of the academic year 2005. For variables, regular teacher-directed instruction and

instruction based on content-based language learning software were independent variables, which affected the dependent ones, consisting of students' learning achievement and views on learning through the software. In the study, the instruments are (1) content-based language learning software on kamma, (2) classroom observation, (3) tests, (4) questionnaire, and (5) semi-structured interview. In the development process, these instruments were examined to find out efficiency through experts and trials. Prior to the experiment, the two groups took a pretest. Then, the control group was taught with regular teacher-directed instruction; whereas the experimental group was taught by the content-based language learning software. Classroom observation was also conducted on the students in the experimental group while they were in the process of learning. At the end of students' learning, a posttest was administered to both groups. Finally, questionnaire and interview were performed on the experimental group only. For data analysis, the obtained data was analyzed to find out whether students' learning achievement in both groups was significantly different and to explore students' views on the content-based language learning software on kamma.

CHAPTER 4

RESULTS AND DISCUSSIONS

This chapter indicates the research findings which are organized around the three main purposes of the present study. Therefore, the presentation of findings is divided into three sections. The first section presents the results of content-based language learning software development. The second section presents the results of comparing of students' learning achievement. Finally, the results of students' views on learning through content-based language learning software will be presented in the last section. In addition, discussions of the results were also presented in this chapter.

4.1 Results

4.1.1 Results of Content-Based Language Learning Software Development

In the development of content-based language learning software on kamma, the researcher has determined the efficiency of the software through alpha and beta tests. Three trials from both alpha and beta tests were conducted and the results were shown in Table 4.1.

Table 4.1 : The Results of Three Trials

Trials	**E_1** (Efficiency of Process)	**E_2** (Efficiency of Results)
Individual	78.89	65.56
Small Group	85.00	78.89
Field	82.53	80.53

From **Table 4.1**, it could be seen that after the trials of individual and small group, the efficiency index of the content-based language learning software was 82.53/80.53. This met the specified criteria.

4.1.2 Results of Comparing Students' English Learning Achievement

The data obtained from pretest and posttest scores of both groups was analyzed using an analysis of covariance or ANCOVA in order to see if there were significant differences. The results were presented in Table 4.2.

Table 4.2: The Results of Students' English Learning Achievement

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	234.826[a]	2	117.413	**11.519**	**.001**
Intercept	256.099	1	256.099	25.125	.000
Pretest	113.727	1	113.727	11.157	.005
Group	131.372	1	131.372	12.888	.003
Error	142.703	14	10.193		
Total	6706.000	17			
Corrected Total	377.529	16			

[a.] R Squared = .622 (Adjusted R Squared = .568)

From Table 4.2, the average posttest score of the students in both groups was significantly different at the 0.01 level (F = 11.519, Sig. = .001). Therefore, it can be concluded that the students' learning achievement of the experimental group was significantly higher than that of the control group. This corresponded to the first hypothesis stated in Chapter 1.

4.1.3 Results of Students' Views on Learning through Content-Based Language Learning Software

The questionnaire was used to investigate students' views on learning through content-based language learning software. The questionnaire consisted of two parts: a five-point rating scale and open-ended questions. The data obtained from the five-point rating scale was calculated for the arithmetic means. The results of the analysis were presented in Table 4.3.

Table 4.3 : The Results of Students' Views on Learning through the Content-Based Language Learning Software on Kamma

Items	$\bar{x}$	S.D.
1. Learning English through content-based language learning software on kamma is new.	4.00	0.93
2. Learning English through content-based language learning software on kamma is difficult.	3.75	1.16
3. Learning English through content-based language learning software on kamma helps you comprehend the reading texts.	4.25	0.71
4. Learning English through content-based language learning software on kamma makes the lessons and activities of learning and teaching uninteresting.	3.88	1.25
5. You enjoy learning English through content-based language learning software on kamma.	4.50	0.53
6. You get worried while you are learning English through content-based language learning software on kamma.	4.25	0.71
7. Learning through content-based language learning software on kamma makes you get more interested in English learning.	4.63	0.52
8. You lack concentration while learning English through content-based language learning software on kamma.	4.38	0.52
9. You feel independent in learning English while you are using content-based language learning software.	4.25	0.46

Item	$\bar{x}$	S.D.
10. You spend amount of time inappropriately for learning English through content-based language learning software on kamma.	4.00	1.07
11. You are happy while you are learning English through content-based language learning software on kamma	4.25	0.46
12. You can choose to learn and review the lesson as you need while you are learning English through content-based language learning software on kamma.	4.50	0.53
13. You get unconfident while you are learning English through content-based language learning software on kamma.	3.75	1.04
14. Learning English through content-based language learning software on kamma arouses your attempt to learn.	4.50	0.53
15. Learning English through content-based language learning software on kamma makes English and Buddhist Studies more interesting.	4.63	0.52
Total	4.23	0.73

From Table 4.3, it was revealed that students had very good views on learning through content-based language learning software ($\bar{x}$ = 4.23). When considering each item, it was found that students viewed that learning through content-based language learning software on kamma made them get more interested and made English and Buddhist studies more interesting ($\bar{x}$ = 4.63). They enjoyed learning English through the software and could choose the lessons to learn as they needed, and they also agreed that learning English through content-based language learning software on

kamma aroused their attempt to learn ($\bar{x}$ = 4.25). The students also agreed that learning through content-based language learning software was not difficult and made them get confident while they were learning through content-based language learning software on kamma ($\bar{x}$ = 3.75).

In Part 2 of the questionnaire, there were four open-ended questions. The data obtained from these questions were analyzed and categorized into similar views or comments which were calculated into percentages. The first question asked students what they like in learning English through content-based language learning software on kamma. The results of this question were as follows.

Sixty-three percent of students said that they liked the overall feature of the learning software. Thirty-eight percent of students liked the narration and pronunciation of the native English speaker in the learning software. They said that narrator's voice and sound effects motivated them to learn. Twenty-five percent of students liked the test in the learning software. They said that they could test their knowledge after learning and could know the feedback or results immediately. Besides, thirteen percent of students liked other different things in the learning software. They liked the reading activities in each lesson of the learning software. The students could develop their vocabulary in the Building Vocabulary activity. They liked the presentation with pictures or moving pictures which could facilitate their learning and motivate them to learn. Finally, the students said that the vocabulary used in each reading selection was appropriate, not too difficult; and the content of each reading selection had appropriate length and were understandable. They also said that the text used in the learning software was easy to read; and the reading texts were precise and interesting.

For the second question, students were asked to tell what they dislike in learning English through content-based language learning software on kamma. The results were revealed below.

Thirteen percent of students said that the test in the learning software was difficult and it did not have keys to let them know the answers of their wrong items. However, fifty percent of students said that they could not find what they dislike in the learning software.

With regard to the third question, students were asked to tell what they have learned from the content-based language learning software on kamma. The results were followed below.

Fifty percent of students said that the content-based language learning software on kamma helped them to develop their reading skill very well. The students were able to read more quickly and understood reading techniques which enhance their reading. They also said that the learning software helped them to know how to guess unknown or unfamiliar words. Sixty-three percent of students said that the learning software assisted them to comprehend the reading texts and grasp the gist.

The last question let students give suggestions about learning through content-based language learning software on kamma. Their suggestions were described as follows.

Firstly, more language learning software should be created. Especially, the computer-assisted language learning software should be developed in the area of grammar, English writing, conversation, and Buddhist vocabulary. Secondly, the content-based language learning software on kamma should be added in terms of other Buddhist contents, translation of difficult words, keys for tests, and

conversational activity. Lastly, the learning software should be developed for other subjects because when the instructor did not have enough time to teach, students could learn through the learning software by themselves.

4.2.4 Results of Classroom Observation

In order to investigate the students' learning behavior, the researcher has observed their methods of learning in a computer-based classroom setting. That was, the researcher observed how students performed during learning though content-based language learning software and how they interacted with their classmates or teacher.

In the beginning of class, the introduction was conducted to prepare students for learning through the learning software. In the computer lab, one computer was used for one student. Students were introduced what to be learned, objectives of learning, and how to learn. The researcher demonstrated how to use the content-based language learning software on kamma and let students learn by themselves according to the lesson plan for the experimental group.

Observationally, the researcher took a look at three sections: learners' interest, interaction, and control of learning. The results of a classroom observation were summed up as follows.

Interest

In investigating students' learning interest, the researcher found that students paid a good attention on the learning software. They looked at the monitor and read the text. The students learned quite actively. All of them pronounced what the narrator said and responded to the learning activities in the software by smiling and making noises. Students enjoyed doing the activities with feedback; they became excited and made loud noises when clicked on the correct choices. Before the start of learning,

students clicked each part of the learning software to survey the whole picture. Students finished all lessons before doing the test in the learning software and they learned every part in the learning software. Besides, some students requested for the learning software copy to continue learning at their own monasteries.

Interaction

In the classroom, students interacted with classmates, teacher, and computer. When students interacted with classmates, they introduced how to use the learning software to each other. The students requested for help from their classmates by asking questions and they explained or helped each other to conduct the learning activities. Some students observed classmates' learning by taking a look at the monitor of their friends.

As for the interaction between students and teacher, it was found that students asked the teacher questions about the content of the lessons and how to use some parts of the learning software. Sometimes students asked the teacher about the meaning of words they found in questions and instructions in the learning software.

On the interaction between students and computer, students chose and clicked on the lessons or learning activities as they needed. The students followed the narrator to pronounce words in the learning software. They smiled and talked to their classmates when they managed to get the correct answers. The students attempted to redo when they clicked on the wrong answers. In addition, the students were exited with the result of posttest in the learning software.

Control of learning

There were four lessons in the learning software. Students were introduced to learn each lesson in order, from 1 to 4, and do a posttest in the learning software when they have finished or comprehended all four lessons.

While learning, students repeated lessons or learning activities that they did not clearly understand. When they repeated, they went quickly for the part they understood and skipped some parts of the lessons. When students finished four lessons, they went to the test menu to do a posttest. They took the test again when they were not satisfied with the test result. Some students reviewed the lessons before taking the test again when they were not satisfied with the score they obtained from the posttest in the learning software.

In short, students paid enough attention while they were learning through content-based language learning software on kamma. They interacted with their classmates, teacher, and computer in order to achieve language learning. Furthermore, the students controlled their own learning by choose or determining what to learn as they needed.

4.1.5 Results of Semi-Structured Interview

The results from semi-structured interview were presented as follows.

When students were asked if they liked learning through content-based language learning software on kamma, all of them responded positively. They said that they had convenience in learning and the learning software helped them more understand the text. They also said that the learning software motivated them to learn and it was an interesting tool which aroused their attentions because the learning software contained sound, picture and moving picture. They wanted to have more

educational software for learning. Besides, they enjoyed learning through the learning software which allowed them to learn according to their needs.

For what the students liked most in the content-based language learning software on kamma, the students expressed different ideas. Seventy-one percent of them liked the overall feature of the learning software. These students said that they enjoyed the learning activities consisting of images, moving pictures, and sound. The images, moving pictures and sound in the learning software promoted their comprehension. Narration of the native English speaker in the learning software helped them to learn better word pronunciation. Another thing that students liked most was the test. Twenty-nine percent presented that they could immediately check the level of their knowledge after learning.

When the students were asked about what they disliked most about learning through content-based language learning software on kamma, most of them said they could not find what they disliked. However, one student said that the questions in the learning activities were too long. He suggested they should be made shorter. Another student also suggested that the font size and window size of the learning software should be enlarged or fitted to the computer screen.

When the students were asked about problems that they faced in learning through the learning software, all of them said that it was not difficult for them to use the learning software and they did not find any problem. They also stated that the learning software made English learning more convenient, and more interesting.

When the students were asked about their feeling that happened while they were learning through content-based language leaning software on kamma, all of them responded in a positive way. They stated that they felt happy, not anxious or

tensed while they were learning in the class. They could learn as they needed according to their pace because the learning software allowed them to control the activities. One student said that he liked learning through the learning software and he wanted a copy of the learning software to continue learning at his monastery.

When the students were asked about the interesting side of the learning software and their learning interest arising from the learning software, all of them reported that the learning software was very interesting and the learning activities in the learning software made them interested them in the lessons provided. They said that they were not bored; they enjoyed learning and were exited because the learning software motivated them to learn. Besides, they stated that learning through the learning software made them pay more attention than the learning in a normal English class.

When the students were asked about their knowledge and development of English reading skill after learning through content-based language learning software, all of them said that the learning software helped increase their knowledge of Buddhism regarding kamma and improve their ability to read. The learning software also helped them improve their reading skills—such as reading for detail, reading for specific information, and guessing of unknown words.

When asked about what should be revised in the content-based language learning software, the students gave many different suggestions. For instance, they suggested that the content-based language learning software should have a dictionary function for some technical terms; test in the learning software should have an answer key, so that students knew which item was correct or wrong; and other three skills—listening, speaking, and writing—should be included in the learning software. The

students wanted to learn more, so they suggested that Buddhist content should be included in the learning software and this kind of educational software should be more developed to enhance English language learning and teaching.

For the last question in the interview, the students were asked if they wanted to learn through the learning software for the next time. All of them responded they wanted to learn through the learning software again. For the development of educational software, students suggested an inclusion of other contents or skills such as grammar, Buddhist principles, conversation, pronunciation, speaking, listening, and writing. Students also indicated that they wanted to study other subjects through the learning software.

4.2 Discussions

The research findings as presented above were discussed in four parts as follows.

Firstly, the content-based language learning software on kamma had efficiency at 82.53/80.53, which met the standard criteria 80/80 as specified. It was so because the learning software was developed in three stages: planning, design, and development. In the development stage, the two tests, alpha and beta, were used to examine the efficiency of the learning software. For the alpha test, the content-based language learning software was evaluated by experts. In terms of the beta test, the learning software was developed through three trials: an individual, a small group, and a field trial. From each stage of development, the researcher could find both good and bad points given by experts and students. The data obtained at each stage helped to develop and revise the learning software. From the efficiency of the learning software at 82.53/80.53 (E_1/E_2), it could be seen that the efficiency of the process (E_1)

was higher than the efficiency of the outcomes (E_2). The reason might be that students were motivated to pay more attention in doing exercises after learning because the learning software allowed students to do exercises and check answers immediately. The learning software also allowed them to do exercises again and again if they were not satisfied with the gained scores, so some students reviewed what they had learned and redid exercises in order to achieve higher scores. Besides, the post-test was more difficult than exercises in the learning software, thus the efficiency of the outcomes was lower than the efficiency of the process.

Secondly, the comparison of learning achievement between both groups showed that the experimental group had a higher average post-test score than the control group with a statistically significant difference at the 0.01. This might be due to the fact that the contents relating to kamma in the content-based language learning software were taken from authentic materials via Buddhist websites. This content as an authentic material was also presented through texts, sound, pictures, and moving pictures which enhanced students' comprehension and motivation while they were learning the reading lessons in the learning software. In addition, the content of kamma in Buddhism built on students' prior knowledge because the students had learned about kamma before according to Buddhist curriculum for Thai Buddhist monks. Therefore, their background knowledge on kamma helped them better comprehend the reading selections in the learning software (Brinton, Snow, & Wesche, 2003; May 1990). Besides, the learning software was developed from the language teaching approach and reading strategies. In the learning software, reading techniques—such as guessing, reading for the main idea, reading for specific information and so on—were presented. This made students more understand reading

strategies, so their learning achievement was higher than that of the students in the control group.

Thirdly, the views on learning through content-based language learning software were highly positive. It was so because the learning software was presented through multimedia consisting of texts, sound, pictures, and moving pictures. The multimedia helped enhance students' learning and allowed entertainment at the same time. Through multimedia, the students were motivated to learn actively. As the active learners, they could interact with computer by clicking or typing. With teacher and classmates, the students could interact by asking questions or requesting for help. Besides, the students could control their learning. They could choose to learn or review what they wanted in the learning software. In other words, the students learned in the context that was free from anxiety and they could learn at their own pace. Therefore, a good learning atmosphere was created and it created a good view on language learning (Heathington & Alexander, 1994).

Lastly, from the classroom observation, it was found that the students learned attentively and actively. They enjoyed learning through interaction with computer, teacher, and peers. The students showed excitement and enthusiasm and chose to learn what they wanted in the learning software. In the interview, most of students expressed positive opinions. They agreed that the learning software was interesting and made learning more convenient and accessible. They liked to learn through the learning software which helped them develop their English reading skills and knowledge. The results from the classroom observation and interview supported the findings of the students' learning achievement. Because the students in the experimental group were interested in learning and the learning software might

motivate them to learn attentively, they demonstrated the satisfactory learning progress. In addition, the students with higher learning achievement might benefit from content-based instruction built on students' prior knowledge on kamma. It is mentioned that for English reading, the students' previous learning experience encourages them to comprehend the reading texts (Jones, 1998).

In conclusion, the content-based language learning software was an effective learning tool for developing students' English reading in Buddhism about kamma. This kind of the educational technology increased students' motivation and provided the appropriate conditions for the success of language learning.

4.3 Summary

According to the research purposes, the results of the study were wrapped up in three main sections—(i) development of content-based language learning software on kamma, (ii) students' learning achievement, and (iii) students' views on the content-based language learning software. First, the development of the learning software met the 80/80 standard criterion. The software gained 82.53/80.53 from the field test; so it had a good level of efficiency. Second, learning achievement of students in both groups was significantly different at the 0.01 level. The average post-test score of the experimental group was significantly higher than that of the control one. And third, students demonstrated very good views on learning through content-based language learning software. Most of them expressed positive opinions toward the software. In addition, the data, which was obtained from classroom observation and interview, supported these results as discussed in details in this chapter.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

This chapter reviews the major findings and methods used in the present study. The main sections of the chapter summarize the results and provide recommendations for further research studies.

5.1 Conclusions

The present study has been conducted for developing the content-based language learning software on kamma, comparing the learning achievement of students who learned through content-based language learning software with the learning achievement of those who learned through regular teacher-directed instruction, and exploring students' views on learning through content-based language learning software.

The population was seventeen third-year English major students who signed up for Reading in Buddhism II course, School of Foreign Languages, Faculty of Humanities, Mahachulalongkornrajavidyalaya University Nakhon Ratchasima Campus, in the second semester of the academic year 2005. They were randomly divided into two groups: experimental and control. Eight students were in the experimental group and nine students were in the control group.

The research procedures consisted of two main parts. The first part included the learning software development based on the effectiveness index at 80/80. The second part consisted of the comparison of students' learning achievement and exploration of students' views.

In the first part, the content-based language learning software on kamma was designed and developed by the researcher. The learning software passed two tests, alpha and beta. For alpha test, the learning software was reviewed by experts in every step of development. In terms of beta test, the learning software was tried out to examine its efficiency in three trials: individual, small group, and field. The learning software was tried out with three students in the individual trial, six students in the small group trial, and twenty-five students in the field trial.

In the second part, comparing of students' learning achievement and exploring of students' views were included. Before learning, the students in both groups took a pretest. Then the students in the experimental group learned through content-based language learning software, whereas the students in the control group learned through regular teacher-directed instruction. Classroom observation was conducted for the students in the experimental group while they were learning. When finished learning, the posttest was administered to the students of both groups. After that, only the students in the experimental group responded to the questionnaire and were interviewed about their views on learning through the learning software. The research instruments consisted of the content-based language learning software on kamma, a pretest, a posttest, a questionnaire, a classroom observation form, and a semi-structured interview form. The data obtained from each instrument were analyzed using quantitative data analysis and qualitative data analysis. The quantitative data analysis was conducted with the data from a pretest score, a posttest score, a questionnaire. The qualitative data analysis was conducted with the data obtained from the open-ended questions of the questionnaire, a classroom observation, and an

interview. The statistics used to analyze data in the present study were ANCOVA, arithmetic means, and percentage.

The results of the research can be summarized as follows.

1. The efficiency of the content-based language learning software on kamma was 82.53/80.53, which met the 80/80 standard criterion.

2. The learning achievement of students in the experimental group was higher than that of students in the control group with statistically significant differences at 0.01.

3. The students had very good views on learning through content-based language learning software on kamma.

5.2 Pedagogical Implications

The pedagogical implications based on the present study are given as follows.

1. The university should have self-access learning center where there are a lot of software-based learning tools which students can choose to learn according to their need and interest. This center will support the self-study of students. The students can seek knowledge by themselves in this center other than the library. However, this center should have enough learning tools with a good management.
2. In learning through the learning software or computer-assisted language learning software, students need to have basic computer skills such as typing, clicking, and dragging mouse. These skills will enhance the software-based learning and create students' confidence in using the learning software.
3. Teachers of English or other subjects should be trained in using the authoring software in design and development of the learning software for their courses—such as Buddhism, Pali language, Social Studies, and Thai language.
4. Students should be provided with various learning software packages because sometimes able students can learn fast and spend short time in learning. So, they may get bored if they have to repeat the learning software again and again, whereas poor students learn slowly and spend more time.

5.3 Recommendations for Further Research

The following recommendations based on the results of this study are proposed for further research.

1. The development of computer-assisted language learning software on other content of English education should be carried out.
2. The similar research should be conducted with students or subjects in other levels or other programs of study.
3. The development of computer-based language learning software consisting of four skills—listening, speaking, reading, and writing—should be done in the form of learning package which included the learning software CD, students' manual, students' workbook, and so on.
4. A comparative study of the learning achievement of students who learn through the learning software by themselves in a computer lab without teacher and those who learn through the learning software in a computer lab with the teacher as a facilitator should be done to understand the differences and find suitable ways to bridge the gap for more efficient learning of the students.

REFERENCES

REFERENCES

Adobe. (2004a). Photoshop CS [Computer software]. San Jose, CA: Author.

Adobe. (2004b). Illustrator CS [Computer software]. San Jose, CA: Author.

Adobe. (2004c). Premiere Pro 7 [Computer software]. San Jose, CA: Author.

Aebersold, J. A., and Field, M. L. (1997). **From reader to reading teacher: Issues and strategies for second language classrooms.** New York: Cambridge University Press.

A-kakul, (1999). **Attitude measurement**. Faculty of Education, Ubon Ratchathanee Rajabhat University.

Alessi, S. M. & Trollip, S. R. (2001). **Multimedia for learning : methods and development.** Massachusetts: Allyn & Bacon.

Alkahtani, S. (1999). Teaching ESL reading using computers. **TESL Journal**, 5(11).

Atagi, R. (2002). **The Thailand educational reform project: school reform policy** [online]. Available: http://www.thailearn.net/schoolform/4071.html.

Barson, J., & Debski, R. (in press). Calling back CALL : Technology in the service of foreign language learning based on creativity, contingency and goal-oriented activity. In M. Warschauer (Ed.), **Telecollaboration in Foreign Language Learning: Proceedings of the Hawaii's Symposium. Honolulu**, HI : University of Hawaii's Second Language Teaching and Curriculum Center.

Bensoussan, M. (1990). EFL reading as seen through translation and discourse analysis : narrative vs expository texts. **English for specific purposes**.

9: 49-66.

Bickel, B., & Truscello, D. (1996). New opportunities for learning : styles and strategies for computers. **TESOL Journal** 6(1), 15-19.

Brahmawong, C. (1978). **Teaching material system**. Bangkok : Chulalongkorn University Press.

Brinton, D. M., Snow, M. A., & Wesche, M. B. (1989). **Content - based second language instruction**. New York: Newbury House.

Brinton, D. M., Snow, M. A., & Wesche, M. B. (2003). **Content –based second language instruction.** Ann Arbor, MI: The University of Michigan Press.

Candy, P. (1987). Evolution, revolution or devolution: Increasing leaner-control in the instructional setting. In D. Boud & V. Griffin (Eds.), **Appreciating adults learning : From the learners' perspective** (pp. 159-178). London: Kogan Page Ltd.

Chapelle, C. A. (1994). CALL activities : Are they all the same? **System** 22(1), 33-45.

Carrel, P. (1987). Content and formal schemata in ESL reading. **TESOL Quarterly.** 21(3): 461-481.

Carrell, P., and Eisterhold, J. C. (1988). Schema theory and ESL reading pedagogy. In P. Carrell, J. Devine, and D. Eskey, (Eds). **Interactive approaches to second language reading.** Cambridge: Cambridge University Press.

Day, R. R., and Bamford, J. (1998). **Extensive reading in the second language classroom.** Cambridge: Cambridge University Press.

Doughty, C. (1987). Relating second-language acquisition theory to CALL research and application. In W. F. Smith (Ed), **Modern media in foreign language**

education: Theory and implementation (pp. 133-167). Lincolnwood, IL : National Textbook Company.

Doughty, C. (1991). Second language instruction does make a difference: Evidence from an empirical study of SL relativization. **Studies in Second Language Acquisition**, 13, 431-469.

Egbert, J. & Hanson-Smith, E. (Eds.). (1999). **CALL environments : Research, practice, and Critical Issues**. Bloomington, Illinois: Paragraph Printing.

Ehsani, F., and Knodt, E. (1998). Speech technology in computer - added language learning : Strengths and Limitations of A New CALL Paradigm. **Language Learning and Technology**. 12(1): 45-60.

Eskey, D. E., and Grabe, W. (1988). Interactive models for second language reading: perspective on instruction. In P. Carrell, J. Devine, and D. Eskey, (Eds). **Interactive approaches to second language reading.** Cambridge: Cambridge University Press.

Felix, U. (1998). Toward meaningful interaction in multimedia programs for language teaching. **ON - CALL, The University of Queensland, Australia**, 12(1): 20-29.

Goodman, K. S. (1998). The reading process. In P. Carrell, J. Devine, and D. Eskey, (Eds). **Interactive approaches to second language reading**. Cambridge: Cambridge University Press.

Groot, P. J. (2000). Computer assisted second language vocabulary acquisition. **Language Learning & Technology**, 4(1): 1-26.

Heathington, B. S. & Alexander, J. E., (1994). Do classroom teachers emphasize attitudes toward reading? **The Reading Teacher**, 37: 484-489.

Hoven, (1999). A model for listening and viewing comprehension in multimedia environments. **Language Learning & Technology**, 3(1): 88-103.

International Relations and Cooperation Center for Education Reform**.** (1999). **National Education Act of B.E. 2542 (1999)** [On-line]. Available : http://www.moe.go.th/English/edu-act.htm.

Jonassen, D. (1992). What are cognitive tools? In P. A. M. Kommers, D. H. Jonassen, & J. T. Mayes (Eds.) **Cognitive Tools for Learning** (pp. 1-6). Berlin: Springer-Verlag.

Jones, L. L. (1998). An interactive view of reading: Implication for the classroom. **The Reading Teacher**, 35: 772-777.

Krashen, S. (1985). **The Input Hypothesis**. London: Longman.

Larsen-Freeman, D., & Long, M. (1991). **An introduction to second language acquisition research**. London: Longman.

Levy, M. (1997). **Computer - assisted language learning : context and conceptualization**. Oxford; Clarendon Press.

Lin, Y-C. A. (2004). An assessment of the international students' attitudes toward technology- based learning : English as a second language (ESL) implication [On-line] (Doctoral dissertation, Mississippi State University). **Disseration Abstracts International** A65/02 : 478. Abstract from : FirstSearch File: DAO Item: 3120816.

Long, M. H. (1988). Instructed interlanguage development. In L. Beebe (Ed.), **Issues In second language acquisition**: **Multiple perspectives** (pp. 115-141). New York: Newbury House.

Macromedia. (2004a). Flash MX 2004 [Computer software]. San Fancisco: Author.

Macromedia. (2004b). Authorware 7.01 [Computer software]. San Fancisco: Author.

Mahachulalongkornrajavidyalaya University. (1995). **Curriculum of Bachelor of Arts**. Bangkok: Mahachulalongkornrajavidyalaya University Press.

Mahachulalongkornrajavidyalaya University, Department of Academic Affair. (2000). **Course syllabus** : Bangkok : Mahachulalongkornrajavidyalaya University Press.

May, F. B. (1990). **Reading as communication : An interactive approach**. Third Edition. Columbus: Merrill Publishing Company.

Mcneil, J. (1984). **Reading comprehension : New directions for classroom practice**. London: Forestman and company.

Meskill, C. (1992). CALL : Individual versus negotiated task processing. Paper Presented at the CALICO Symposium: Outreach'92, Monterey, CA.

Microsoft. (2004a). Word 2003 [Computer software]. Redmond, WA: Author.

Microsoft. (2004b). Publisher 2003 [Computer software]. Redmond, WA: Author.

Microsoft. (2004c). Movie Maker II [Computer software]. Redmond, WA: Author.

Nuttal, C. (1996). **Teaching reading skills in a foreign language**. Oxford: Heinemann.

Pennington, M. & Stevens, V. (Eds.). (1992). **Computer in applied linguistics: An international perspective**. Clevedon: Multilingual Matters.

Peterson, R. A. (2000). **Constructing effective questionnaires**: London: Sage.

Pica, T., Kanagy, R., & Falodun, J. (1993). Choosing and using communication tasks for second language instruction. In G. Crookes, & S. Gass (Eds.), **Tasks and language learning** : **Integrating theory & practice** (pp. 9-34). Clevedon, England: Multilingual Matters, Ltd.

Pokapanichwong, A. (2000). **Computer assisted instruction program for Technical English 2 on signs and instructions**. M.Ed. Thesis, King Mongkut's Institute of Technology Lardkrabang. International Relations and Cooperation Center for Educational

Richards, J. C., & Rodgers, T. S. (2001). Content-based instruction. In **Approaches and methods in language teaching** (2nd ed., pp. 204-222). Cambridge: Cambridge University Press.

Robinson, G. L. (1991). Effective feedback strategies in CALL. In P. Dunkel (Ed.), **Computer– assisted language learning and testing** (pp. 155-167). New York: Newbury House.

Royer, J. M., and Carlo, M. S. (1991). Transfer of comprehension skills from native to second language. **Journal of reading**. 34(6): 450-455.

Sonic Foundry. (2002). Sound Forge 6.0 [Computer software]. Medison, WI : Author.

Stevens, V. (1992). Humanism and CALL: A coming of age. In M. C. Pennington & V. Stevens (Eds.), **Computers in applied linguistics : An international Perspective** (pp. 11-38). Clevedon, England: Multilingual Matters.

Stryker, S. B., & Leaver, B. L. (Eds.). (1997). **Content-based instruction in foreign language education: Models and methods.** Washington, DC: Georgetown University Press.

Sukamolson, S. (2000). **Conducting and developing a multimedia computer-assisted instruction program for teaching Foundation English II**. Chulalongkorn University, Language Institute.

Swain, M. (1985). Communicative competence: Some roles of comprehensible input and comprehensible output in its development. In S. M. Gass, & C. G.

Madden (Eds.), **Input in second language acquisition** (pp. 235-253). Rowley, MA: Newbury House Publishers.

Swain, M., & Lapkin, S. (1995). Problems in output and the cognitive processes they generate: A step towards second language learning. **Applied Linguistics,** 16: 371-391.

Tanhikorn, B., Rodpotong, S., Pishitpornchai, C., and Saengsap, S. (2001). **Knowledge about multimedia for education**. Bangkok: Khurusapha.

Tanok, S. and others. (2003). **Teaching - learning conditions and problems of Mahachulalongkornrajavidyalaya University Nakhon Ratchasima Campus.** Mahachulalongkornrajavidyalaya University Nakhon Ratchasima Campus.

The Ministry of Education. (2002). **Basic education curriculum 2001**. Bangkok: R.S.P.

Torut, S. & Torut, B. (2002). **The development of computer multimedia English Lessons for academic purposes**. Faculty of Education, Silpakorn University.

Yopp, R.H., & Yopp, H.K. (1992). **Literature-based reading activities.** California : Allyn and Bacon.

APPENDICES

Appendix A

The Individual Trial for Effectiveness Evaluation of Content-Based Language Learning Software on Kamma

Student Number	Pretest Score (30 points)	Exercise Score (30 points)	Posttest Score (30 points)	E1	E2
1	17	24	21		
2	5	23	18		
3	15	24	20		
Total Score	37	71	59		
Mean Score	12.33	23.67	19.67		
Percentages	41.11	78.89	65.56	**78.89**	**65.56**

$\overline{X}$ = 71/3

= 23.67

$\mathbf{E_1}$ = (23.67/30) x 100

= **78.89**

$\overline{X}$ = 59/3

= 19.67

$\mathbf{E_2}$ = (19.67/30) x 100

= **65.56**

The Small Group Trial for Effectiveness Evaluation of Content-Based Language Learning Software on Kamma

Student Number	Pretest Score (30 points)	Exercise Score (30 points)	Posttest Score (30 points)	E1	E2
1	10	28	27		
2	8	24	25		
3	11	25	23		
4	14	26	24		
5	12	23	21		
6	11	27	22		
Total Score	66	153	142		
Mean Score	11	25.5	23.67		
Percentages	36.67	85.00	78.89	**85.00**	**78.89**

$\overline{X}$ = 153/6

= 25.5

$\mathbf{E_1}$ = (25.5/30) x 100

= **85.00**

$\overline{X}$ = 142/6

= 23.67

$\mathbf{E_2}$ = (23.67/30) x 100

= **78.89**

The Field Trial for Effectiveness Evaluation of Content-Based Language Learning Software on Kamma

Student Number	Pretest Score (30 points)	Exercise Score (30 points)	Posttest Score (30 points)	E1	E2
1	12	25	25		
2	15	24	24		
3	14	21	23		
4	12	22	25		
5	16	28	26		
6	18	26	25		
7	12	26	24		
8	13	24	25		
9	14	25	23		
10	12	22	20		
11	15	22	23		
12	16	25	24		
13	14	26	23		
14	15	24	24		
15	12	26	22		
16	13	23	25		
17	15	25	24		
18	14	26	26		
19	8	23	25		
20	17	23	23		
21	9	27	24		
22	14	26	26		
23	12	27	27		
24	11	28	23		

Student Number	Pretest Score (30 points)	Exercise Score (30 points)	Posttest Score (30 points)	E1	E2
25	13	25	25		
Total Score	336	619	604		
Mean Score	13.44	24.76	24.16		
Percentages	44.8	**82.53**	**80.53**	**82.53**	**80.53**

$\overline{X}$ = 619/25

= 24.76

$\mathbf{E_1}$ = (24.76/30) x 100

= **82.53**

$\overline{X}$ = 604/25

= 24.16

$\mathbf{E_2}$ = (24.16/30) x 100

= **80.53**

Appendix B

Lesson Plan for a Control Group

Subject : Reading in Buddhism II (302311)

Level : Third-Year English Majors (N=9)

The School of Foreign Languages, Faculty of Humanities,

Mahachulalongkornrajavidyalaya University

Nakhon Ratchasima Campus

Periods : 6 periods

Topic **:** Kamma

Objectives : 1. Students will be able to identify the topic.

2. Students will be able to identify the topic sentence.

3. Students will be able to identify the main idea.

4. Students will be able to find specific details.

5. Students will be able to use content clues and background knowledge to understand the text.

6. Students will be able to extract information by making inferences.

7. Students will learn vocabulary related to Buddhism.

Content : **Kamma** (Reading about kamma in Buddhism)

1. What is kamma?
2. Good kamma and evil Kamma
3. The law of kamma

4. Rebirth

Period	Content	Activities	Materials	Assessment
1 - 2	1. Objectives, content, and assessment 2. Pretest 3. Reading the text "Understanding Kamma" 4. Main Ideas 5. Guessing 6. Topic 7. Pronoun reference 8. Vocabulary -Synonyms -Word in context	1. Students are introduced about learning objectives, content, and assessment. 2. Students do a pretest. **Lesson 1** **<u>Before Reading</u>** 3. In activity 1 of Lesson 1, students are required to cycle T before the statements that they agree with and F before those that they disagree. 4. Students check their answers from peers and teacher. 5. For activity 2, teacher writes on the board four words (Kamma, Karma, Cetana, and Vipaka). Students pronounce each word together. Then, teacher has students discuss the meaning of each word. **<u>While Reading</u>** 6. Teacher asks students, "What is kamma? Then, has them express what they know about kamma one by one. 7. Teacher has students set the question "What is kamma?" in mind and read the passage 1.1, Understanding Kamma, to	1. Pretest 2. Student's book "Kamma"	1. Results from doing a pretest 2. Checking from doing the activities and exercises

Period	Content	Activities	Materials	Assessment
		find the answer. 8. When finished reading, students do the exercise that follows the reading in order to answer the question "What is kamma?". 9. Students check their answers. **After Reading** 10. In exercise 1, students are asked to write T before the statements that are true and write F before those that are false according to the reading. 11. Students check their answers. 12. Teacher writes this sentence on the board. "It is volition that the Buddha called action (kamma)". Then, has students see the relationship between the underlined word and the word in parentheses. 13. Teacher points out that the word in parentheses, after a dash, and after a comma gives information or meaning for the new word or difficult word in the same sentence. 14. Students do exercise 2 to find the meanings of		

Period	Content	Activities	Materials	Assessment
		the underlined words by cycling the word or part that describes or gives information about the underlined word. 15. Students check their answers. 16. Students do exercise 4 to match the given topics with their paragraphs in the passage 1.1. 17. Students check their answers. 18. Teacher points out that a reading passage expresses one main idea and it sums up the topics and ideas of all the paragraphs. 19. Students do exercise 5 to find the one main idea from the passage 1.1. Then, Students check their answers. 20. Teacher writes the following sentences on the board and asks questions, "what does **"It"** refer to? and "what does **"him"** refer to? - Kamma (Karma in Sanskrit) literally means action. **It** refers to all volitional actions that people or living beings do through body, speech, and mind.		

Period	Content	Activities	Materials	Assessment
		-If you're driving and hurt a person who runs in front of your car, then there are no kammic results (vipaka) because you have no volition to hurt **him**. 21. Teacher points out the importance of pronouns in reading. 22. Students do exercise 6 to identify the words that the underlined pronouns refer to. Then, students check their answer. **Building Vocabulary** 23. In the building vocabulary activity, exercise 1, students are asked to mach the given words with their meaning. Then students check their answers. 24. Exercise 2 of the building vocabulary activity, students are asked to complete the blank with the best appropriate words taken from the passage 1.1. Then, students check their answers.		
3 - 4	1. Reading the text "Two Main Types of Kamma" 2. Main ideas 3. Guessing	**Lesson 2** **Before Reading** 1. In Lesson 2 of student's book, students are asked to match Buddhist words	Student's book "Kamma"	Checking from doing the activities and exercises

Period	Content	Activities	Materials	Assessment
	4. Topic 5. Scanning for specific information 6. Pronoun references 7. Vocabulary -Parts of speech	with their meaning in English. 2. Students check answer and discuss the meaning of each word. **While Reading** 3. Teacher asks students, "what are the two main types of kamma in Buddhism? Then, has each student gives opinions about kamma in Buddhism. 3. Teacher has students set the question "what are the two main types of kamma?" in mind. Then has them read the passage 2.1 (Two Main Types of Kamma). 3. Teacher has students answer their question that they have before reading when finished. Then, has them check their answer from peers. **After Reading** 4. In exercise 1, students are asked to write T before the statements that are true and write F before those that are false according to the reading. 5. Students check their answers. 6. Teacher writes this sentence on the board and		

Period	Content	Activities	Materials	Assessment
		has students find the example of the underlined words. - People who want to have a happy life should do only wholesome actions such as offering food to the monk, keeping precepts and practice of meditation. 7. Teacher points out that the examples are given in parentheses, after a dash, and after a comma. The examples can help students to guess the meaning of new words and has key terms (for example, for instance, and such as). 8. Students do exercise 2 to fine the examples of the underlined words by cycling the part that describes or gives examples of the underlined word. 9. Students check their answers. 10. Students do exercise 3 to match the given topics with their paragraphs in the passage 2.1. 11. Students check their answers. 12. Teacher points out		

Period	Content	Activities	Materials	Assessment
		that a reading passage expresses one main idea and it sums up the topics and ideas of all the paragraphs. 13. Students do exercise 4 to match good and bad with their criteria according to the passage 2.1. Then, Students check their answers. 14. Students do exercise 5 to identify the one main idea of the passage 2.1. 15. Teachers pointes out the importance of setting purpose before reading and scanning for specific information. 16. Students do exercise 6 to find the answers of the questions set before reading. Then, students check their answer from their peers and teacher. 17. Students do exercise 7 to identify the words that the given pronouns refer to. Then, students check their answer from their peers and teacher. **Building Vocabulary** 18. Teacher writes the following sentences on the board. Then, teacher asks students, "what is the underlined word called in		

Period	Content	Activities	Materials	Assessment
		part of speech?". - Having volition, people act by body, speech, or mind. -Therefore it is seen as a good act. 19. Teacher points out the importance of the part of speech in guessing of the meaning of new words. 20. Students do exercise 1, 2, and 3 to complete the sentences with the appropriate words and identify the part of speech of those words. 21. Teacher writes this sentence on the board. Then, has students find the differences of the underlined words or has them tell the part of speech of each one. - In Buddhism, kamma refers to the teaching on moral actions with volition (causes) and kammic consequences (effects). 22. Teacher points out the related words that have the same stem and different endings. These words can help to guess the meaning of new words. 23. Students do exercise		

Period	Content	Activities	Materials	Assessment
		4, 5, and 6. Then, check answers from peers and teacher.		
5	1.Reading the text " Basic Teaching on Kamma" 2. Main ideas 3. Guessing 4. Topic 6. Topic sentence 7. Pronoun reference 8. Making inferences 9. Vocabulary -Related words -Parts of speech	**Lesson 3** **<u>Before Reading</u>** 1. Teacher write this proverb on the board. Then, has students think about the meaning in Pali and discuss about its meaning. -Good gets good; evil gets evil. **<u>While Reading</u>** 2. Teacher has students discuss about what is the basic teaching on kamma. 3. Teacher has students think about the question "what is the basic teaching on kamma?". Then, has them read the passage 3.1 (Basic Teaching on Kamma) and answer the question they set before reading. **After Reading** 4. Students do exercise 1, 2, 3, and 4. Then, check answers from peers and teacher. 5. Teacher has students see the example of the reading selection consisting of topic and topic sentence. Then, teacher points out that	Student's book "Kamma"	Checking from doing the activities and exercises

Period	Content	Activities	Materials	Assessment
		topic tells what students are reading about while topic sentence tells the main idea of a paragraph. 6. Students do exercise 5 and check answers from peers or teacher. Teacher gives the hint. -The topic is just a word or noun phrase—a few words. It is not a sentence. The topic sentence can be found in different places in the paragraph: beginning, middle, or end. 7. Students do exercise 6 to find the words that the given pronouns refer to. Then, students check answers from peers or teacher. 8. Teacher write these sentences on the board. Then, has students conclude what the writer means. Each student write what he can infer on the board under each statement. -The law may not catch us but the law of kamma will. -It is impossible—except by reaching nibbana—to		

Period	Content	Activities	Materials	Assessment
		escape the consequences of our actions. 9. Teacher points out that making inference is to say the same things as the writer in our own words. Then, has them do exercise 7 and check answers from peers or teacher. **Building Vocabulary** 10. Students do exercise 1 to identify the word that is different from others in each group by cycling. Then, students check answer from peers or teacher. 11. Teacher write two words on the board and ask students, "which word is a noun?" and "which word is an adjective?". Then ask them for the suffix of each word. -Action -Active 12. Teacher points out the suffix which can tell the part of speech of a word. Then, has them do exercise 2, 3, and 4 in the building vocabulary activity and check answers from peers or teacher.		
6	1. Reading the text	**Lesson 4**	Student's book	1. Checking

Period	Content	Activities	Materials	Assessment
	"Rebirth in Buddhism" 2. Main Ideas 3. Guessing 4. Topic 5. Topic sentence 6. Making inferences 7. Vocabulary -Categories -Prefixes & Suffixes 8. Posttest	**Before Reading** 1. In the student's book, students take a look at the diagram and answer the following questions. Teacher has all students express their idea and discuss about "Rebirth in Buddhism". -What is this process called? -Do you think who will follow this process? -According to Buddhism, who do not have to follow this process? -Can you tell four things in this process? **While Reading** 2. Teacher writes this question on the board. Then, has students set that question as purpose before reading. - What teaching supports the notion or thought of rebirth in Buddhism? 3. Students read the passage 4.1 and answer the question that they set before reading when finished. Then, students check answer from peers or teacher.	"Kamma"	from doing the activities and exercises 2. Results from the posttest

Period	Content	Activities	Materials	Assessment
		<u>After Reading</u> 4. Students do exercise 1-6. Then, check answers from peers or teacher. **<u>Building Vocabulary</u>** 5. Students do exercise 1 to identify the word that does not belong in group. Then, check answers from peers or teacher. 6. Teacher writes these prefixes with their meaning on the board. Has students give examples of the words with the given prefixes. *con-/com-* = *with, together* *inter-/e-* = *between, among* *mis-* = *wrong* *pre-* = *first, before* *re-* = *again, back* *trans-* = *across* **Opposite Meaning** *Un-* *In-* *Im-* *Dis-* 7. Students do exercise 2 and check answers from peers or teacher. 8. Teacher writes these		

Period	Content	Activities	Materials	Assessment
		suffixes with their part of speech on the board. Has students give examples of the words with the given prefixes. **Nouns** -ess -ship -ism **Verbs** -ate -ize -en **Adjective** -less **Adverb** -ly 9. Students do exercise 3 and 4. Then check answers from peers or teacher. 10. Students in the control group do a posttest in the same day as those in the experimental one (three days after the finishing the last lesson).		

Lesson Plan for an Experimental Group

Subject : Reading in Buddhism II (302311)

Level : Third-Year English Majors (N = 8)

The School of Foreign Languages, Faculty of Humanities,

Mahachulalongkornrajavidyalaya University

Nakhon Ratchasima Campus

Periods : 6 periods

Topic **:** Kamma

Objectives :

1. Students will be able to identify the topic.
2. Students will be able to identify the topic sentence.
3. Students will be able to identify the main idea.
4. Students will be able to find specific details.
5. Students will be able to use content clues and background knowledge to understand the text.
6. Students will be able to extract information by making inferences.
7. Students will learn vocabulary related to Buddhism.

Content : **Kamma** (Reading about kamma in Buddhism)

1. What is kamma?
2. Good kamma and evil Kamma
3. The law of kamma
4. Rebirth

Period	Content	Activities	Materials	Assessment
1 - 2	1. Objectives, content, and assessment 2. Pretest 3. Reading the text "Understanding Kamma" 4. Main Ideas 5. Guessing 6. Topic 7. Pronoun reference 8. Vocabulary -Synonyms -Word in context	1. Students are introduced about learning objectives, content, and assessment. 2. Students do a pretest. 3. Students launch the content-based language learning software and follow the instructions until they go the main page. 4. At the main page, teacher introduces the main parts of the software and how to learn. 5. Students are assigned to go to lesson 1 and study the objectives of lesson 1. Then, click OK to go to the lesson 1 page consisting of four main activities: Before Reading, While Reading, After Reading, and Building Vocabulary. 6. Students are assigned to do each activity from Before Reading to Building Vocabulary in lesson 1. While studying the lesson 1, students ask teacher questions and discuss with their friends.	1. Pretest 2. Content-based language learning software on kamma 3. Computer with CD drive and speakers or headphones.	1. Results from doing a pretest 2. Checking from doing the activities in the software.
3 - 4	1. Reading the text "Two Main Types of Kamma"	1. Students study lesson 2 on the topic of Good	Computer with CD drive and speakers or	Checking from doing the activities in the

Period	Content	Activities	Materials	Assessment
	2. Main ideas 3. Guessing 4. Topic 5. Scanning for specific information 6. Pronoun references 7. Vocabulary -Parts of speech	and Evil. They are assigned to study the same four activities: Before Reading, While Reading, After Reading, and Building Vocabulary. While studying, the students are allowed to repeat what they don't understand as they need. 2. Students discuss with their friends and ask teacher if they have questions.	headphones.	learning software.
5	1. Reading the text " Basic Teaching on Kamma" 2. Main ideas 3. Guessing 4. Topic 5. Topic sentence 6. Pronoun reference 7. Making inferences 8. Vocabulary -Related words -Parts of Speech	1. Students study lesson 3 (The Law of Kamma). They are assigned to study the same four activities: Before Reading, While Reading, After Reading, and Building Vocabulary. While studying, the students are allowed to repeat what they don't understand as they need. 2. Students discuss with their friends and ask teacher if they have questions or request for	Computer with CD drive and speakers or headphones.	Checking from doing the activities in the learning software.

Period	Content	Activities	Materials	Assessment
		help.		
6	1. Reading the text "Rebirth in Buddhism" 2. Main Ideas 3. Guessing 4. Topic 5. Topic sentence 6. Making inferences 7. Vocabulary -Categories -Prefixes & Suffixes 8. Posttest	1. Students study lesson 4 (Rebirth). They are assigned to study the same four activities: Before Reading, While Reading, After Reading, and Building Vocabulary. While studying, the students are allowed to repeat what they don't understand as they need. 2. Students discuss with their friends and request for help from teacher. 3. When finished all four lessons, they can review the lesson or part that they don't understand clearly. 4. Finally, students are assigned to do a test in the test menu. This test contains 30 multiple choices. The score that students obtain from this test serves as the exercise score during the study. 5. Students in the experimental group do a posttest in the same day as those in the control group (three days after the finishing the last lesson).	1. Computer with CD drive and speakers or headphones. 2. Posttest	1. Checking from doing the activities and exercise 2. Results from posttest

Appendix C

Pretest of Reading in Buddhism II on Kamma

Directions: Read each passage carefully and choose the best answer for each question. (30 points)

Passage 1

There is a tremendous variety among the living beings existing in the world. People and animals are of different sorts. What is it that causes us to take rebirth in a particular form? Does it happen through coincidence, through accident, by chance without any reason, or is there some principle behind it? What is it that determines the form of rebirth we take?

Buddha answers these questions, with the Pali term "kamma". Kamma is the factor which determines the specific form of rebirth, what kind of a person we are at the outset of our life, and it is kamma again that determines a good number of the experiences that we undergo in the course of our life.

The word "kamma" literally means action, deed or doing. But in Buddhism it specifically means volitional action. As the Buddha says, "Monks, it is **volition** that I call kamma. For having willed, one then acts by body, speech or mind". What really lies behind all action, the essence of all action, is **volition**, the power of the will. It is this **volition** expressing itself as action of body, speech and mind that the Buddha calls kamma. This means that unintentional action is not kamma. If we accidentally step on some ants while walking down the street, that is not the kamma of taking life, for there was no intention to kill. If we speak some statement believing it to be true and it turns out to be false, this is not the kamma of lying, for there is no intention to deceive.

Kamma manifests itself in three ways, through three "doors" of action. **These** are body, speech and mind. When we act physically the body serves as the instrument for volition. This is bodily kamma. When we speak, expressing our thoughts and intentions, this is verbal kamma, which can be performed either directly through speech or else indirectly through writing or other means of communications. When we think, plan, and desire inwardly without any outer action, this is mental kamma. What lies behind all these forms of actions is the mind and the chief mental factor which causes the action is the volition.

1. What does this passage mainly discuss?

    a) Buddha's Word

    b) Volition

    c) Kamma in Buddhism

    d) Kamma and Mind

2. The main idea of the third paragraph is that _____.

    a) volition is an important factor of kamma

    b) unintentional action is kamma

    c) beings act through body, speech, or mind

    d) volitional action is regarded as kamma

3. According to the passage, living beings are different because _____.

    a) they performed both good and bad actions

    b) they created different kammas

    c) they produced only wholesome actions

    d) they avoid evil actions through body, speech, and mind

4. In paragraph 3, "volition" could be correctly replaced by _____.

    a) intention

    b) mind

    c) mental action

    d) commandment

5. "These" (paragraph 4, line 1) refers to _____.

    a) thoughts

    b) kammas

    c) ways

    d) doors

6. From the fourth paragraph, we can infer that _____.

    a) people act verbally by expressing an idea

    b) people have volition before doing, speaking, and thinking.

    c) people create an action by walking, standing, sitting, and lying.

    d) writing is a physical action

7. Which of the following can be considered as kamma?

a) Killing birds that come in front of you while driving a car.

b) Killing a mosquito that is biting you.

c) Stepping on insects while walking to a temple

d) Killing insects when you wash clothes

8. Teaching dhamma, expressing opinions, and lying are examples of _____.

a) bodily action

b) verbal action

c) mental action

d) physical action

Passage 2

The Buddha divides kamma ethically right down the middle into two different classes, wholesome kamma ("kusala kamma") and unwholesome kamma ("akusala kamma"). Unwholesome kamma is action which is spiritually harmful and morally blameworthy. Wholesome kamma is action which is spiritually beneficial and morally praiseworthy.

There are two basic criteria for distinguishing wholesome and unwholesome kammas. **One** is the intention behind the action. If an action is intended to bring harm to oneself, harm to others or harm to both oneself and others, that is unwholesome kamma. Kamma which is conducted for the good of oneself, for the good of others, or for the good of both, is wholesome kamma.

The other criterion is the roots of action. All action arises from certain mental factors called roots. These are the causal factors underlying action or the sources of action. All 1Hunwholesome actions come from three unwholesome roots; **greed**, aversion and delusion. Greed is selfish desire aimed at personal gratification; expressed as grasping, craving and attachment. Aversion is ill will, hatred, resentment, anger and a negative evaluation of the object. Delusion is ignorance, mental unclarity and confusion.

9. Which of the following could be the best topic of this passage?

a) harmful and beneficial

b) blameworthy and praiseworthy

c) Wholesome and Unwholesome

d) roots of action

10. Wholesome kamma refers to _____.

a) the action that brings harm to oneself or others

b) the action that makes oneself and others unhappy

c) the action that causes an unpleasant rebirth

d) the action that benefits oneself or others

11. What causes beings to create a good and bad action?

a) Intentions

b) Roots

c) Kusala kamma

d) Akusala kamma

12. From the last paragraph, we may conclude that if people can control their greed, aversion, and delusion, _____.

a) they can reduce unpleasant actions

b) they can achieve enlightenment

c) they will be far from happiness

d) they will practise meditation

13. The word ‘greed’ in the third paragraph most closely means _____.

a) angry

b) ignorance

c) kindness

d) lust

14. In paragraph 2, “One” (line 2) refers to _____.

a) criteria

b) criterion

c) wholesome

d) unwholesome

15. To decide whether kammas are wholesome or unwholesome, we should consider two criteria. They are _____.

a) volition and hatred

b) greed and delusion

c) intention and roots

d) kusala and akusala

Passage 3

The good and bad results that arise from kamma are not rewards or punishments. **They** are not imposed by any outside power. Actions produce their results naturally through the law of cause and effect working in the moral realm. This natural law is called **'kamma niyama'**, the order of kamma, which functions autonomously. The Buddha explains how kamma is the cause of differences in the fortunes of people.

(a) Some people die prematurely because in the past they have destroyed life. The karmic result of killing is to be short-lived. Others live long because they were kind and compassionate; they had respect and reverence for life.

(b) Some are sickly because they have injured and hurt other beings.

(c) Those who were often angry and harsh become ugly, those who were patient and cheerful become beautiful.

(d) Some are rich because they have been generous in the past, some are poor because they have been selfish.

(e) Some are influential because they have rejoiced in the good fortunes of others.

(f) Some are weak and powerless because they have been envious of the good fortunes of others.

(g) Some are intelligent because they have been reflective and studious in the past, because they always enquired and investigated matters. Some are dull and stupid because they have been lazy and negligent, because they never studied and did not think.

16. Kamma is called ‘the law of cause and effect’ because _____.

    a) Kamma as a cause done by people has the potential to give results.

    b) Kamma is a law given by the Buddha

    c) Kamma can be seen in daily life

    d) Kamma is the effect of action

17. According to the author, outside power means _____.

    a) Buddha

    b) god

    c) ghost

    d) enlightened one

18. In line 1, “They” refers to _____.

    a) actions

    b) punishments

    c) rewards

    d) good and bad results

19. According to the passage, people who love giving beneficial things to others could be _____.

    a) long-lived

    b) intelligent

    c) rich

    d) healthy

20. The words ‘kamma niyama’ as used in the fourth sentence could properly imply all of the following **EXCEPT** _____.

    a) kamma is a natural law

    b) Buddha gave the law of kamma

    c) kamma was discovered by the Buddha

    d) kamma has order to function itself

21. Which of the following could be the kammic result of studying hard, according to the passage?

a) negligent

b) studious

c) intelligent

d) reflective

22. The best title of this passage is _____.

a) result of kamma

b) cause of kamma

c) the law of cause and effect

d) the natural law

23. Who could be long-lived, according to the passage?

a) People who love to give their own things to others

b) People who speak with harsh speech

c) People who like to practise meditation

d) Loving-kind people who avoid killing any living being.

Passage 4

What determines the kind of life this will be is tied very much to a moral perspective. Our good or bad deeds, our actions or kamma (or karma) determine the state into which we will be reborn. The traditional teaching on this describes six **realms**—the hells, the hungry ghost realm, the animal realm, the realm of the jealous gods, the human realm and the heavens.

It is hard to generalize, but the tendency in Buddhist countries is to accept this literally. A tendency amongst some Buddhists, particularly in the West, perhaps, is to see **these** as metaphorical states existing in this life. We don't have to look far in the world to see both heaven and hell. There are people who live in the utmost luxury and there are those who live in misery and fear. There are those tormented by their addictions, just like those hungry ghosts who no matter how much they drink are always thirsty. Some Buddhists take the practice of meditation, the teachings on morality, and compassion and loving-kindness, and leave the idea of rebirth alone, taking an almost agnostic stance as it were. To those Buddhists of a strict scientific bent, it may be a step too far to accept the teaching on rebirth completely, or even partially.

24. What does the passage discuss?

a) Moral Perspective

b) Good and Bad Deeds

c) Belief in the Places of Rebirth

d) Six Realms

25. In the passage, the author wants to present _____.

a) the traditional teaching on rebirth

b) scientific view on rebirth

c) the six realms of existence

d) the differences of Buddhists' beliefs in rebirth

26. It is hard to generalize the concept of rebirth and realms because _____.

a) it can not be proved scientifically

b) it can not be seen

c) the Buddha passed away

d) it is a natural law

27. The word 'realms' (line 3) means _____.

a) the world of enlightened one

b) states of good beings

c) states of bad beings

d) the places where beings will be reborn

28. In line 6, "these" refers to _____.

a) six realms

b) Buddhists

c) Buddhist countries

d) deeds

29. How do Buddhists see the rebirth into six realms as metaphorical states?

a) They see beings in the six realms with loving-kindness, or metta.

b) They compare beings in the present world with those in other realms.

c) They do as beings in other realms do.

d) They see as beings in other realms see.

30. According to the passage, who does not believe in rebirth?

a) Buddhists who practise meditation

b) Buddhists who live in the Buddhist countries

c) Buddhists who have a scientific tendency

d) Buddhists who are European

Posttest of Reading in Buddhism II on Kamma

Directions: Read each passage carefully and choose the best answer for each question. (30 points)

Passage 1

In Pali, kamma (Sanskrit spells as karma) literally means deeds, actions or doing. Any kind of intentional action whether it's mental, verbal or physical is regarded as kamma. Kamma can be formed individually or in small group or in mass such as a whole nation.

However, involuntary, unintentional or subconscious actions do not constitute kamma, as volition is absent. The most important factor in determining kamma, is volition or intention

Only Buddha and Arahants do not have volitional actions as normal people do. Both have reached the stage of **eradicating** ignorance and craving. They no longer create new kammas for themselves but are waiting for the fruition of kammic balance. So, Nibbana can be finally attained.

Kamma is generated by the mind. All thoughts, words and deeds go through the mind before they form into activities. With a guarded mind, bad thoughts, false speeches and ill-will actions are prevented.

Mind is the forerunner of kamma. **It** is both past and present deeds .**It** is not fate or destiny as one may think, but one's own deeds that constitute their future. **It**'s definitely not the Will of God, as other religions believe.

In short, kamma is the Universal Law of Cause and Effect, just like Newton's Laws. When there is an action there will be a reaction. Like scientific theories such as Law of Motion, Gravity and other laws, they are discovered (realised) by humans and not created or invented by any other beings.

1. What is the subject of this passage?

a) Nibbana

b) Fruition

c) Mind

d) Kamma

2. Which of the following is the topic sentence of the last paragraph?

a) When there is an action, there will be a reaction.

b) Kamma is the universal law of cause and effect.

c) Scientific theories such as the Law of Motion

d) Scientific laws are realised by human beings.

3. Which of the following is **NOT** true?

a) Kamma is done through body, speech, or mind.

b) Kamma is what people create intentionally.

c) People think before performing a kamma.

d) The law of kamma was invented by the Buddha.

4. In the third paragraph, the word 'eradicating' means _____.

a) consisting of

b) avoiding

c) collecting

d) getting rid of

5. In the fifth paragraph, "It" refers to _____.

a) mind

b) kamma

c) destiny

d) fate

6. With a guarded mind, bad thoughts, false speeches, and ill-will actions are prevented. We may infer from this statement that _____.

a) the mind prevents good actions

b) bad actions overcome the guarded mind

c) people should protect the mind from evil

d) people with a well-trained mind can avoid unwholesome actions

7. The factor that's very important for kamma is _____.

a) doer

b) result

c) volition

d) action

8. What are the similarities between kamma and scientific laws?

a) cause and effect

b) physical laws

c) experiment

d) reaction

Passage 2

Kamma can be categorised as wholesome (skillful or *kusala*), unwholesome (unskillful or *akusala)*, and neutral. It follows that wholesome *kamma* will produce a beneficial result and unwholesome *kamma* will produce a negative or **detrimental** effect on the doer of the deed. Neutral kamma will not produce an effect. A *kammic* act is complete when intention, action and a result take place. For example, a person may think about causing injury to someone. **He** may then act through the body to actually carry out the task. If there was only the intention, but no injury took place, the corresponding *kamma vipaka* will be less. In general, any intentional action through the body, speech or mind, which does harm to oneself and to others, will be unwholesome *kamma.*

9. The best title of this passage is _____.

a) Kusala and Akusala

b) Kamma Vipaka

c) Types of Kamma

d) Natural Kamma

10. Kamma that produces an unpleasant result is _____.

a) skillful

b) unskillful

c) neutral

d) kammic

11. A kammic action is complete when all of the following occur **EXCEPT** _____.

a) act

b) consequence

c) defilements

d) volition

12. The word ‘detrimental’ (line 3) means _____.

a) joyful

b) harmful

c) fearful

d) pleasant

13. In line 5, “He” refers to _____.

a) person

b) someone

c) doer of good action

d) doer of bad action

14. According to the passage, the word ‘neutral’ means _____.

a) skillful action

b) unskillful action

c) skillful-and-unskillful action

d) not-skillful-and-not-unskillful action

15. Neutral kamma will not produce an effect. We can infer from this statement that _____.

a) beings do not perform any kamma

b) beings have more good than bad

c) beings create good or bad actions without volition

d) beings produce both good and bad

Passage 3

The consequence or result of kamma is known as vipaka. Vipaka is fruit of kamma. A mango seed is like kamma; with the existence of all the elements (terrain, weather and other factors), the seed germinates into a healthy plant.

When that mango tree blossoms with flowers and pollination takes place, it bears mango fruit. That mango is Vipaka. Kamma may be good or bad, so as the vipaka. Like a mango, the fruit will be sweet if the seed comes from a sweet mango; like wise for the sour mango. As Samyutta Nikaya states:

"According to the seed that's sown,
So is the fruit ye reap therefrom,
Doers of good will gather good,
Doers of evil, evilreaps.
Sown is the seed and planted well.
Thou shall enjoy the fruit thereof"

In Buddhism, kamma is a law which operates in its own field without **intervention** of any external authority. It is not governed by any god(s), but is an independent agency. Just like gravity, the gravity was there since the existence of earth. **It** is an invisible force like energy in scientific terminology. For example, an apple is ripening; the fruit gets bigger and heavier while the stalk becomes weaker. Eventually the stalk snaps off, and the fruit falls to the ground. Science calls it the gravitational force of the earth causing the apple fall downward instead floating on air or flying upwards.

16. The best topic of this passage is _____.

a) Kamma
b) Mango
c) Vipaka
d) Invisible force

17. What is the author's main purpose in this passage?

a) to describe about kamma

b) to compare the fruit of kamma to the fruit of mango

c) to suggest how to do good

d) to give reasons why we should avoid bad deeds

18. According to the proverb from Sumyutta Nikaya, we can conclude that _____.

a) kamma is the law of cause and effect

b) seeds cause fruits to happen

c) people create both good and evil

d) doing good is better than doing bad

19. The word 'intervention' (paragraph 4) could be replaced by _____.

a) generalization

b) creation

c) reaction

d) fruition

20. In paragraph 4, line 3, "It" refers to _____.

a) agency

b) gravity

c) law

d) kamma

21. Which of the following statements is **NOT** true?

a) Vipaka is the consequence of actions.

b) The Vipaka of the mango is its fruit.

c) The law of kamma is given by the god.

d) The kammic force can not be seen.

22. According to the passage, the good or bad results are compared to_____.

a) sweet and sour mangoes

b) seed and fruit

c) apple tree and its fruits

d) tree and flower

23. In the last paragraph, the gravitational force is like _____.

a) invisible energy

b) the force of kamma

c) external authority

d) apple fruit

Passage 4

Beings are reborn according to their deeds, according to the seeds they sow. Good deeds will lead to rebirth as a human or a god. Bad deeds lead to rebirth in one of the hell worlds or as a ghost or an animal. There are six separate **planes** into which any living being can be reborn--three fortunate realms, and three unfortunate realms. **Those** with favorable, positive kamma are reborn into one of the fortunate realms: the realm of demigods, the realm of gods, and the realm of men. While the demigods and gods enjoy gratification unknown to men, they also suffer unceasing jealousy and envy. The realm of man is considered the highest realm of rebirth. Humanity lacks some of the extravagances of the demigods and gods, but is also free from their relentless conflict. Similarly, while inhabitants of the three unfortunate realms—of animals, ghosts and hell—suffer untold suffering, the suffering of the realm of man is far less. The realm of man also offers one other aspect lacking in the other five planes, an opportunity to achieve enlightenment, or Nibbana. Given the sheer number of living things, to be born human is, to Buddhists, a precious chance at spiritual bliss, a rarity that one should not forsake.

\

24. The best title of this passage is _____.

a) Realms of existence

b) Rebirth of beings

c) The highest realm

d) Cause of action

25. What is the main idea of this passage?

a) Every one can be reborn in the six realms

b) The best of six realms is the human world

c) Beings are reborn according to their actions—good or bad.

d) Only man can achieve enlightenment

26. In line 4, “Those” refers to _____.

a) beings

b) good deeds

c) bad deeds

d) planes

27. The word ‘planes’ (line 3) most closely means _____.

a) the land of liberation

b) the land of gods

c) states of woefulness

d) states of rebirth

28. People with unfavorable negative kamma are reborn into all of the following **EXCEPT** _____.

a) the animal world

b) the ghost world

c) the heaven

d) the hell

29. Human world is the best of realms because _____.

a) people can realise the dhamma

b) people are more intelligent than other beings

c) people can see the Buddha

d) this realm gives a chance to attain nibbana

30. From the last sentence of the passage, we can infer that _____.

a) Buddhists want to be born as human beings

b) Buddhists believe in the teachings on rebirth

c) it’s difficult to be born as a human being

d) people should make more merits to be reborn as human beings

Appendix D

Item Analysis for Pretest

The results of item analysis for pretest show the level of difficulty (p), discrimination index (r), and reliability (r_{tt} by KR-20).

Item	Level of Difficulty (p)	Discrimination Index (r)	Reliability (r_{tt} by KR-20)
1	0.464	0.357	
2	0.429	0.429	
3	0.536	0.357	0.831
4	0.429	0.286	
5	0.607	0.214	
6	0.464	0.357	
7	0.464	0.214	
8	0.464	0.357	
9	0.429	0.286	
10	0.429	0.286	
11	0.464	0.214	
12	0.571	0.286	
13	0.464	0.357	
14	0.571	0.286	
15	0.429	0.286	
16	0.393	0.214	
17	0.536	0.643	
18	0.464	0.357	
19	0.536	0.643	
20	0.536	0.357	
21	0.513	0.571	
22	0.464	0.357	
23	0.571	0.429	
24	0.563	0.429	
25	0.393	0.214	
26	0.536	0.643	
27	0.536	0.543	
28	0.571	0.714	
29	0.521	0.429	
30	0.643	0.571	

Item Analysis for Posttest

The results of item analysis for posttest show the level of difficulty (p), discrimination index (r), and reliability (r_{tt} by KR-20).

Item	Level of Difficulty (p)	Discrimination Index (r)	Reliability (r_{tt} by KR-20)
1	0.536	0.357	
2	0.516	0.429	
3	0.607	0.357	0.810
4	0.523	0.286	
5	0.679	0.214	
6	0.536	0.357	
7	0.536	0.214	
8	0.536	0.357	
9	0.541	0.286	
10	0.532	0.286	
11	0.464	0.214	
12	0.607	0.214	
13	0.536	0.357	
14	0.643	0.286	
15	0.536	0.357	
16	0.464	0.214	
17	0.607	0.523	
18	0.536	0.357	
19	0.607	0.571	
20	0.607	0.214	
21	0.536	0.531	
22	0.643	0.429	
23	0.607	0.214	
24	0.527	0.429	
25	0.464	0.214	
26	0.571	0.571	
27	0.643	0.286	
28	0.714	0.571	
29	0.750	0.214	
30	0.714	0.429	

Appendix E

The Gained Scores of Both Groups

The Experimental Group (N = 8)

Student ID	Pretest (30 points)	Exercise (30 points)	Posttest (30 points)
1	8	23	23
2	8	26	22
3	11	25	20
4	22	29	27
5	12	26	24
6	9	17	18
7	12	20	23
8	12	27	20
Total	94	193	177
Mean	11.75	24.125	22.125

The Control Group (N = 9)

Student ID	Pretest (30 points)	Exercise (30 points)	Posttest (30 points)
1	19	24	25
2	10	18	15
3	8	21	17
4	12	23	15
5	19	25	19
6	11	18	22
7	13	19	18
8	9	20	11
9	8	15	9
Total	109	183	151
Mean	12.11	20.33	16.78

Appendix F

Questionnaire of Students' Views on Learning through Content-Based Language Learning Software on Kamma

This questionnaire is designed to collect data about students' views on learning through content-based language learning software on kamma. It is divided into two main parts.

Part 1: The questionnaire asks for the opinions on learning through content-based language learning software.

Part 2: The open-ended questions ask about learning through content-based language learning software on kamma.

Part I: The Views on Learning through Content-Based Language Learning Software

Instructions: Please put ☑ in the space corresponding to your opinion.

Items	Levels of Opinions				
	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1. Learning English through content-based language learning software on kamma is new.					
2. Learning English through content-based language learning software on kamma is difficult.					
3. Learning English through content-based language learning software on kamma helps you comprehend the reading texts.					
4. Learning English through content-based language learning software on kamma makes the lessons and activities of learning and teaching uninteresting.					
5. You enjoy learning English through content-based language learning software on kamma.					

6. You get worried while you are learning English through content-based language learning software on kamma.					
7. Learning through content-based language learning software on kamma makes you get more interested in English learning.					
8. You lack concentration while learning English through content-based language learning software on kamma.					
9. You feel independent in learning English while you are using content-based language learning software.					
10. You spend amount of time inappropriately for learning English through content-based language learning software on kamma.					
11. You are happy while you are learning English through content-based language learning software on kamma					
12. You can choose to learn and review the lesson as you need while you are learning English through content-based language learning software on kamma.					
13. You get unconfident while you are learning English through content-based language learning software on kamma.					
14. Learning English through content-based language learning software on kamma arouses your attempt to learn.					
15. Learning English through content-based language learning software on kamma makes English and Buddhist Studies more interesting.					

Part 2: The Open-Ended Questions about Learning through Content-Based Language Learning Software on Kamma

Instructions : Please write to express your ideas or give suggestions about learning through content-based language learning software on kamma.

1. What do you like in learning through content-based language learning software on kamma?

……

……

……

……

2. What do you dislike in learning through content-based language learning software on kamma?

……

……

……

……

3. How does the content-based language learning software on kamma assist you to comprehend or develop the following?

   3.1 Reading Skill

……

……

……

   3.2 Reading Contents

……

……

……

   3.3 Other

……

……

……

4. Can you give other suggestions about learning through content-based language learning software?

……

……

……

……

……

……

……

……

……

……

……

……

-Thank you very much for your cooperation.-

Appendix G

Discrimination Index

of the Five-Point Rating Scale Questionnaire (t-test)

Item	t	Sig.	statement
3	4.051	0.001	Positive
7	4.110	0.001	Positive
10	4.583	0.003	Negative
13	3.713	0.003	Negative
5	3.427	0.004	Positive
4	3.873	0.008	Negative
8	3.873	0.008	Negative
12	3.873	0.008	Positive
14	3.873	0.008	Positive
1	3.275	0.011	Positive
2	2.687	0.019	Negative
6	2.585	0.029	Negative
9	2.631	0.030	Positive
15	2.280	0.040	Positive
11	2.181	0.048	Positive

Reliability Analysis

for the Five-Point Rating Scale Questionnaire

Reliability Coefficients

Numbers of Cases	=	30
Numbers of Items	=	15
Alpha	=	**0.812**

Appendix H

Semi-Structured Interview Form

Guided Questions	Interviewee
1. Do you like to learn through content-based language learning software? Why?	
2. What do you like most in learning through content-based language learning software on kamma?	
3. What do you dislike most in learning through content-based language learning software on kamma?	
4. Are you convenient in learning through content-based language learning software on kamma? If not, what are the problems you faced? Can you give any suggestions?	
5. How do you feel while you are learning through content-based language learning software on kamma?	
6. Is the content-based language learning software on kamma interesting? Does the learning software arouse your attention in learning?	
7. Does the content-based language learning software on kamma help you to acquire knowledge and develop your reading skill?	
8. How should the content-based language learning software be adjusted?	
9. Do you want to learn through content-based language learning software on kamma for the next time? If you do, what contents or subjects you would like to learn?	

Interviewer's signature.....

(.....)

---------/----------/----------

Appendix I

List of Specialists

Name	Position	Review
1. Prof. Dr. Chaiyong Brahmawong	Chief Technology Officer, College of Internet Distance Education, Assumption University of Thailand	Content-Based Language Learning (CBLL) Software
2. Dr. Dhirawit Pinyonatthagarn	A lecturer, Suranaree University of Technology	-CBLL Software -Tests -Questionnaire -Interview Form -Observation Form
3. Dr. Sirinthorn Seepho	A Lecturer, Suranaree University of Technology	-CBLL Software -Tests -Questionnaire -Interview Form -Observation Form
4. Dr. Phramaha Apichai Dhammajayo	Chair, School of Political Sciences, Mahachulalongkornrajavidyalaya University Nakhon Ratchasima Campus	CBLL Software
5. Asst. Prof. Dr. Pannatorn Sangarun	A Lecturer, Suranaree University of Technology	-CBLL Software -Questionnaire -Interview Form

Name	Position	Review
		-Observation Form
6. Mr. Satidchoke Phosa-ad	A Lecturer, Suranaree University of Technology	CBLL Software
7. Asst. Prof. Dr.Puangpen Intaprawat	A Lecturer, Suranaree University of Technology	CBLL Software
8. Dr. Maneepen Apibalsri	A Lecturer, Suranaree University of Technology	Tests
9. Dr.Banjert Chongapiratanakul	A Lecturer, Suranaree University of Technology	CBLL Software
10. Assoc. Prof. Dr.Kanit Khaimook	A Lecturer, Suranaree University of Technology	Statistical Analysis
11. Mr. Chamnong Puphala	Chair, School of Foreign Languages	Lesson Plans
12. Mr. Greg Seats	English Teacher, Sakaew School	-English Language, -Audio and Video Script
13. Mr. William Reyland	English Teacher, Utaradit Rajabhat University	-English Language

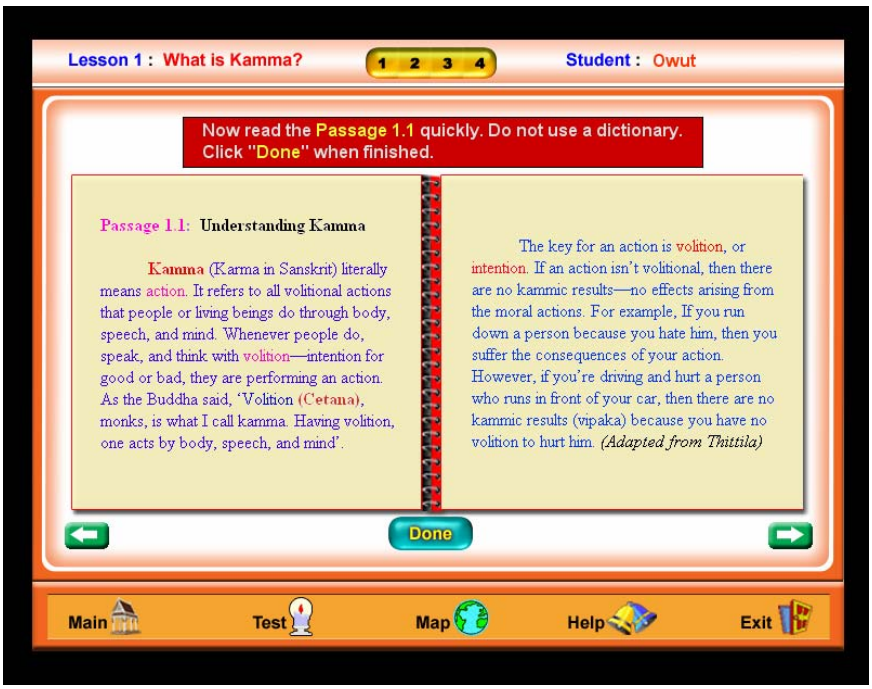
Appendix J

Examples of the Content-Based Language Learning Software on Kamma

1. Main Menu

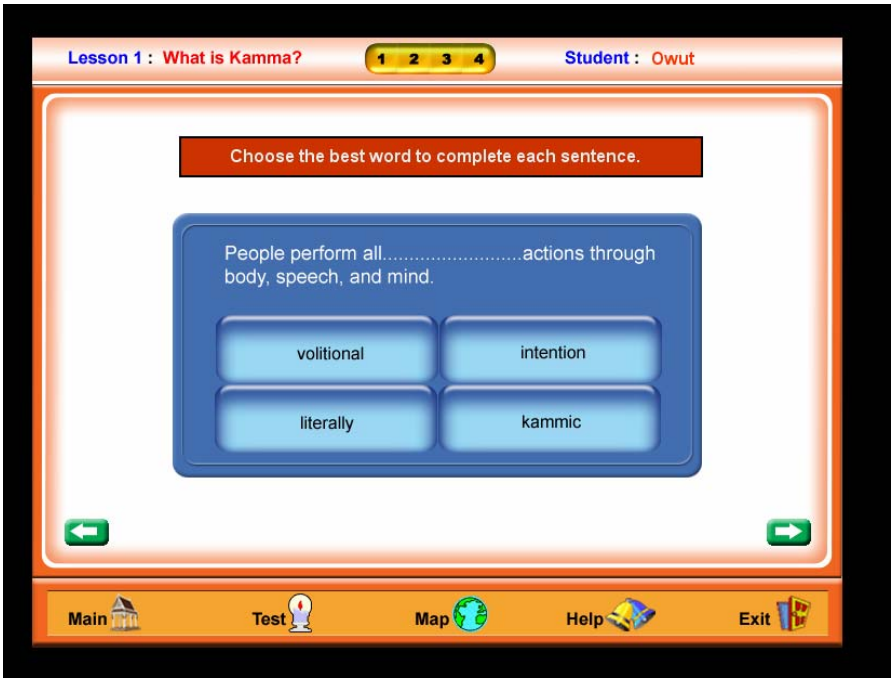
2. Lesson Page with Four Main Activities

3. Activity Page



4. Activity Page

5. Activity Page



6. Activity Page

7. Test Page

8. Map Page

9. Help Page

Appendix K

- **Evaluation Forms (Thai)**
- **Official Letters (Thai)**

แบบประเมินข้อสอบก่อนเรียน
(Evaluation Form for Pretest)

คำชี้แจง : กรุณาพิจารณาข้อสอบก่อนเรียน และทำเครื่องหมาย ✓ ลงในช่องว่างเพียงหนึ่งช่องเท่านั้น เพื่อตรวจสอบคุณภาพของข้อสอบในแต่ละด้านตามความคิดเห็นของผู้ทรงคุณวุฒิ

ก. ด้านความเป็นปรนัย (Objectivity)

รายการประเมิน	ระดับคุณภาพ				
	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
1. ทุกคนที่อ่านข้อสอบสามารถเข้าใจได้ง่ายและใช้เป็น					
2. ข้อสอบมีความชัดเจนและถูกต้อง					
3. ผู้ใดเป็นผู้ตรวจก็ให้คะแนนเท่ากัน					

ข. ด้านความตรง (Validity)

รายการประเมิน	ระดับคุณภาพ				
	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
1. ข้อสอบมีความสอดคล้องกับเนื้อหาสาระเรื่องกรรมในบทเรียน (Content Validity)					
2. ข้อคำถามมีความเหมาะสมกับพฤติกรรมเป้าหมาย (Construct Validity)					

รายการประเมิน	ระดับความคิดเห็นของผู้ทรงคุณวุฒิ		
	เห็นด้วย (+1)	ไม่แน่ใจ (0)	ไม่เห็นด้วย (-1)
1. ข้อคำถามมีความสอดคล้องกับพฤติกรรมเป้าหมาย (Construct Validity)			

ข้อเสนอแนะ :

.....
.....
.....
.....
.....
.....
.....

ลงชื่อ.....ผู้ประเมิน

(.....)

...../...../.....

แบบประเมินข้อสอบหลังเรียน
(Evaluation Form for Posttest)

คำชี้แจง : กรุณาพิจารณาข้อสอบหลังเรียน และทำเครื่องหมาย ✓ ลงในช่องว่างเพียงหนึ่งช่องเท่านั้น เพื่อตรวจสอบคุณภาพของข้อสอบในแต่ละด้านตามความคิดเห็นของผู้ทรงคุณวุฒิ

ก. ด้านความเป็นปรนัย (Objectivity)

รายการประเมิน	ระดับคุณภาพ				
	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
1. ทุกคนที่อ่านข้อสอบสามารถเข้าใจได้ง่ายและใช้เป็น					
2. ข้อสอบมีความชัดเจนและถูกต้อง					
3. ผู้ใดเป็นผู้ตรวจก็ให้คะแนนเท่ากัน					

ข. ด้านความตรง (Validity)

รายการประเมิน	ระดับคุณภาพ				
	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
1. ข้อสอบมีความสอดคล้องกับเนื้อหาสาระเรื่องกรรมในบทเรียน (Content Validity)					
2. ข้อคำถามมีความเหมาะสมกับพฤติกรรมเป้าหมาย (Construct Validity)					

รายการประเมิน	ระดับความคิดเห็นของผู้ทรงคุณวุฒิ		
	เห็นด้วย (+1)	ไม่แน่ใจ (0)	ไม่เห็นด้วย (-1)
1. ข้อคำถามมีความสอดคล้องกับพฤติกรรมเป้าหมาย (Construct Validity)			

ข้อเสนอแนะ :

.....
.....
.....
.....
.....
.....
.....

ลงชื่อ.....ผู้ประเมิน

(.....)

...../...../.....

แบบประเมินบทเรียนคอมพิวเตอร์ช่วยสอนภาษาอังกฤษเนื้อหาเรื่องกรรม

(Evaluation Form for Content-Based Language Learning Software on Kamma)

คำชี้แจง : กรุณาแสดงความคิดเห็นของท่าน โดยทำเครื่องหมาย ✓ ลงในช่องระดับความคิดเห็นของผู้ทรงคุณวุฒิ ซึ่งกำหนดเกณฑ์ตัดสินคุณภาพเป็น 5 ระดับ ดังนี้

ระดับ 9-10 หมายถึง ดีมาก ระดับ 7-8 หมายถึง ดี ระดับ 5-6 หมายถึง พอใช้

ระดับ 3-4 หมายถึง ควรปรับปรุง ระดับ 1-2 หมายถึง ไม่เหมาะสม

รายการประเมิน	ระดับความคิดเห็นของผู้ทรงคุณวุฒิ									
	ดีมาก		ดี		พอใช้		ควรปรับปรุง		ไม่เหมาะสม	
	10	9	8	7	6	5	4	3	2	1
1. ด้านเนื้อหาและการนำเสนอ										
1.1 เนื้อหาบทเรียนครอบคลุมวัตถุประสงค์										
1.2 การแยกย่อยเนื้อหาเหมาะสมกับวัตถุประสงค์										
1.3 การจัดลำดับขั้นตอนการนำเสนอเนื้อหา										
1.4 ความถูกต้องของเนื้อหา										
1.5 ความชัดเจนในการอธิบายเนื้อหา										
1.6 เนื้อหาเหมาะสมกับระดับความรู้และประสบการณ์เดิมของผู้เรียน										
1.7 ความน่าสนใจของเนื้อหาบทเรียน										
1.8 คำศัพท์มีความเหมาะสม										
1.9 ปริมาณเนื้อหาในแต่ละบทมีความเหมาะสม										
1.10 เนื้อหานำมาจากสื่อหรือเอกสารจริง										
2. ด้านภาพ เสียง และการใช้ภาษา										
2.1 ความตรงตามเนื้อหาของภาพที่นำเสนอ										
2.2 ขนาดภาพที่ใช้ประกอบบทเรียนมีความเหมาะสม										
2.3 การสื่อความหมายของภาพประกอบบทเรียน										
2.4 การเร้าความสนใจด้วยภาพและเสียง										
2.5 ความชัดเจนของเสียงบรรยายประกอบบทเรียน										
2.6 ความถูกต้องของไวยากรณ์ และการสะกด										
3. ด้านการออกแบบจอภาพ										
3.1 แบบอักษรที่ใช้นำเสนอเนื้อหาอ่านได้ชัดเจน										
3.2 ขนาดตัวอักษรในการนำเสนอเนื้อหาเหมาะสม										
3.3 ความเหมาะสมของการเลือกใช้สีตัวอักษร										
3.4 ความชัดเจนของตัวอักษรบนพื้นหลังสีต่างๆ										
3.5 ความเหมาะสมของการเลือกใช้สีพื้นจอภาพ										
3.6 จังหวะการปรากฏตัวอักษรเพื่อนำเสนอเนื้อหา										
3.7 การเน้นข้อความโดยใช้ตัวอักษรและสีเหมาะสม										

รายการประเมิน	ระดับความคิดเห็นของผู้ทรงคุณวุฒิ									
	ดีมาก		ดี		พอใช้		ควรปรับปรุง		ไม่เหมาะสม	
	10	9	8	7	6	5	4	3	2	1
4. ด้านการเรียนภาษาและการจัดการในบทเรียน										
4.1 การปฏิสัมพันธ์หรือวิธีโต้ตอบกับบทเรียน										
4.2 ความหลากหลายของกิจกรรม										
4.3 ความเหมาะสมของการให้ข้อมูลย้อนกลับ										
4.4 รูปแบบการตั้งคำถามในบทเรียน										
4.5 รูปแบบการให้ตอบคำถามในบทเรียน										
4.6 คำอธิบายการปฏิบัติในบทเรียนชัดเจน										
4.7 ความต่อเนื่องของการนำเสนอเนื้อหา										
4.8 การเปิดโอกาสให้ผู้เรียนควบคุมบทเรียน เช่น การใช้แป้นพิมพ์ และการกดปุ่ม เป็นต้น										
4.9 กิจกรรมมีลักษณะเหมือนกิจกรรมการใช้ภาษาในชีวิตประจำวัน										
4.10 กิจกรรมมุ่งพัฒนาความถูกต้องและทักษะภาษา										
4.11 กิจกรรมส่งเสริมการใช้ภาษาเพื่อการสื่อสาร										
4.12 บทเรียนเปิดโอกาสให้ผู้เรียนมีประสบการณ์ทางภาษาอย่างสร้างสรรค์										
4.13 บทเรียนเปิดโอกาสให้ผู้เรียนใช้ทักษะทางภาษาหลากหลาย										
4.14 บทเรียนเปิดโอกาสให้ผู้เรียนได้เรียนรู้ด้วยตนเอง										

ข้อเสนอแนะ :

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

ข้อผิดพลาดที่เกิดขึ้นขณะใช้งานซอฟท์แวร์ (กรณีมีข้อผิดพลาด)

ข้อมูลเกี่ยวกับคอมพิวเตอร์	-ระบบปฏิบัติการ Windows ☐XP ☐ME ☐98 ☐ อื่นๆ ..... -ตัวประมวลผล CPU ☐500 MHz ☐1 GHz ☐2 GHZ ☐ อื่นๆ ..... -หน่วยความจำ RAM ☐64 Mb ☐128 Mb ☐256 Mb ☐512 Mb ☐ อื่นๆ..... -จอภาพขนาด ☐14 นิ้ว ☐15 นิ้ว ☐17 นิ้ว ☐ อื่นๆ.....
ข้อผิดพลาดที่พบ	

ลงชื่อ.....ผู้ประเมิน

วันที่...../...../.....

แบบประเมินแบบสอบถาม

(Evaluation Form for Questionnaire)

คำชี้แจง : กรุณาพิจารณาแบบสอบถาม และทำเครื่องหมาย ✓ ลงในช่องว่างเพียงหนึ่งช่องเท่านั้น เพื่อตรวจสอบคุณภาพของแบบสอบถามตามความคิดเห็นของผู้ทรงคุณวุฒิ

1. ด้านความตรง **(Validity)**

รายการประเมิน	ระดับคุณภาพ				
	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
1.1 แบบสอบถามมีความสอดคล้องกับเนื้อหาสาระที่ต้องการศึกษา (Content Validity)					
1.2 ข้อคำถามมีความเหมาะสมกับพฤติกรรมเป้าหมาย (Construct Validity)					

รายการประเมิน	ระดับความคิดเห็นของผู้ทรงคุณวุฒิ		
	เห็นด้วย (+1)	ไม่แน่ใจ (0)	ไม่เห็นด้วย (-1)
1.3 ข้อคำถามมีความสอดคล้องกับพฤติกรรมเป้าหมาย (Construct Validity)			

ข้อเสนอแนะ :

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

ลงชื่อ.....ผู้ประเมิน

(.....)

...../...../.....

แบบประเมินสำหรับแบบสัมภาษณ์
(Evaluation Form for Structured Interview)

คำชี้แจง : กรุณาพิจารณาแบบสัมภาษณ์ และทำเครื่องหมาย ✓ ลงในช่องว่างเพียงหนึ่งช่องเท่านั้น เพื่อตรวจสอบคุณภาพของแบบสัมภาษณ์ตามความคิดเห็นของผู้ทรงคุณวุฒิ

1. ด้านความตรง (Validity)

รายการประเมิน	ระดับคุณภาพ				
	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
1.1 แบบสัมภาษณ์มีความสอดคล้องกับเนื้อหาสาระที่ต้องการศึกษา (Content Validity)					

รายการประเมิน	ระดับความคิดเห็นของผู้ทรงคุณวุฒิ		
	เห็นด้วย (+1)	ไม่แน่ใจ (0)	ไม่เห็นด้วย (-1)
1.2 ข้อคำถามมีความสอดคล้องกับพฤติกรรมเป้าหมาย (Construct Validity)			

ข้อเสนอแนะ :

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

ลงชื่อ.....ผู้ประเมิน

(.....)

...../...../.....

CURRICULUM VITAE

Phramaha Suriyawuth Suwannabubpha (Suriyamedhi) was born on February 27, 1981 in Nakhon Ratchasima. He is a royal Buddhist monk. For Buddhist studies, he graduated in advanced level of Pali language studies (level 9) in 2003. He also entered to study English in the School of Foreign Languages, Faculty of Humanities, Mahachulalongkornrajavidyalaya University Nakhon Ratchasima Campus. From the Buddhist university, he graduated in B.A. degree of English in 2003. After that, with the interest in English language, he studied in the School of English, Institute of Social Technology, Suranaree University of Technology for a Master's Degree in English language studies.

At present, he lives and works at Wat Pramuanrat, Choho, Muang, Nakhon Ratchasima province.