

การพัฒนารูปแบบการเรียนการสอนอ่านโดยใช้วัฏจักร 4MAT และเสียงดนตรี  
เพื่อเสริมสร้างการเรียนรู้คำศัพท์ สำหรับการอ่านภาษาอังกฤษเพื่อความเข้าใจ  
และเจตคติต่อการเรียนรู้ของนักศึกษาปริญญาบัณฑิต



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**DEVELOPMENT OF A READING INSTRUCTIONAL MODEL  
USING THE 4MAT SYSTEM AND MUSIC TO ENHANCE  
VOCABULARY ACQUISITION FOR ENGLISH READING  
COMPREHENSION AND ATTITUDE TOWARDS LEARNING  
OF UNDERGRADUATE STUDENTS**

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for the Degree of Doctor of Philosophy Program in Curriculum and Instruction  
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การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อ 1) เพื่อพัฒนารูปแบบการเรียนการสอนอ่านโดยใช้วัฏจักร 4MAT และเสียงดนตรี เพื่อเสริมสร้างการเรียนรู้คำศัพท์สำหรับการอ่านภาษาอังกฤษเพื่อความเข้าใจ และเจตคติต่อการเรียนรู้ ของนักศึกษาปริญญาบัณฑิต และ 2) ประเมินประสิทธิภาพของรูปแบบดังกล่าวโดยเปรียบเทียบความสามารถทาง คำศัพท์ ความสามารถในการอ่านภาษาอังกฤษเพื่อความเข้าใจและเจตคติต่อการเรียนรู้หลังการทดลองระหว่าง นักศึกษาที่เรียนโดยใช้วัฏจักร 4MAT และเสียงดนตรี และนักศึกษาที่เรียนโดยใช้การสอนแบบปกติ กลุ่มตัวอย่าง เป็นนักศึกษาสาขาวิชาภาษาอังกฤษ ชั้นปีที่ 2 มหาวิทยาลัยรังสิต จำนวน 60 คน จำแนกเป็นกลุ่มทดลองและกลุ่ม ควบคุม กลุ่มละ 30 คนเท่ากัน นักศึกษากลุ่มทดลองเรียนโดยใช้รูปแบบการเรียนการสอนอ่านโดยใช้วัฏจักร 4MAT และเสียงดนตรี ส่วนนักศึกษากลุ่มควบคุมเรียนโดยใช้การสอนแบบปกติ ระยะเวลาในการทดลอง 10 สัปดาห์ เครื่องมือที่ใช้ในการเก็บรวบรวมข้อมูล คือ แบบวัดความสามารถทางคำศัพท์ แบบวัดความสามารถในการอ่าน ภาษาอังกฤษเพื่อความเข้าใจและแบบประเมินเจตคติต่อการอ่าน วิเคราะห์ข้อมูลโดยใช้ค่าเฉลี่ย ส่วนเบี่ยงเบน มาตรฐาน และการทดสอบค่าที

ผลการวิจัยพบว่า

1. รูปแบบการเรียนการสอนอ่านภาษาอังกฤษโดยใช้วัฏจักร 4MAT ร่วมกับดนตรี มีหลักการ 5 ประการ คือ 1) ผู้เรียนซึมซับความรู้และประสบการณ์โดยอาศัยการมีปฏิสัมพันธ์กับสิ่งแวดล้อม 2) ผู้เรียนใช้ช่องทางที่ หลากหลายในการรับรู้ประสบการณ์ 3) ประสบการณ์ที่ผู้เรียนเรียนรู้ต้องมีการแลกเปลี่ยน 4) ผู้เรียนเชื่อมโยง ประสบการณ์ใหม่กับประสบการณ์เดิมที่มีอยู่ 5) การใช้เสียงดนตรีบรรเลงขณะเรียนจะช่วยพัฒนาเจตคติต่อการอ่าน รูปแบบการเรียนการสอนดังกล่าวประกอบด้วยขั้นตอนในการสอน 6 ขั้นตอนได้แก่ 1) การเชื่อมโยงประสบการณ์ 2) การใช้จินตนาการ 3) การอธิบายอย่างชัดเจนการใช้สื่อประกอบ 4) การอ่านควบคู่เสียงดนตรีบรรเลง 5) การ ฝึกฝนแบบคู่ขนาน 6) การแลกเปลี่ยนผลการเรียนรู้

2. ผลการศึกษากการใช้รูปแบบการเรียนการสอนอ่านภาษาอังกฤษโดยใช้วัฏจักร 4MAT ร่วมกับดนตรี พบว่า 1) นักศึกษาที่เรียนในกลุ่มทดลองโดยใช้วัฏจักร 4 MAT และเสียงดนตรี มีค่าเฉลี่ยของคะแนนความสามารถ ทางคำศัพท์ หลังการทดลองสูงกว่านักศึกษาที่เรียนโดยใช้การสอนแบบปกติ อย่างมีนัยสำคัญทางสถิติที่ระดับ .05 2) นักศึกษาในกลุ่มทดลอง มีค่าเฉลี่ยของคะแนนความสามารถในการอ่านภาษาอังกฤษเพื่อความเข้าใจ หลังการทดลอง สูงกว่านักศึกษาที่เรียนโดยใช้การสอนแบบปกติ อย่างมีนัยสำคัญทางสถิติที่ระดับ .05 3) นักศึกษาที่เรียนในกลุ่ม ทดลอง มีค่าเฉลี่ยของคะแนนเจตคติต่อการเรียนรู้หลังการทดลองสูงกว่านักศึกษาที่เรียนโดยใช้การสอนแบบปกติ อย่างมีนัยสำคัญทางสถิติที่ระดับ .05

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สาขาวิชาหลักสูตรและการสอน..... ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก.....  
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KEYWORDS: 4MAT SYSTEM / MUSIC / VOCABULARY ACQUISITION / ENGLISH READING COMPREHENSION / ATTITUDE TOWARDS LEARNING

NAKONTHEP TIPAYASUPARAT: DEVELOPMENT OF A READING INSTRUCTIONAL MODEL USING THE 4MAT SYSTEM AND MUSIC TO ENHANCE VOCABULARY ACQUISITION FOR ENGLISH READING COMPREHENSION AND ATTITUDE TOWARDS LEARNING OF UNDERGRADUATE STUDENTS. ADVISOR: ASST.PROF. ALISARA CHUCHAT, Ph.D., CO-ADVISOR: ASSOC. PROF. PRATIN PIMSARN, Ph.D., 251 PP.

The purposes of this research were 1) to develop the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students and 2) to investigate the effectiveness of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students, which was done by comparing vocabulary ability, English reading comprehension, and attitude towards learning of the students instructed through this model with those who learned through conventional instruction. The samples of this research were purposively selected 60 second-year English majors of the Faculty of Liberal Arts, Rangsit University, who had enrolled in the course: Reading I during the second semester of the academic year 2010. They were divided into 30 for control and another 30 for experimental groups equally. Based on the pre-test post-test control group design, the study covered the period of 10 weeks. The data collecting instruments were vocabulary ability test, reading comprehension test, and reading attitude questionnaire. Data were analyzed by the percentage of average score, standard deviation, and t-test.

The findings of this research were as follows:

1. The developed instructional model, aiming to enhance vocabulary ability and reading comprehension, and to promote positive attitudes towards reading, consisted of five principles: 1) Learners expand and refine information through adaptive modes by interacting with them, 2) Students need multiple exposures to new inputs in order to understand them, 3) Reflections the students have on their expression and learning must be shared and turned around, 4) Students should actively make connections between the new and the known, 5) The integration of background music maximizes learning and enhances reading attitudes. The model incorporated six instructional steps: 1) Recalling Experience, 2) Imagining, 3) Explicit Modeling, 4) Reading with Music, 5) Parallel Practicing, and 6) Sharing Outcome.

2. The results of the evaluation of the effectiveness of the developed instructional model indicated that: the experimental group had significantly higher vocabulary ability post-test mean scores than the control group at the level of 0.05, 2) the experimental group had significantly higher reading comprehension post-test mean scores than the control group at the level of 0.05, and 3) the experimental group had significantly higher mean scores of attitude towards reading than the control group at the level of 0.05.

Department: Curriculum, Instruction, and Educational Technology.. Student's Signature.....

Field of Study: Curriculum and Instruction..... Advisor's Signature.....

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# CHAPTER I

## INTRODUCTION

### **Background and Significance of the Problems**

English is widely regarded today as the main language of international communication. It is used in a number of social areas and covers all aspects of technology and everyday life across the borderless world of communication. English is so important that its role has been reinvented as an international language. The instruction of the language nowadays, thus, has basically turned into English as an international language.

In the case of Thailand, the importance of English has been ever more recognized in everyday living and education, especially at the tertiary level. The reason is that textbooks and other academic documents are written in English. Therefore, a person with good proficiency of English is advantageous over others, as they can properly keep track with technological, political, and technological advancement (Sumitra, 1997). As a result, English has been included, for communicative purpose, in almost all programs and majors of universities and colleges throughout Thailand: 6-12 credits as general education courses and 76-84 for English majors. It aims to equip students with good command of all the four skills and situation-based function of the language (Office of Higher Education Commission, 2004).

Generally, language learners need to develop four skills: speaking, listening, reading and writing. Of these, the skill of reading is not only important in itself, but it contributes to the other three skills. Reading functions as a tool helping a person search for knowledge from foreign textbooks, or other available sources. Many people in multilingual settings need to read in English at reasonably high levels of proficiency to achieve personal, occupational, and professional goals. Anderson (1984) contends that English is of overriding importance as information has now been printed and published in English. Without reading, opportunities for improving one's life are limited (Grabe and Stoller, 2002).

By recognizing that the major goal for all educational institutions around the world is to promote literacy and that literacy can be acquired through reading, 100 higher education institutions that offer English major programs in Thailand have incorporated 3-4 reading courses as their core subjects. This excludes reading courses

as ESP subjects which students can choose at will after they have completed the required courses of their curriculum.

Although English reading is very crucial and needed as seen from the above, results from evaluation of its achievement among Thai students are not satisfactory (Supat, 1992). Considering the result of ONET in 2008-2010, the mean percentage scores of English tests, of which the main proportion was reading, were the lowest among all other subjects, receiving 30.93%, 30.64%, and 23.98% respectively. This situation is in its critical range when taking what the National Statistics Office reported in relation to Thai reading habits in 2007 into notice. Thai people read just two books a year, in contrast to Vietnamese, who read sixty books a year, and Singaporeans, who read forty-five (The Nation, October 19, 2007). However, a spokesman for the Education Ministry insisted that Thai youth were keener on reading nowadays. In 2003, Thai children read an average of seven lines a day, but this number had increased by 7.9 per cent by 2005. The ministry's lofty aim was to raise this to a daily average of 12 lines a day by the end of the year 2007 (The Nation, June 14, 2007).

The reason why Thai students are not successful readers can be attributed to several problems. Some of the problems associated with English readers struggling to read can unfortunately be influenced by particular methods of reading instruction that either test rather than teach reading or that do not take into consideration the differences between learning to read in a first and a second language (Farrell, 2009). For instance, when a reading teacher asks his or her students to read a passage and answer the comprehension questions that follow, or to write a summary, or to explain the meaning of individual words in a sentence, all these are testing and not really teaching reading. Testing reading has a place in the curriculum, but only after the instruction has taken place. One thing worth recognizing is that students learning to read in their first language possess more knowledge of grammar and vocabulary than those readers learning to read in a second language. Furthermore, English readers also have varying levels of English language proficiency that have an impact on reading comprehension (p.2).

In order to investigate the specific problems in reading achievement under the circumstances, the researcher, in 2008, administered questionnaires to a group of 100 second-year to fourth-year English major students from Rangsit University, Bangkok University, and Thammasat University. In addition, semi-structured interviews with 20 teachers from the three universities were conducted as a preliminary study. The

findings indicated that the students perceived inadequate vocabulary ability to be the biggest problem, saying that they basically could not understand what they were reading because of the difficult words in the texts. Regarding the teachers, the most pressing and biggest problem related to reading is attitudes. They also elaborated that good reading attitudes would lead to motivation to read.

The findings in terms of vocabulary ability are in accord with Bernhardt (2004), who posits the crucial knowledge of vocabulary to reading which has been defined as *passage sight vocabulary*. While a reader is reading, this cognitive ability of words can facilitate the process of reading. The more knowledge that readers have of the vocabulary specific to a given passage, the more comprehensible the input becomes. Without such knowledge and efficiency, readers are apt to experience a short circuit – that is, a failure to understand the relationships among ideas in the text, to monitor comprehension, and to infer and integrate new meaning. Ultimately, this will result in fewer chances for vocabulary development (Grabe and Stoller, 2002; Koda, 2005).

For comprehension, reading attitude can get the reader engaged. Guthrie (2001: 2) says that an “engaged” reader is “intrinsically motivated to read for knowledge and enjoyment”. Such internally motivated readers read “because of personal interest and desires to learn, relax, escape, or empathize” (Block, 2005). Reluctant readers have been defined by Stringer and Mollineaux (2003, cited in Pearman, 2008) as “those who are able to but do not possess the desire or the inclination to read.” According to the Online Dictionary for Library and Information Science (ODLIS), a reluctant reader is a person who, for whatever reason, chooses not to read, doing so only when necessary. In a study of 21,000 youths, O’Neil (1991, cited in Pearman, 2008) found that lack of motivation had a negative effect on literacy development (Pearman, 2008).

In view of the importance of reading, improving learners’ attitudes to reading is of enormous importance. The more they read, the more they will improve in terms of comprehension and vocabulary acquisition. Research says there are correlations among the three factors of reading. The reader will gain more confidence when they can construct more comprehension from what they are reading, and this confidence, will in turn lead to more positive attitudes to read more. And when they read more, the influx of lexical items into the brain will occur more, which in turn bring about comprehension and confidence to read (Koda, 2005; Pulido and Hambrick, 2008).

According to several recent research findings, one important factor that affects positive or negative attitudes in the way students learn is difference of learners. Individual differences among learners can impact learning processes and teaching procedures. In research area, understanding the ways in which learners differ from one another has become of fundamental concern to those involved in English teaching/learning, either as teachers or researchers. A number of research address individual differences, putting focus on factors such as aptitude, motivation, attitudes, personality, and then to establish correlations between these factors and second language proficiency (Lightbown and Spada, 2006). Research findings on studies of learning styles have shown that an understanding of learning styles create optimal learning conditions in the language classroom (Lincoln and Rademacher, 2006). Reid (1998) also indicated that if language teachers know more about how various students learn new materials, they will make better decisions on both content and in-class activities.

In addition, perception seems to be one important elements of learning style. Research on perception and reading indicates that reading performance is strongly related to perceptual ability (Carbo, 1983). It has been found that good readers prefer to learn through their visual and auditory senses, while poor readers have higher preferences for learning tactfully and kinesthetically in an informal design (soft chairs, rugs, pillows). Also poor readers have difficulty shifting between and integrating auditory and visual stimuli (Dunn, 1981).

Fluent readers are able to perform multiple tasks at the same time and to adjust to various activities in class efficiently: they can recognize words while also comprehending their meaning (Block and Israel, 2005). In addition, recent research in first language reading strongly suggests that reading instruction can make a difference and that each reader has the potential to become more fluent with correct intensive instruction. For example, recent brain research using functional magnetic resonance imaging (fMRI) has suggested that fluent readers use left hemisphere regions of the brain as they read. Shaywitz and colleagues (2004) have shown that when slow readers receive intensive reading instruction, they too show “increased activation in the left hemisphere regions” (p.13)

A correlational study comparing the learning styles of good and poor readers conducted by Price, Dunn, and Sanders (1980) demonstrates that the two groups differ significantly in terms of hemispheric preference. After administering the hand-scorable hemispheric test to a group of students, they discovered that 85% of the poor

readers were classified as right-brain-dominant learners. The cause of the problem seems to stem here as the activities in most language classes, especially reading, are organized in the way that the left dominants are accommodated, while the right dominants are isolated. Carbo (1983) suggests that, so as to resolve the problem of one-brain dominance, reading instruction should initially include holistic reading approaches (such as language-experience). And when teachers integrate the abilities of the two hemispheres so as for the most adaptive processing to be brought to bear on the learning situation, learner motivation and performance will improve.

From all the facts that prevail, a conclusion of problems in reading class and reading achievement can be drawn as follows:

#### **In the teacher's area**

1. Teachers do not use multiple methods for teaching reading that can reach all students in class. In class, teachers test rather than teach reading strategies.
2. Teachers are not aware of the learning styles and preferences of the children in their care, so they can create the appropriate balance of methods needed for the students they reach.

#### **In the student's area**

1. Students possess individual differences in learning. And these natural differences must be accommodated so as to ensure reading achievement.
2. Parts of the differences can be attributed to two modes of the brain which need maximizing from the proper kind of instruction.

In order to ensure equity in learning for all students, for the past two decades, much attention has been drawn to 4MAT, a teaching methodology posited by Bernice McCarty, which is built upon the principles of learning styles and their relationship to the natural learning cycles and the underpinning of hemisphericity. 4MAT provides a systematic model of planning instruction that assumes that individuals learn in different yet identifiable ways and that engagement with a variety of diverse learning activities results in higher levels of motivation and performance. Its premise is that individuals learn primarily in one of four different but complementary ways based on how they perceive and process information (McCarthy and McCarthy, 2006).

Grounded in the works of John Dewey (experiential learning), Carl Jung (theory of individualization), David Kolb (experiential learning theory), and Anthony Gregorc (Gregorc's style delineator), 4MAT is an instructional model that extends



beyond learning styles to create a balanced model for planning instruction. As 4MAT is a representative of what Kolb calls “integrated learning” (Kolb, Boyatzis, and Mainemelis 2001), it provides a teaching model that cycles the learner through four major learning styles. When compared with other teaching model in the similar genre, 4MAT is different as it builds upon the four-factor learning style models of Gregorc and Kolb by integrating learning styles with brain-based processing strategies.

In studies conducted in various settings, the use of 4MAT increased learner motivation and improved academic performance (McCarty et al, 2002). Statistically significant gains in content area learning have been found in the areas of mathematics (Szewczyk, 1987; Lieberman, 1988; Lieberman, 1989), science (Benezra, 1985; Young, 1986; Bowers, 1987; Lisokie, 1989) and music (Appell, 1991). In higher education settings, 4MAT has been successfully applied in a variety of disciplines, including engineering (Harb, Durrant, and Terry, 1991), law (Kelly, 1990), and tourism (Paraskevas and Sigala, 2003). However, no studies have simultaneously applied the model across diverse university disciplines in higher education as proposed by Svinicki and Dixon, in their multidisciplinary conceptualization of Kolb’s experiential learning model (1987).

In addition to 4MAT, a number of studies over the past years have demonstrated that relaxation positively affects academic success as it can facilitate change in physiological states in the body that lead to more effective performance of the brain (Hepler and Kapke, 1996; Blanchard, 1979). Studies show that background music has intriguing effect on memory. One example is Mozart’s music and baroque music, with a 50-to-60-beat-per-minute pattern can activate the left and right hemispheres of the brain, which can maximizes learning and information retention. The information being studied activates the left mode, whereas the music stimulates the right mode, causing the brain to be more capable of processing information. Although the use of music seems to be isolated from language learning in schools or universities today, research suggests that music functions as a catalyst for cognitive skills and aspects of social-emotional development across disciplines.

According to a recent research (Smith, 2001), participation in a relaxed setting is of overriding significance to learning to read, as well as acquiring other language skills. Besides, listening to classical music before taking a test can help students improve their test scores significantly since this type of music releases neurons in the brain which help the body to relax. In terms of memory, and information retention, background music can prove effective as seen in Lozanov’s studies where students

could learn up to 1,000 new words/phrases in one day through baroque music with 92% average retention rate. This corresponds to another study done in 1982 at the University of North Texas, of which the result shows that vocabulary memorization and recall are better through Handel's Water Music. One explanation is that music itself is not a part of learning process; however, it enters memory along with the acquired information. The findings imply that recall is better when the same music targeted for learning is used during recall. Also, tempo seems to play a key role of music's effect on memory (Anderson, Henke, McLaughlin, Ripp and Tuffs, 2000)

In addition to brain maximization and vocabulary memorization, many components of music can have a calming effect. Blanchard (1979) found that playing background music during a classroom examination dramatically helped lower blood pressure, resulting in significantly higher scores and better attitudes for participating students.

To sum up, these studies pave the foundation for a connection between music, relaxation, improved brain function, increased academic performance, and more positive learning attitudes.

As for reading, the benefit of using background music in reading class is also advisable. One study featuring a vibroacoustic music chair combined with the 50-60 beats per minute of music indicates student's improved reading performance beyond the expectation of a reading program alone. Besides, better attitudes towards reading caused by relaxation were also reported (Carlson, Hoffman, Gray and Thompson, 2004).

Based on Lozanov's research findings, the Mozart Effect, and Blanchard (1979), in light of whole brain capitalization through music, this present study features classical pieces of music of Bach, Mozart, and Handel, all of which are 50-60 beats per minute. The grounds underlying the hypothesis of the study is that listening to background music during reading and pondering will increase focus and attention, which leads to full mental potential. Additionally, relaxation from music can facilitate changes in physiological states in the body that allow the brain to work more efficiently. And that assumption has been used as one major element underpinning the principles of the developed instructional processes.

In conclusion, this knowledge about the specialization of 4MAT and background music has led to several hypotheses about how reading instruction might

be improved. In this regard, the researcher has attempted to propose a prospective instructional model based on the 4MAT System and background music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students.

### **Research Objectives**

This research contained two main research objectives as follows:

1. To develop the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students

2. To investigate the effectiveness of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students, which could be done through:

2.1. Evaluation of experts in the field

2.2. Evaluation of the effectiveness of the developed instructional model, which relied on:

2.2.1. Comparing the vocabulary ability of the students in the experimental group before and after using the instructional model

2.2.2. Comparing the vocabulary ability of the students in the experimental and control groups after using the instructional model

2.2.3. Comparing the reading comprehension of the students in the experimental group before and after using the instructional model

2.2.4. Comparing the reading comprehension of the students in the experimental and control groups after using the instructional model

2.2.5. Comparing the attitude towards learning of the students in the experimental group before and after using the instructional model

2.2.6. Comparing the attitude towards learning of the students in the experimental and control groups after using the instructional model

2.2.7. Studying the students' opinions towards the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students

## Research Questions

The research questions addressed in this study were as follows:

1. In what aspect did the reading instructional model using the 4MAT System and music enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students?

2. How effective was the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students?

2.1. Did the students in the experimental group taught with the reading instructional model using the 4MAT System and music have higher scores in vocabulary ability, reading comprehension, and attitude towards learning than those in the control group taught with the conventional method?

2.2. Were the scores in vocabulary ability, reading comprehension, and attitude towards learning of the experimental group taught with the reading instructional model using the 4MAT System and music significantly higher after the treatment?

## Research Hypothesis

In response to reading problems of undergraduate students, especially in the context of Thailand, the researcher has been trying to investigate the true causes of those problems and have found out that three of all the stems of problems are from limitation of vocabulary ability, reading comprehension, and lack of positive attitude towards learning. The researcher has then been looking for the effective instructional models, processes, methods, and techniques to help students and teachers cope with those causes and, from a bunch of research bodies, has discovered that the 4MAT System could be a remedial solution. In studies conducted in elementary secondary schools, the use of 4MAT increased learner motivation and improved academic performance (Blair and Judah, 1990; McCarthy et al., 2002; Wilkerson and White, 1988). According to Nicoll-Senft and Seider (2010), more achievements in content area learning have been found in the premises of mathematics, science, and music. In higher education context, 4MAT has been successfully applied in a variety of disciplines, including engineering, law, and tourism. Although up to now, few studies have applied the model across L2 reading, the results of previous studies implied the possibility of applying 4MAT in ELT area, particularly in the domain of English reading.

In addition, a number of studies over the past years have demonstrated that relaxation from background music positively affects academic success as it can facilitate change in physiological states in the body that lead to more effective performance of the brain (Hepler and Kapke, 1996; Blanchard, 1979). Studies show that background music, especially classical baroque music, with a 50-to-60-beat-per-minute pattern can activate the left and right hemispheres of the brain, which can maximize learning and information retention (Carlson, Hoffman, Gray and Thompson, 2004; Smith, 2001). With this in mind, the researcher has integrated the use of background music into 4MAT System and, out of the two elements, has developed a reading instructional model with an aim to solve the mentioned reading problems.

In order to investigate whether reading instructional model using the 4MAT System and music can really enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students or not, the hypotheses were proposed as follows:

1. After treatment, the vocabulary ability of the experimental group is significantly higher than that in the control group.
2. After treatment, the reading comprehension of the experimental group is significantly higher than that in the control group.
3. After treatment, the attitude towards learning of the experimental group is significantly higher than that in the control group.

### **Scope of the Study**

#### 1. Population

The population of this study was the undergraduate English major students of the Faculty of Liberal Arts, or Humanities of any university in Thailand, and studied English as their foreign language.

#### 2. Variables

In this study, there were two types of variables as follows:

2.1. The treatment variable: reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students and conventional instruction

2.2. The dependent variable: the effectiveness of the developed instructional model which was considered from:

2.2.1. Vocabulary ability

2.2.2. Reading comprehension

### 2.2.3. Attitude towards learning

#### **Operational Definitions of Terms**

The terminologies employed in the study were as follows:

**4MAT System** referred to eight-step cycle of instruction model, based on individual learning styles and information processing preferences as determined by brain dominance, which translates concepts from learning style theory into instructional strategies. The model, based on Kolb's (1984) theory of experiential learning and on the findings of brain hemisphericity research, was developed by McCarthy in the 1970's.

**Attitude towards Learning** referred to an individual disposition related to English reading activities and situations, as well as L1 reading, which can be defined by two components: 1.) cognitive, which is personal, evaluative beliefs; and 2.) affective, which is feelings and emotions. The attitude towards learning in this research was measured by the reading attitude questionnaire designed by the researcher.

**Background music** referred to classical pieces of instrumental music of Bach, Mozart, and Handel, all of which are 50-60 beats per minute and feature the piano, violin, harp, or organ as the principle instruments. They are categorized in the genre of light classical Baroque music.

**Conventional Instruction** referred to the arrangement of learning activities as generally seen in reading class at university which was not based on the principles of 4MAT System and background music. There were three teaching steps as follows: 1) pre-reading 2) during-reading 3) post-reading.

**Instructional Model** referred to the arrangement of learning activities systematically designed based on concepts, theories, and principles of 4MAT System and background music, incorporating 6 teaching/learning steps as follows:

1. Recalling Experience
2. Imagining
3. Explicit Modeling
4. Reading with Music

## 5. Parallel Practicing

## 6. Sharing Outcome

This instructional model was designed by the researcher and validated by experts in the field to ascertain that it could be effectively used in reading instruction to enhance students' vocabulary ability, reading comprehension, and attitude towards reading.

**Reading Comprehension** referred to the ability to understand or attribute meaning to what is read and can be divided into three levels:

1. *Literal comprehension.* This level of comprehension represents the minimum of involvement on the part of the reader. It is the simple understanding of the words and ideas of the author. The author's message is received but not examined, evaluated, or utilized in any way. The level includes the following reading skills: recognizing and using pronoun references, recognizing the meaning of words, stating the main idea of a sentence, paragraph, or passage, identifying the sequence of events, identifying signal words or discourse markers, classifying ideas into main topics and supporting details, recognizing the topic in a text, skimming, scanning, and locating topic sentences or generalizing.

2. *Interpretive comprehension.* This level involves an effort to grasp relationships, compare facts with personal experiences, understand sequences, see cause-and-effect relationships, and generally interpret the message. It requires a more active participation on the part of the reader. The reading skills included at this level are guessing meaning of unknown words, paraphrasing or restating the text in different words, recognizing the use of language, expressions, predicting, recognizing patterns of relationships or ideas, summarizing and drawing conclusion, drawing inferences and reading between the lines, inferring the main idea.

3. *Critical comprehension.* At this highest level of comprehension the reader evaluates the author's ideas, either accepting or rejecting them or applying them to some new situation. The author's message is received, understood, and utilized in some way, mentally or physically. This critical level includes the reading skills of identifying purposes and attitudes of the author, posing questions about the text, identifying tone of the language, identifying genre of the text, identifying title of the text, distinguishing between facts and opinions, critiquing the text, critiquing the author, judging how well the objectives were met, and reflecting on what has been learned from the text.

In this research, reading comprehension ability was used as criteria to measure students' reading comprehension.

**Reading skills** referred to linguistic processing abilities that are relatively automatic in their use and combinations and applied to the text unconsciously.

**Reading strategies** referred to deliberate, conscious, controllable processes used by readers to self-regulate reading for the purpose of attaining a specific cognitive goals or objectives of reading. They mainly included the following: recognizing and using pronoun references, recognizing the meaning of word, stating the main idea of a sentence, paragraph, or passage, identifying the sequence of events, identifying signal words or discourse markers, classifying ideas into main topics and supporting details, recognizing the topic in a text, skimming, scanning, generalizing, guessing meaning of unknown words, paraphrasing, recognizing the use of language and expressions, predicting, recognizing patterns of relationships or ideas, summarizing, drawing inferences and reading between the lines, inferring the main idea, identifying purposes and attitudes of the author, identifying tone of the language, distinguishing between facts and opinion, and critiquing the text.

**Students** referred to the population who were the undergraduate English major students of the Faculty of Liberal Arts, or Humanities of any university in Thailand, and studied English as their foreign language.

**Vocabulary Acquisition for English Reading Comprehension** referred to the ability to acquire vocabulary items and develop understanding in English reading. In this research, the vocabulary acquisition for English reading comprehension was separately measured by two tests: 1.) the vocabulary ability test and 2.) the reading comprehension test, both of which were designed by the researcher.

**Vocabulary Ability** referred to the proficiency to recognize an item of vocabulary, in the form a specific visual stimulus pattern, and match it to the mental lexicon where the meaning of this word is stored. It is the ability used by readers to construct meaning of a reading text and is an important prerequisite for reading comprehension.



## **Significance of the Study**

The research findings were significant and useful in the following aspects:

### **1. Theoretical significance**

The findings of this study confirmed the effectiveness of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students. The empirical evidence showed in the development of gains in vocabulary ability, reading comprehension, and attitude towards learning of students in the experimental group. The study will also result in the instructional process as a product of R&D (research and development) type of research and a process of creating an innovative teaching model which could be used as an alternative for English major students to develop their reading achievement.

### **2. Pedagogical significance**

The findings of this study were the development of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students. It could be another alternative for English lecturers and instructors at a university level to conduct the reading class more effectively by applying this instructional model. In addition, English teachers in schools could adopt or apply parts of this reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning in their reading class at secondary level as well.

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## **CHAPTER II**

### **LITERATURE REVIEW**

This chapter presents the review of literature and research that related to the present study. It covers eight main areas as follows:

1. Reading Comprehension
2. Vocabulary Ability
3. Reading Attitudes
4. Learning Styles
5. Reading and Hemisphericity
6. 4MAT System
7. Background Music
8. Instructional Model
9. Related Research

#### **1. Reading Comprehension**

Reading has been defined as “a complex cognitive process of decoding symbols for the intention of constructing or deriving meaning”. It is the mastery of basic cognitive processes to the point where they are automatic so that attention is freed for the analysis of meaning (Carrell, Devine and Eskey, 1988; Grabe and Stoller, 2002). Considered as the goal of all reading, reading comprehension has been defined by educators in a number of ways: “a recursive process in which the reader may construct new understanding cumulatively while reading or even later when reflecting on text or connecting it to other texts” (Fountas and Pinnell, 1996, cited in O’Connor, White, and Swanson, 2007). Farrell (2009) defines comprehension as” the readers’ ability to construct the meaning from the text through the combination of prior knowledge and previous experience of the topic, the information in the text, and the stance the reader takes in relationship to the text”.

In the case of L2 readers, comprehension is the process of understanding or making meaning when reading. This process involves three key components: (1) the reader, (2) the text, and (3) the context. The reader brings his or her prior knowledge, reading skills, and interests to the reading situation. The text refers to the genre or type of literature (e.g., informational, fiction, poetry, etc.), and the context addresses the purpose for reading such as for pleasure, information, homework completion, or test preparation. When the reader is able to connect these three key components, comprehension is more likely to occur. For example, when a student has good prior

knowledge, is able to read a text with relative ease, is interested in the text, understands the type or genre of literature, and has a clear goal for reading, the student is more likely to comprehend what is read (Bernhardt, 1991; Carrell, Devine and Eskey, 1988; Grabe and Stoller, 2002).

### **1.1. Levels of reading comprehension**

Teachers often refer to two levels of comprehension (Elish-Piper, 2010): lower-level comprehension, also called literal comprehension; and 2) higher-level comprehension. Literal comprehension focuses on information that is “right there” in the text such as the name of a character, the number of legs an insect has, or the capital of the State of Illinois. To answer a literal comprehension question, students can go back to the text and find the answer “right there” in the text. Literal comprehension is important, but students must also be able to develop higher level comprehension. Higher-level comprehension goes beyond just the words in the text. The reader must be able to “think and search” to piece together answers to some questions by using bits of information that are scattered throughout the text. In addition, the reader must be able to connect what he or she knows with what the author has written to answer “author and me” questions. Finally, comprehension includes the ability to answer “on my own” questions that ask the reader to respond based on personal experience (Anthony, Pearson and Raphael, 1993). While these components and levels of comprehension relate to all texts, there are additional considerations when reading fiction or informational texts.

Raygor and Raygor (1985) state three levels of comprehension as:

1. **Literal comprehension.** This level of comprehension represents the minimum of involvement on the part of the reader. It is the simple understanding of the words and ideas of the author. The author’s message is received but not examined, evaluated, or utilized in any way. The level includes the following reading skills: recognizing and using pronoun references, recognizing the meaning of words, stating the main idea of a sentence, paragraph, or passage, identifying the sequence of events, identifying signal words or discourse markers, classifying ideas into main topics and supporting details, recognizing the topic in a text, skimming, scanning, and locating topic sentences or generalizing.
2. **Interpretive comprehension.** This level involves an effort to grasp relationships, compare facts with personal experiences, understand sequences, see cause-and-effect relationships, and generally interpret the message. It requires a more active participation on the part of the reader. The reading skills included at this level

are guessing meaning of unknown words, paraphrasing or restating the text in different words, recognizing the use of language, expressions, predicting, recognizing patterns of relationships or ideas, summarizing and drawing conclusion, drawing inferences and reading between the lines, inferring the main idea.

3. Critical comprehension. At this highest level of comprehension the reader evaluates the author's ideas, either accepting or rejecting them or applying them to some new situation. The author's message is received, understood, and utilized in some way, mentally or physically. This critical level includes the reading skills of identifying purposes and attitudes of the author, posing questions about the text, identifying tone of the language, identifying genre of the text, identifying title of the text, distinguishing between facts and opinions, critiquing the text, critiquing the author, judging how well the objectives were met, and reflecting on what has been learned from the text.

## **1.2. Reading skills and strategies**

Reading can be defined as, “a complex system of deriving meaning from print” (Adams, 1990; Kame'enui and Simpsons., 2001). Within this system are a series of identified skills associated with the process of reading and comprehension. Skills and strategies can be distinguished. According to Grabe and Stoller (2002), skills of reading are linguistic processing abilities that are relatively automatic in their use and combination, while strategies are defined as a set of ability that readers have conscious control over but are also relatively automatic, such as skipping a word they do not know when reading. With regard to a definition of reading strategies, researchers have used diverse techniques, such as interview, questionnaire, observation, journal, and think-aloud protocol, to measure readers' reading strategy use. Subsequent researchers (Adams, 1990; Alderson, 2000; Grabe and Stoller, 2002; Aebersold and Field, 1997) narrowed the list to a more manageable set of strategies used by good readers as follows:

- Recognition of written word and expression
- Using one's external knowledge to predict and explain a text
- Recalling potential information in the text
- Discrimination between main themes and subsidiary ones
- Eliciting lexical meaning and usage of unfamiliar vocabulary
- Understanding meaning and function of grammatical structures
- Recognition of linking words (e.g. “so”)
- Recognition of sentence function (e.g. definition, restatement)
- Recognition of the relationship between a sentence and the text

- Picking up definite information for summary making or note taking
- Deep reading to reach a concluding summary; and knowing how to organize ideas within a text
- Understanding the information and tendencies included in the text
- Understanding the way the text is organized, and
- The ability to evaluate, explain and interact with the text

Research suggests that effective reading strategies can be taught to L2 readers and that they can benefit from such instruction. Strategy instruction also develops student knowledge about the reading process, introduces them to specific strategies, and provides them with opportunities to discuss and practice strategies while reading. That said, the ultimate goal of reading instruction is not to teach individual reading strategies, but rather to develop strategic readers (Farrell, 2009).

As Carrell (1998) suggests, successful strategy use seems to depend on the context that the reading takes place in and the specific text students are reading. For reading teachers and L2 readers, then, reading strategy training aims at improving the performance of struggling readers through explicit, step-by-step demonstrations of good reading behaviors that include instruction in metacognitive strategies (Koda, 2005). Some educators think this type of instruction is present in most L2 reading classes. However, research by Collins, Brown, and Holum (1991) has indicated that this is not the case and that in fact, in most classrooms, students do not practice strategic reading, because “the process of thinking about reading are often invisible to both the students and the teacher” (p. 6).

### **1.3. Models of reading**

Different researchers have different opinions of what processes are involved when we read (Farrell, 2009; Grab and Stoller, 2002) and these have been presented and discussed mostly in terms of particular models of reading. One model of reading, called the *top-down processing model*, argues that reading is directed by the brain (associated with schema theory) that readers bring their prior knowledge and experiences to the *text* as they read, and that this influences how they understand and interpret a text. In fact the extreme version of this model suggests that readers will only continue to read a text as long as it confirms their prior expectations. This top-down reading process can be explained as follows: After first looking at a passage or a text, readers guess or predict what it will be about based on their prior knowledge and experience of the topic. They can do this after reading the title, the headings, and the

subheadings and glancing quickly through the text. They then continue to read the text seeking confirmation of their understanding of the topic. So readers using a top-down approach will try to fit the text into the knowledge and experiences they already have.

A second model is called the *bottom-up processing model*. It suggests that a reader takes meaning from the text itself, from each word and sentence and from how the text is organized, in order to construct meaning from that text only; this model is thus associated with phonics. In this approach, information is first processed in the smallest sound units and then moves to letters, words, phrases, and full sentences. Understanding or comprehension of the text will ultimately depend on the reader's knowledge of vocabulary and syntax. The bottom-up process can be explained as follows: When we read, one thing we do is extract the propositions from the text, which was done by breaking sentences into their constituent parts and constructing the propositions from there. Comprehension then depends on the propositions we have extracted, which serve as the basis of what we understand and recall. This can be seen as the opposite of the top-down approach; instead of working from meaning to text (top-down), this model has a reader working from text to meaning (with a focus at word and sentence level).

However, another model of how reading works with L2 readers is called the interactive processing model (Rumelhart, 1977; Stanovich, 1980) and argues that both approaches explained above, the top-down and bottom-up processes, occur simultaneously when a person reads a text. This is sometimes related to the Balanced Approach in first language reading research, because it provides teachers with a more balanced view of the important contributions of both the text and the creation of meaning from the background knowledge and experience of the reader.

## **2. Vocabulary Ability**

While comprehension is recognized as the main goal of reading, educators agree that vocabulary is an important component of comprehension (Anderson and Freebody, 1985; Irvin, 2001; Jongasma, 2000; Senechal and LeFevre, 2002; Stahl, 2003). There is consensus on the importance of vocabulary knowledge for L2 readers (Stahl, 2003). However, researchers often interchange the terms vocabulary knowledge and vocabulary ability when describing the same construct. In fact, throughout the literature and within individual works, the terms vocabulary knowledge and vocabulary ability are used interchangeably.

Wiig and Secord (1992) state. “Word and concept knowledge are essential aspects in models of cognition, intelligence, and verbal reasoning. Word and concept knowledge is essential for academic achievement and that level of word knowledge has been identified as the best predictor of reading comprehension” (p. 2). Other researchers, (Baumann and Kame'enui, 1991; Beck, McKeown and Kucan, 2002; Gersten and Geva, 2003) have agreed on the terms ‘minimal, partial, and full concept knowledge’ to categorize and describe “breadth and depth” (Qian, 1999) of acquired vocabulary. Using these criteria, students with a minimum level of vocabulary concept knowledge link new words with a specific definition or single context while students with full concept knowledge understand and use words in different contexts, know the varied meanings of multiple-meaning words, and can ascertain a word’s meaning from the meanings of similar words (p. 8). Students with partial concept knowledge fall somewhere in between.

Students learn vocabulary more effectively, i.e. full concept knowledge, when they are directly involved in constructing meaning rather than in memorizing definitions or synonyms (Smith, 1997). Effective vocabulary knowledge “includes a component of both oral and written language that encompass the body of words students must know if they are to read increasingly demanding text with fluency and comprehension” (Kame'enui et al., 2002).

### **2.1. Level of vocabulary ability**

Knowledge of a word has been conceptualized in alternative ways. These alternative conceptualizations include, but are not limited to, dimensional word knowledge, stage-like word knowledge, continuum-based word knowledge, contextualized and decontextualized word knowledge, and partial and comprehensive word knowledge. Although word knowledge has traditionally been assessed in a decontextualized, theories on what it means to know a word suggest that true knowledge cannot be measured so simplistically (Beck, McKeown and Kucan, 2002). Educators have classified the levels of vocabulary ability as follows:

Dale (1965) devised one of the earliest conceptualizations of word knowledge, which addresses the extent of a person’s understanding of a word:

1. Stage 1: never saw it before.
2. Stage 2: heard it, but doesn’t know what it means.
3. Stage 3: recognizes it in the context as having something to do with it.
4. Stage 4: knows it well.

These four stages of word knowledge recognize that the meaning of a word can be partial and contextually based. Beck, McKeown, and Omanson (1987) suggest that degrees of knowledge about a word can be represented on a continuum:

1. No knowledge.
2. General sense such as knowing *mendacious* has a negative connotation.
3. Narrow, context-bound knowledge, such as knowing that a “radiant bride” is beautiful and happy, but unable to describe an individual in a different context as “radiant.”
4. Having knowledge of a word but not being able to recall it readily enough to use it in appropriate situations.
5. Rich, decontextualized knowledge of a word’s meaning, its relationship to other words, and its extension to metaphorical uses, such as understanding what someone is doing when they are “devouring” a book.

Empirical support has been provided for the idea that a person may have a general sense of a word even if he or she does not have explicit knowledge of the word or its meaning (Shore and Durso, 1990).

Anderson and Ortony (1975) explored implications for partial word knowledge and word sense. They suggest that a single word will have many different meanings in a multitude of sentences even if the “core” meaning is the same. Take the word *piano*, for example. In a sentence context involving music, the meaning of *piano* as a musical instrument will be in the forefront. However, in a sentence context involving moving household items, the meaning of *piano* as a very heavy, bulky, but nevertheless fragile piece of furniture will be more relevant. There is a “sense” of the word that cannot be adequately defined from a dictionary meaning, one that only comes from experiences that allow for the differentiation of macro- and microdistinctions in a word’s meaning. Clearly, word knowledge is not as decontextualized and dichotomous as once perceived.

Cronbach’s (1942) assessment of word knowledge derived from differences in what one is asked to do to demonstrate knowledge of a word:

1. Generalization, or the ability to define a word.
2. Application, or the ability to select or recognize situations appropriate to using a word.
3. Breadth, or knowledge of the multiple meanings of a word.



4. Precision, or the ability to apply a word correctly and to recognize its inappropriate use.

5. Availability, or the ability to actually use a word in thinking and discourse.

Graves (1987) considered aspects of vocabulary knowledge from the perspective of tasks that represent stages of acquisition of vocabulary words:

1. Learning to read known words.
2. Learning new meanings for known words.
3. Learning new words representing known concepts.
4. Learning new words for new concepts.
5. Clarifying and enriching known words and meaning.
6. Moving words from receptive to expressive vocabulary.

Finally, Nagy and Scott (2000) argue that there are five key aspects of word knowledge:

1. Incrementality: the idea that words are known to varying degrees of complete knowledge.
2. Polysemy: words have multiple meanings, and shades of meanings, which means that context must be used to infer the intended meaning.
3. Multidimensionality because word knowledge is multidimensional, it cannot be represented on a single, linear continuum.
4. Interrelatedness: word knowledge is represented by a configuration of relation in a semantic network of words.
5. Heterogeneity different kinds of words require different kinds of word knowledge.

Despite differing notions about how much a person knows the meaning of a word, the conclusion can be drawn as different ranges are the same in that they are listed from lowest to highest level of vocabulary knowledge. Thus the conclusion of the vocabulary ability levels can be made as follows:

1. A student has no recognition of a word. Indeed, she may never have seen it before.
2. A student has heard of the word (that is, recognizes that it is a word) but has no knowledge of its meaning.
3. A student recognizes the word in context and has a vague understanding of its meaning.
4. A student knows well the meaning of the word in the context in which it appears.

5. A student knows the multiple meanings of the word (if they exist) and can actually use the word in thinking, speaking, or writing.

## **2.2. Relationship between vocabulary knowledge and reading comprehension**

Educators agree on the definition of vocabulary knowledge and their role in reading comprehension (Anderson and Freebody, 1985; Baker, 1995; Irvin, 2001; Jongma, 2000; Mckeown et al., 1983; Qian, 1999; Schum, 1992; Stahl, Hare, Sinatra and Gregory, 1991). Related research and current educational practice suggests a correlation between students' vocabulary, that is, words they know, and students' comprehension of what they read (Gersten and Geva, 2003).

According to Farrell (2009), in order to be able to recognize a text, L2 readers must also know at least 98 percent of the words in that text, and this is probably the vocabulary threshold below which comprehension may be unlikely. In addition, a large vocabulary is critical not only for our students' reading purposes but also for all other language skills such as speaking, writing, and listening comprehension (Grabe and Stoller, 2002). Thus, a large vocabulary is seen by many as the key to comprehending a text; in other words, the more words a reader knows, the more text the reader will understand.

## **2.3. Principles of teaching vocabulary**

There are a number of ways of teaching vocabulary, many teachers try to accomplish this by getting their students to memorize word lists or look at synonyms and antonyms of a word and then doing fill-in-the-blank exercises connected to these memorized words. These efforts may be useful, but recent research has indicated that L2 readers acquire vocabulary more effectively when they are directly involved in constructing meaning of the word rather than when they memorize definitions or synonyms (Koda, 2005).

Nation (2003, 135-140) suggests a set of guiding principles that can be applied by reading teachers in a variety of teaching and learning situations.

1. Focus on the most-useful vocabulary first. Teachers can rely on a vocabulary list (Nation, 2002) which includes almost 75 percent of common words in newspapers, academic texts, novels, and all those in everyday conversation. After the

students have mastered the vocabulary on the list, other words they should learn, e.g. high-frequency words or words in academic area, depend on the goals of the learners.

2. Focus on the vocabulary in the most appropriate way. Nation (2003) suggests that teachers use actual classroom time to directly and explicitly teach high-frequency words by

- having students read and listen to others read graded readers containing these words

- having them study the words and do exercises based on them

- having them speak and write using these high-frequency words

3. Encourage students to reflect on and take responsibility for learning.

Students need to realize that they must be responsible for their own learning. Taking this responsibility requires knowing what to learn, knowing the range of options for learning vocabulary, skill in choosing the best options, and the ability to monitor and evaluate progress with those options.

4. Teach students how to apply morphological knowledge. Morphological knowledge can help students analyze vocabulary in different ways while at the same time taking the above principles into consideration. Teachers can begin at the word level by providing different activities related to the make-up of a word and by using word games and word-recognition exercises.

### **3. Reading Attitudes**

#### **3.1. Attitude and motivation**

Reading attitudes have been defined in various ways, for example, as “a system of feelings related to reading which causes the learner to approach or avoid a reading situation” (Yamashita, 2004). It is “a system of feelings related to reading which causes the learner to approach or avoid a reading situation” (Alexander and Filler, 1976) or “a state of mind, accompanied by feelings and emotions that make reading more or less probable” (Smith, 1990). These “feelings about reading should influence how much individuals involve themselves in reading; thus, attitudes about reading should relate to individuals’ motivation for reading” (Alexander and Filler, 1976).

Wigfield also pinpoints that “although attitudes toward reading are said to have motivational consequences, the work in this area by and large has not been connected to the dominant theories in the motivation literature” (1997: 62). Part of the reason for this difficulty of relating attitude and motivation, perhaps, is the complexity

of the relationship between attitudes, motivations and action. For example, students may have a positive attitude to reading from seeing others enjoy reading, but because of low linguistic ability, poor teaching or inappropriate reading material, they cannot read well, and therefore do not enjoy reading, and are therefore not motivated to read more. Or, despite a positive attitude to reading, and the ability to read efficiently, students may not be motivated to read because TV and online activities bring more instant gratification, or because playing sport gives a greater sense of satisfaction.

Students' attitudes to L2 reading can be affected by experiences of L1 language learning and reading, but their attitudes to their L1 and L2 are not likely to be the same. They will have different motivations for reading in the two languages, based on varying academic goals, socialization practices from home and community, prior educational instruction and socio-political differences between the two cultures. These differences will lead to perceptions of how well they can read, which will in turn influence their self-esteem, emotional responses to reading, interest in reading and willingness to persist (Grabe and Stoller, 2002: 57). All of these have an effect on motivation to read.

Marshall (2000) describes motivation as an invisible force, maintaining that, far from being the ambiguous concept that it may appear, "embraces knowing (cognitive factor) and emotions and feelings (affective factor) which put the learner in tune with books and other printed material" (p. 63). And motivation is described as a "master controller" of reading instruction. Its different and vital factors are believed not only to facilitate but enhance students' reading achievement.

It is important to remember here the notion of "learned helplessness", originally formulated by Seligman (1975), which is one of the most important barriers to motivation. It is relevant to all aspects of language learning, including reading. The attribution of "a lack of success to a lack of ability" and seeing "that lack of ability as being beyond personal control" (Galloway, Rogers, Armstrong, Leo and Jackson, 1998), will demotivate the learner reader. Attempts by teachers to help, in the form of offering special help, easy readers, a partner who can help, "are likely to be interpreted as confirmation of the pupil's essential lack of competence" (1998: 99-100). This attitude of learners towards their own inability is a negative motivation to read.

Engaged readers, for Guthrie (2001: 2), are those who "are intrinsically motivated to read for knowledge and enjoyment". Engaged readers "seek to

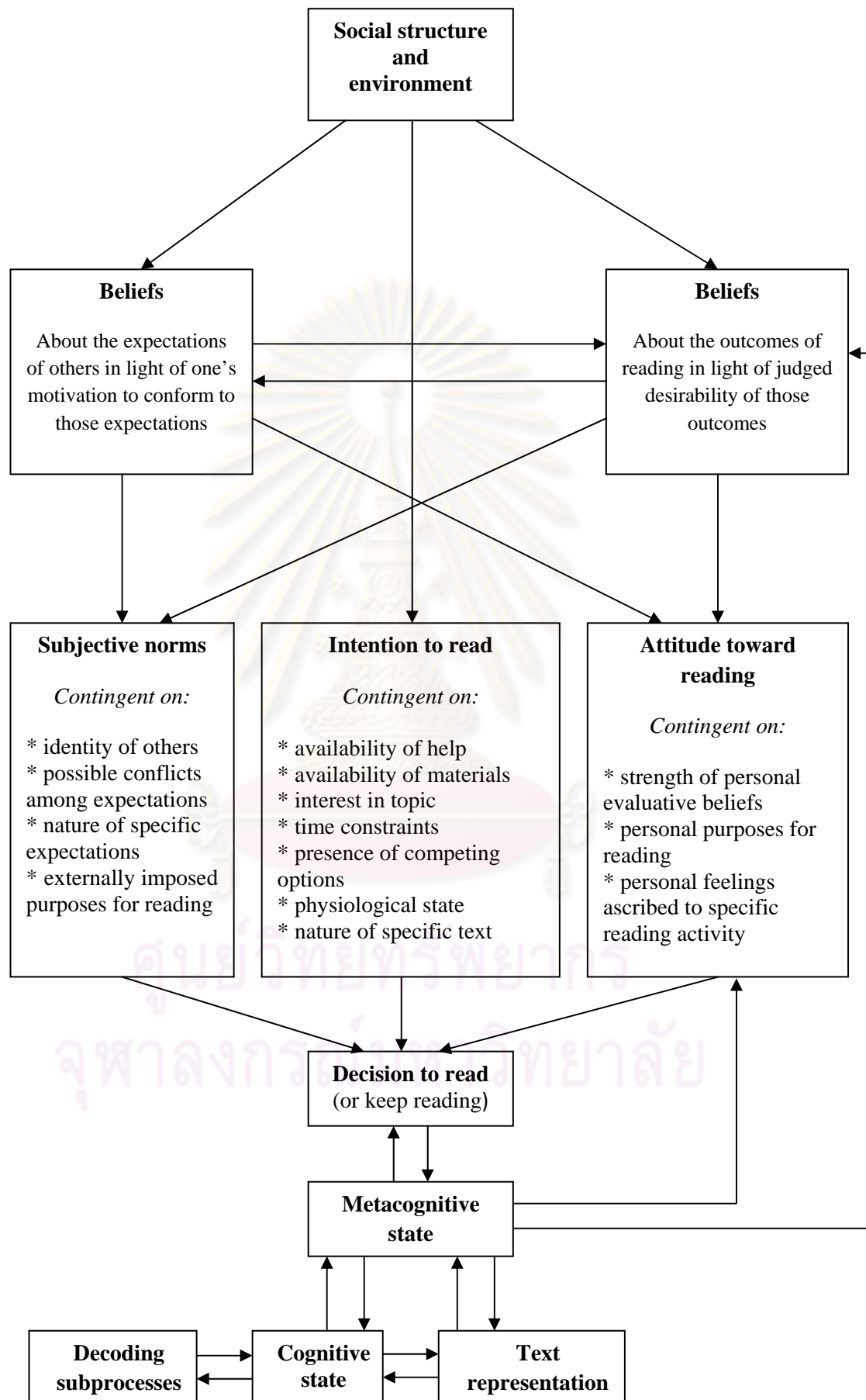
understand; they enjoy learning and they believe in their reading abilities. They are mastery-oriented, intrinsically motivated, and have self-efficacy” (2001: 1). These ideas are very close to those of Wigfield (1997). The engaged reader is a motivated reader. The motivation is intrinsic, for the sake of personal enjoyment or for the pleasure in acquiring new knowledge. Motivated readers have a positive attitude to reading: they want to understand, so read with a questioning mind, questioning the text, questioning the author. They have a positive attitude to their own ability to read and to understand. Nevertheless, they wish to improve their reading skill: they wish to master it, but being intrinsically motivated, they aim for mastery for personal satisfaction rather than for the sake of being better than others. Wigfield and Guthrie (Wigfield, 1997) found “strong and significant differences in the amount of reading across the high, middle, and low intrinsically motivated groups. Children higher in intrinsic motivation read much more than did children who were medium and low in intrinsic motivation. In contrast, the three groups of extrinsically motivated children did not differ as greatly in the amount of reading they did (p. 64).

### **3.2. Components of reading attitudes**

Reading attitude is a complex theoretical construct. According to an extensive and in-depth review of literature by Reeves (2002), there is considerable agreement among contemporary researchers that reading attitude is defined by three components: cognitive (personal, evaluative beliefs), affective (feelings and emotions), and conative (action readiness and behavioral intentions). This view, consisting of three components, is most explicitly stated by Mathewson (1994), and these components can also be identified in other major models dealing with reading attitude, such as those of McKenna (1994) and Ruddell and Unrau (1994).

Mathewson (1994) proposes a complex definition of attitude. He considers that many definitions do not take into account the richness of the concept. Mathewson suggests an inclusive definition, “a tricomponent view of attitude with evaluation as the cognitive component, feeling as the affective component and action readiness as the conative component” (p. 1133). This is taken up by McKenna (1994) who provides a developing, recursive model of research exploration in his Proposed Model of Reading Attitude Acquisition (1994) as shown in Figure 2.1.

**Figure 2.1** McKenna's Proposed Model of Reading Attitude Acquisition



According to Brown (1980), many information-processing models of learning have not taken into account the importance of factors such as “attitudes, opinions, prejudices, fears of failure, etc. ... in determining the efficiency of any learning activity” (p. 13). McKenna’s model, however, includes the largely affective nature of attitude, with beliefs being related in a causal way to attitude (McKenna, Kear and Ellsworth, 1995). McKenna’s model covers cognitive and affective factors under which attitudes develop, and conditions under which change is likely to be effected in attitude, the conceptualisations of which are necessary for teachers to be able to intervene in the cycle of learning and positively influencing their students’ attitudes in the classroom. The model, as seen in Figure 2.1, holds the ground that teachers who are enthusiastic and who communicate the valuing of reading, both as a cognitive and aesthetic experience, are empowered to positively affect their students’ attitudes toward reading.

McKenna et al. (1995) are aware that children’s acquisition of reading attitude is developed through complex processes and thus:

may affect the level of ability ultimately attained by a given student through its influence on such factors as engagement and practice.... (and that) even for the fluent reader, poor attitude may occasion a choice not to read when other options exist, a condition now generally known as a literacy. (p. 934)

The “beliefs about the outcomes of reading” sections of the model suggest that students’ beliefs about the outcomes of reading do influence their attitude. These beliefs may have their origins in the environment or they may be the memory of actual reading experiences, which McKenna has indicated to stem from the “metacognitive state” to “beliefs about the outcomes of reading”. McKenna considers that “This recursive, cumulative process suggests that the recurrence of dissatisfying results will lead to successively worsened attitudes. Conversely, a succession of positive experiences may result in more positive attitudes, but only if environmental factors are positive” (1994, 34).

Despite the complexity of McKenna’s (1994) model, the present study focuses only on cognitive and affective aspects of reading attitude components which address both L1 and L2 reading attitude constituting. And for this purpose, it attempts to construct an instrument that measures both L1 and L2 reading attitudes in a similar manner.

## 4. Learning Styles

One of the major differences between traditional methods of teaching and more modern ones is that teaching methods at present always struggle to better accommodate learning styles or individual differences among learners (Wu and Arabah, 2009). The term 'learning style' has been used to describe an individual's natural, habitual, and preferred way of absorbing, processing, and retaining new information and skills (Oxford, 1998). Learning styles might consequently influence the learner's response to different methods of delivering language in EFL classroom. A broad range of learning styles has been mentioned in the literature. For instance, people who favorably perceive things through seeing would fall into a group called 'visual' learners. Other people, who seem to learn best upon hearing something once or twice before they know it, may be called 'aural' learners. For others, who are referred to as 'kinesthetic' learners, they learn best when a physical action is added to the learning process. In contrast to these perceptually-based learning style differences, considerable research has focused on a cognitive learning style distinction between analytic and global learners. An analytic learner likes to analyze language elements in detail, while a global learner is believed to prefer learning through global exposure to a second/foreign language. For example, in dealing with a new text, an analytic learner might search for small details and try to follow accurately the precise relationships between different parts of a text, while a global learner might prefer to predict and infer to get an overall understanding of the same text. There is also a similar difference between the cognitive learning styles of field-independent and field-dependent learners. The distinction between these cognitive learning styles refers to whether an individual tends to separate details from the general background or to see things more holistically.

### 4.1. The roles of learning styles

According to several recent research findings, two things most language teachers realize are 1) their main role in the teaching proportion is to provide better conditions for learning and 2) individual differences among learners can impact learning processes and teaching procedures. In research area, understanding the ways in which learners differ from one another has become of fundamental concern to those involved in EFL teaching/learning, either as teachers or researchers. A number of research address individual differences, putting focus on factors such as aptitude, motivation, attitudes, personality, and then to establish correlations between these factors and second language proficiency (Lightbown and Spada, 2006). Research findings on studies of learning styles have shown that an understanding of learning



styles create optimal learning conditions in the language classroom (Lincoln and Rademacher, 2006). Reid (1998) also indicated that if language teachers know more about how various students learn new materials, they will make better decisions on both content and in-class activities.

#### **4.2. Reading and learning styles**

Extensive research shows critical relationship between reading achievement and learning styles. Kaley (1977) postulated the importance of learning styles by saying that it is a better predictor of reading achievement than IQ and learners are believed to be able to improve their reading achievement significantly when taught through their preferred individual learning style. Another theoretical construct that can attribute to the assumption is the immediate environment. Several researchers agree that the immediate environment seems to produce a biological reaction in some students that can encourage or discourage learning, depending upon how much the student's learning style is accommodated. For instance, students have read significantly better when the amount of sound and light match their learning style preference (Pizzo, 1981). Many research findings, especially Krinsky (1982), reported that students achieved higher reading comprehension scores once they were exposed to their preferred setting, i.e. noisy or quiet, dim or bright light. The reason lies on the fact that when students are comfortable within their learning environment, they are likely to absorb and retain information and concepts more easily and efficiently. Carbo (1983) and Carlson, Hoffman, Gray and Thompson, (2004) suggested that one possibility to improve reading environment for reluctant readers, based on the variety of learning styles in most classrooms, is to take advantage of slow background music.

In addition, perception seems to be one of the learning style elements of greatest importance, research on perception and reading indicates that reading performance is strongly related to perceptual ability (Carbo, 1983). It has been reported that good readers prefer to learn through their visual and auditory senses, while poor readers have higher preferences for learning tactfully and kinesthetically in an informal design (soft chairs, rugs, pillows). Also poor readers have difficulty shifting between and integrating auditory and visual stimuli (Dunn, 1981, cited in Carbo, 1983).

Research comparing learning styles across achievement level, corresponding to Dewey's construct (1916, cited in MaCarthy and MaCarthy, 2006) that all learning require the transactional interaction between the individual and the environment,

indicates that many poor readers seem to need a structured reading program (time limits, specific choices, clear directions, work checked immediately). Such programs should rely on some interaction with peers and consistent feedback from teachers, apart from well-organized relaxed reading environment (Carbo, 1983). As another advocacy of the idea, Farrell (2009) pinpoints the cases of learning styles as determined by culturally affected differences where Anglo students are less willing to speak alone in front of their peers, when asked by the reading teacher, and to work in small groups than Asian and native American students.

## 5. Reading and Hemisphericity

The correlation between reading proficiency and the two hemispheres of the brain has been reported and mentioned in several research studies. Kimura and her colleagues (1993, cited in McCarthy et al, 2002) have indicated that hemispheric specialization, especially left dominance for language, “emerged more due to the evolution of certain motor skills” that lend themselves to communication. This is contrary to the right hemisphere which is responsible to the ability to manipulate spatial relationship. A number of evidences reviewed by Springer and Deutsch (1993) suggest that hemispheric asymmetric are innate and shaped further by the demand and input to the brain. According to the two researchers, each hemisphere processes and possesses different characteristics as follows.

<i>Left</i>	<i>Right</i>
Verbal	Nonverbal
Digital	Visual-Spatial
Sequential	Simultaneous
Rational	Analogical
Logical	Intuitive
Convergent	Divergent
Deductive	Metaphorical
Realistic	Imaginative
Directed	Free
Explicit	Tacit
Objective	Subjective
Successive	Random
Abstract	Concrete
Analytical	Holistic

A correlational study comparing the learning styles of good and poor readers conducted by Price, Dunn, and Sanders (1980) demonstrates that the two groups differ significantly in terms of hemispheric preference. After administering the hand-scorable hemispheric test to a group of students, they discovered that 85% of the poor readers were classified as right-brain-dominant learners. The cause of the problem seems to stem here as the activities in most language classes, especially reading, are organized in the way that the left dominants are accommodated, while the right dominants are isolated. Carbo (1983) suggests that, so as to resolve the problem of one-brain dominance, reading instruction should initially include holistic reading approaches (such as language-experience). And when teachers integrate the abilities of the two hemispheres so as for the most adaptive processing to be brought to bear on the learning situation, learner motivation and performance will improve.

## **6. 4MAT System**

### **6.1. Background of 4MAT System**

4MAT System is a teaching model featuring learning styles to create a balanced model for planning instruction that cycles the learner through for major learning styles (Nicoll-Senft and Seider, 2010). The model combines the fundamental principles of John Dewey (Experiential Learning), Carl Jung (Theory of Individualization), David Kolb (Experiential Learning Cycle), and Anthony Gregorc (Gregorc's Style Delineator), 4MAT was constructed on the four-factor learning style models of Gregorc and Kolb by integrating learning styles with brain-based processing strategies. The model provides an assumption that individuals learn in different ways and "that engagement with a variety of diverse learning activities results in higher levels of motivation and performance. 4MAT is grounded on the belief that "individuals learn primarily in one of four different but complementary ways based on how they perceive and process information" (McCarthy and McCarthy, 2006).

An important construct upon which 4MAT is based is hemisphericity, the practice of systematically balancing teaching activities that equally address linear and holistic thinking. According to Springer and Deutsch (1993), the most widely researched and cited characteristics used to describe linear and holistic thinking are, for linear thinking: verbal, digital, sequential, rational, and logical; and for holistic thinking: nonverbal, visual-spatial, simultaneous, analogical, and intuitive.

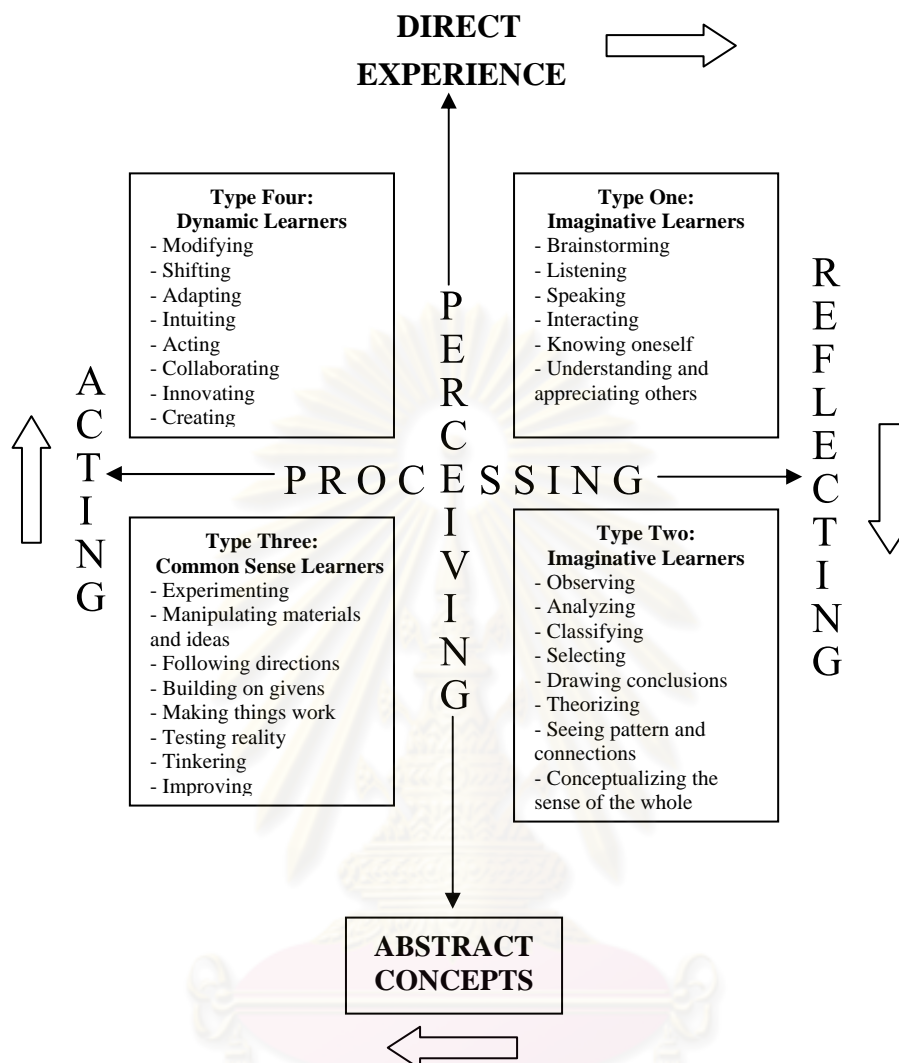
The principles of hemisphericity are that (1) individuals have at their disposal two complementary methods for approaching and processing information and experiences; (2) adequate engagement of both methods, described in the literature as linear and holistic thinking, results in deepened levels of personal understanding; and (3) engagement of both hemispheres of the brain, usually described as “whole brain” learning, has significant implications for designing instruction and understanding human learning (McCarty et al, 2002).

## **6.2. Four types of learners**

The 4MAT System views learning as a natural sequence which progresses sequentially from Quadrant one through Quadrant four experiences. If an instructor includes all types of learning in the classroom, then each student has a better chance of comprehending the material. Movement around the circle is a natural learning progression. Humans sense and feel; they experience, they watch; they reflect, then they think; they develop theories, then they try out theories; they experiment. Finally, they evaluate and synthesize what they have learned in order to apply it to their next similar experience. Based on the McCarthy model, a reading teacher seeking to develop strategies and skills needed among their students should seek to accommodate the needs of diverse learning styles.

4MAT identifies four interrelated learning styles based on a continuum of how we perceive and process new information. Our individual learning style results from where we naturally fall on these continuums. McCarthy has identified these learning styles as Imaginative Learners (Type One Learners); Analytic Learners (Type Two Learners); Common Sense Learners (Type Three Learners); and Dynamic Learners (Type Four Learners). The following Figure 2.1 shows a brief description of these learning styles from both learning and teaching perspectives (Nicoll-Senft and Seider 2010; Harrison, 2000; McCarthy and McCarthy, 2006).

**Figure 2.2.** McCarthy's Four Types of Learners



Imaginative Learners (Type One) learn best through personal experience, a combination of sensing, or feeling, or watching. They benefit from opportunities to find meaning in what they are learning and they enjoy discussing their beliefs, feelings, and opinions with others. They are reflective in nature and learn primarily through dialogue. They are keen on perspective taking and, in an attempt to find personal meaning; they often ask the question “Why?” These learners must understand how learning is associated to their values; thus, they seek meaning and clarity.

Analytic Learners (Type Two) prefer to learn through a combination of watching and developing theories and concepts. They often learn best in a traditional classroom setting. They prefer sequential thinking and thorough details. They enjoy reflecting on new ideas and connecting new learning to other information they know to be true. They tend to be cautious and hard-working, and find ideas intriguing. For

them, the most important question is “What?” Their right hemisphere seeks to integrate new experiences with what they already know, while their left hemisphere seeks that new knowledge.

Common Sense Learners (Type Three) learn by doing and trying things out for themselves. When presented with new information they immediately focus on practical applications. They are active learners, preferring to get right to work in the classroom. Their right hemisphere seeks applications for what they learn, while their left hemisphere asks the more general “What have other people done?” question. This group dislikes assignments that do not have an obvious purpose or application. They learn best when provided with hands-on, experiential learning opportunities. For these learners, the most important question is .How does it work?

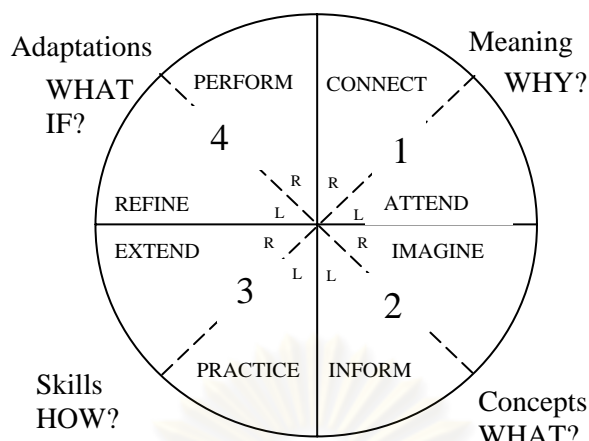
Finally, Dynamic Learners (Type Four) are active learners who learn best by doing and sensing and feeling. They enjoy taking risks and learn primarily through self-discovery. They like to connect their learning to things that matter in their lives. Their right hemisphere develops extensions of their learning while their left hemisphere seeks to analyze learning for relevance and significance. These learners ask the question “If?” as they enjoy synthesizing information and applying their learning in new ways.

4MAT sequences these four approaches in a framework that reflects the natural learning cycle. First, the teacher connects personal experiences of the learners to the targeted teaching concept. This is followed by systematic teaching of the content matter. Next, students are provided with guided practice and application. Finally, students are given opportunities to integrate and synthesize their new learning.

### **6.3. Eight steps of 4MAT System**

Because the learners may fall into one of eight categories, McCarthy recommends incorporating all eight areas into the teaching process. Teachers need to be aware that they have a preferred style and work to include other styles. McCarthy stresses the inclusion of both left and right brain activities, but also recommends that the teaching be structured around the learning cycle, which is inclusive of all of the learning styles. The 4MAT system provides a circular template with eight pie wedges designed to cover four Quadrants, each of which is subdivided into two steps to serve left and right brain modes. McCarthy and McCarthy (2006) summarized all eight steps of 4MAT cycle as in Figure 2.3 below:

**Figure 2.3. The eight steps of 4MAT Cycle**



#### Step One: Quadrant 1 Right

The first step of 4MAT System is designed to engage the learner in a concrete experience which leads to a search of prior knowledge and prior experience. Learners experience and compare their perceptions of their existing state of knowledge and work cooperatively to create an overall learning set from which to proceed. In this step the teacher encourages diversification of ideas, dialogue and participation. This step is designed to encourage relational, symbolic thinking which is a right hemispheric function.

#### Step Two: Quadrant 1 Left

The second step is designed to add process judgment to the perceptions generated in step one. In this teaching set, the teacher engages student reflection upon their existing level of their knowledge and experience to determine if their opinions and beliefs are supportable. In quadrant one (right and left) the goal is engagement. This phase of 4MAT Cycle emphasizes left hemispheric thinking and therefore has as its goal the imposition of structure.

#### Step Three: Quadrant 2 Right

Step three is designed to create a context for the learner to represent the subjective nature of his/her existing knowledge as a preparation for the validation and analysis of ideas. In this step learners are encouraged to symbolize, in as many modalities as possible, their present state of understanding of the subject matter. Image making, central to this step, is a right mode activity. The emphasis here is the expansion of representations of meaning. However, this step requires the learner to begin to shift from reflective experience to reflective thinking. The teacher's role here is to draw attention to aspects of structure and objectivity implicit in the students representations of what they know.

#### Step Four: Quadrant Two Left

Step four of 4MAT System engages students in objective thinking. The emphasis here is analysis of verifiable concepts, facts, generalizations and theories. The role of the teacher is to present information and experience in complete and systematic ways. The good “two -left” lecture builds upon the personal connections established in quadrant one to foster conceptual thinking. This is a left mode teaching set. This step is McCarthy’s application of Kolb’s abstract conceptual, reflective mode as well as Jung’s thinking function.

#### Step Five: Quadrant Three Left

In step five of the 4MAT System the emphasis shifts from acquisition and assimilation to testing and adaptation. Students now take the lead to apply what has been taught. In quadrant three left the goal is reinforcement and diagnostic evidence of the student’s ability to apply the concepts taught. The teacher’s role here is coaching and assisting as students refine their ability to find applications of their ideas. This teaching set engages Kolb’s abstract concepts in action and Jung’s extroverted sensing functions. It also models Dewey’s idea that knowledge must be tested in the environment. Because the emphasis of this teaching/learning set is left mode, correct answers and student products which demonstrate their ability to apply the concepts are important here.

#### Step Six: Quadrant Three Right

Step Six of 4MAT System exemplifies John Dewey’s idea of the student as a scientist. In this learning set the student tests the limits and contradictions of his/her understanding. The teacher’s role is to encourage students to take the application of learned ideas to more sophisticated, personal levels. Students are encouraged to develop their own applications which demonstrate that they understand and can apply what has been learned. Project work is the essence of this phase of the 4MAT Model. The right mode emphasis in this learning set is designed to encourage students to create personal applications their experiences with the ideas learned.

#### Step Seven: Quadrant Four Left

Step seven requires the learner to critically examine the place of the newly acquired knowledge and experience in his/her existing world view. The central issue here is what new questions do I have and what must be done to integrate this learning into a meaningful conceptual subset. Working alone or preferably in pairs and triads, learners in this learning set edit and refine their work. They also face and resolve contradictions implicit in the tension between new and earlier schema. The teacher’s role here is to guide the refinement of the old schema and encourage the formation of a more complete perspective.



### Step Eight: Quadrant Four Right

The essence of step eight is integration, celebration, and closure. In this last learning set, the learner returns to the place where he/she began, the self, and integrates the learning experience into a slightly different, personally held world view. This is the step where students' performances are seen, presentations are given, and connections are made to bigger ideas. The teacher's role is to join in the celebration and facilitate entry into the next unit of study. The main activities in eight steps of 4MAT System are shown in Figure 2.3.

**Figure 2.4.** Activities in eight steps of 4MAT System

Step	Hemisphere	Quadrants	Activities
<b>EXPERIENCING</b>			
Step One <b>Connect</b>	Right	Q1	Engage the learner in the experience. Exposing the learner to the new information, giving them a puzzle to solve, or relating it to a personal experience can do this. This session arouses the learner's interest in the topic.
Step Two <b>Attend</b>	Left	Q1	This session has the learner reflect on the experience of step one. In it, the information is analyzed, which is a favored left brain activity.
<b>CONCEPTUALIZING</b>			
Step Three <b>Imagine</b>	Right	Q2	The student does something to imagine or picture the concept in a non-verbal way. Examples include drawing, modeling, and mind maps.
Step Four <b>Inform</b>	Left	Q2	In this step, the learner learns concepts and skills. This may be a teacher lecture, or student reading and research. The teacher provides sources of information for the student.
<b>APPLYING</b>			
Step Five <b>Practice</b>	Left	Q3	In this step, the learner works with the content through exercises, and opportunities to use the new information.

Step	Hemisphere	Quadrants	Activities
Step Six <b>Extend</b>	Right	Q3	During this phase, the new information is applied to more complex experiences, such as a project. It often incorporates group activities. Learners look for ways the information personally impacts themselves.
<b>CREATING</b>			
Step Seven <b>Refine</b>	Left	Q4	In this step the application created in step six is evaluated, and other areas of application are determined. Any errors in learner information are discovered and refined for accuracy here.
Step Eight <b>Perform</b>	Right	Q4	In the final phase, the new learning is presented/shared with others and there is some acknowledgement of the process of learning.

#### 6.4. Roles of teachers

Another unique feature of the 4MAT system is the role that the teacher plays. In traditional classrooms, the teacher is the imparter of information, and the students are the receptacles. In the 4MAT system, the teacher changes his role while proceeding “around the circle” along the four quadrants. In Quadrant Two, for example, the teacher’s role is quite conventional- as Information Provider. On the contrary, in Quadrant Four, the teacher becomes the Evaluator/Facilitator, providing an atmosphere of freedom to get students to discover by doing and challenging them to observe, analyze, and share, apart from helping some who need more direction. Thus through the progression of the model, the teacher uses a broad knowledge of learning styles and specific methods to teach his students. In other words, the model provides a tool for employing the varying instructional modes.

This knowledge about the specialization of 4MAT has led to several hypotheses about how reading instruction might be improved. In this regard, the underlying principles of 4MAT can be drawn the as follows:

## 4MAT System Principles

1. People have major learning style and hemispheric (right mode/left mode) processing preferences.
2. Designing and using multiple instructional strategies in a systematic framework to teach to these preferences can improve teaching and learning.
3. Accommodating, as well as challenging, all types of learners by appealing to their accustomed learning styles while stretching them to function in less comfortable modes results in higher levels of motivation and performance.
4. Learning always involves a cycle that begins with concrete experience, and moves through abstract conceptualization and experimentation to assimilation.

## 7. Background Music

In recent years, newer research in background music is shedding more light on its effect on moods, emotions, and behaviors. A number of writers have discussed the functions of music (Radocy and Boyle, 1988; North and Hargreaves, 1997; Hallam, 2001). As used as one learning modality, music has come to be considered as lying on a range from stimulating and invigorating to soothing or calming (Hallam, Price and Katsarou, 2002).

### 7.1. Music and academic achievement

A number of studies over the past years have demonstrated that relaxation positively affects academic success as it can facilitate change in physiological states in the body that lead to more effective performance of the brain (Blanchard, 1979; Kiger, 1989; Hepler and Kapke, 1996). Studies show that background music has intriguing effect on memory. One example is Mozart's music and baroque music, with a 50-to-60-beat-per-minute pattern can activate the left and right hemispheres of the brain, which can maximize learning and information retention. The information being studied activates the left mode, whereas the music stimulates the right mode, causing the brain to be more capable of processing information. According to a recent research (Smith, 2001), participation in a relaxed setting is of overriding importance to learning to read, as well as acquiring other language skills. Besides, listening to classical music before taking a test can help students improve their test scores significantly since this type of music releases neurons in the brain which help the body to relax.

In terms of memory, and information retention, background music can prove effective as seen in Lozanov's studies where students could learn up to 1,000 new words/phrases in one day through baroque music with 92% average retention rate. This corresponds to another study done in 1982 at the University of North Texas, of which the result shows that vocabulary memorization and recall are better through Handel's Water Music. One explanation is that music itself is not a part of learning process; however, it enters memory along with the acquired information. The findings imply that recall is better when the same music targeted for learning is used during recall. Also, tempo seems to play a key role of music's effect on memory (Anderson, Henke, McLaughlin, Ripp and Tuffs, 2000, cited in Carlson, Hoffman, Gray and Thompson, 2004)

In addition to brain maximization and vocabulary memorization, many components of music can have a calming effect. Blanchard (1979) found that playing soft lullaby-like music during a classroom examination dramatically helped lower blood pressure, resulting in significantly higher scores and better attitudes for participating students.

## **7.2. Music and reading**

As for reading, the benefit of using background music in reading class is also advisable. Hallam, Price and Katsarou (2002) found that performance on reading comprehension tests was significantly improved when background music was playing. There were also 'settling down periods' at the beginning of the morning and afternoon sessions and a mid-afternoon fatigue period when music was of greatest assistance. Another study featuring a vibroacoustic music chair combined with the 50-60 beats per minute of music indicates student's improved reading performance beyond the expectation of a reading program alone. Besides, better attitudes towards reading caused by relaxation were also reported (Carlson, Hoffman, Gray and Thompson, 2004).

Regarding the type of music, Kiger (1989), studying older pupils aged 15 years who read a 1450-word passage on Japanese history with high or low information load music or no music in the background, attempted to categorize music in terms of stimulation offered, arguing that slow, soft, repetitive, low-information music provides optimally arousing conditions. Kiger measured information load by categorizing rhythmic complexity, tonal range and repetition, and found that reading comprehension scores were significantly higher in the low information load condition

(instrumental music) than in the silent or high information load conditions (music with lyrics).

### **7.3. Music and Emotions**

The question of the connection between music and emotions has lingered on and been studied since a long time ago. Musical meaning is often related to emotions, and music is spoken of as the language of emotions. Have (2008), using the arousal theory, pinpointed how music can generate emotional reactions in the listener. It is postulated that, when hearing is activated by a sound hitting the eardrums, it causes a state of attention, an arousal. The consciousness becomes aware that something has happened. The hearing then focuses on the occurrence and attention is increased and maintained by an emotional response. Music, as arousal, demonstrates itself as physiological changes in the neural system, several of which can be measured. In the course of an arousal, electrical resistance in the skin is lessened, pupils expand, breathing becomes either more rapid or slower and unstable, blood pressure and heart rhythm tend to rise and there is an increase in the tension of the muscles, which is often accompanied by physical restlessness. Furthermore, sweat condensation and finger temperature also become lower.

According to a number of research results (Krumhansl, 2002; Gunter 1995), there are relationships between people's emotional experience caused by music and physiological reactions which can be measured. One of the results showed that sad music caused the greatest changes in pulse, blood pressure and finger temperature, for example. Music which was described in terms of the emotion of fear showed the greatest fluctuation in blood flow, and happy music had the greatest effect on breathing. However, the results did not accord with investigations of the physiology of non-musical emotions. A feeling of happiness not caused by music does not show the same changes in breathing as the feeling of happiness caused by music. In another research, Gunter (1995) conducted a similar study and found that music containing 60 beats per minute (the ideal resting heart rate for humans) produced relaxing effects in students. Gunter speculated that music which allows listeners' heartbeats to slow down to a rate of 60 beats per minute will enhance relaxation and possibly lead to the ability to focus and concentrate more effectively. These findings have confirmed the more relaxed physiological states as an effect of musical emotions.

#### **7.4. Music and classroom management**

As noted by Raucher (2003), music is a tool that can be used to help teachers achieve effective and efficient classroom management. The calming effects of music have positive effects on the students when it is introduced into the classroom. Creating a classroom that has low anxiety and stress levels is important to classroom management. Music can help to keep the levels of tension and stress to a minimum. When music is played in the classroom it can help to change the mood. Specific types of music can be played to illicit the desired mood. Calming music can be played when the mood is too intense, and if the students are lagging a more upbeat genre of music can be implemented to increase their energy.

Additionally, music has the power to keep students engaged and reduce discipline problems within the classroom. The inclusion of music in lessons tends to enrich the material and provide more meaning to the lesson. When the learners are more engaged and interested in the lesson, they will stay focused for longer and retain more information. The students will not have as many discipline problems when they are engaged. The learners will be focused on the lesson and disruptions will simply subside. Jackson and Joyce (2003) contend that maintaining positive classroom management calls for music by making the day more alive and interesting. This in turn leads to increased learning and decreased discipline problems.

#### **7.5. Music and Foreign Language Acquisition**

Learning a second language can be a stressful and difficult process. There are many techniques and strategies that foreign language teachers use in their classrooms to aid in the acquisition of the second language. Creating an environment that has a low affective-filter, meaning minimal stress and non-threatening, is essential for second language learning to take place (Anderson, 2000). In addition, second language learners need devices to engage them and allow for retention of the second language. Music is a common technique used by foreign language teachers because it has many benefits that apply to the foreign language classroom.

According to Krashen's Input Hypothesis, input must be comprehensible for language learners to retain the information. Within his Input Hypothesis, Krashen developed the "Monitor Model" which offers five hypotheses regarding language learning. The fourth hypothesis deals with comprehensible input. The hypothesis states, "Acquisition occurs only when learners receive optimal comprehensible input

that is interesting, a little beyond their current level of competence. This means that the level of linguistic content that the students receive must be at their level or slightly above in order for learning to take place. Chunking, or dividing language up into smaller, comprehensible parts, can aid in language learning. “Through word / sound play, many “chunks” of useful language can be incorporated into the learner’s linguistic repertoire at almost any age or proficiency level” (Anderson, 2000).

Using music in the foreign language classroom corresponds with Krashen’s Input Hypothesis. Music tends to reduce anxiety and inhibition in second language learners. Learning a new concept through a song or listening to music is less threatening than a lecture or worksheet. Music breaks down barriers and creates an environment that is friendly. In addition, music corresponds to the portion of the hypothesis which states that input must be meaningful. This, in turn, provides for a connection between the second language and the student’s perspective. Creating relevance for the student is necessary for learning to occur.

#### **7.6. Mozart effect**

The Mozart Effect is the result of research findings. A study, conducted by Raucher (1993), was done in which 36 college students listened to Mozart’s sonata for two pianos (K448) for ten minutes. After listening to the music, the participants scored higher on spatial-temporal tasks, as measured by the Stanford-Binet IQ test. As summarized by Raucher, this research suggests that Mozart’s music has positive effects on the brain and its functions.

While the above study focused on adults, Blanchard (1979) discusses the “Mozart Effect for Children”. Routier discusses the impact that Mozart’s music has on the brain and learning. Her findings are particularly interesting for educators because this knowledge can help teachers incorporate music into their lessons to achieve a higher quality of learning.

There is a connection between music and the brain. “Music’s physical vibrations, organized patterns, engaging rhythms, and subtle vibrations interact with the mind and body in many ways, naturally altering the brain in a manner that one-dimensional rote learning cannot” (Blanchard, 1979). When children listen to Mozart’s music, it temporarily heightens spatial awareness and intelligence. It is shown that when listening to Mozart’s music there is an increase in concentration and speech abilities, an improvement in reading and language skills of those who listen to

music regularly or receive music instruction, and evidence that SAT scores are much higher in students who sing or play an instrument. In addition, music is a set of processes and patterns. By listening to or playing music regularly it helps in the development of the processes and patterns of the brain. Mozart's music, which is similar to Bach in terms of the emphasis on the average power of particular notes, shows a connection between music and reading, writing, memorization ability and mathematical skills.

This knowledge about the specialization of background music has led to several hypotheses about how reading instruction might be improved. With this in mind, the underlying principles of the background music can be drawn as follows:

### **Background music principles**

1. The introduction of background music into the classroom setting has a calming influence on learners and can improve attitudes and performance on reading tasks.
2. Music with fewer beats per minute, rather than upbeat, fast music, plays a positive role in the performance of participants on reading comprehension tasks, prose recall tasks, and pondering.
3. Readers, staying focused and relaxed in class, can perform better when background music is played along with their reading.

### **8. Instructional model**

Educators and researchers investigate what is meant by the terms instructional model, model of teaching, and instructional design (Joyce and Weil, 2000; Reigeluth, 1999; Seels and Richie, 1994). Joyce and Weil (2000: 6-7) define instructional models as models of learning which can help students acquire information, ideas, skills, values, ways of thinking, and means of experiencing themselves. They are the instructional tools the outcomes of which address the students' increased capacities to learn more easily and effectively.

On the other hand, instructional design is a construct referring to the principles and procedures by which instructional materials, lessons, and whole systems can be developed in a consistent and reliable fashion. Reigeluth (1983) characterizes his views on instructional design as blueprints about methods of instruction, whereas instructional development optimizes the process of developing the instruction and encompasses design, implementation, and formative evaluation activities. The



principles and procedures can be applied to guide designers to work more efficiently while producing more effective and appealing instruction suitable for a wide range of learning environments (Gustafson and Branch, 1997).

In this aspect, it can be seen that the relationship between the model of teaching and instructional design is syntactically drawn as instructional design theories and principles are put into practice by being embedded in procedural guides or protocols for instructional development (Reigeluth, 1999). These often take the form of instructional systems development process models which encompass the following components:

1. **Opening:** The opening of the lesson sets the stage for what is to follow. The anticipation that is created motivates students and activates their interest. An effective opening activates students' schemata by tapping into their prior knowledge and making connections to new learning. The lesson opening, therefore, should be structured to help students recall what they already know, understand the relevance of what they will learn, and be aware of what they will know and be able to do as a result of the learning activity. In other words, students should consciously connect new learning to previous learning. The teacher facilitates this process through effective opening activities (Jensen, 2000).

2. **Teaching strategies:** Teaching strategies are selected based on the type of content to be taught and the needs and abilities of the students. Teaching strategies are what the teacher does to develop background and set the stage for the learning activities students will engage in. Strategies may include demonstrating, modeling, explaining, and questioning. The input provided at this point gives students enough information to proceed confidently with the learning tasks. It does not preclude exploration and discovery on their part.

3. **Student activities:** To learn, a student engages in some activity. The teacher selects or develops an instructional activity that "fits" the learning standard and the students' needs and abilities. The teacher must be selective. Whether simple or complex, effective learning activities enable students to reach specified standards. Several aspects of learning must be considered as learning activities are developed. Whether or not students are interested in an activity has an impact on their motivation to complete the activity, which affects their attention to the task and how much learning they will retain (Shrock, 1995).

4. **Describing learning activities:** The wording of the learning activity guides the students in the learning task. Therefore, a critical part of instructional planning is the description, explanation, or directions for a learning activity. The wording of the description is carefully chosen to convey precisely what students are to accomplish.

Selecting appropriate terminology for the learning activity is necessary to design coherent and organized instruction. The key word in the description of an instructional activity is the linchpin and, therefore, must be carefully chosen. The key word is a verb that indicates the action of the student in the learning process.

5. Closing/Summary/Reflection: When one connects new learning to prior knowledge, one's mental map of information, concepts, skills, processes, attitudes, values, and beliefs related to a topic is expanded. This mental map is the schema or linked collection of related thoughts and ideas and is the operating base within which new information is integrated. Reigeluth (1999) states that reflection is the partner of experience. Reflection and experience lead us to construct meaning. It is therefore important that students have opportunities for metacognitive processing throughout, and especially at the conclusion of, a learning experience.

To develop an instructional model, Tissana (2005) proposes the steps on the basis of instructional system design as follows:

1. Determining the clear objectives of the model development. This is vital as the objectives function as the target of the model and, at the same time, serve as the framework of the whole model.

2. Studying related principles, theories, and approaches to determine the components and their organizing framework of the model. For an instructional model, the underpinning principles and theories lend themselves as the base of the model. The true understanding of the principles and theories can help the teachers and model developers to systematically organize all components of the model.

3. Studying the phenomenon where the problems prevail so as to strengthen the model in terms of its effectiveness upon implementing. Through the careful study of related factors, the teachers and model developers can anticipate problems that may arise along the line of developing process.

4. Determining the components of the model by considering all related factors. This step is done through the developer's experiences and statistical validation. The step is significant as it combines both experiences and creativity of the developers and paves the way for the model to proceed to its final goal.

5. Organizing and classifying the components into groups. This is also important as when similarities and differences of the components are seen and placed, into categories, it would be simpler for the model developers to process and prepare them for the following steps.

6. Systematically organizing the components on the ground of causes and effects, as well as priority sequencing. This step calls for thorough planning and care as the causal-effect relationship of all the components is investigated. The developers

have to take all the factors involved into notice in light of their priorities and parallelism.

7. Transcribing the organized concepts into flowcharts which consist of inputs, productivity process, monitoring mechanism, and feedbacks. This flowcharts or diagrams reflect the synthesis of the ideas and their organization in the steps above, all of which help explain the developed instructional model in the more concrete ways.

8. Piloting the developed model to verify its effectiveness. No models can be proved effective without their implementation. The results from this piloting stage: good points, weaknesses, and problems will be evaluated and lead to the revision of the instructional model.

9. Evaluating the developed model on the ground of its predetermined targets. During this step, the developers take the results of implementation into consideration and analyze strength and weaknesses, including the arising problems that keep the model from reaching its determined goal. The analysis will yield the insight in terms of causes which bring about those impediments.

10. Revising the model by means of the piloting results. During this step, the developers set aside the obstacles along the line of the instructional process. Other intervening variable that may affect and impede the accomplishment of the model will be controlled so that it can reach its goals as planned.

In terms of designing effective reading lessons, Farrell (2009) postulates that one of the most important concerns for teachers is how to make their classes interesting and relevant for their students. This is not an easy concern to address, because students have such diverse interests, which affects their personal motivation upon reading. And as many programs may have prescribed materials and texts and teachers have to use these materials regardless of their students' preferences. The following principles (Richards, 1990) are worth considering when developing lesson plans for a reading class:

1. Choose appropriate reading materials. It is important for teachers of reading to L2 students to take some time also to reflect on the materials or texts their students are asked to read. This is because materials can be used to support and enhance techniques and strategies that teachers focus on within a reading lesson. It is obvious that in many cases the textbook may have already been chosen by the school/university as in a set curriculum. However, teachers can certainly adapt these materials to their own particular needs. They can also choose supplementary reading materials, depending on the needs of their students and the purpose of the reading class.

When choosing a specific reading passage for L2 students, Day and Bamford (1998) suggest that the most important decision teachers consider is the level of interest their students have in the topic of the passage. In fact, according to Nutall (1996, 29-30) the single most important factor for the success of a reading class for students is choosing passages that are interesting, and she says that this is “more critical than either the linguistic level of the text or its exploitability”. Nutall (1996) thus recommends that the teacher of reading should attempt to discover if the passage will, aside from telling students things they do not already know, introduce them to new and relevant ideas or make them think about things they have not thought about before, help them understand the way people feel or think, and make them want to read for themselves.

2. Make reading the major activity of the reading lesson. Some teachers have a habit of standing in front of their classes and spending the majority of class time just talking about reading, while their students do not get any time to practice reading. Reading classes should have a sustained period of actual reading, during which writing, speaking, and listening are not overwhelmingly emphasized. Obviously, integrated lessons with appropriate proportions of language skills will take place when the teacher orally presents pre-reading activities, and students may be given post-reading activities that include writing, speaking, and listening.

3. Have a specific objective for each lesson. Each reading lesson should have some specific objective that can be achieved during that lesson. This could be as simple as getting the students to use prediction in its various forms: predicting the story from the heading, predicting the paragraph from the topic sentence, or predicting the ending of the story after reading the introduction, and so on. The following elements of the learning unit should always be taken into consideration: language focus, topic, objectives, prior knowledge, and materials/equipment. All five aspects of lesson preparation are interrelated, and one cannot function without the other. For example, knowledge of the students’ prior experiences will influence what specific objectives the teacher will focus on, and this in turn will influence the materials that the teacher chooses to achieve the objective.

4. Use activities that allow students to bring their own experiences to their reading. Researchers suggest a number of reading strategies which address reading comprehension (Farrell, 2009; Aebersold and Field, 2002; Grabe and Stoller, 2002). Some of the strategies/activities, proved effective for reading achievement, include KWL, activating prior knowledge, using audiovisual aids, asking questions, word association, analogy/visual image, and mental imagery. These activities can be applied throughout the reading process as seen appropriate by the teacher.

5. Focus your instruction on teaching, not testing. The whole idea of teaching reading is to instruct students to be able to comprehend unfamiliar texts. It is, thus, of overriding importance for the teachers to bear in mind that they are teachers, not testers. It is not advisable for teachers to plunge students into a text in order to answer comprehension questions and then become frustrated at their inability to find the answers to the correct questions (Farrell, 2009). A testing focus will not generate independent, strategic readers. Testing or assessment has a place after students have been taught effective methods of comprehending the text (p. 76).

6. Divide lessons into pre- reading, during- reading, and post-reading phases. Teachers can introduce the lesson objective to the students at the beginning of the lesson and also encourage the students to activate their prior knowledge on the topic. This can be achieved by having students skim or scan the passage in order to generally orient them into the lesson. Next, the lesson should focus on the instructional objective, teaching a strategy or practicing a strategy already taught, and this should take up the majority of the class time. After the students have read and focused on the main part of the lesson, some closure is necessary to ease them out of the lesson. At this stage of the reading lesson, teachers can evaluate whether the lesson has been effective or whether it needs further reinforcement in the form of assigned homework (Farrell, 2009).

## **9. Related Research**

Related research in this present study encompasses those recent studies in five arrays: reading comprehension and strategies, vocabulary ability, reading attitudes, background music, and 4 MAT System, both in foreign countries and in Thailand.

### **9.1. Reading comprehension and strategies**

The keyword strategy has been found, through research, to be useful in improving students' ability to comprehend. De Courcy and Birch (1993) conducted research through open-ended interviews, observation, and think-aloud protocol with four Japanese students and found that the students mainly used keywords and inference as their reading strategies to comprehend the whole text. Fagan (2003) found that English as second language learners need the keyword strategy as a scaffold during the reading process. Some researchers found significant effects on reading comprehension, such as employing keyword strategies before reading. For example, O'Donnell, Weber and McLaughlin, (2003) found that students obtained high comprehension scores when they previewed materials and discussed keywords before reading.

Similarly, O'Connor, White, and Swanson (2007) hypothesized that repeated reading would have greater impact on improvements in rate and word recognition, and continuous reading would have more impact on understanding word meanings and comprehension. The purpose of this study was to explore whether practice improving reading rate would lead to improvements in reading comprehension. Participants in this study included 37 poor readers. Six struggling readers per class were separated into trios based on their fluency rate and assigned to either the control condition or the intervention condition (read-aloud practice group). Students in the intervention group practiced reading aloud under repeated or continuous reading conditions for 15 minutes of practice three times per week for 14 weeks. In the repeated reading group (RR) students read each page of text three times, while the continuous reading (CR) read more pages from the same text without repeating. Results of this study showed that students in the RR and CR conditions demonstrated greater growth when compared to the control condition on measures of reading rate and reading comprehension; however, no significant difference was found between the RR and CR conditions on measures of word identification, vocabulary, or comprehension.

A strong confirmation on the gain of comprehension resulted from instruction is seen. Scharlach (2008) investigated a new instructional framework titled, START (Students and Teachers Actively Reading Text) aimed at improving comprehension through modeling and scaffolding of eight important comprehension strategies during teacher read-aloud and independent reading. The purpose of this study was to evaluate the effectiveness of implementing a new instructional framework for enhancing reading comprehension. The participants of this study included five tenth-grade classrooms totaling 81 students. The intervention covered three following conditions: (a) control classroom- students participated in their regular read-aloud and independent reading activities, (b) strategy only classrooms (ST) - teachers modeled and scaffolded the use of metacognitive comprehension strategies and participated in independent reading time as usual, and (c) START classroom- teachers modeled and scaffolded the use of metacognitive comprehension strategies and students were taught to actively readtext and self-monitor their comprehension during independent reading. The results of this study demonstrated that students in the START classrooms made significantly higher reading comprehension gains on the Gates- MacGinitie reading comprehension test. In this study, the START framework was proven an effective method to enhance reading comprehension instruction.

Similarly, Pearman (2008) explored the effectiveness implementing a multisensory teaching approach through the use of CD-ROM storybooks to aid

comprehension. The purpose of this study was to investigate whether young students with different levels of reading abilities would perform higher on an oral retelling when given text at their reading level presented via CD-ROM storybook format rather than traditional print. Sixty-nine students participated in this study. Students were classified as low, medium, or high by their teachers from information gathered on the STAR Early Literacy assessment. Results of this study showed that retelling scores were significantly higher for students after reading electronic texts. This may be due to the fact that CD-ROM storybooks integrate sound affects and animations providing a rich context for reinforcing vocabulary and concepts. In conclusion, evidence from this study suggests that CD-ROM storybooks may facilitate reading comprehension for second grade students struggling with developing reading skills and strategies.

In Thailand, Areerug (2004) developed a reading instructional model based on reading strategies and collaborative learning principles with an objective to enhance reading learning outcomes of university students. The subjects of the study, two groups of the first-year university students were exposed to the treatment for ten weeks. The results showed that the experimental group had significant higher reading comprehension mean scores than the control group at the statistical level of .01. The mean scores of reading behaviors concerning the strategies used after learning through the developed model of the experimental group were higher than before learning through the developed model at the statistical level of .01. In sum, the combination of reading strategy teaching and collaborative learning principles framework in this study was proven an effective method to enhance reading comprehension of intermediate students.

## **9.2. Vocabulary ability**

A number of recent studies on vocabulary ability development have implied the variety of new, effective activities and instruction in the field. Alessi and Dwyer (2008) studied newspaper reading with vocabulary assistance among intermediate learners of Spanish. The purpose was to investigate whether reading a Spanish newspaper article either before reading, while reading, both, or without any such assistance would develop the students' vocabulary achievement. According to the result, reading performance was significantly better for students receiving vocabulary assistance during reading, but not for those receiving it before reading. Reading time of the newspaper article was less for students receiving pre-reading vocabulary assistance, but total lesson time (the pre-reading time plus reading time) was more for those students. Given the particular activities of this study, a vocabulary activity before reading appears to speed up reading without affecting comprehension, while

vocabulary assistance during reading appears to improve comprehension without affecting speed.

In the same line, Pulido and Hambrick (2008) investigated the relative contributions of experiential and ability factors to second language (L2) passage comprehension and L2 vocabulary retention. Participants included a cross section of 99 adult learners of Spanish as a foreign language enrolled in beginning through advanced level university Spanish courses. Participants completed a standardized reading proficiency test (Adult Basic Learning Examination, Spanish version) to verify a range in proficiency, a checklist and translation passage sight vocabulary test, and a written recall in the native language of the 4 passages that were read. Vocabulary retention was measured at 2 time intervals by a multiple-choice test of receptive retention of meaning of targeted vocabulary. Data were analyzed using structural equation modeling (SEM). Results revealed consistent support for the following model: (a) Language processing experience positively influenced L2 passage sight vocabulary; (b) L2 passage sight vocabulary positively influenced narrative passage comprehension; and (c) L2 comprehension positively influenced L2 vocabulary growth.

### **9.3. Reading Attitudes**

At present, educators turn to look at attitude more seriously as a drive that control behaviors in many aspects. In light of reading, Yamashita (2004) examined the relationship between both first language (L1) and second language (L2) reading attitudes, and learners' performance in L2 extensive reading. Four reading attitude variables were identified (Comfort, Anxiety, Value, Self-perception), both in L1 and L2, according to learners' responses to a questionnaire. Results of analyses using these four variables are summarised on two levels. First, the study supports the transfer of the affective domain of reading (attitudes) from L1 to L2. But L2 proficiency does not affect this transfer in the way in which the linguistic threshold hypothesis would predict if this hypothesis were applied to the affective domain. Since this hypothesis explains the transfer of the cognitive domain of reading (i.e., reading abilities and strategies), these findings suggest that cognitive and affective domains of reading relate differently in L1 and L2. Although the transfer of reading attitudes was generally supported, there were different degrees of transferability among different attitude variables: what learners think (Value) was more likely to transfer from L1 to L2 than what they felt (Comfort, Anxiety, Self-perception). Second, from a more pedagogical point of view, the positive feeling towards reading, both in L1 and L2, facilitated learners' performance in extensive reading. Merely thinking that reading



was beneficial to oneself does not represent a strong enough motivation. The study has thus demonstrated the importance of understanding learners' attitudes (particularly feelings) to reading both in L1 and L2 for encouraging L2 learners' involvement in extensive reading.

Following Yamashita's work, Lin and Lin (2009) investigated the effects of using e-books (or texts with multimedia support) in an extensive reading program (ERP) on EFL learners' attitudes toward reading in English. In a junior high school in northern Taiwan, 109 students from three intact classes were recruited in the ten-week ERP of e-books. Each class was introduced to a list of 140 selected e-books for the reading program; each student was then encouraged to read e-books after school, with the target of reading four e-books every week. The degree of changes in reading attitudes was assessed by using the reading attitude scale (Stokmans, 1999) before and after the e-book ERP. In addition, the teacher's class notes of the students' reading behaviors and reactions as well as their spontaneous oral or written feedback were analyzed to be triangulated with the quantitative data. The results showed that the e-books had positive effects on the students' attitudinal changes in all dimensions of reading attitudes, namely, utility, development, enjoyment and escape, as well as in all the cognitive, affective and conative components. The results also showed that the features of the e-books, especially oral reading, highlighting, animations and music/sound effects, were considered important to change attitudes. The implementation of interaction and learner control in the e-books guaranteed positive attitudinal changes as well.

#### **9.4. Background music**

Scope of music has stretched out, covering academic areas in the past decades. Several studies were done to examine new roles of music. Cassidy and Macdonald (2007) investigated the effects of music with high arousal potential and negative affect (HA), music with low arousal potential and positive affect (LA), and everyday noise, on the cognitive task performance of introverts and extraverts. Forty participants completed five cognitive tasks: immediate recall, free recall, numerical and delayed recall, and Stroop. Ten participants completed each of these tasks in one of four sound conditions: HA, LA, everyday noise and silence. Participants were also assessed for levels of introversion/extroversion, and reported their music/noise and study preferences. Performance was lessened across all cognitive tasks in the presence of background sound (music or noise) compared to silence. HA and LA music produced differential distraction effects, with performance of all tasks being poorer in the presence of HA compared to LA and silence, in the presence of noise than silence

across all tasks, and in the presence of noise than LA in three of the four tasks. Performance was moderated by internal arousal, with introverts performing better overall on each task except the Stroop, and appearing to be more detrimentally affected by the presence of HA music and noise.

On the other hand, De Groot (2006) examined the effects of three stimulus variables and background music on paired-associate learning of foreign language (FL) vocabulary. The stimulus variables were the frequency and concreteness of the native language (L1) words and the (phonotactical) typicality of the FL words. 64 L1-FL pairs were presented for learning six times, followed by a recall test after the second, fourth, and sixth learning round. A fourth recall test took place one week later. Typical FL words, FL words paired with frequent L1 words, and FL words paired with concrete L1 words were learned better than atypical FL words and FL words paired with infrequent and abstract L1 words, respectively. More learning occurred in the music condition than in the silent condition. The results implied higher academic achievement in terms of differences between memory representations of L1 words, differences in the phonological coding enabled by the FL words, and individual learner differences.

Likewise, Tze and Chou (2010) conducted a study to examine whether different types of background music affect the performance of a reading comprehension task in Taiwanese college students. There are two major research questions in this study. First, the study tries to find out whether listening to music affect the learner's concentration when they are doing a task such as reading. The second research question was whether light classical music was more distracting or less distracting than hip-hop music during a reading comprehension task. An experiment involving 133 participants from a medium-size college in southern Taiwan was conducted where the participants performed a reading comprehension task with either light classical music, hip hop music, or with no music in the background. The result of the study showed that music with a higher intensity was more distracting and had a greater effect on task performance and concentration. The result helped formulate the Attention Drainage Effect theory, which is based on Kahneman's (1973) capacity model of attention.

As in Thailand, Dussadee (2005) investigated the calming effect of music among a group of 36 female amateur gun shooters, an experimental group of subjects of her students. Over five weeks before their matches, the experimental group was exposed to relaxing music for 20 minutes three times a week while the control group

did not. The data were collected through anxiety and self-confidence questionnaire and physical measurements, including heart beat rate, blood pressure and so forth one hour before the match. The findings showed that the experimental group had significant higher self-confidence scores and lower anxiety scores than the control group. The findings go in line with Suthat (1991) who investigated the correlation between background music and silent reading achievement of Mattayom 6 students. It was found that the group interacting with the music showed higher scores of reading ability than the group without music at statically significant level of .01.

### **9.5. 4MAT System**

A number of studies across the fields have been done to assess the effectiveness of 4MAT in the last decades. In the field of science, Jackson (2001) compared learning achievement, attitude, and retention of two groups of community college students in biology course for one semester. The subjects were given pre and post-test regarding their achievement and retention. Attitude towards Science Standard Test was administered to both groups to compare their learning attitudes. The results revealed that the experimental group had significantly higher post-test scores than the control group in all three dimensions.

In terms of teacher training, Ojure (1997) conducted a study to investigate the relationship between teachers' participation in 4MAT learning style training and their perception of teacher efficacy three ways. Teachers who participated in 4MAT Fundamentals training were surveyed, observed, and interviewed. The Gusky and Passaro (1994) teacher efficacy scale was given to 120, K-12 teachers at 4MAT training sites. The survey was administered three times: before the workshop, immediately after the workshop and one month after the teachers had returned to their classrooms. The scale measured two teacher efficacy factors: (a) internal teacher efficacy: perception of personal influence and impact on teaching and learning situations; and (b) external teacher efficacy -- perception of the influence and impact of elements that lie outside the classroom on teaching and learning situations. Perceptions of internal teacher efficacy increased significantly from pre- to post workshop administrations. After the teachers had been in the classroom for one month, internal teacher efficacy scores were lower than immediately after the workshop but still significantly higher than before the workshop. The training had no significant impact on external teacher efficacy scores. An interaction was found between teachers' level of previous knowledge and the reported gain in internal teacher efficacy. Those teachers with little previous knowledge of learning style

theory and methodology showed higher levels of gain in internal teacher efficacy immediately after the workshop and on the one-month follow-up survey. These findings suggest that knowledge of learning style theory and practice can be valuable to teachers. It appears that examining the impact of learning style training on teachers' attitudes and behaviors may provide meaningful insights into why interest in learning style concepts continues despite an inconclusive research base.

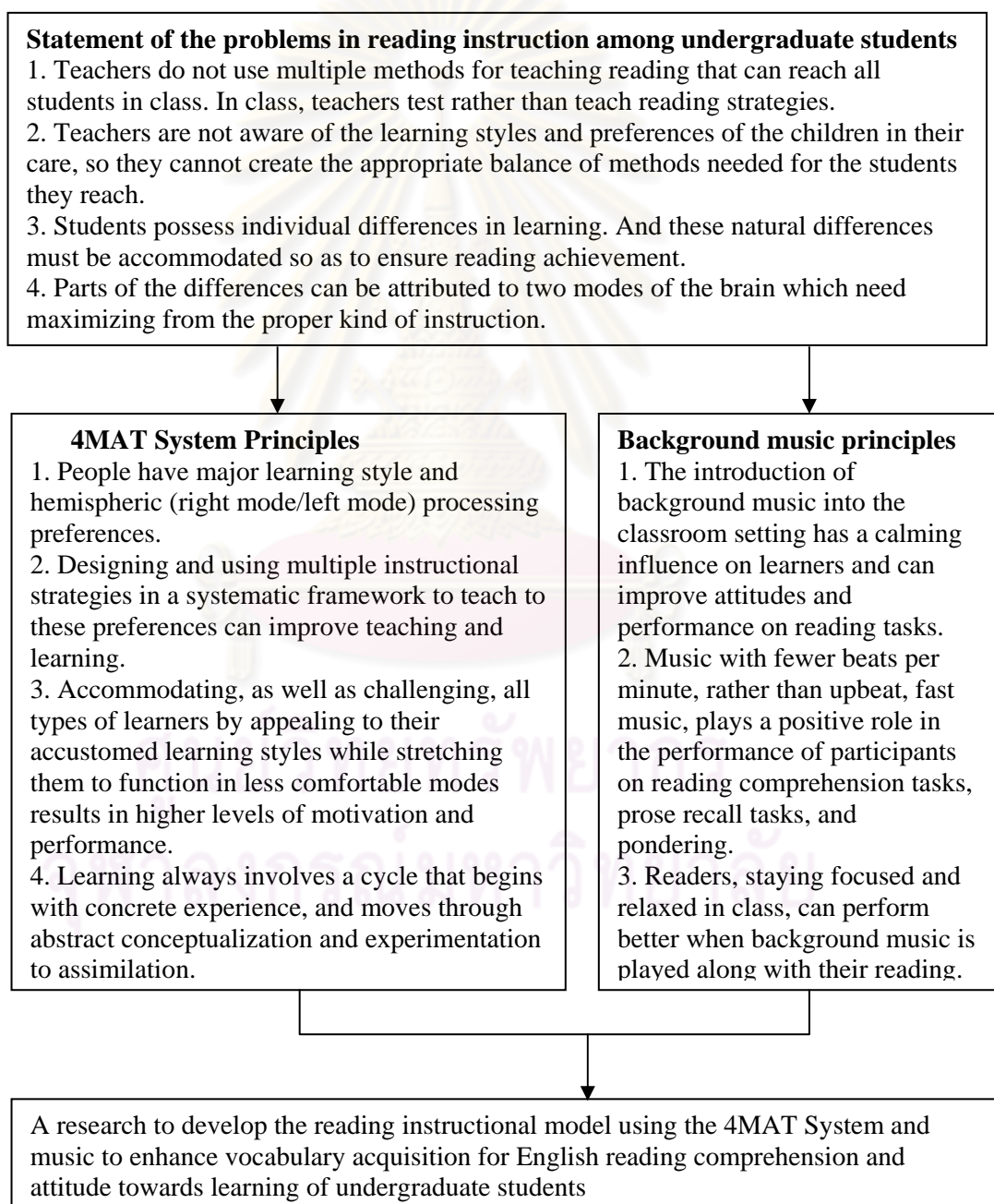
Hsieh (2003) studied learning achievement, comprehension, knowledge application, motivation, and cooperation resulted from 4MAT-based instruction. The subjects of the study, two groups of vocation school students in Taiwan, were exposed to the treatment for three weeks. The results showed that the experimental group had higher post-test scores than the control group at a significant level in all five areas. The results were parallel to Tsai (2004), who conducted a study using two groups of Taiwanese nursing students as subjects. The purpose was to investigate learning achievement, satisfaction, and retention brought about by 4MAT. Right after six weeks of experiments, learning achievement test and opinion questionnaire were administered to the students and two months after that, the tests were given again to examine their retention. ANCOVA and t-test were used to analyze the data. According to the results, all 48 students in the experimental group had significantly higher post-test scores than the control group. Data from the questionnaire suggested that the group receiving 4MAT instruction was satisfied with the course.

As in Thailand, Thitirat (2005) investigated the effect of 4MAT-based Thai literature instruction in terms of learning achievement and attitudes of Mattayom 2 (eighth-grade) students. The data collecting instruments included achievement tests and attitude questionnaires. After eight weeks of experimenting period when the data were analyzed by means of t-test and ANCOVA, 30 students in the experimental group were found to have significantly higher scores of both attitudes and learning achievement than the control group at the level of .05. The findings were in accord with Nuttita (2002), who recruited 97 Mattayom 3 (ninth-grade) students, divided into 50 for experimental group and 47 for control group. The treatment of the study was 4MAT-based mathematics instruction. After the experimenting period, learning achievement tests and initiative scales were administered to the subjects. The findings implied that the experimental group had higher attitude and achievement scores than the control group at the statistically significant level of .05. Also, Troonet (1999) implemented 4MAT-based science instruction with an objective to study learning achievement and problem-solving ability of Mattayom1 students. The findings were found parallel to Thitirat (2005) and Nuttita (2002) as the 35 participants in the

experimental group showed significantly higher achievement and problem-solving ability scores than the control group at the statistical level of .05.

Considering all aspects of the literature review regarding reading comprehension, vocabulary ability, reading attitudes, background music, and 4MAT, all of which were the variables of this study, a conceptual framework has been drawn as seen in Figure 2.4.

**Figure 2.4** A conceptual framework of the research



## CHAPTER III RESEARCH METHODOLOGY

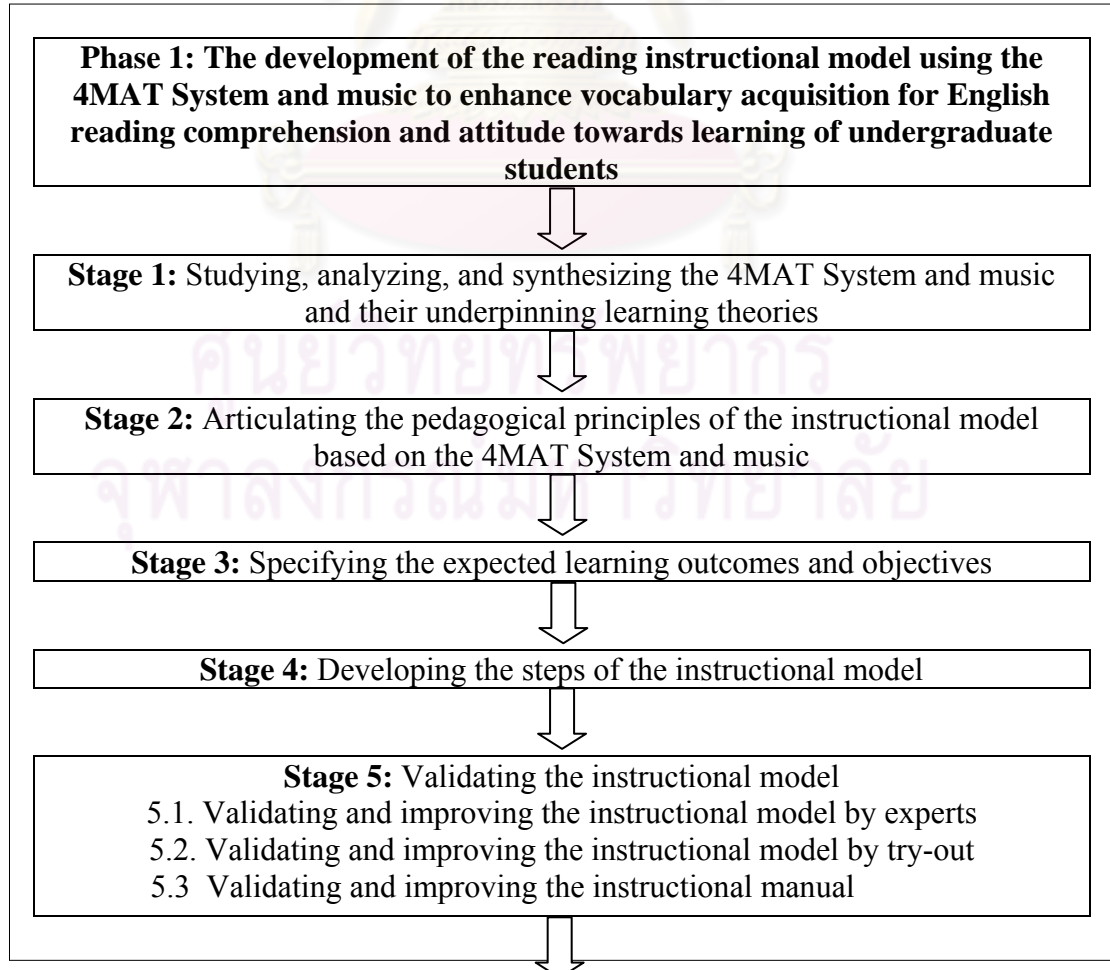
The research entitled “Development of a Reading Instructional Model Using the 4MAT System and Music to Enhance Vocabulary Acquisition for English Reading Comprehension and Attitude towards Learning of Undergraduate Students” comprised two phases of procedures as follows:

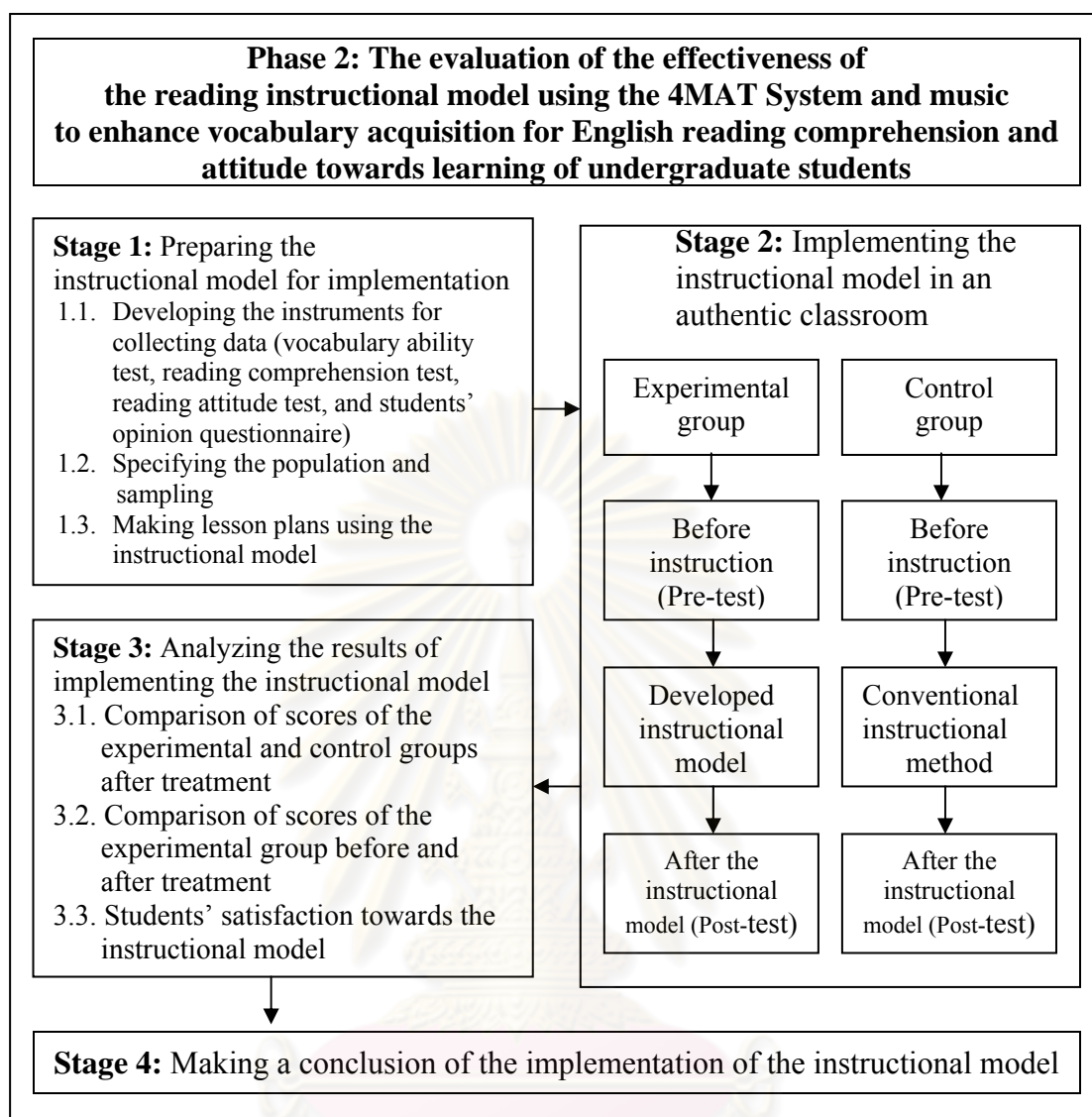
**Phase 1:** The development of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students

**Phase 2:** The evaluation of the effectiveness of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students

Two phases of the research procedures were summarized and were presented in the following figure.

**Figure 3.1** The summary of the research procedures





**Phase 1: The development of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students**

There were five stages in this phase (See Appendix B).

**Stage 1:** Studying, analyzing, and synthesizing the 4MAT System and music and their underpinning learning theories for the development of the instructional process to enhance vocabulary acquisition for English reading comprehension and attitude towards learning

In response to the reading problems of undergraduate students, especially in the context of Thailand, the researcher has been trying to investigate the true causes of those problems. The scope also stretched out to include the reading problems of Thai university students at present as this was the background of the phenomenon upon

which the rudiment of the present study was laid. And from the result of a preliminary study, in which 100 undergraduate students and 20 university teachers were the subjects, it was found out that three of all the stems of problems are from limitation of vocabulary ability, reading comprehension, and lack of positive attitude towards learning. The researcher, then, looked for the causes and, with the results of the review of related studies, found out that learner differences and whole brain came into play. The researcher also tried to search for effective instructional models, processes, methods, and techniques to help students and teachers cope with those causes. And from a bunch of research bodies, the researcher discovered that the 4MAT System could be a remedial solution. In studies conducted in elementary schools, secondary schools, and universities, the use of 4MAT has been widely recognized to increase learner motivation and improve academic performance (Blair and Judah, 1990; McCarthy et al., 2002; Wilkerson and White, 1988; Nicoll-Senft and Seider, 2010).

In addition, a number of studies over the past years have demonstrated that relaxation from background music positively affects academic success as it can facilitate change in physiological states in the body that lead to more effective performance of the brain (Hepler and Kapke, 1996). Studies show that background music, especially classical baroque music, with a 50-to-60-beat-per-minute pattern can activate the left and right hemispheres of the brain, which maximizes learning and information retention. And there are a number of research results showing the relaxing effects of music in light of academic benefits (Anderson, Henke, McLaughlin, Ripp and Tuffs, 2000).

With this in mind, the researcher has integrated the use of background music into the 4MAT System and, out of the two elements, has developed a reading instructional model with an aim to solve the mentioned reading problems.

In order to develop a reading instructional model, the researcher studied and analyzed the 4MAT System and music, together with their underlying learning theories, from many sources: documents, textbooks, journal articles, and academic research studies. The focus of the study at this stage was the relationship of the two core elements and other components of the present study: reading strategies, reading achievement, learning styles, whole brain learning, and attitudes towards reading. And after the key concepts of both the 4MAT System and background music were synthesized, two sets of principles were drawn up. The synthesized pedagogical principles of the 4MAT System and background music are shown below.



### **4MAT System principles**

1. People have major learning style and hemispheric (right mode/left mode) processing preferences.
2. Designing and using multiple instructional strategies in a systematic framework to teach to these preferences can improve teaching and learning.
3. Accommodating, as well as challenging, all types of learners by appealing to their accustomed learning styles while stretching them to function in less comfortable modes results in higher levels of motivation and performance.
4. Learning always involves a cycle that begins with concrete experience, and moves through abstract conceptualization and experimentation to assimilation.

### **Background music principles**

1. The introduction of background music into the classroom setting has a calming influence on learners and can improve attitudes and performance on reading tasks.
2. Music with fewer beats per minute, rather than upbeat, fast music, plays a positive role in the performance of participants on reading comprehension tasks, prose recall tasks, and pondering.
3. Readers, staying focused and relaxed in class, can perform better when background music is played along with their reading.

**Stage 2:** Articulating the pedagogical principles of the instructional model using 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning

The researcher analyzed the fine details of pedagogical principles of the 4MAT System and background music from Stage 1 to find some links and combination that directly addressed the reading problems. And after the articulation of the underlying principles, the pedagogical principles of the instructional model based on the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning were written. The details of the instructional model principles are shown below.

### **Principles of the instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning**

1. Learners expand and refine information through adaptive modes by interacting with them.
2. Students need multiple exposures to new inputs in order to understand them.
3. Reflections the students have on their expression and learning must be shared and turned around.
4. Students should actively make connections between the new and the known.
5. The integration of background music maximizes learning and enhances reading attitudes.

### **Stage 3: Specifying the objectives and expected learning outcomes of the instructional model**

Looking carefully at the dependent variables, the researcher took the pedagogical principles of the instructional model from Stage 2 to determine its objectives and expected learning outcomes of the instructional process based on the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning. The objectives and expected learning outcomes of the instructional model can be seen as follows:

#### **The objectives of the instructional model**

1. to enhance vocabulary ability
2. to enhance reading comprehension
3. to promote positive attitudes towards reading

#### **The expected learning outcomes of the instructional model**

1. Learners will increase their vocabulary knowledge in terms of recognition and storage through the mastery of integral techniques: classification, semantic and syntactic identification, morphological analysis, and word association.
2. Learners will improve their ability to comprehend texts through the mastery of comprehension strategies.
3. Learners will be more motivated to read both inside and outside their reading class. These developed attitudes will result in their better reading behavior and higher reading achievement.

**Stage 4:** Developing the steps of the instructional model

Since the 4MAT System features the cyclical framework which is flexible to deploy in any content area and subject. In order to develop it into an instructional model for reading, the researcher had to articulate other relevant reading strategies and activities. This stage incorporates four steps as follows:

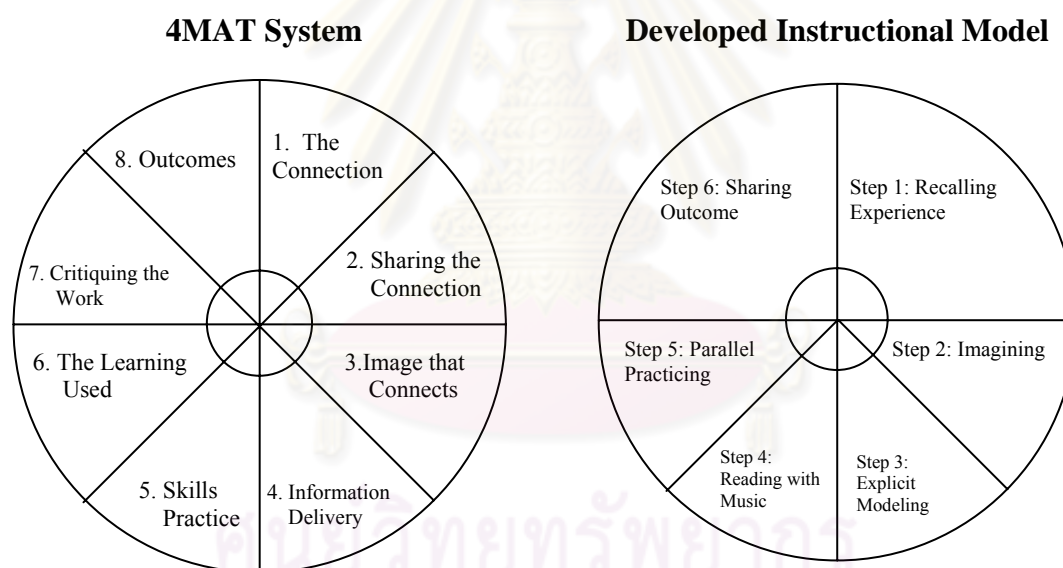
**4.1. Matching the 4 Quadrants with the 8 steps of the 4MAT cycle with typical reading phases: pre-reading, during-reading, and post-reading**

The typical reading instruction consists of three phases: pre-reading, during-reading, and post-reading. The researcher started by relying on the three traditional phases of reading (Farrel, 2009; Aebersold and Field, 2002; Grabe and Stoller, 2002), marking Step 5 in Quadrant 3 of the 4MAT cycle (Skill Practice) as during-reading, then labeled Steps 1-4 as “pre-reading” and Steps 6-8 as “post-reading”. As the purpose of Quadrant 1 is to engage the learner in a concrete experience leading to a search of prior knowledge and sharing it, which is akin to the background knowledge-activating step of typical reading instruction, the researcher merged the two steps in the Quadrant together and labeled it “Recalling Experience”, which is the main objective of Quadrant 1 of the 4MAT Wheel (McCarthy et al., 2002). As the Steps 7 and 8 in Quadrant 4 serve the same purpose of knowledge application as in post-reading phase of typical reading instruction, they were combined and reinvented as “Sharing Outcome”; this goes in line with one of the two main objectives of Quadrant 4 of the 4 MAT System (McCarthy et al., 2002; McCarthy and McCarthy, 2006). The two steps in Quadrant 2 remain untouched and lend themselves to the original purpose of knowledge informing. The only minor modification is that the researcher allowed the teaching of reading strategies to always flow in Step 3 as “Explicit Modeling”, the point where explicit teaching of strategies takes place (Paris, Wasik and Turner, 1991; Farrell, 2009). The condensed process of the 4MAT reading cycle is shown in Figures 3.2 and 3.3.

**Figure 3.2** The matching of the instructional process of the 4MAT System, typical phases of reading instruction, and the newly-developed model

4MAT		Typical Phases of Reading Instruction	Newly-developed Model
Quadrant	Step/Mode		
1	1 R	Pre-reading	Recalling Experience
	2 L		
2	3 R		Imagining
	4 L		Explicit Modeling
3	5 L	During-reading	Reading with Music
	6 R	Post-reading	Parallel Practicing
4	7 L		Sharing Outcome
	8 R		

**Figure 3.3** The comparison of the instructional process of the 4MAT System and that of the developed instructional model



4.2. Selecting relevant comprehension and vocabulary strategies/activities parallel to the three formulated objectives and learning outcomes in Stage 3

In order to develop a teaching-learning procedure of the instructional process, some relevant well-recognized reading strategies and activities suggested by reading research studies and proved effective for reading ability enhancement (Farrell, 2009; Aebersold and Field, 2002; Grabe and Stoller, 2002; Sousa, 2005) have been selected and integrated as shown in the following Figure 3.4.

**Figure 3.4** The review of some relevant well-recognized reading strategies/activities selected to include in the newly-developed model.

<b>Relevant well-recognized reading strategies/activities</b>	<b>Review of core constructs/principles</b>
Morphological awareness (Mahony et al., 2000; Nation, 2003)	Morphological knowledge is useful in understanding early vocabulary growth. Knowing the structure of morphemes within words can help learners guess meaning of unknown words, especially multi-syllabic ones.
Activating prior knowledge (Aebersold and Field, 2002; Johnston and Pearson, 1982; Grabe and Stoller, 2002)	Connecting learners to themselves, to other texts, and to the outside world is very important as, apart from getting the learners motivated by individualizing the text, it helps them build interpretation of the new reading.
Selecting core vocabulary (Aebersold and Field, 2002)	Knowledge of content-specific vocabulary is helpful for text reading and these words should be presented before learners read the text so that they will have a general understanding of the words and recognize them when learners encounter them in the text.
Using word association (Farrell, 2009)	Getting learners to connect their lexical schema not only orients them to the topic but also increases their levels of motivation. Through this, teachers can use what they learn about students; this knowledge of the topic can be used for their lesson planning.
Explicit teaching of strategies (Paris, Wasik and Turner, 1991; Farrell, 2009)	Reading strategies should be explicitly taught to EFL learners through systematic modeling by the teacher so that the learners can be fully aware of the strategies they are using currently and those they will use in the future.
Paraphrasing (Fisk and Hurst, 2003; Aebersold and Field, 2002)	Having learners rewrite the text, or parts of it, in their own words and discuss the paraphrased version with their peers is effective as it involves all four skills which lead to a deeper understanding and greater memory of the text. When learners recall information, and paraphrase it in some way, in addition to knowledge, they are using the process of translation, which is a subcategory of comprehension. This does not involve the process of analysis, but deals with that of synthesis at the same time.
Using analogy and visual images (Sousa, 2005)	Nonverbally, relating what is taught in the new reading to knowledge the learners possess will help them conceptualize the input through the right mode of their brain.

<b>Relevant well-recognized reading strategies/activities</b>	<b>Review of core constructs/principles</b>
Analyzing good and bad examples of writing (Sousa, 2005)	Having the learners analyze and discuss good and bad examples of chapter summaries serves as a means to extend their reading and also promote group working and sharing among their peers.
Group working (Oxford,1997; LeJune, 1999)	Working in groups allows learners to share responsibility and points of view, through the assigned tasks that match their ability and that contribute to the whole group effort.
Using audiovisual aids (Sousa, 2005)	Audiovisual aids are of great help to “right-mode” learners. A multimedia environment is also one way to appeal to motivation and arousal in reading class.
Summary writing (Aebersold and Field, 2002)	Summary writing functions as an assessing tool, reflecting that learners can build comprehension of a particular text both now and in the future. This leads to a transfer of skills.

The criteria used in selecting the strategies/activities were determined by the three objectives and three learning outcomes of the instructional model which addressed the enhancement of vocabulary ability, reading comprehension, and attitude towards reading. The selected relevant reading strategies/activities were integrated as shown in Figure 3.5.

**Figure 3.5** The integration of the selected relevant reading strategies/activities, as sorted by the objectives and expected learning outcomes of the developed instructional model

<b>Objectives of the model</b>	<b>Expected learning outcomes of the model</b>	<b>Relevant well-recognized reading strategies/activities</b>
1. To enhance vocabulary ability	1. Learners will increase their vocabulary knowledge in terms of recognition and storage through the mastery of integral techniques: classification, semantic and syntactic identification, morphological analysis, and word association.	Morphological awareness (Mahony et al., 2000)  Activating prior knowledge (Aebersold and Field, 2002; Johnston and Pearson, 1982; Grabe and Stoller, 2002)  Selecting core vocabulary (Aebersold and Field, 2002)  Word association (Farrell 2009)

<b>Objectives of the model</b>	<b>Expected learning outcomes of the model</b>	<b>Relevant well-recognized reading strategies/activities</b>
2. To enhance reading comprehension	2. Learners will improve their ability to comprehend texts through the mastery of comprehension strategies.	Explicit teaching of strategies (Paris, Wasik and Turner, 1991; Farrell, 2009)  Paraphrasing (Fisk and Hurst, 2003)  Analogy and visual images (Sousa, 2005)  Analyzing good and bad examples of writing (Sousa, 2005)  Summary writing (Aebersold and Field, 2002)
3. To promote positive attitudes towards reading	3. Learners will be more motivated to read both inside and outside the reading class. These developed attitudes will result in their better reading behavior and higher reading achievement.	Group working (Oxford, 1997; LeJune, 1999; Johnson and Johnson, 1989))  Using audiovisual aids (Sousa, 2005)

4.3. Sequencing all the selected strategies/activities along with background music.

The selected reading strategies were then woven along the track of the 4MAT wheel. During the process, the interconnection between the reading strategies and activities was considered on the ground of the 4MAT framework and the pedagogical principles of the instructional model determined earlier. In accordance with Tissana (2005), organizing and classifying the components of an instructional model into groups is important as when similarities and differences of the components are seen and placed, into categories, it would be simpler for the model developers to process and prepare them for the following steps.

The condensation of Steps 1 and 2 in Quadrant 1, and Steps 7 and 8 in Quadrant 4, allowed the new instructional model to cover six steps, which served as the base where reading strategies and background music could be integrated. This part of the development process is shown in Figures 3.6, 3.7, and 3.8.

**Figure 3.6** The sequencing of the selected relevant reading strategies/activities, based on 4MAT activities and the six developed steps of the newly-developed instructional reading model

Activities in four Quadrants of the 4MAT System	Six teaching/learning steps of the developed instructional reading model	Selected relevant reading strategies/activities
Quadrant 1/Type One Learner  - Brainstorming - Listening - Speaking - Interacting - Small group discussion - Simulation - Games - Role playing	1. Recalling Experience	Group working  Activating prior knowledge  Using audiovisual aids  Asking questions  Word association  Selecting core vocabulary  Morphological awareness
Quadrant 2/Type Two Learner  - Observing - Analyzing - Classifying - Drawing conclusions - Theorizing - Visualizing - Group discussion - Analogy	2. Imagining	Activating prior knowledge  Analogy and visual images  Mental imagery
	3. Explicit Modeling	Explicit teaching of strategies
Quadrant 3/Type Three Learner  - Questioning - Model building - Experimenting - Following directions - Manipulating materials and ideas - Tinkering - Applying	4. Reading with Music	Group working  Asking questions
	5. Parallel Practicing	Group working  Summary writing



<b>Activities in four Quadrants of the 4MAT System</b>	<b>Six teaching/learning steps of the developed instructional reading model</b>	<b>Selected relevant reading strategies/activities</b>
Quadrant 4/Type Four Learner  - Modifying - Adapting - Acting - Creating - Collaborating - Innovating - Case studies - Projects	6. Sharing Outcome	Group working  Paraphrasing  Analyzing good and bad examples of writing

**Figure 3.7** The integration of background music along with the six developed steps of the newly-developed instructional reading model, based on its intended effect

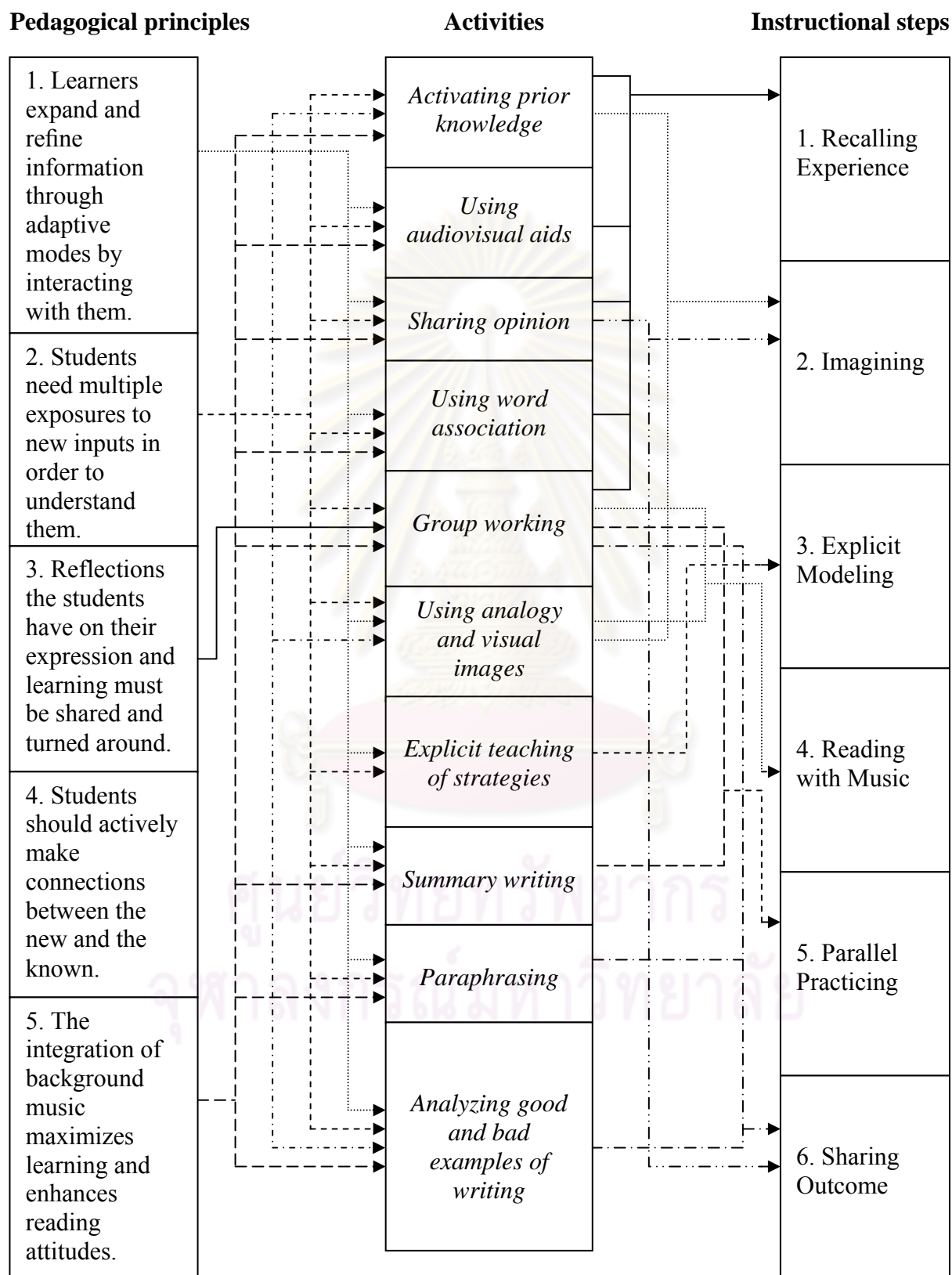
<b>Six teaching/learning steps of the developed instructional reading model</b>	<b>Background music and its intended effect</b>
1. Recalling Experience	Music is used while learners are brainstorming, group working together in the activity of word association. The effect of stimulating and invigorating has been borrowed.
2. Imagining	While learners are pondering and visualizing, the music is played to foster their imagination and mental performance. Here the soothing and calming effect is intended.
3. Explicit Modeling	No music used

<b>Six teaching/learning steps of the developed instruction reading model</b>	<b>Background music and its intended effect</b>
4. Reading with Music	While learners are silent-reading paragraph by paragraph, the music is played periodically to keep them focused and relaxed. At this step, music can also serve as a timer as learners will start reading when music starts and stop when it is faded down.
5. Parallel Practicing	Music is used when learners are discussing and writing a summary in their group. Positive emotional effect from relaxing tune is addressed.
6. Sharing Outcome	While learners are discussing and comparing their paraphrasing work, music can yield a calming effect, which indirectly minimizes stress in the class.

#### 4.4. Determining detailed learning activities of the sequenced steps

From the sequenced steps above, the selected reading strategies under the framework of the 4MAT cycle were woven together in their place, in relation with the predetermined pedagogical principles of the instructional model. As parts of the instructional design, systematically organizing the components on the ground of causes and effects is crucial. The priority sequencing calls for thorough planning and care as the causal-effect relationship of all the components is investigated. The instructional model developers have to take all the factors involved into notice in light of their priorities and parallelism (Tissana, 2005). The relationship of the pedagogical principles and the instructional steps of the model is seen in Figure 3.8:

**Figure 3.8** The relationship of the pedagogical principles and the instructional steps of the developed instructional reading model



From the pedagogical principles of the model and sequenced steps above, along with the selected reading strategies under the framework of the 4MAT cycle, learning activities in the instructional steps took their form as shown below:

### **Step 1: Recalling Experience**

During the first step of the instructional process which serves as a warm-up, the teacher's tasks are to engage students in a concrete experience which leads to a search of prior knowledge and prior experience, especially in terms of vocabulary. This search, through leading questions and modern media like video clips, is designed to create an interactive group dialogue through introducing questions which connect what students already know and believe to the topic the teacher intends to teach. The teacher tries to use strategies which encourage diversification of ideas, dialogue, and participation and enable students to associate prior lexical knowledge with new vocabulary to come. Through idea sharing and pooling, student's beliefs and opinions begin to evolve into organizers and structures for future thinking and concept building. This phase of the process emphasizes right and left hemispheric thinking and, with symbolic thinking and the imposition of structure, the goal is engagement.

### **Step 2: Imagining**

Step two of the process is designed to create a context for students to represent the subjective nature of their existing knowledge as a preparation for the analysis of ideas. In this step, students are encouraged to symbolize their present state of understanding of the subject matter in as many nonverbal forms as possible. Image making, which is central to this step, is a right mode activity. The emphasis here is the expansion of representations of meaning. This step requires students to begin to shift from reflective experience to reflective thinking.

### **Step 3: Explicit Modeling**

Step three of the instructional process engages students in objective thinking. The emphasis here is analysis of concepts, facts, generalizations and theories. At this stage, the teacher presents targeted reading strategies and experience in complete and systematic ways. Well-delivered lecture, which belongs to the left hemisphere, builds upon the personal connections established in step one to foster conceptual thinking.

#### **Step 4: Reading with Music**

At this stage, the teacher asks students to read along with music. Students are allowed to apply the strategies they have learned in step three to real practice as the emphasis shifts from acquisition and assimilation to testing and adaptation. Upon reading, students are supposed to employ comprehension monitoring techniques which focus on assessing what the text has stated as compared to the reader's expectation. In this left hemisphere stage, the goal is reinforcement and diagnostic evidence of the student's ability to apply the concepts taught.

#### **Step 5: Parallel Practicing**

Step five of the reading process treats the student as a scientist. In this learning set, students test the limits and contradictions of their understanding. Students are encouraged to develop their own applications which demonstrate that they understand and can apply what has been learned. Parallel reading texts and summary writing are the essence of this phase where the focus of reading, a receptive skill, has shifted to writing, a productive one, to optimize full comprehension. The right mode emphasis in this learning set is designed to encourage students to create personal applications of their experiences with the ideas and vocabulary learned from the previous steps.

#### **Step 6: Sharing Outcome**

The final step of the process requires students to critically examine the place of the newly acquired knowledge and experience in their existing world view. The central issue of this post-reading stage here is what must be done to integrate this learning into a meaningful conceptual division. Working in groups, students in this learning step edit and refine their work from earlier steps. While sharing the paraphrasing work, they also face and resolve contradictions implicit in the tension between new and earlier schema. This is the culminating stage where both left and right hemispheres are used, bringing students back to where they started, a completion of the cycle.

#### **Stage 5: Validating the instructional model**

##### **5.1. Validating and improving the instructional model by experts**

To validate the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude

towards learning of undergraduate students, four experts (See Appendix A) in the field of ELT/SLA were asked to verify the model using a specific evaluation form. The form included 15 items of affirmative statements, covering seven important points of the model structure: principles, objectives, expected learning outcomes, teaching/learning processes, learning activities, assessment scheme, and the overall perspective of the model. A four-point rating scale, from 4 (meaning very good), 3 (good), 2 (moderately acceptable), 1 (needs revision), was employed (See Appendix I).

According to the result of validation (See Appendix P), the total mean score of the experts' opinion was 3.72, with no items receiving scores lower than 3.00. However, in order to evaluate the content validity of the instructional model, quantitative data were mainly considered. One expert provided a piece of advice in terms of content, saying that the reading strategies should be rearranged on the basis of difficulty level. Another recommendation was the on-process assessment. Observing only the students' attention and interest from joining in-class activities was too elusive. Rather, their production work, which covered writing pieces, worksheets, and others, should be considered. The researcher, then, made some revision in the part of the instructional model as suggested, accordingly.

## 5.2 Validating and improving the instructional model by try-out

To ensure that the developed reading instructional model was effective and to reduce unexpected problems, the actual lesson plan was validated by four experts (See Appendix P) and, after that, was piloted with a group of students for four weeks during the first semester of academic year 2010. The samples in the pilot study, which had equivalent characteristics as the subjects in the main study, consisted of 25 second-year English major students. The group was exposed to instruction set out in lesson plans of the newly-developed instructional process. The pilot study helped the researcher to anticipate some extraneous variables in various aspects and minimize a number of treatment errors which may have arisen during the actual implementation period. In addition, the pilot study served as a rehearsal which could yield the researcher some ideas about alternatives in the teaching/learning steps. This would lead to the modification and variation of some activities in the plan; for example, the use of video clips in step 1, jigsaw games as an analogy in step 2, and reading time per paragraph in step 4.

After the pilot, most of the main weaknesses found were structural elements of the plan; for example, timing, grouping system, and continuity between each activity. In light of timing, it obviously helped the researcher to realize that some steps

contained too many activities and took too much time. Accordingly, some activities were deleted and some were mixed or merged into one. Moreover, the way the students formed the groups while joining the class activities affected the production as expected by each task. The researcher has taken these findings into notice and set up a configuration, or a system of how groups should be formed (See Appendix C). And last of all, the sequence of some activities was changed and rearranged in order to make each step connect to another in more effective and logical ways. This helped the lesson run smoothly and continuously in general.

### 5.3 Validating and improving the instructional manual

The instructional manual was designed to accompany the “Reading Instructional Model Using the 4MAT System and Music to Enhance Vocabulary Acquisition for English Reading Comprehension and Attitude towards Learning of Undergraduate Students” with the purpose to equip the interested teachers with the needed details concerning the model. It served as a guideline for the teachers, upon adopting the instructional model in their class. The manual contained all the necessary details of the instructional model in terms of instructional procedure, objectives, content, and assessment.

To validate the manual, three experts (See Appendix A) were asked to give their opinion using the specific evaluation form. There were five items in the form, all of which covered both the structure and the language use of the manual, e.g. the clarity and extensiveness of the details, benefit of given alternatives, easy and clear language use, and practical recommendations concerning the roles of teacher and learners. The evaluation scheme also featured a four-point rating scale (See Appendix J).

When the results appeared, it was found that the average score was 3.79. From this, it can be concluded that the experts were very satisfied with the instructional manual. However, the comments on the page layout and the way the information was arranged to be user-friendly was noted. This was revised before the manual was again put into use.

### **Phase 2: The evaluation of the effectiveness of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students**

There were four stages in this phase.

## Stage 1: Preparing the instructional model for implementation

### 1.1. Developing the instruments for collecting data

To measure three different dependent variables in the present study, two different tests and one questionnaire were developed.

#### 1.1.1. Reading comprehension test

In order to collect the data related to reading comprehension of the subjects, this reading comprehension test was developed. The 4-multiple-choice test included 30 items. The form of an unseen passage reading was utilized here. All the three reading passages in this test were from various sources with their themes parallel to the texts in the lesson plans. The number of words in all three passages ranged from 209-417. Through the application of the Flesh-Kincaid formula, the calculated readability index scores of the three passages were in the range of 36-47 (level 12 and 14), signifying the appropriateness of texts as used at college and university level ([www.standards-schmandards.com/exhibits/rix/index.php](http://www.standards-schmandards.com/exhibits/rix/index.php)). The length, sources, and readability index scores of the three unseen passages in the reading comprehension test are shown in Table 3.1.

**Table 3.1** The details of the three unseen passages in the reading comprehension test

Passages	Themes	Number of words	Sources	Number of questions	Readability Index	
					Scores	Level
1	Homeschooling	417	“Interactions 2” Teacher’s manual (Hartman and Kirn, 2007).	12	38	12
2	Tattoos	209	Readers’Digest (July, 2001)	8	47	12
3	Airline business	295	www.ccsenet. org	10	36	14

As the purpose of this was to measure how much students could understand reading texts, Raygor and Raygor’s three levels of comprehension (1985) were used as the criteria for the test construction. The distribution of the number of items across the three levels of comprehension is shown in Table 3.2:



**Table 3.2** The distribution of reading comprehension test items across the three levels of comprehension

<b>Comprehension Level</b>	<b>Reading Comprehension Skills</b>	<b>Items</b>
1. Literal comprehension	Recognizing and using pronoun references, recognizing the meaning of words, stating the main idea of a sentence, paragraph, or passage, identifying the sequence of events, identifying signal words or discourse markers, classifying ideas into main topics and supporting details, recognizing the topic in a text, skimming, scanning, and locating topic sentences or generalizing	1, 2, 3, 5, 6, 13, 14, 15, 16, 18, 21, 22, 23, 24, 25, 26  <b>16 items</b>
2. Interpretive comprehension	Guessing meaning of unknown words, paraphrasing or restating the text in different words, recognizing the use of language, expressions, predicting, recognizing patterns of relationships or ideas, summarizing and drawing conclusion, drawing inferences and reading between the lines, inferring the main idea	4, 7, 8, 9, 10, 11, 17, 27, 28  <b>9 items</b>
3. Critical comprehension	Identifying purposes and attitudes of the author, posing questions about the text, identifying tone of the language, identifying genre of the text, identifying title of the text, distinguishing between facts and opinions, critiquing the text, critiquing the author, judging how well the objectives were met, and reflecting on what has been learned from the text	12, 19, 20, 29, 30  <b>5 items</b>

In the first place, after being revised by the advisor and co-advisor, the test was validated by three ELT/SLA experts in terms of IOC (Item-Objective Congruence), of which the mean score was found as 0.77. As shown by the result, there were 19 items receiving an IOC value of 1.00 and 11 items with an IOC value of 0.67. After that, the test was piloted with a group of 44 second-year English majors at Rangsit University in October 2010. The students in the pilot group were not included in the sampling but shared exactly the same characteristics as the 60 subjects of the study. After administering the test, the scores then were computed on a basis of reliability; all 7 items of which the discrimination power was lower than 0.20 or the

degree of difficulty was not in the range of 0.20-0.80 were revised. After this step, the test was administered a second time to another 42 English majors so as to calculate the scores in terms of reliability coefficient. This was done by  $KR_{21}$  reliability analysis method (Kerlinger, 1986). The result of the statistical analysis indicated the reliability value of the test was  $r = 0.62$ . The power of distribution and level of difficulty of all 30 questions in the test were computed as 0.27-0.80 and 0.20-0.80 respectively. It could, therefore, be concluded that the test was reliable and able to be applied to the students both in the experiment and control group (See Appendix Q).

### 1.1.2. Vocabulary ability test

To collect the data in relation to the reading vocabulary ability of the subjects, this vocabulary ability test was developed. The 4-multiple-choice test was based on the reading book: *Interactions 2 Silver Edition* (Hartman and Kirn, McGraw-Hill, 2007). The test, including 30 items, featured “Core Vocabulary”, a group of focused words, from 10 chapters in the textbook (See Appendix M). Each item was designed in the form of contextualized word recognition. Students, upon doing the test, were supposed to choose the best word from the four multiple choices in each item to complete the stem, or the sentence given. The purpose was to test the students’ ability to recognize words semantically, not syntactically.

Like the reading comprehension test, in the first place, after being revised by the advisor and co-advisor, the test was validated by three ELT/SLA experts in terms of IOC (Item-Objective Congruence), of which the average scores of all 30 items were found as 0.82. The test was then piloted with a group of 44 second-year English majors at Rangsit University in October 2010. After administering the test, the scores then were calculated to test its reliability; 6 items of which the discrimination power was lower than 0.20 or the degree of difficulty was not in the range of 0.20-0.80 were revised. After that, the test was administered a second time to another 42 English majors to compute the scores with regard to reliability coefficient.  $KR_{21}$  reliability analysis method was employed here. The result of the statistical analysis indicated the reliability value of the test was  $r = 0.68$ , the test discrimination (D) was found in between 0.23-0.80, and the test difficulty was found in the range of 0.20 - 0.80 (See Appendix Q). It could, therefore, be inferred that the test was reliable and able to be applied to the students both in the experiment and control group.

### 1.1.3. Reading attitude questionnaire

In this research, the questionnaire was adapted from Stokmans' 24-item reading attitude scale (1999). In order to examine the students' attitudes towards reading, based on Mckenna' two domains of reading attitudes (1994), the present study focused on affective (feelings and emotions) and cognitive (personal, evaluative beliefs).

The questionnaire, made into a Thai version so as to facilitate the stage of administering, was implicitly divided into 2 parts with 15 items each: the first part of the questionnaire featured an affective component, covering comfort (7 items) and anxiety (8 items). The second part deals with a cognitive component, covering value (8 items) and self perception (7 items). It also covered an open-ended part where the students can provide additional opinions, which were the qualitative data of the study. The distribution of items in the test is shown in Table 3.3 as follows:

**Table 3.3** The distribution of items of the reading attitude questionnaire

<b>Part One</b>	<b>Affective Component</b>	<b>Items</b>
	Comfort	1-7
	Anxiety	8-15
<b>Part Two</b>	<b>Cognitive Component</b>	<b>Items</b>
	Value	16-23
	Self Perception	24-30

Note: Items 8-15 and 24-30 with negative descriptions are reversely scored.

Utilizing the five-point Likert scale, the orientations of the reading attitude questionnaire were divided into two categories based on whether the implication of each statement was positive or negative. In the light of the scoring system, as the Comfort section and Value section featured items with positive meanings, the scores of 5 were differentiated as “Strongly Agree” and 1 as “Strongly Disagree”. For the Anxiety and Self Perception sections, featuring items with negative meanings, it was the other way round as the scores of 5 was assigned to “Strongly Disagree”, while 1 was given to “Strongly Agree”. The questionnaire was arranged by having done validity analysis in terms of IOC (Item-Objective Congruence). The responses of the 20 items obtained from the three experts in the ELT/SLA field (See Appendix A)

were calculated and yielded the average IOC value of 0.78 with no items receiving the scores lower than 0.50. After piloting with a group of 42 second-year students, the reliability of the questionnaire was made by Cronbach Alpha analysis. The Cronbach Alpha value was found as  $\alpha = 0.79$ . The result showed that there was a strong correlation among the items. In light of the data, it could be inferred that the reading attitude questionnaire was appropriate in terms of content validity and no major modification was made. However, some minor changes with respect to wording were made on the comments and recommendation of the three experts; for instance, the use of 1<sup>st</sup>-person pronoun and consistency of some words in the Thai version of questionnaire.

#### 1.1.4. Questionnaire eliciting students' opinions towards the instructional model.

The five-point rating scale questionnaire was developed with the purpose to investigate the students' opinions towards the instructional model at the end of the experiment. The questionnaire consisted of 20 items, all of which were affirmative sentences (See Appendix E). To validate the questionnaire, three experts in the field (See Appendix A) were asked to use a specific evaluation form. The form comprised two main parts with different evaluating formats: IOC (Item-Objective Congruence) analysis for the content validity of all 20 statements in the first part and rating-scale analysis for the structure and overall design of the questionnaire in the second part. Language use is also another focus of the second part of this evaluation form (See Appendix L).

According to the result of validation, the average IOC value was found as 0.74 with no items receiving the scores lower than 0.50. This result showed that there was a strong correlation among the items. As for the result from the evaluation form, all experts' opinions were computed and the mean score was found as 3.81 (See Appendix P). In light of the data, it can be concluded that the questionnaire eliciting students' opinions towards the instructional model was reliable and valid to be used in this present study.

#### 1.2. Specifying the population and sampling

The population of this study was the undergraduate students who were English majors studying in a faculty of Liberal Arts or Humanities at universities under the affiliation of the Ministry of Education of Thailand. The samples of this study, assigned by the purposive sampling technique, were the second-year English majors of the Faculty of Liberal Arts, Rangsit University, who had enrolled "Reading I" as a

required course. The reason why Rangsit University was chosen was that it is one of the leading private universities in Thailand and has been offering its English major program for more than ten years. As for the English major students here, though on the whole they do not represent the cream students of the country, they have a higher proficiency of English than other English majors in many universities on the nationwide scale. In sum, they could be classified as “moderate-ability students”. This point made them a good sampling group representing the whole population. Regarding the course, Reading I (ENG 221) was selected since it is the lowest required course in the series of three reading courses in the curriculum of the English major program at Rangsit University. According to the four-year study plan as determined by the curriculum documents, students are supposed to take it in their second year. They have to pass Foundation English III as the prerequisite. Thus, it can be inferred that the students in the course are “intermediate”, with some background knowledge in terms of reading strategies. And this was the important reason for the choice.

Relying on a pre-test post-test experiment and control group design, the group of 60 students, the subjects of the present study, was divided into 30 for control and another 30 for experimental groups equally. In order to keep the internal validity of the study, the researcher assigned the subjects into two groups, using Randomized Control-group Pretest-posttest Design to make sure that their different backgrounds of English proficiency might not become the intervening variable. The researcher listed out all the student names from number 1 to number 60 according to their grades in Foundation English III, which is the prerequisite of the Reading I course. After matching all students into 30 pairs; for example 1 and 2, 3 and 4, up to 59 and 60, the researcher randomly put the two members of each pair into two groups through lottery drawing and named the group meeting every Monday as the control group, and called the Wednesday group the experimental group, both of which were taught by the researcher himself. The two groups can be seen in the experimental design in Table 3.4 below.

**Table 3.4** Experimental design used in the study

<b>Groups</b>	<b>Pre-test</b>	<b>Experimental Design</b>	<b>Post-test</b>
Experimental	T <sub>1</sub> <sub>123</sub>	Instructional model based on the 4MAT System and music	T <sub>2</sub> <sub>123</sub>
Control	T <sub>1</sub> <sub>123</sub>	Conventional instructional method	T <sub>2</sub> <sub>123</sub>

T<sub>1</sub> → Vocabulary ability test

T<sub>2</sub> → Reading comprehension test

T<sub>3</sub> → Reading attitude questionnaire

### 1.3. Making lesson plans using the instructional model

Over the period of ten weeks, two sets of lesson plans were prepared for the students in both the experimental group and the control groups. Each lesson plan, designed for 160-minute instruction of three periods, was based on the reading textbook: “Interactions 2” (Hartman and Kirn, 2007). Having been adopted and used for all groups of Reading I course at Rangsit University for three years so far, the book was considered appropriate: not only did it correspond to the content of the course but it also met the criteria; discourse variety, level of difficulty, and learners’ interest. Ten content chapters comprising reading texts, and reading strategies can be seen below.

**Table 3.5 Contents chapters of the long-range plans:**

<b>Chapter</b>	<b>Topic</b>	<b>Reading text</b>	<b>Reading Strategies</b>
1	Education and Student Life	Education: A Reflection of Society	- Skimming the topic and main idea - Predicting content of a reading
2	City Life	A City That’s Doing Something Right	- Identifying the topic and main idea - Identifying supporting details - Drawing meaning from the context
3	Business and Money	Banking on Poor Women	- Understanding conclusions - Skimming for the topic and the main ideas
4	Jobs and Professions	Changing Career Trends	- Previewing a reading - Identifying important details - Skimming for the topic and the main ideas
5	Lifestyles Around the World	Trendspotting	- Understanding pronoun reference - Marking text when you read
6	Global Connections	Global Trade	- Identifying inference - Skimming for main ideas

Chapter	Topic	Reading text	Reading Strategies
7	Language and Communication	If We Could Talk with Animals...	- Distinguishing facts from assumptions - Understanding italics and quotation marks
8	Tastes and Preferences	The Silk Road: Art and Archaeology	- Synthesizing and applying information from a reading - Recognizing summaries in a reading
9	New Frontiers	The Human Brain—New Discoveries	- Predicting content of a reading - Identifying the main ideas
10	Ceremonies	Rites of Passage	- Understanding chronology: scanning for time words - Understanding symbols

So as to examine students' vocabulary ability and reading comprehension levels, together with their attitudes towards reading, a set of ten specific lesson plans based on the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students was prepared for the students in the experimental group. Each lesson plan incorporates six instructional steps with brief details as follows (See also Appendix D):

Step 1: Recalling Experience:

- 1.1. Asking/answering questions from video clips
- 1.2. Brainstorming vocabulary
- 1.3. Previewing selected core vocabulary

Step 2: Imagining

- 2.1. Using non-verbal items to make analogy

Step 3: Explicit Modeling

- 3.1. Explaining and modeling reading strategies clearly

Step 4: Reading with Music

- 4.1. Reading assigned texts silently

## 4.2. Asking/answering comprehension-check questions

## Step 5: Parallel Practicing

## 5.1. Practicing the strategies learned through parallel exercises

## 5.2. Making summaries of the parallel texts

## Step 6: Sharing Outcome

## 6.1. Paraphrasing

## 6.2. Sharing ideas regarding the paraphrasing assignments

To validate the developed lesson plans, a specific evaluation form was used (See Appendix K). The form included 12 items of affirmative statements, incorporating five important points of the lesson plan structure: overall components, objectives, contents, teaching/learning activities, and assessment of the plan. A four-point rating scale was also employed. Yielding an average score of 3.63, the result of the evaluation by experts showed that, in general, they were quite satisfied with it in spite of a few comments in the open-ended part. The suggestion regarding coherence between the steps and the time line was taken into consideration. The researcher then made a major revision accordingly.

With the same course content, another set of ten different lesson plans was prepared for the students in the control group. Each plan was based on the conventional instructional method of reading which was not based on the principles of 4MAT System and background music. There were three teaching phases: 1) pre-reading, 2) during-reading, and 3) post-reading. The comparison of the two reading instructional methods in terms of objectives, teaching/learning activities, and assessment is shown in Table 3.6 below.

**Table 3.6** Differences of lesson plans for the experimental and control group

<b>Elements of lesson plan</b>	<b>Experimental group</b>	<b>Control group</b>
1. Objectives	Corresponding with the course objectives	Corresponding with the course objectives
2. Content	Determined by ten chapters of the reading textbook: “Interactions 2”	Determined by ten chapters of the reading textbook: “Interactions 2”



Elements of lesson plan	Experimental group	Control group
3. Teaching/learning activities	<p>Comprising six instructional steps as follows:</p> <p>Step 1: Recalling Experience  Step 2: Imagining  Step 3: Explicit Modeling  Step 4: Reading with Music  Step 5: Parallel Practicing  Step 6: Sharing Outcome</p> <p>The design is based on the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students. The focus was put on enhancing vocabulary ability, reading comprehension, and attitude towards reading</p>	<p>Comprising three teaching phases:</p> <p>1) pre-reading  2) during-reading  3) post-reading  which do not feature the use of the 4MAT System and background music. The focus was put on enhancing reading ability/skills in general.</p>
4. On-process and after-process assessment	<p>Based on six specific teaching/learning steps of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students. At the end of the course, the students' satisfaction was assessed in addition to vocabulary ability, reading comprehension, and attitude towards reading.</p>	<p>Based on conventional three phases of reading instructional method. At the end of the course, only the students' vocabulary ability, reading comprehension, and attitude towards reading were assessed.</p>
5. Roles of teachers and students (See Appendix B)	<p>Inconsistent roles that keep changing along the six teaching/learning steps (four Quadrants of the 4MAT wheel)</p>	<p>Consistent roles throughout the whole procedure</p>

**Stage 2: Implementing the instructional process in an authentic classroom**

The experiment was carried out with two comparable sample groups at the Faculty of Liberal Arts, Rangsit University. To examine the students' vocabulary ability and reading comprehension levels, together with their attitudes towards reading, the vocabulary ability test, reading comprehension test, and reading attitude questionnaire were administered to both groups in a single session as pre-test. Over the period of ten weeks, the experiment group interacted with ten specific lesson plans, which were the intervention of the study while the researcher maintained a conventional instructional method in the control group. After ten weeks, each of the group was administered the vocabulary ability test, reading comprehension test, and reading attitude questionnaire as post-test. Given the period of ten weeks, which was the duration determined in the study, it was long enough to detect the development. As Manson and Bramble (1997) pointed out the longer the time spent, the greater the probability that something could influence the subjects' environment that in turn would affect the results. The period of ten weeks was deemed appropriate to see the effects of the experimental treatment.

During ten weeks in the second semester of the academic year 2010, lasting from 1 November 2010 – 25 February, 2011, the researcher directed conventional instructional method-based activities in the control group. That means the students were taught only with traditional designed learning materials. Throughout the experimental period, the class was conducted with the teacher presenting the topics and the students listening to their teacher and also answering the questions asked by their teacher. At the same time, they carried out activities in their textbooks. While the practice best applicable to this method was drill and practice, students were taught the objectives through teacher-directed lecture, notes on the board and overhead, practices from the textbook, teacher-developed worksheets, and the student workbook, which accompanies the text (See Appendix D). However, in the experimental group, the activities were prepared, based on the principles of the newly-developed model which was underlined by the 4MAT System and background music. Different types of activities were specially designed and revolved around the cycle of 4MAT. After the ten-week period, data regarding the students' vocabulary ability, reading comprehension, and attitude towards reading were collected.

### Stage 3: Analyzing the results of implementing the instructional model

To analyze the data from implementing the developed instructional model, the scores of vocabulary ability, reading comprehension, and attitude towards reading of the experimental and control groups were calculated by using percentage points of the t-distribution in the following aspects:

3.1. Comparing the mean scores of vocabulary ability of the experimental group and control group by t-test (t-independent) at a significance level of .05

3.2. Comparing the mean scores of vocabulary ability of the experimental group before and after the treatment by t-test (t-dependent) at a significance level of .05.

3.3. Comparing the mean scores of reading comprehension of the experimental group and control group by t-test (t-independent) at a significance level of .05.

3.4. Comparing the mean scores of reading of the experimental group before and after the treatment by t-test (t-dependent) at a significance level of .05.

3.5. Converting the mean scores of the attitude towards reading of the students into the following interpreting criteria:

<b>Attitude scores</b>	<b>Interpretation</b>
3.68-5.00	High attitude towards reading
2.34-3.67	Moderate attitude towards reading
1.00-2.33	Low attitude towards reading

3.6. Comparing the mean scores of attitude towards reading of the experimental group and control group by t-test (t-independent) at a significance level of .05

3.7. Comparing the mean scores of attitude towards reading of the experimental group before and after the treatment by t-test (t-dependent) at a significance level of .05.

3.8. Converting the mean of the students' opinions towards the developed instructional model into the following interpreting criteria:

<b>Opinion scores</b>	<b>Interpretation</b>
3.68-5.00	Very satisfied
2.34-3.67	Moderately satisfied
1.00-2.33	Hardly satisfied

3.9. Studying the students' opinion towards the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students

**Stage 4:** Making a conclusion of the implementation of the instructional model

The researcher analyzed the information from Stage 3 and condensed it into a conclusion of the implementation of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students. The result is shown in Chapter IV.



## **CHAPTER IV**

### **RESEARCH FINDINGS**

In the research entitled “Development of a Reading Instructional Model Using the 4MAT System and Music to Enhance Vocabulary Acquisition for English Reading Comprehension and Attitude towards Learning of Undergraduate Students” the data analysis was conducted in two phases.

Phase 1: The result of the development of a reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students

Phase 2: The result of the evaluation of the effectiveness of the instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students

#### **Phase 1: The result of the development of a reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students**

The development of a reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students, resulting in the instructional model and other accompanying documents of the models, incorporated five stages as follows (See also Appendix S):

**Stage 1:** Studying, analyzing, and synthesizing 4MAT System and music and their underpinning learning theories for the development of the instructional model to enhance vocabulary acquisition for English reading comprehension and attitude towards learning

**Stage 2:** Articulating the pedagogical principles of the instructional model based on the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning.

**Stage 3:** Specifying the expected learning outcomes and objectives

**Stage 4:** Developing the instructional steps of the instructional model

**Stage 5:** Specifying assessment and evaluation of the instructional model

The results of the five stages of the developing procedure yielded the instructional model encompassing the following components:

### 1.1. Principles of the instructional model

The principles of the instructional model were derived after the researcher studied, analyzed, and synthesized 4MAT System and music and their underlying learning theories from documents, textbooks, articles, and academic research studies. The principles of the developed model can be summarized as follows:

The instructional model provides learners with opportunities to expand and refine information through adaptive modes by interacting with them. With this, multiple means of exposures to new inputs are featured along the process of instruction. Learners are encouraged to actively make connections between the new and the known. Reflections the learners have on their expression and learning must be shared and turned around. The learning atmosphere in general is orchestrated by background music which is integrated and by the teacher. These roles are changed in line with the cycle of instruction.

### 1.2. Objectives of the instructional model

The developed model incorporates three main objectives as follows:

- 1.2.1 to enhance vocabulary ability of undergraduate students
- 1.2.2 to enhance reading comprehension of undergraduate students
- 1.2.3 to promote positive attitudes towards reading of undergraduate students

### 1.3. Content of the instructional model

The content of the model is based on the content of the course: Reading I (ENG 221) of Rangsit University. The content covers reading skills in English: vocabulary development, word analysis, guessing meaning from context, reading for main ideas, and other reading strategies. There are two parts of the content of the instructional reading model: reading texts and reading strategies.

Reading texts, used in terms of drilling purposes, are a multi-paragraph passage, each of which was written and simplified to serve the targeted vocabulary and reading strategies, used as the principle learning materials in class.

Reading strategies, used in terms of concepts learned, are mental activities that readers use in order to construct meaning from a text. They indicate how readers make sense of what they read and what they do when they do not understand the passage.

Ten principle reading strategies from successful strategic readers were selected for the model:

- Previewing a reading
- Predicting content of a reading
- Skimming and scanning
- Drawing meaning from the context/guessing meanings of unknown words
- Identifying the topic and main idea and supporting details
- Making inference
- Drawing conclusion from the text
- Identifying pronoun references
- Identifying inferences
- Distinguishing facts from assumptions

#### 1.4. Instructional steps of the instructional model

Before starting the activities, it is advisable for the teacher to get the learners oriented through overt explanation. Necessary information regarding all aspects of the instructional process is provided: details of in-class activities, materials to be covered, roles of students and teacher, and assessment and evaluation schemes. After that, vocabulary ability test, reading comprehension test, and reading attitude questionnaire are administered to the students. The teacher, then, follows the instructional steps shown below:

##### **Step 1: Recalling Experience**

During the first step of the instructional process which serves as a warm-up, the teacher's tasks are to engage students in a concrete experience which leads to a search of prior knowledge and prior experience, especially in terms of vocabulary. This search, through leading questions and modern media like video clips, is designed to create an interactive group dialogue through introducing questions which connect what students already know and believe to the topic the teacher intends to teach. The teacher tries to use strategies which encourage diversification of ideas, dialogue, and participation and enable students to associate prior lexical knowledge with new

vocabulary to come. Through idea sharing and pooling, student's beliefs and opinions begin to evolve into organizers and structures for future thinking and concept building. This phase of the process emphasizes right and left hemispheric thinking and, with symbolic thinking and the imposition of structure, the goal is engagement.

### **Step 2: Imagining**

Step two of the process is designed to create a context for students to represent the subjective nature of their existing knowledge as a preparation for the analysis of ideas. In this step, students are encouraged to symbolize their present state of understanding of the subject matter in as many nonverbal forms as possible. Image making, which is central to this step, is a right mode activity. The emphasis here is the expansion of representations of meaning. This step requires students to begin to shift from reflective experience to reflective thinking.

### **Step 3: Explicit Modeling**

Step three of the instructional process engages students in objective thinking. The emphasis here is analysis of concepts, facts, generalizations and theories. At this stage, the teacher presents targeted reading strategies and experience in complete and systematic ways. Well-delivered lecture, which belongs to the left hemisphere, builds upon the personal connections established in step one to foster conceptual thinking.

### **Step 4: Reading with Music**

At this stage, the teacher asks students to read along with music. Students are allowed to apply the strategies they have learned in step three to real practice as the emphasis shifts from acquisition and assimilation to testing and adaptation. Upon reading, students are supposed to employ comprehension monitoring techniques which focus on assessing what the text has stated as compared to the reader's expectation. In this left hemisphere stage, the goal is reinforcement and diagnostic evidence of the student's ability to apply the concepts taught.

### **Step 5: Parallel Practicing**

Step five of the reading process treats the student as a scientist. In this learning step, students test the limits and contradictions of their understanding. Students are encouraged to develop their own applications which demonstrate that they understand



and can apply what has been learned. Parallel reading texts and summary writing are the essence of this phase where the focus of reading, a receptive skill, has shifted to writing, a productive one, to optimize full comprehension. The right mode emphasis in this learning set is designed to encourage students to create personal applications from their experiences with the ideas and vocabulary learned from the previous steps.

### **Step 6: Sharing Outcome**

The final step of the process requires students to critically examine the place of the newly acquired knowledge and experience in their existing world view. The central issue of this post-reading stage here is what must be done to integrate this learning into a meaningful conceptual division. Working in groups, students in this learning set edit and refine their work from earlier steps. While sharing the paraphrasing work, they also face and resolve contradictions implicit in the tension between new and earlier schema. This is the culminating stage where both left and right hemispheres are used, bringing students back to where they started, a completion of the cycle.

#### 1.5. Assessment and evaluation of the instructional model

This newly developed instructional model covers two phases of the assessment scheme: before-process and after-process assessments; and on-process assessment.

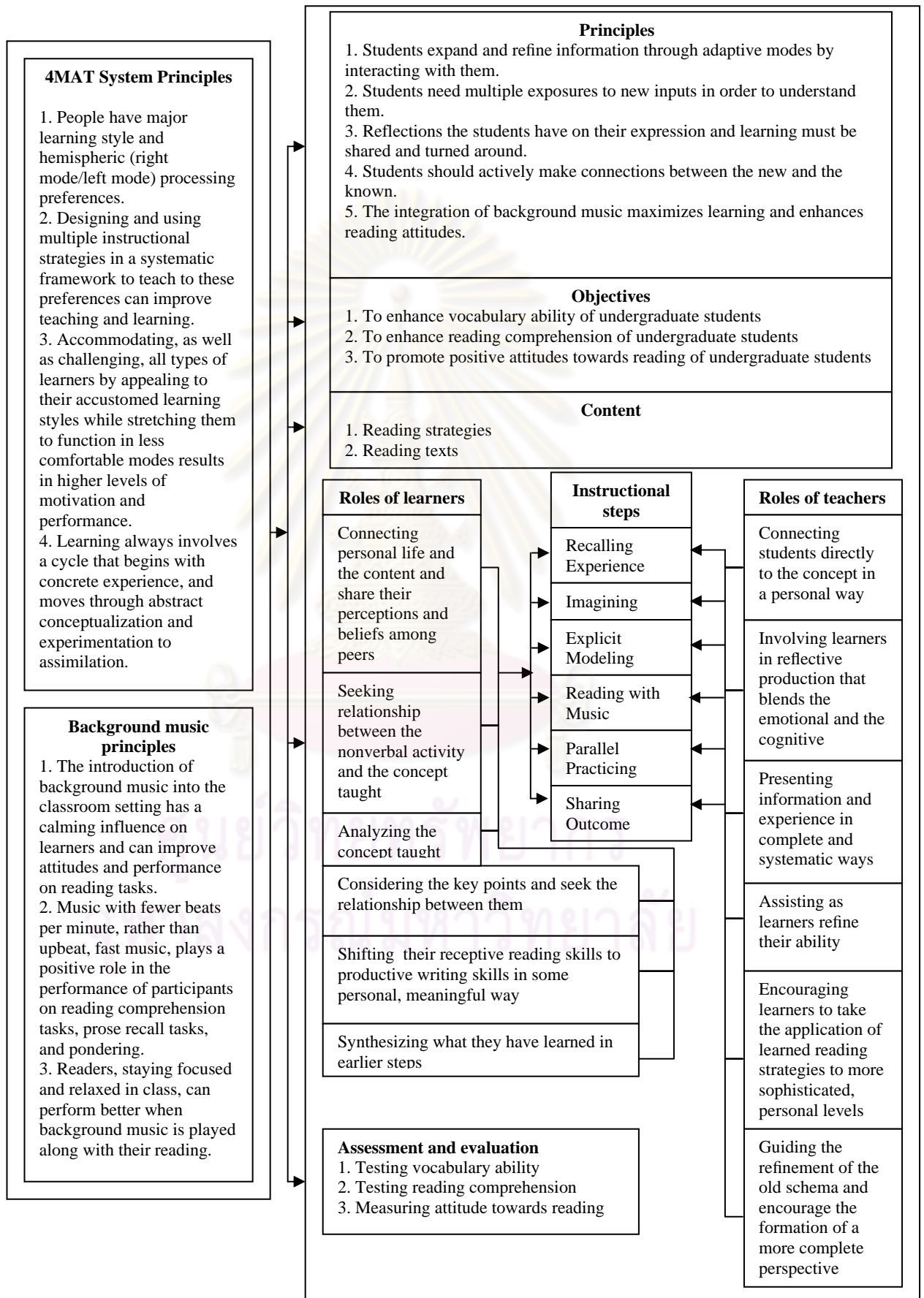
##### 1.5.1. Before-process and after-process assessments

Prior to the teaching procedure based on the developed model, pre-tests which include vocabulary knowledge test, reading comprehension test, and self-report questionnaire on attitude are administered to the learners so that their background proficiency before the intervention can be detected. After the treatment, the same tests will be administered to the group again.

##### 1.5.2. On-process assessment

Students' performance and behaviors, reflecting the effectiveness of the instructional process, is assessed and evaluated along the six steps across the whole reading process. The assessment is conducted through production, presentation observations, in-class activity participation, discussion, and idea exchanges, and can be assigned to each step.

**Figure 4.1** The reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students



## 1.6. Instructional documents

The instructional documents consist of the instructional manual and ten lesson plans. The details are as follows:

1.6.1 The instructional manual is designed as the directions of the developed instructional model, with the purpose to equip the interested teachers with the needed details concerning the model. The manual comprises preparations, materials, guidelines of how to run the instructional activities, roles of teachers and students, and other necessary things to be considered throughout the teaching process. It covers activity alternatives and recommendations which will assist the teacher to implement the instructional model smoothly and achieve its predetermined objectives.

1.6.2. Ten lesson plans, each of which lasts 160 minutes, covering the period of ten weeks. Each lesson plan shares the same format: titles, learning outcomes, content, instructional media, assessment, and specified time. It is designed on the basis of the developed instructional model. Extra worksheets and handouts can be found in Appendix D. These plans require the teachers to study them carefully and prepare instructional media as suggested so as achieve the desired goal of the model.

### **Phase 2: The result of the evaluation of the effectiveness of the instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students**

After the lesson plans, based on the basis of the developed reading instructional model, were validated by a group of experts in the field and piloted during the try-out phase, they were implemented in an authentic class of 30 students, who were the subjects of this present study, in order to evaluate the effectiveness of the developed reading instructional model. The result of the evaluation has four parts as follows:

- 2.1. The result of data analysis regarding vocabulary ability
- 2.2. The result of data analysis regarding reading comprehension
- 2.3. The result of data analysis regarding attitude towards reading
- 2.4. The result of data analysis regarding the students' opinions towards the instructional model

### 2.1. The result of data analysis regarding vocabulary ability

After the comparison of the pre-test mean scores of vocabulary ability of the experimental and control groups was made, the post-test mean scores of vocabulary ability of the two groups and the pre-test and post-test mean scores of vocabulary ability of the experimental group have been compared by using independent samples t-test and dependent samples t-test respectively. The result of the analysis can be seen in Tables 4.1, 4.2, and 4.3 below:

**Table 4.1** Comparison of pre-test mean scores of vocabulary ability of the experimental and control groups

	Max	Min	$\bar{x}$	S.D.	t	df	Sig.
Experimental group	21	14	15.53	4.98	2.81	58	1.07
Control group	20	14	15.15	6.32			

P<.05

(Total scores = 30, n = 60)

It can be seen from Table 4.1 that the pre-test vocabulary ability mean scores of 30 students in the experimental group is 15.53 (S.D. = 4.98) with the highest score of 21 and the lowest score of 14. On the other hand, the mean scores of the pre-test of 30 students in the control group is 15.15 (S.D. = 6.32) with the highest score of 20 and the lowest score of 14. The result of the statistical analysis using independent samples t-test shows that the accounted t is 2.81 (df = 58); thus, it can then be concluded that the vocabulary ability of the experimental and control groups is not significantly different at the level of .05.

**Table 4.2** Comparison of post-test mean scores of vocabulary ability of the experimental and control groups

	Max	Min	$\bar{x}$	S.D.	t	df	Sig.
Experimental group	25	17	20.40	2.40	3.58*	58	.00
Control group	22	15	17.87	3.04			

\*P<.05

(Total scores = 30, n = 60)

In Table 4.2, the mean scores of the post-test of 30 students in the experimental group is 20.40 (S.D. = 2.40) with the highest score of 25 and the lowest score of 17. On the other hand, the mean scores of the post-test of 30 students in the control group is 17.87 (S.D. = 3.04) with the highest score of 22 and the lowest score of 15.

To analyze the different post-test mean scores of both groups, independent samples t-test is employed. Based on the t Distribution, it was found that the calculated t is 3.58 (df = 58) with statistical significance at .001. Therefore, it implies that the post-test vocabulary ability mean scores of the experimental group are significantly higher than that of the control group at the level of .05.

**Table 4.3** Comparison of the pre-test and post-test mean scores of vocabulary ability of the experimental group

	$\bar{X}$	S.D.	$\bar{D}$	$SD_{\bar{D}}$	t	df	Sig.
Pre-test	15.53	4.98	4.87	3.78	7.06*	29	.00
Post-test	20.40	2.40					

\*P<.05

(Total scores = 30, n = 30)

In Table 4.3 above, the pre-test and post-test of vocabulary ability mean scores of 30 students in the experimental group are compared. The mean score of the pre-test of all 30 students is 15.53 (S.D. = 4.98) while their post-test mean score is 20.40 (S.D. = 2.40). The average difference between the pre-test and post-test scores of the students is 4.87 ( $SD_{\bar{D}} = 3.78$ ).

To analyze the differences of the pre-test and post-test vocabulary ability mean scores of the experimental group, dependent samples t-test is used. Based on the t Distribution, the accounted t is shown as 7.06 (df = 29) at statistical significance of .000. Considering the mean score difference, it can be said that the post-test vocabulary ability mean scores of the experimental group are significantly higher than the pre-test mean scores at the statistical level of .05.

## 2.2. The result of data analysis regarding reading comprehension

After the comparison of the pre-test mean scores of reading comprehension of the experimental and control groups was made, the post-test mean scores of reading comprehension of the two groups and the pre-test and post-test mean scores of reading comprehension of the experimental group have been compared by using independent

samples t-test and dependent samples t-test respectively. The result of the analysis can be seen in Tables 4.4, 4.5, and 4.6 below:

**Table 4.4** Comparison of pre-test mean scores of reading comprehension of the experimental and control groups

	Max	Min	$\bar{X}$	S.D.	t	df	Sig.
Experimental group	21	12	15.93	3.03	1.71	58	.92
Control group	20	13	16.85	3.32			

P<.05

(Total scores = 30, n = 60)

Table 4.4 shows that the reading comprehension mean scores of the pre-test of 30 students in the experimental group is 15.93 (S.D. = 3.03) with the highest score of 21 and the lowest score of 12. On the other hand, the mean scores of the pre-test of 30 students in the control group is 16.85 (S.D. = 3.32) with the highest score of 20 and the lowest score of 13. The result of the statistical analysis using independent samples t-test shows that the accounted t is 1.71 (df = 58) with significance of .92. Therefore, it can then be concluded that the pre-test reading comprehension of the experimental and control groups is not significantly different at the level of .05.

**Table 4.5** Comparison of post-test mean scores of reading comprehension of the experimental and control groups

Level of comprehension	Total scores	Experimental group		Control group		t	df	Sig.
		$\bar{X}$	S.D.	$\bar{X}$	S.D.			
Literal comprehension	16	10.70	1.89	9.57	2.22	2.12*	58	.03
Interpretive comprehension	9	6.20	1.54	5.63	1.44	1.46	58	.14
Critical comprehension	5	3.90	.99	3.00	1.08	3.35*	58	.00
Total	30	20.80	2.40	18.2	3.03	3.58*	58	.00

\*P<.05

(Total scores = 30, n = 60)

In Table 4.5 above, the comparison of post-test mean scores of reading comprehension between the experimental and control groups can be seen. The average post-test score of 30 students in the experimental group has been found as  $\bar{X}$  = 20.8 (S.D. = 2.401) while the average post-test score of the control group has been found as

$\bar{X}$  = 18.2 (S.D. = 3.037). The analysis by independent samples t-test shows that the accounted t-value is 3.584 (df = 58) at statistical significance .001, which is lower than .05. It means as a whole, the students in the experimental group show significantly higher reading comprehension mean scores than those in the control group.

Considered each level of comprehension, significance is different across the three levels. With accounted t in literal comprehension level found as 2.12 (df = 58) at statistical significance .038, which is lower than .05, and 3.35 (df = 58) at statistical significance .001 in critical comprehension level, which is lower than .05, it means the students in the experimental group show significantly higher reading comprehension mean scores than those in the control group in the two levels of comprehension. However, with regard to interpretive comprehension level where t value is calculated as 1.46 (df = 58) at statistical significance .14, which is higher than .05, it indicates that the students in the experimental group show insignificantly higher reading comprehension mean scores than those in the control group. When S.D. of the experimental group's mean scores (1.54) is compared with that of the control group (1.44), the higher standard deviation even implies the bigger range of the scores in the group after receiving the treatment.

**Table 4.6** Comparison of the pre-test and post-test mean scores of reading comprehension of the experimental group

Level of comprehension	Total scores	Pre-test		Post-test		$\bar{D}$	$SD_{\bar{D}}$	t	df	Sig.
		$\bar{x}$	S.D.	$\bar{x}$	S.D.					
Literal comprehension	16	8.56	3.33	10.70	1.89	2.13	2.28	5.11*	29	.00
Interpretive comprehension	9	4.90	1.88	6.20	1.54	1.30	1.23	5.76*	29	.00
Critical comprehension	5	2.46	1.16	3.90	.99	1.43	1.19	6.57*	29	.00
Total	30	15.93	3.03	20.80	2.40	4.86	3.77	7.05*	29	.00

\*P<.05

(Total scores = 30, n = 30)

In Table 4.6 above, the pre-test and post-test of reading comprehension mean scores of 30 students in the experimental group are compared. The mean score of the pre-test of all 30 students is 15.93 (S.D. = 3.03) while their post-test mean score is 20.80 (S.D. = 2.40). The average difference between the pre-test and post-test scores of the students is 4.86 ( $SD_{\bar{D}}$  = 3.77).

To examine the differences of the pre-test and post-test of the experimental group, dependent samples t-test is used. Based on the t Distribution, it shows that the accounted t is 7.05 (df = 29) at statistical significance of .00. Considering the mean score difference as a whole, it implies that the post-test reading comprehension mean scores of the experimental group are significantly higher than the pre-test mean scores at the statistical level of .05.

And when the accounted t values of each level of comprehension are taken into notice, it shows that the pre-test and post-test mean scores in each levels of comprehension were significantly different. With the t values of 5.11 (df =29), 5.76 (df =29), and 6.57 (df =29) at statistical significance of .00, it implies that the post-test reading comprehension mean score of the experimental group was significantly higher than their pre-test mean score at the statistical level of .05.

### 2.3. The result of data analysis regarding attitude towards reading

After the comparison of the pre-test mean scores of reading attitudes of the experimental and control groups was made, the post-test mean scores of reading attitudes of the two groups and the pre-test and post-test mean scores of reading attitudes of the experimental group have been compared by using independent samples t-test and dependent samples t-test respectively. The result of the analysis can be seen in Tables 4.7, 4.8, and 4.9 below:

**Table 4.7** Comparison of pre-test mean scores of reading attitudes of the experimental and control groups

Aspects of reading attitude	Total items	Experimental group		Control group		t	df	Sig.
		$\bar{X}$	S.D.	$\bar{X}$	S.D.			
Comfort	7	3.34	.40	3.41	.39	3.28	58	1.01
Anxiety	8	2.86	.55	2.68	.67	4.35	58	.08
Value	8	4.02	.25	3.86	.34	2.47	58	2.32
Self perception	7	2.75	.51	2.78	.42	4.24	58	.74
Total	30	3.24	.42	3.18	.45	2.86	58	.26

P<.05

(Total items = 30, n = 60)

Table 4.7 shows that the pre-test reading attitudes mean scores of 30 students in the experimental group is 3.24 (S.D. = .42) with the highest mean score of 4.02 in



the aspect of Value and the lowest mean score of 2.75 in the aspect of Self Perception. On the other hand, the mean scores of the pre-test of 30 students in the control group is 3.18 (S.D. = .45) with the highest score of 3.86 in the aspect of Value and the lowest mean score of 2.68 in the aspect of Anxiety. The result of the statistical analysis using independent samples t-test shows that the accounted t is 2.86 (df = 58); thus, it can then be concluded that the reading attitudes of the experimental and control groups is not significantly different at the level of .05.

**Table 4.8** Comparison of summarized post-test mean scores of attitude towards reading of the experimental and control groups

Aspects of reading attitude	Total items	Experimental group		Control group		t	df	Sig.
		$\bar{X}$	S.D.	$\bar{X}$	S.D.			
Comfort	7	3.99	.43	3.65	.40	4.29*	58	.01
Anxiety	8	3.71	.60	3.08	.62	2.33*	58	.02
Value	8	4.67	.28	4.44	.39	3.35*	58	.00
Self perception	7	3.35	.56	2.93	.46	3.54*	58	.00
Total	15	3.93	.46	3.52	.45	3.36*	58	.01

\*P<.05

(Total items = 30, n = 60)

Table 4.8 provides the summarized post-test mean score of the experimental group as compared with that of the control group, using independent sample t-test. The calculated t values across the four aspects of reading attitude, Comfort, Anxiety, Value, and Self Perception are 4.29, 2.33, 3.35, and 3.54, at significance level of .018, .028, .001, and .001 respectively. Consequently, it implies that in terms of reading attitude, the post-test mean scores of the experimental group are significantly higher than those of the control group at the statistical level of .05.

**Table 4.9** Comparison of the pre-test and post-test mean scores of reading attitudes of the experimental group

Level of comprehension	Total scores	Pre-test		Post-test		$\bar{D}$	SD $_{\bar{D}}$	t	df	Sig.
		$\bar{X}$	S.D.	$\bar{X}$	S.D.					
Comfort	7	3.34	.40	3.99	.43	.65	2.17	4.22*	58	.00
Anxiety	8	2.86	.55	3.71	.60	.85	1.14	6.78*	58	.00
Value	8	4.02	.25	4.67	.28	.65	1.20	7.67*	58	.00
Self perception	7	2.75	.51	3.35	.56	.60	2.54	3.97*	58	.00
Total	15	3.24	.42	3.93	.46	.69	3.62	6.05*	58	.00

\*P<.05

(Total scores = 30, n = 30)

In Table 4.9 above, the pre-test and post-test of reading attitude mean scores of 30 students in the experimental group are compared. The mean score of the pre-test of all 30 students is 3.24 (S.D. = .42) while their post-test mean score is 3.93 (S.D. = .46). The average difference between the pre-test and post-test scores of the students is .69 ( $SD_{\bar{D}} = 3.62$ ).

To examine the differences of the pre-test and post-test of the experimental group, dependent samples t-test is used. Based on the t Distribution, it shows that the accounted t is 6.05 (df = 58) at statistical significance of .00. Considering the mean score difference as a whole, it implies that the post-test reading attitude mean scores of the experimental group are significantly higher than their pre-test mean scores at the statistical level of .05.

And when the accounted t values of each aspect of reading attitudes are taken into notice, it shows the difference of pre-test and post-test mean scores of each aspect are significant. With the t values of 4.22 (df = 58), 6.78 (df = 58), 7.67 (df = 58), and 3.97 (df = 58) at statistical significance .00, it implies that the post-test reading attitude mean scores of the experimental group were significantly higher than their pre-test mean scores at the statistical level of .05.

Additionally, as revealed by the data from the open-ended part of the reading attitude questionnaires, it was found that the students' opinions in both experimental and control groups towards reading were different. In terms of Comfort and Anxiety, the participants in both groups indicated that they perceived reading as more enjoyable and less boring; however, the students in the experimental group provided more reasons in alignment with the lessons taught. They pinpointed that they felt less stressed when reading English texts both inside and outside the class as they knew they could apply the strategies and techniques learned in class to whatever they read though they had never seen them before. The students in the group also expressed higher motivation and confidence upon reading, saying that they were more willing to read unfamiliar or long texts though they did not completely understand what they read and that they felt their anxiety decreased because of the background music used. Concerning vocabulary, at the end of the course, the students in the control group found guessing meaning of unknown words easier than at the beginning, but no reasons were provided. On the contrary, the students in the experimental group indicated that they could employ word-attacking strategies to draw meaning from lexical items they encountered while reading.

In the aspect of Value and Self Perception, the students in the experimental group also elaborated more positive utility of reading by saying that the strategies learned in class were of great use since they could be applied to both reading in other courses and in their everyday life. They added that the topics of the lessons they interacted with in class ignited some ideas and convinced them to read more, especially for the general knowledge. The students in the control group held opinions towards the value of reading; nevertheless, their viewpoints were not specific. In addition, the students in the experimental group viewed themselves as more skilled readers, pinpointing that they had more mastery over the reading strategies learned in class. They described that they were able to draw the main ideas and important details out of the texts, and to make inferences, the strategy they once found difficult to master. A few students in the group also related the increasing reading proficiency, in their perception, with other language skills, saying that their speaking and writing ability also developed due to what they had learned in the reading course.

#### 2.4. The result of data analysis regarding the students' opinions towards the instructional model

To examine the students' opinions towards the instructional model, a 5-point rating scale questionnaire was used. The questionnaire included 20 items, each of which could be categorized into three aspects: opinions towards the principle activities in all 6 instructional steps (Items 2-12), opinions towards the use of background music (Items 13-16), opinions towards the benefit of the model in relation to academic gains (Items 17-19), and overall satisfaction towards the instructional model (Items 1, 20).

So as to interpret the data after being statically analyzed, the students' opinion mean scores were converted by the following interpreting criteria:

<b>Opinion scores</b>	<b>Interpretation</b>
3.68-5.00	Very satisfied
2.34-3.67	Moderately satisfied
1.00-2.33	Hardly satisfied

The results of the analysis of data are shown in Tables 4.10, 4.11, and 4.12.

**Table 4.10** The mean scores of students' opinions towards the principle activities in all instructional steps of the instructional model

Items	$\bar{x}$	S.D.	Interpretation
1. The use of video clip in Step 1 is appropriate and useful.	4.65	.57	Very satisfied
2. Pooling core vocabulary in Step 1 before reading the text makes the reading easier.	4.73	.68	Very satisfied
3. Using nonverbal activities in Step 2 to introduce the reading strategies to be taught in Step 3 is interesting and appropriate.	3.56	.42	Moderately satisfied
4. I like the way the teacher taught and modeled reading strategies explicitly in Step 3.	4.27	.43	Very satisfied
5. Reading strategies in Step 3 should be taught before starting to read the text in Step 4.	4.33	.61	Very satisfied
6. Silent reading paragraph by paragraph, timed by background music, is appropriate.	4.27	.59	Very satisfied
7. Answering all comprehension-check questions after each paragraph is appropriate and useful as it helped me understand the paragraph better.	3.95	.75	Very satisfied
8. Doing the parallel reading activity in Step 5 allowed me a good opportunity to review the reading strategies learned in Step 3 again.	4.56	.48	Very satisfied
9. Writing out a paragraph summary in a form of one sentence helped me know better how to locate or draw the main idea.	4.19	.81	Very satisfied
10. Paraphrasing in Step 6 is useful as I could practice both reading and writing skills.	4.42	.43	Very satisfied
11. Seeing writing work of other groups is appropriate as I could know how good or bad I was when compared with peers.	4.67	.55	Very satisfied

The following interpreting criteria is assigned: 1.00-2.33: Hardly satisfied, 2.34-3.67: Moderately satisfied, and 3.68-5.00: Very satisfied. The result of data analysis in Table 4.10 shows that, overall, the students were very satisfied with the instructional activities integrated in the instructional model. The item receiving the highest mean score (4.73) is "Pooling core vocabulary in Step 1", and second to highest is "Seeing writing work of other groups is appropriate" (4.67) which belongs to Step 5. The students perceived the item "Using nonverbal activities in Step 2" the lowest, receiving 3.56. This item is the only one that was rated as moderately satisfied among all in the group.

**Table 4.11** The mean scores of students' opinions towards the use of background music incorporated in the instructional model

Items	$\bar{X}$	S.D.	Interpretation
1. The background music played while doing the group work helped maintain relaxing atmosphere.	4.85	.59	Very satisfied
2. The background music played while I was reading in Step 4 could keep my focus and attention.	4.56	.63	Very satisfied
3. Background music made learning more interesting and reading less boring.	4.24	.48	Very satisfied
4. I have realized the benefit of background music and know that it can be used while reading.	3.96	.40	Very satisfied

Table 4.11 provides information concerning the students' satisfaction towards the use of background music. It was found that, in general, the students were very satisfied with the background music used in the instructional model. The students expressed their highest satisfaction towards the item "The background music played while doing the group work helped maintain relaxing atmosphere." (4.85). They perceived the item "I have realized the benefit of background music and know that it can be used while reading." As the lowest, receiving the mean score of 3.96. However, it is still classified in the highest range of satisfaction.

**Table 4.12** The mean scores of students' opinions towards the benefit of the instructional model in relation to academic gains

Items	$\bar{X}$	S.D.	Interpretation
1. The reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning is interesting.	4.12	.47	Very satisfied
2. This reading instructional model can improve my reading comprehension in general.	4.27	.66	Very satisfied
3. This reading instructional model can help me learn vocabulary better in general.	4.42	.41	Very satisfied
4. My attitude towards reading is now better in general after being taught through this reading instructional model.	4.33	.58	Very satisfied
5. I want to have an opportunity to be taught through this reading instructional model again in other higher reading courses.	4.46	.52	Very satisfied

The result of data analysis in Table 4.12 shows that the students in general were very satisfied with the benefit of the instructional model in relation to academic gains. The item receiving the highest mean score (4.46) is “I want to have an opportunity to be taught through this reading instructional model again.”, and the item rated the lowest is “The reading instructional model is interesting.”

The qualitative data from the open-ended part of the questionnaire were analyzed by means of thematic approach. The results of the analysis were classified into three categories: instructional activities, the teacher, and the learning atmosphere as follows:

1. Instructional activities: The majority of the students enjoyed the variety of activities which they had never experienced in ordinary reading classes. Several of them viewed group work as supportive to learning. And more than half of the class had very positive opinions towards the instructional media, especially the use of video clips, PowerPoint slides, and jigsaw games or paper folding (Step 2). A few students voiced their complaints on “too large a variety of activities”, but that was their perception only in the first few weeks as, after some time, they said they could adjust to the multiple activities and began to immerse themselves into the leaning process.

2. The teacher: Apart from the usual complements on “being knowledgeable”, more than one-third of the class perceived the teacher as “versatile and all-rounded”. A few students could even elaborate the good points of the teacher’s role change. Several of them also pinpointed that it was the teacher that made them confident to perform and to join in class activities.

3. Learning atmosphere: Almost all students specifically enjoyed the calming and stress-free effect of the “beautiful and relaxing” sound of background music intermittently played along the track of learning. A lot of them indicated the increased motivation to learn as brought about by music. Only one voice of the students, in addition to a few complaints about the run-down condition of the classroom, expressed aversion towards the music, looking at it as “disruptive”.

All in all, when taking the information from all aspects of the questionnaire, especially the grand mean score of 4.34, into account, it can be summarized that the students were very satisfied with the developed reading instructional model. The discussion of the research findings are shown in Chapter V.

## **CHAPTER V**

### **SUMMARY, DISCUSSIONS, AND RECOMMENDATIONS**

The research entitled “Development of a reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students” encompassed two objectives.

#### **Research Objectives**

1. To develop the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students

2. To investigate the effectiveness of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students, which could be done through:

2.1. Evaluation of experts in the field

2.2. Evaluation of the effectiveness of the developed instructional model

#### **Research methodology**

The methodology consisted of two principle phases: the development of the reading instructional model and the evaluation of the effectiveness of the model after its implementation.

#### **Phase 1: Developing the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students**

The phase incorporated five stages as follows:

**Stage 1:** Studying, analyzing, and synthesizing the 4MAT System and music and taking the underlying learning theories from various sources into consideration.

**Stage 2:** Developing the instructional model based on the 4MAT System and music attitude towards learning were written.

**Stage 3:** Developing instructional documents: instructional manual and lesson plans

**Stage 4:** Validating the instructional model, together with its instructional documents

**Stage 5:** Revising the instructional model, together with its instructional documents

**Phase 2: The evaluation of the effectiveness of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students**

**Stage 1:** Preparing the instructional model for implementation

1.1. Developing the instruments for collecting data

The research included four instruments as follows:

1.1.1. Vocabulary ability test

1.1.2. Reading comprehension test

1.1.3. Reading attitude questionnaire

1.1.4. Questionnaire eliciting students' opinions towards the developed model

1.2. Specifying the population and sampling Assigning groups and choosing a course to experiment in

1.3. Making lesson plans using the instructional model

Over the period of ten weeks, two sets of lesson plans were prepared for the students in both the experimental group and the control groups. Each lesson plan, designed for 160-minute instruction of three periods, was based on the reading textbook: "Interactions 2" (Hartman and Kirn, 2007). Each lesson plan incorporates six instructional steps based on the principles and objectives of the instructional model.

**Stage 2:** Implementing the instructional model in an authentic class

**Stage 3:** Analyzing the results of implementing the instructional model

To analyze the data from implementing the developed instructional model, the scores of vocabulary ability, reading comprehension, and attitude towards reading of the experimental and control groups were calculated by using percentage points of the t-distribution in the following aspects:



3.1. Comparing the mean scores of vocabulary ability, reading comprehension, and attitude towards reading of the experimental group and control group by t-test (t-independent) at a significance level of .05

3.2. Comparing the mean scores of vocabulary ability, reading comprehension, and attitude towards reading of the experimental group before and after the treatment by t-test (t-dependent) at a significance level of .05.

3.3. Studying the students' opinion towards the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students

### **Conclusion of research findings**

The research findings can be concluded into two parts: 1) the result of the development of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students 2) the result of the experimentation of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students.

#### **1. The result of the development of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students**

The development of a reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students, resulting in the instructional model and other accompanying documents of the models, incorporated three main parts as follows: principles, objectives, and instructional procedures.

##### **1.1. Principles**

1. Students expand and refine information through adaptive modes by interacting with them.

In order to acquire vocabulary and master reading strategies, students should do something with the words and through practice. To maximize the internalization of learning, students must be provided an opportunity to apply what they have learned.

Learning tasks such as structured exercises, simulations, cases, games, and observations had proven to be powerful learning tools because they created personal experiences for learners that serve to initiate their own process of inquiry and understanding.

2. Students need multiple exposures to new inputs in order to understand them.

A variety of instructional modes, media, and activities must be used along with various strategies to transform theories into concepts. Students with different learning styles register input in different ways. So as to accommodate all types of learners and to appeal to individual interest, instructional modes, media, and in-class activities should be varied throughout the reading instruction procedure.

3. Reflections the students have on their expression and learning must be shared and turned around.

Group work and lots of student talk should be incorporated. Through group activities, students can infect each other with enthusiasm for reading, which allow more proficient students to help other peers to better understand what they read in class. Peers also provide an audience with whom students can share information about what they have read.

4. Students should actively make connections between the new and the known.

Students' background knowledge must be activated especially in terms of vocabulary and the content of the text. Through an introduction, students recall information that they may already know about the topic of the text. If the students keep this knowledge in mind as they read, they increase their opportunities to make sense of the information they find in the text. This activating process will also review or introduce the relevant vocabulary for the topic.

5. The integration of background music maximizes learning and enhances reading attitudes.

Listening to background music during reading and pondering will increase focus and attention, which improves mental sharpness. Relaxation from music can facilitate changes in physiological states in the body that allow the brain to work more

efficiently. Students perform better while listening to the soft, calm, relaxing music like classical music with more of a slow tempo, rather than more upbeat music.

## **1.2. Objectives**

The developed model incorporates three main objectives as follows:

1. to enhance vocabulary ability of undergraduate students
2. to enhance reading comprehension of undergraduate students
3. to promote positive attitudes towards reading of undergraduate students

## **1.3. Instructional Procedures**

### **Step 1: Recalling Experience**

During the first step of the instructional process which serves as a warm-up, the teacher's tasks are to engage students in a concrete experience which leads to a search of prior knowledge and prior experience, especially in terms of vocabulary. This search, through leading questions and modern media like video clips, is designed to create an interactive group dialogue through introducing questions which connect what students already knows and believes to the topic the teacher intends to teach. The teacher tries to use strategies which encourage diversification of ideas, dialogue, and participation and enable students to associate prior lexical knowledge with new vocabulary to come. Through idea sharing and pooling, student's beliefs and opinions begin to evolve into organizers and structures for future thinking and concept building. This phase of the process emphasizes right and left hemispheric thinking and, with symbolic thinking and the imposition of structure, the goal is engagement.

### **Step 2: Imagining**

Step two of the process is designed to create a context for students to represent the subjective nature of their existing knowledge as a preparation for the analysis of ideas. In this step, students are encouraged to symbolize their present state of understanding of the subject matter in as many nonverbal forms as possible. Image making, which is central to this step, is a right mode activity. The emphasis here is the expansion of representations of meaning. This step requires students to begin to shift from reflective experience to reflective thinking.

### **Step 3: Explicit Modeling**

Step three of the instructional process engages students in objective thinking. The emphasis here is analysis of concepts, facts, generalizations and theories. At this stage, the teacher presents targeted reading strategies and experience in complete and systematic ways. Well-delivered lecture, which belongs to the left hemisphere, builds upon the personal connections established in step one to foster conceptual thinking.

### **Step 4: Reading with Music**

At this stage, the teacher asks students to read along with music. Students are allowed to apply the strategies they have learned in step three to real practice as the emphasis shifts from acquisition and assimilation to testing and adaptation. Upon reading, students are supposed to employ comprehension monitoring techniques which focus on assessing what the text has stated as compared to the reader's expectation. In this left hemisphere stage, the goal is reinforcement and diagnostic evidence of the student's ability to apply the concepts taught.

### **Step 5: Parallel Practicing**

Step five of the reading process treats the student as a scientist. In this learning set, students test the limits and contradictions of their understanding. Students are encouraged to develop their own applications which demonstrate that they understand and can apply what has been learned. Parallel reading texts and summary writing are the essence of this phase where the focus of reading, a receptive skill, has shifted to writing, a productive one, to optimize full comprehension. The right mode emphasis in this learning set is designed to encourage students to create personal applications from their experiences with the ideas and vocabulary learned from the previous steps.

### **Step 6: Sharing Outcome**

The final step of the process requires students to critically examine the place of the newly acquired knowledge and experience in their existing world view. The central issue of this post-reading stage here is what must be done to integrate this learning into a meaningful conceptual division. Working in groups, students in this learning set edit, and refine their work from earlier steps. While sharing the paraphrasing work, they also face and resolve contradictions implicit in the tension between new and earlier schema. This is the culminating stage where both left and right hemispheres are used, bringing students back to where they started, a completion of the cycle.

## 1.4. Assessment and evaluation

### 1. Before-process and after-process assessments

Prior to the teaching procedure based on the developed model, pre-tests which include vocabulary knowledge test, reading comprehension test, and self-report questionnaire on attitude are administered to the learners so that their background proficiency before the intervention can be detected. After the treatment, the same tests will be administered to the group again.

### 2. On-process assessment

Students' performance and behaviors, reflecting the effectiveness of the instructional process, is assessed and evaluated along the six steps across the whole reading process. The assessment is conducted through production, presentation observations, in-class activity participation, discussion, and idea exchanges, and can be assigned to each step.

## **2. The result of the experimentation of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students**

Having proved the hypotheses of the study, the research findings of the experimentation of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students are as follow:

2.1. After the experiment, the group of students interacting with the reading instructional model using the 4MAT System and music had significantly higher vocabulary ability mean scores than the group receiving the conventional instructional method at the level of 0.05.

2.2. The post-test vocabulary ability mean scores of the group of students interacting with the reading instructional model using the 4MAT System and music were significantly higher than their pre-test mean scores at the level of 0.05.

2.3. After the experiment, the group of students interacting with the reading instructional model using the 4MAT System and music had significantly higher reading comprehension mean scores than the group receiving the conventional instructional method at the level of 0.05.

2.4. The post-test reading comprehension mean scores of the group of students interacting with the reading instructional model using the 4MAT System and music were significantly higher than their pre-test mean scores at the level of 0.05.

2.5. After the experiment, the group of students interacting with the reading instructional model using the 4MAT System and music had significantly higher mean scores of attitude towards reading than the group receiving the conventional instructional method at the level of 0.05.

2.6. The post-test mean scores of attitude towards reading of the group of students interacting with the reading instructional model using the 4MAT System and music were significantly higher than their pre-test mean scores at the level of 0.05.

2.7. Overall, the group of students interacting with the reading instructional model using the 4MAT System and music had positive opinions on the developed instructional model.

## **Discussions**

In order to discuss the research findings, the research questions can be answered as follows:

**Research Question 1:** In what aspect did the reading instructional model using the 4MAT System and music enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students?

**Research Question 2:** How effective was the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students?

The answers to the two questions are interrelated and it is of overriding importance to consider the significance of the developed instructional model in terms of its structure, main components, and how it was addressed to the expected results, which are vocabulary ability, reading comprehension, and attitude towards learning.

### **1. The significance of the reading instructional model using the 4MAT System and music in terms of its structure and main components**

The reading instructional model is grounded on the main cycle of the 4MAT System with an integration of music. It is targeted to boost reading achievement, of which the attributes are reading comprehension, vocabulary ability, and reading attitudes. According to Koda (2005) and Farrell (2010), reading achievement can be

enhanced through well-designed instructional methods and strategies that can accommodate learners in appropriate ways. In addition, the teacher's roles that keep changing around the wheel of 4MAT are beneficial in light of scaffolding.

Considering the instructional procedures of the model, consisting of 1) Recalling Experience 2) Imagining 3) Explicit Modeling 4) Reading with Music 5) Parallel Practicing 6) Sharing Outcome, implication of its activities can be discussed as follows:

### **Step 1: Recalling Experience**

This pre-reading step serves as an introduction activity with an aim to arouse students' interest towards the reading text. The step covers right and left brain modes, where students are supposed to "connect" first and "attend" later. The following main focuses on reading are seen.

First, showing a video clip, which is the starting activity of this step, places the concept in students' minds and makes them want to see and hear the word. This goes in line with Huckin, Haynes and Coady (1993) who suggest that learning is promoted by creating the need for vocabulary before presenting the words themselves. Also, using multimedia in class in this fashion can arouse students' interest towards the reading text apart from connecting the topic to be read with their background knowledge in terms of vocabulary.

Word association is then used to connect pictures or video clips with learners' prior experience regarding vocabulary. In terms of schema theory (Pardo, 2004), this activity is beneficial in two ways. First, an introduction helps students to recall any information that they may already know about the topic, either from personal experience or other reading. As they read, they can, using this knowledge, make sense of the information they find in the text (Aebersold and Field, 1997). And second, activating background knowledge is important to reading, as it helps students to start to think about the topic. This, in turn, increases their interest in the topic and motivates them to read the text. Word association can give students opportunities to review relevant vocabulary relating to the topic.

Subsequently, word generating, through brainstorming and pooling by the teacher, can help learners learn the words in the context of the topic of the reading. And the framework and all the associations that readers have of the word within that framework will help them learn. This activity is supported by recent research which

has indicated that L2 readers acquire vocabulary more effectively when they are directly involved in constructing meaning of the words rather than when they memorize a definition or synonyms (Koda, 2005).

### **Step 2: Imagining**

This is another pre-reading step where right brain mode is emphasized. And it is the only activity that is unique to 4MAT. The objective is to extend the experience of reflection in Step 1 to the delivery of reading strategies in Step 3. One principle activity, which is analogy, is featured.

As used in this step, analogy can nonverbally help learners to relate the strategies to be taught and content of the new reading to knowledge the learners possess. This will help them conceptualize the input through the right mode of their brain. McCarthy (2006) suggests that these nonverbal activities or media are used to accommodate the right brain and must be based on the students' past experience as connected and shared in Step 1. They must relate to the content of the lecture that follows. "If the teachers do this well, the students will attend to their lecture and focus on their reading with a highly successful attitude." In this present study, jigsaw games were used as a main activity, but other types of visual dialogs, paper folding, and drawing served as alternatives, depending on the reading strategies to be taught in Step 3. Qualitative data from the result of students' opinion questionnaires indicated that this activity was "unusual" when compared with those they had seen in other typical reading classes. However, the activity can be applied as a pre-reading activity and is a good substitute for concept maps (Sousa, 2005).

### **Step 3: Explicit Modeling**

The objective of this pre-reading step, equivalent to step 4 in Quadrant 2 of 4MAT with the focus on the left brain, is to equip students with targeted reading strategies. The process engages students in objective thinking which relies on the left brain. The focus is put on explicit teaching of reading strategies. Research suggests that reading strategies can and should be explicitly taught to L2 students and that when strategies are taught, students' performance on comprehension tests improves, and they are better able to recall the contents of a text (Paris, Wasik and Turner, 1991). There are also other research studies that pinpoint the importance of explicit strategies before reading and six good reasons can be concluded (Winograd and Hare, 1988; Grabe and Stoller, 2002). First, strategies allow readers to elaborate upon,



organize, and evaluate information derived from a text. Also, the acquisition of reading strategies coincides and overlaps with the development of multiple cognitive strategies to enhance attention, memory, communication, and learning. In addition, strategies are personal cognitive tools that can be used selectively and flexibly. Apart from that, strategies that foster reading and thinking can be taught directly by teachers. And aside from enhancing learning throughout the curriculum, strategic reading reflects metacognition and motivation, because readers need to have both the knowledge and disposition to use strategies.

The reasons above imply that these strategies should be taught through systematic modeling by the teacher so that the learners can be fully aware of the strategies they are using currently and those they will use in the future.

#### **Step 4: Reading with Music**

The objective of this during-reading step is to provide guided practice upon applying the strategies learned. At this stage, students are asked to read along with music. While reading, they are supposed to employ comprehension monitoring techniques to assess what the text has stated as compared to the reader's expectation. This stage relies on the left brain and, according to the 4MAT System, the goal is reinforcement and diagnostic evidence of the student's ability to apply the concepts taught. The focus is as follows:

At this stage, the emphasis is on comprehension questions which are asked at the end of each paragraph. The purpose of the questions is for students to review and assess what they read. According to Aebersold and Field (1997), it is suggested that the teacher should use questions to build comprehension of a higher-level text so that students can establish the main idea of each paragraph. This is of use as they can see how an individual paragraph might fit into the reading as a whole. This is in accord with Sousa (2005) who suggests that questions can be used by both teachers and learners throughout this during-reading process, serving several purposes: for readers, questions can help them monitor comprehension, and for teachers, they can help assess comprehension.

After reading, students are asked to do an after-reading exercise in the form of outlining or filling in the Venn diagram to help them see the entire idea organization of the text. Understanding the semantic structure of the reading explicitly is another general approach to increasing reading comprehension (Farrell, 2010).

### **Step 5: Parallel Practicing**

The objective of this post-reading step is to give students the opportunity to personalize the learned strategies by doing a collaborative reading-writing task. The students are asked to write out a summary of parallel reading texts. This is the right mode step where students are encouraged to develop their own applications which demonstrate that they understand and can apply what has been learned. The focus is placed on two activities.

First, parallel reading texts and summary writing are featured. Summary writing functions as an assessing tool, reflecting that learners can build comprehension of a particular text both now and in the future. This leads to a transfer of skills. Asking students to spend 10-15 minutes writing down what they have just read is an unstructured but effective way to get them to review mentally the information in an overt manner (Aebersold and Field, 1997). For teachers, this activity serves as another means to assess the students' comprehension. Several researches indicate the value of writing a brief summary after reading as one activity to help increase comprehension in a reading class (McEwan, 2002).

Second, locating topic sentences in the paragraph involve many skills for readers. However, it is accepted as another strategy which helps maximize comprehension. If the topic sentence is clearly stated in the paragraph, the readers use only a scanning technique. But if the paragraph is implicit, containing no topic sentence in any one part of the paragraph, the readers must construct that main sentence through synthesizing the information throughout the paragraph. This activity is beneficial as it leads to comprehension in general (Aebersold and Field, 1997).

### **Step 6: Sharing Outcome**

The objective of this post-reading step is to provide guidance and feedback on students' projects and to encourage students. During this step, students work in groups; they edit, and refine their work from earlier steps. While sharing the paraphrasing work, they also face and resolve contradictions implicit in the tension between new and earlier schema. This is the culminating stage which brings students back to where they started. It means a completion of the cycle. It is the step where "the students are now embodying the text of the experts" (McCarthy and McCarthy,

2006). The step encompasses both the right and left brain; that means students refine first and perform later. The focus is placed on three activities.

The first learning activity is paraphrasing. Having learners paraphrase the text, or parts of it, in their own words and discuss the paraphrased version with their peers is effective as it involves all four skills which lead to a deeper understanding and greater memory of the text. This also allows the teacher to assess the students' production since they will be able to make a good paraphrase as long as they comprehend what they read. Moreover, when students recall information and paraphrase it in some way, in addition to knowledge, they are using the process of translation, which is a subcategory of comprehension (Fisk and Hurst, 2003; Aebersold and Field, 2002).

The second activity includes core vocabulary or key words. Using learned key words that the students know already in Step 1 and Step 4 (during-reading) in the paraphrasing exercise is suggested. This student-centered activity allows an opportunity for students to refine through their experience. Every time teachers tell students the meaning of a word, they lose an opportunity to encourage and aid students in building their own strategies to cope with unknown vocabulary (Aebersold and Field, 2002).

For the third activity, when the paraphrasing work is turned around, that means the activity has provided the students with an opportunity to analyze and discuss good and bad examples of chapter summaries. This is effective because it serves as a means to extend their reading and also promote group working and sharing among their peers (Aebersold and Field, 2002). This is also an opportunity to allow students to share what they learned and to evaluate the learning (Sousa, 2005).

Meanwhile, regarding the effects of music on the instruction, the use of background music in Steps 1, 2, 4, 5, and 6 serves different purposes and renders various benefits. In Step 1 and 2, music is used, especially when students do the brainstorming and pondering activities, to create a relaxing atmosphere, which thereby results in their production (Have, 2008). And while students are silent-reading paragraph by paragraph in Step 4, music is used to keep their attention while reading and, as a by-product, to time their reading. During Step 5 and 6, music is used to provide its calming effect as, when disruptions simply subside, the students will be focused on the lesson (Jackson and Joyce, 2003). Another obvious by-product of background music use in the present study is its effect on classroom management.

Music has the power to keep students engaged and reduce discipline problems within the classroom. The inclusion of music in lessons tends to enrich the material and provide more meaning to the lesson. When the learners are more engaged and interested in the lesson, they will stay focused for longer and retain more information. The students will not have as many discipline problems when they are engaged. The learners will be focused on the lesson and disruptions will simply subside (Jackson and Joyce, 2003).

The teacher's roles that keep changing around the wheel of the instruction and provide supports to the students in its different aspects can be explained with the idea of scaffolding. The use of scaffolding supported by the teacher who can use decoding, word recognition, and modeling is explained in Vygotsky's Zone of Proximal Development (ZPD). Students can further improve their reading ability, and overcome anxiety with the help of an intervention from a teacher. The help given by the teacher is called scaffolding. In Vygotsky's theory of Zone of Proximal Development, it is stated that students can achieve their potential level of development if scaffolding is given or applied to them. As time progresses, they develop the skills and can read independently later on. Vygotsky saw development as social in origin and reliant tools and signs for the mediation of mental processes (Smagorinsky, 1995). The Zone of Proximal Development explains that the consciousness has a social origin and claims that mental processes are mediated by tools and signs (Wertsch, 1985). The theme points out that mental processes, one of which is reading, can be directly affected by external factors, such as the supervision or facilitation of the teacher, as seen in the framework of the instructional model.

In addition, throughout the whole process of instruction, group working was seen prevalent in almost all instructional steps, combined with other reading activities in different fashions to maximize the students' learning and potentials. Small group working in a reading class provided students with an opportunity to share their ideas regarding the reading materials. Besides, the empirical data through the observation in authentic classes have shown that the students were more enthusiastic and motivated to learn. Also, working in a group while reading allows students to enjoy materials that they may not be able to read on their own (Fountas and Pinnell, 1996). Students encounter many different types of experiences when being grouped for instruction. These experiences can include different attitudes, feelings, self-perceptions, and changes in behavior, all of which lead to more positive attitudes in learning (Tieso, 2003).

## 2. Reading comprehension

According to the research results, it was found that, as a whole, the students in the experimental group ( $\bar{X} = 20.8$ , S.D. = 2.40) show significantly higher reading comprehension mean scores than those in the control group ( $\bar{X} = 18.2$ , S.D. = 3.03), which proved the research hypothesis. However, when considering each level of comprehension, it was found that the reading comprehension mean score of the experimental group was significantly higher than that of the control group regarding the literal and critical levels. The gain of the post-test mean score regarding the interpretive level of comprehension of the experimental group was higher than that of the control group, but not at the significant level of .05. The reason for this might be attributed to the experimental ten weeks' period, which was too short for the students to master the strategies taught. Simply speaking, in addition to various activities along the instructional procedure, they acquired the strategies through the step of "Explicit Modeling"; however, the application of the instructional model did not break the habit of using their reading skills while reading. This is parallel to Anderson (2003) who pinpointed the difference between skills and strategies. According to what he defines, strategies are conscious actions that learners take to achieve desired goals, while skills are strategies that have become automated. This implies that when readers acquire strategies, they take time to internalize. And when we look closely at the interpretive level, it shows that this level of reading comprehension covers advanced strategies, for example, inferring, drawing conclusion, or guessing meaning of unknown words. Teaching skills to the students is crucial in reading classes. Farrell (2009) indicated the importance of skills in relation to comprehension. He posits that to increase reading comprehension level of L2 readers, the teacher needs to teach both general and specific skills and also show the students how to apply these skills. Considering the result in this aspect, it can be inferred that longitudinal studies are needed to fully confirm the effects of the developed instructional model. The instruction should be extended to cover a longer period so as to provide students with opportunities to develop their reading comprehension.

One outstanding feature of the model as influenced by the 4MAT wheel is the variety of activities that "stretch" to accommodate all type of learners in class. The typical structure of the reading course that places emphasis on lecture-based instruction is geared more towards Analytical learners (Type Two) who prefer working by themselves. However, according to the findings of the preliminary study conducted to investigate the 4MAT-oriented learning type, the majority of the subjects who shared quite the same attributes as those in the present study were classified as

Type Four students. Such an activity, thus, might be painful to them as the group of Dynamic learners think less linearly and enjoy group work. And this is the reason that can illustrate the research finding with regard to the dimension of comprehension in the same line as Nicoll-Senft and Seider (2010) and Hsieh (2003).

### **3. Vocabulary ability**

The research results show significantly higher gain of vocabulary ability mean scores of the group exposed to the instructional model when compared between and within group ( $\bar{X} = 20.40$ , S.D. = 2.40). The reason for this gain can be seen from vocabulary activities in Step 1 and controlled paraphrasing in Step 6. In Step 1, students were asked to brainstorm words relating to the video clip which was used as a warm-up. They, later on, were shown a list of core vocabulary items taken from the text as a preview. During this step, students worked in groups, learning words from sharing ideas with peers. They had to bring out their tacit knowledge in terms of morphology to draw the meanings as all the words, during this step, were still decontextualized. This is one approach to how vocabulary is learned (Mahony et al., 2000). Also in Step 6, the same group of words was reinforced again when students were asked to rewrite the summary of the paragraph in parallel reading. This productive activity helps them learn the words since recent research has indicated that L2 students acquire vocabulary more effectively when they are directly involved in constructing the meaning of the words rather than when they memorize definitions or synonyms (Koda, 2005). Doing the controlled paraphrase activity, using the words after seeing them already is advisable in light of sequencing. Aebersold and Field (1997) point out that, to conduct an effective vocabulary instruction, exercise that require students to produce the words to be learned should follow recognition exercises so that students can have further contact with the word, perhaps using it first (in Quadrant One) to produce paraphrases (in Quadrant Four). These vocabulary activities in the framework of 4MAT help pave the way to comprehension, and also correspond with John Dewey's Experiential Learning which holds the ground that "all learning require the transactional transaction between the individual and the environment", which is one underlying rudiment of the 4MAT wheel. Also, the finding has been confirmed as it is in accord with Tsai (2004).

With the result of the study explained in this facet, the relationship between vocabulary acquisition and reading comprehension is obvious here. One recent research looked at the interplay as "a virtuous circle" This is true for struggling readers who, while reading, stumble over words that they do not know, read slowly,

and experience difficulty in following the ideas contained within and across sentences. With such difficulty, they become frustrated and develop distaste for reading. This results in infrequent reading and inhibits potential growth of knowledge, such as linguistic knowledge. On the other hand, it is a virtuous circle in that with more L2 processing experience, learners become more efficient in the skills required for reading. They read more frequently and better, and are apt to experience more growth in knowledge from engaging in literacy activities (Pulido and Hambrick, 2008).

#### **4. Attitudes towards reading**

As the results showed, the students' attitudes were different and the changes were obvious. It is encouraging that all scores of the four dimensions, Comfort, Anxiety, Value, and Self Perception, increased at a significant level. It can also be detected that the participants had a positive change in terms of both components: affective and cognitive. Affectively, they believed that English reading was generally enjoyable and they did not feel bored or anxious when reading. Cognitively, they believed that English reading was beneficial for them and they had the desire and ambition to keep reading. In addition, the way they looked at themselves as an English reader was more positive.

How the attitudinal changes happened was observed in two aspects. Affectively, qualitative data in the open-ended part of the questionnaire revealed that the use of background music in class did arouse their curiosity and enhance their interest in reading in English. Moreover, anxiety and worry towards reading minimized after ten weeks of the instruction. Cognitively, after the instruction, they developed more positive attitudes regarding Value and Self Perception towards reading, which gradually convinced them of the usefulness and helpfulness of English reading. The change of reading attitudes was supported by several previous studies (Yamashita, 2004; Lin and Lin, 2009).

Although no correlation between reading comprehension and reading attitudes was explicitly examined in this present study, it was believed that the sense of achievement whenever they learned something, comprehended the text, finished an in-class assignment or achieved the weekly goal of reading are probably the cause of higher reading attitude scores. This supports the belief that confidence and comprehension are interrelated. In a reading class, students need to develop not only their knowledge of how to approach a text but also their confidence in doing so. They need to know that they can read effectively on their own, without a teacher there to

make all the decisions for them. That confidence comes only from the experience of having tried it on their own and having been successful most of the time. If students can do that before they leave the classroom, the reading teacher has succeeded (Aebersold and Field, 1997).

In the study, the use of background music was investigated. And as revealed by the result in the students' opinions questionnaire administered after the instruction, they found music positive rather than disruptive. The effectiveness of background music in the study was not separately examined owing to the unavailability of the physiological measurement; however, based on the analyses of previous studies and documents, it is believed that the effects of music on task performance may be mediated by arousal and mood, rather than cognitive directly (Cassidy and MacDonald, 2007). Simply speaking, it directly maximizes neither reading comprehension nor vocabulary ability in the reading class. But through affective domain (mood and emotion), it helps boost the desire to learn.

Another explanation with regard to the benefit of music in the experiment is its neuropsychological effect (Raucher et al, 1993, cited in Cassidy and MacDonald, 2007). Lullaby-like music relaxed the students and helped to calm their nerves. The calm, relaxing music was not as much of a distracter as the upbeat music nor did it necessarily interfere. Instead, the music helped keep the students focused and blocked any other common distracters, such as a tapping of a pencil or coughing in the classroom. And this helped justify the research finding in terms of concentration as seen parallel with Tze and Chou (2010).

In terms of 4MAT, the wheel of activities that rotate to accommodate all four types of learners is one crucial reason why the students in the experimental group were seen to be "happier" with reading when compared both with the control group and with themselves prior to the implementation of treatment. And when the activities in the Wheel are boosted by the power of background music, the combination of the two has addressed to the students' attitude in learning (Nicoll-Senft and Seider, 2010; Tsai, 2004).

## **Recommendations**

There are two major points to be recommended in this research entitled "Development of a Reading Instructional Model Using the 4MAT System and Music to Enhance Vocabulary Acquisition for English Reading Comprehension and Attitude



towards Learning of Undergraduate Students”; one is recommendations for the implementation of the research findings and the other is the recommendations for further research.

### **1. Recommendations for the implementation**

1.1. The reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning can serve as an alternative in reading instruction in schools and universities in the future. The school or university administrators should encourage the reading teachers to adopt the model and apply it to groups of students that share the same problems to maximize their reading achievement. If it is the case, it would be a good idea for the school or university to organize a workshop in order to get the teachers oriented with the core concepts of the model to ensure its expected result.

1.2. In the case where the instructional model is applied to a group of students with huge diversity, it is advisable for the teacher to conduct a preliminary study to investigate the learning differences among students. This will be of great help as some adjustments concerning the learning activities and materials can be made to rightly accommodate individual students before the instruction proceeds.

1.3. In the case where the instructional model is adopted for a reading class of higher or lower level, the content of the model can be replaced by the content of the chosen course. The teacher can also use new materials to accompany the model. This change will not affect the expected learning outcome as long as the instructional procedures are maintained.

1.4. The research results suggested that one important factor that will help students become successful in reading is their positive attitudes and motivation to learn. As a result, an orientation before embarking on the course is advisable as it provides students with the overall picture of what they will encounter and helps them to become aware of the importance of what is to be learned.

1.5. In order to ensure the effectiveness of the instructional model, it is advisable for the teacher to study the instructional manual carefully. This includes the use of background music as suggested, one indispensable accompaniment of the model so that the outcome will not be counterproductive.

## 2. Recommendations for further studies

Based on the results and findings from the present research, further studies can be conducted in the following areas:

2.1. Longitudinal studies are needed to confirm the effects of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning. The instruction should be extended to cover a longer period so as to provide the opportunity to fully enhance reading achievement.

2.2. The reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning should be used with different group of students where different learning styles are the problem, not only for undergraduate students. The result of the implementation in different groups can be comparatively studied to gain new insights and different perspectives.

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## **Appendices**

### **Appendix A**

#### **List of experts validating the research instruments**

1. Experts validating the experimenting instruments: the instructional model, the instructional manual of the model, a sample of a lesson plan, and the questionnaire eliciting students' satisfaction towards the model

1.1 Associate Professor Dr. Supat Sukamolson

Retired lecturer, Language Institute of Chulalongkorn University

1.2 Associate Professor Dr. Patcharee Pokasamrit

Lecturer, Faculty of Language and Communication, National Institute of Development and Administration

1.3 Assistant Professor Dr. Apisak Pupipat

Lecturer, Faculty of Liberal Arts, Thammasat University

1.4 Associate Professor Supong Tangkiengsirisin

Lecturer, Language Institute of Thammasat University

2. Experts validating the reading comprehension and vocabulary ability tests

2.1 Associate Professor Dr. Tipamas Chumworathayee

Lecturer, Language Institute of Thammasat University

2.2 Assistant Professor Dr. Patraporn Tapinta

Lecturer, Faculty of Humanity, Kasetsart University

2.3 Ajarn Edward Geerson

Lecturer, Language Institute of Thammasat University

3. Experts validating the reading attitude questionnaire

3.1 Associate Professor Dr. Busakorn Vichulta

Retired lecturer, Faculty of Liberal Arts, Mahidol University

3.2 Associate Professor Dr. Rapin Subaneg

Lecturer, Language Institute of Ramkhamhaeng University

3.3 Associate Professor Dr. Panarai Supprapa

Retired lecturer, Faculty of Psychology, Chulalongkorn University



## **Appendix B**

### **Instructional Model**

This reading instructional model using 4MAT System and music has been developed with the purpose to enhance vocabulary acquisition for English reading comprehension and attitude towards learning. It aims to respond to reading problems of EFL learners, especially undergraduate students in tertiary level.

### **Background of the Instructional Model**

Teachings reading in tertiary level, several teachers realize that most problems are derived not only from vocabulary knowledge, but also from reading comprehension and attitudes (Anderson, 1999). Additionally, research indicates that the students' differences of learning styles pose difficulties when students are exposed to conventional activities in class. The reason is that some activities hardly facilitate comprehension as they do not help activate a reader's background knowledge and promote the full potential of the reading brain, two of which are essential elements of reading comprehension process (Eskey, 1986). In addition, the fact that not many students have become successful in their L2 reading is due to their attitude towards reading. Anxiety and negative attitudes have become psychological barriers preventing students from conceptualizing meaning of reading texts as stated by Eskey (1986, p. 6) that comprehension is always directed and controlled crucially by the needs and purpose of an individual. Reading teachers, therefore, face many challenges in the classroom of how to help students cope with these interrelated problems.

For the past two decades, much attention has been drawn to 4MAT, a teaching methodology posited by Bernice McCarty, which is built upon the principles of learning styles and their relationship to the natural learning cycles. In studies conducted in various settings, the use of 4MAT increased learner motivation and improved academic performance (McCarty et al, 2002). When integrated with background music, it has been reported that relaxation will facilitate changes in physiological states in the body and allow the brain to work more effectively (Hepler and Kapke, 1996). According to a recent study (Smith, 2001), participation in a relaxed setting is critical for acquiring skills in writing, scientific understanding, as well as learning to read.

### **4MAT System**

Combining the fundamental principles of John Dewey (Experiential Learning), Carl Jung (Theory of Individualization), David Kolb (Experiential Learning Theory),

and Anthony Gregorc (Gregorc's Style Delineator), 4MAT System is a teaching model featuring learning styles to create a balanced model for planning instruction that "cycles the learner through for major learning styles" (Nicoll-Senft and Seider, 2010). 4MAT was constructed on the four-factor learning style models of Gregorc and Kolb by integrating learning styles with brain-based processing strategies. The model provides an assumption that individuals learn in different ways and "that engagement with a variety of diverse learning activities results in higher levels of motivation and performance. 4MAT is grounded on the belief that "individuals learn primarily in one of four different but complementary ways based on how they perceive and process information" (McCarthy and McCarthy, 2006).

### **Background Music**

Over the past years, studies have demonstrated that relaxation positively affects academic success as it can facilitate change in physiological states in the body that lead to more effective performance of the brain (Hepler and Kapke, 1996). Studies show that background music has intriguing effect on memory. One example is Mozart's music and baroque music, with a 50-to-60-beat-per-minute pattern can activate the left and right hemispheres of the brain, which can maximize learning and information retention. The point is that the information being studied activates the left mode, whereas the music taps the right mode, causing the brain to be more capable of processing information. According to a recent research (Smith, 2001), participation in a relaxed setting is of overriding importance to learning to read, as well as acquiring other language skills. Besides, listening to classical music before taking a test can help students improve their test scores significantly since this type of music releases neurons in the brain which help the body to relax. In addition to brain maximization and vocabulary memorization, many components of music can have a calming effect. Blanchard (1979) found that playing background music during a classroom examination dramatically helped lower blood pressure, resulting in significantly higher scores and better attitudes for participating students.

To sum up, these studies pave the foundation for a connection between music, relaxation, improved brain function, increased academic performance, and more positive learning attitudes.

### **Developmental Phases of the Model**

The results of the development of a reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading

comprehension and attitude towards learning of undergraduate students were presented into 5 stages as follows:

**Stage 1:** The result of studying, analyzing, and synthesizing 4MAT System and music and their underpinning learning theories for the development of the instructional process to enhance vocabulary acquisition for English reading comprehension and attitude towards learning

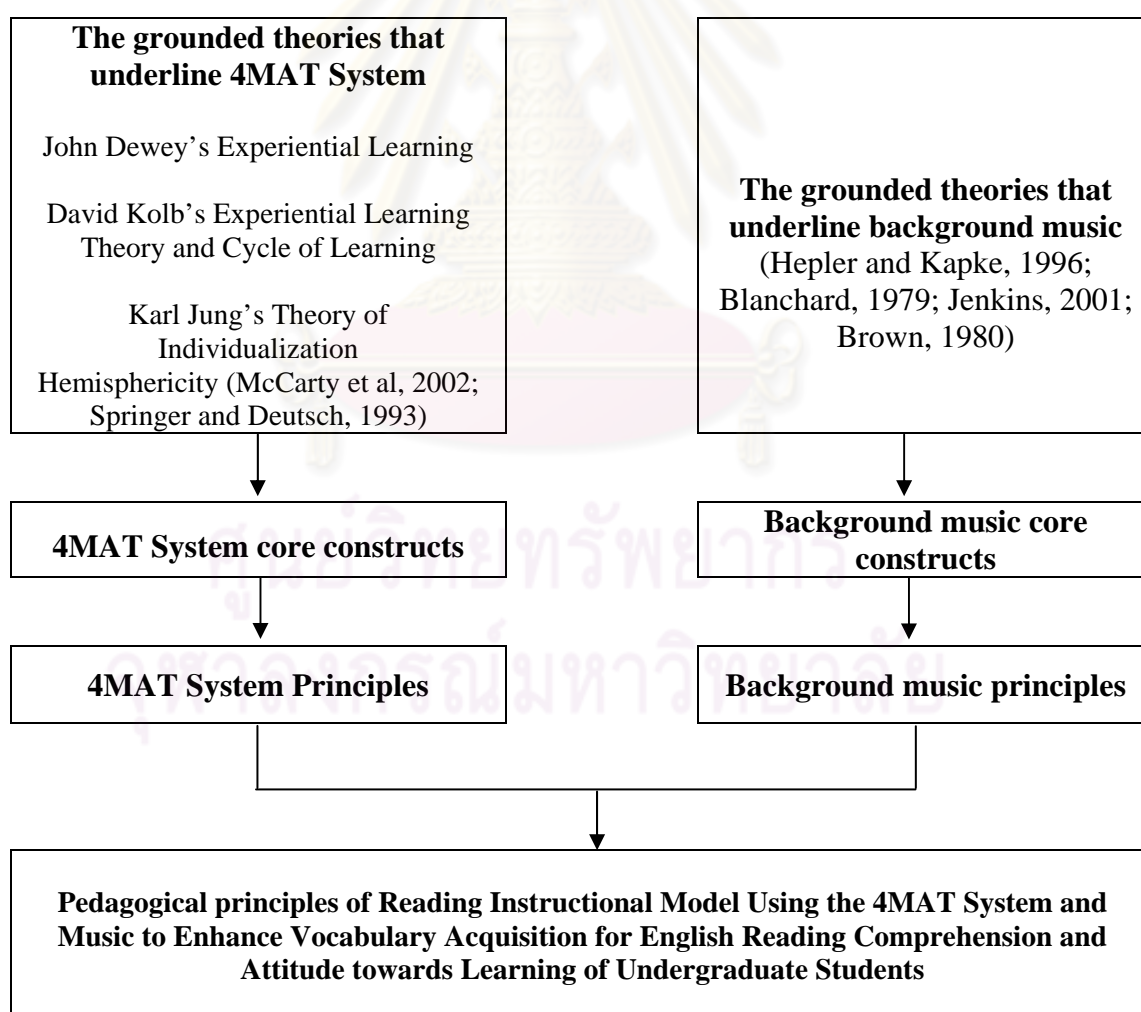
**Stage 2:** The result of articulating the pedagogical principles of the instructional process based on 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning

**Stage 3:** The result of specifying the expected learning outcomes and objectives

**Stage 4:** The result of developing the steps of the instructional process

**Stage 5:** The result of validating the instructional process

**Figure 1** The result of data analysis of Phase I



The result of data analysis of Phase I was as follows:

**Stage 1:** The result of studying, analyzing, and synthesizing 4MAT System and music and their underpinning learning theories for the development of the instructional process to enhance vocabulary acquisition for English reading comprehension and attitude towards learning

The researcher studied, analyzed, and synthesized 4MAT System and music and their underlying learning theories for the development of the instructional process to enhance vocabulary acquisition for English reading comprehension and attitude towards learning from documents, textbooks, articles, and academic researches. The results from the study, analysis, and synthesis are shown below and presented in Figure 2 and 3.

**Figure 2** The result of studying 4MAT System

<b>The grounded theories that underline 4MAT System</b>	
<b>John Dewey's Experiential Learning</b>	
1.	All learning required the transactional interaction between the individual and the environment.
2.	Cognitive potential is not hidden in the mind awaiting perfection; rather, it evolves and diversifies through use.
<b>David Kolb's Experiential Learning Theory and Cycle of Learning</b>	
1.	People perceive reality differently. When confronted with new situations, some people respond primarily by sensing and feeling their way; others think things through.
2.	People differ in how they process experiences and information, and subsequently how they make new things part of themselves.
3.	Human learning and personal development are synonymous processes which involve the continuous integration of a distinct set of independent systems that give meaning to life's circumstances. These systems include the following modes: Concrete Experiential (CE), Reflective Observation (RO), Abstract Conceptual (AC), and Active Experimentation (AE).
4.	Four major assumptions: (1) learning is a continual process, not an outcome, (2) learning is grounded in personal experience, (3) learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world, and (4) learning involves transactions between the individual and the environment whereby experiences are transformed into knowledge and actions.
5.	Individuals develop different habits or styles of learning that are shaped by their preference for one way of perceiving and one way for processing or transforming information. The classification of four basic learning "styles" is described as Divergers, Assimilators, Convergents, Accommodators.

### **Karl Jung's Theory of Individualization**

1. Individuation is a process where a mature individual has developed command of all four functions: sensing, thinking, feeling and intuition.
2. Much apparent random variation in human behavior is actually orderly and consistent, being due to certain basic differences in the ways people prefer to use modes of perception and judgment.

### **Hemisphericity (McCarty et al, 2002; Springer and Deutsch, 1993)**

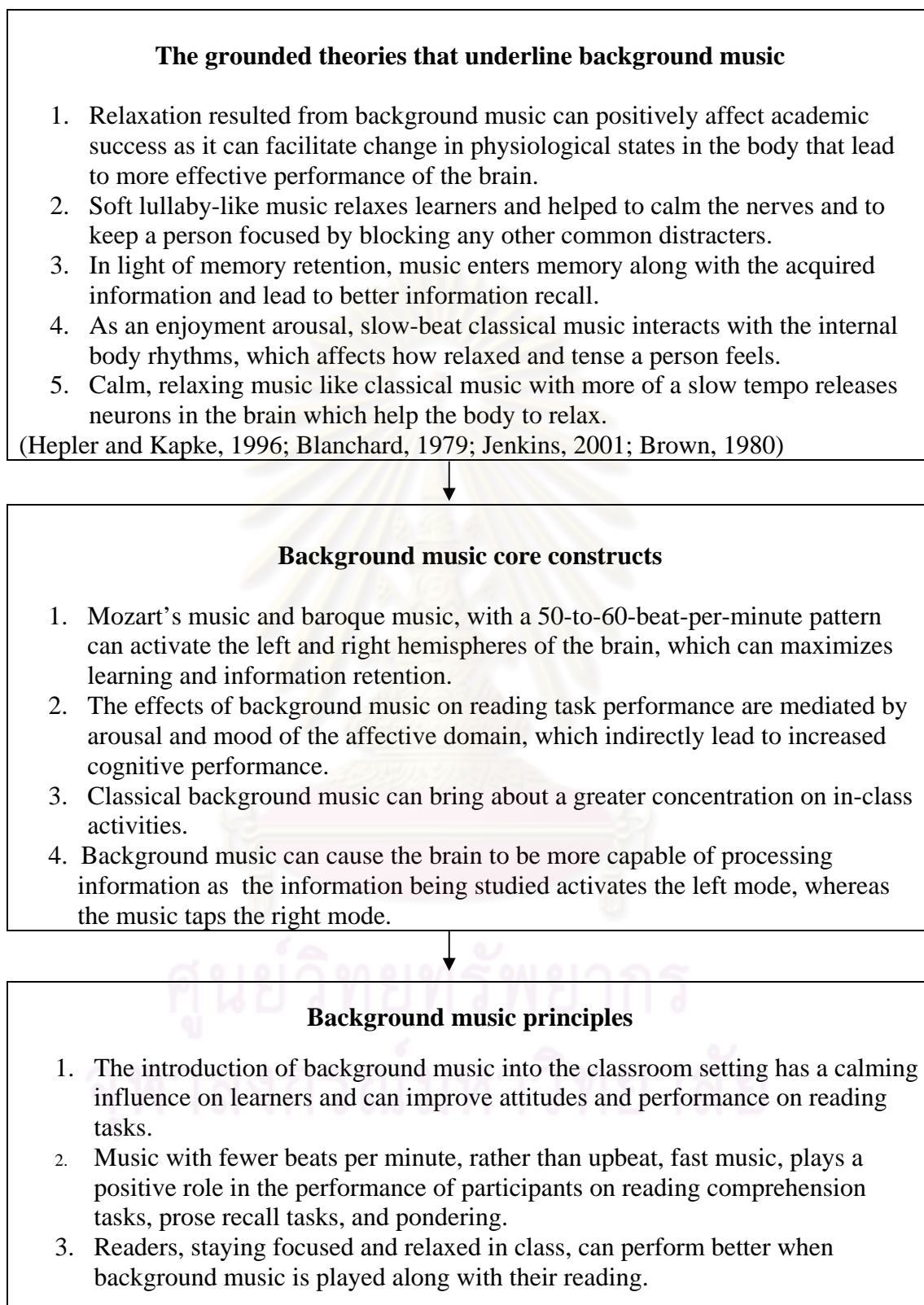
1. The hemispheres of the human brain process information and experience in identifiably different ways.
2. Individuals have at their disposal two complementary methods for approaching and processing information and experiences.
3. Adequate engagement of both methods, described in the literature as linear and holistic thinking, results in deepened levels of personal understanding.
4. Individual preferences for hemispheric integration have clear relationships to cognitive style, especially with regard to learning.

### **4MAT System core constructs**

1. Human learning is a personal and continuous process which consists of creating meaning and understanding through the refinement and adaptation of existing levels of knowledge and experience.
2. Individuals learn in different yet identifiable ways. Each learner in all four learning styles has a quadrant or place on the theoretical circle where learning comes more easily. These include (1) Imaginative Learners, (2) Analytic Learners, (3) Common Sense Learners, and (4) Dynamic Learners.
3. Learning is a natural sequence which progresses sequentially from Quadrant one through Quadrant four experiences. Movement around the circle is a natural learning progression.
4. Engagement of both hemispheres of the brain, usually described as "whole brain" learning, has significant implications for designing instruction and understanding human learning.

### **4MAT System Principles**

1. People have major learning style and hemispheric (right mode/left mode) processing preferences.
2. Designing and using multiple instructional strategies in a systematic framework to teach to these preferences can improve teaching and learning.
3. Accommodating, as well as challenging, all types of learners by appealing to their accustomed learning styles while stretching them to function in less comfortable modes results in higher levels of motivation and performance.
4. Learning always involves a cycle that begins with concrete experience, and moves through abstract conceptualization and experimentation to assimilation.

**Figure 3** The result of studying background music

**Stage 2:** The result of articulating the pedagogical principles of the instructional process based on 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning

The researcher articulated the pedagogical principles of the instructional model based on 4MAT System and background music from Stage 1 to create the principles of the instructional reading model to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students. The newly-developed instructional model encompasses five principles as follows:

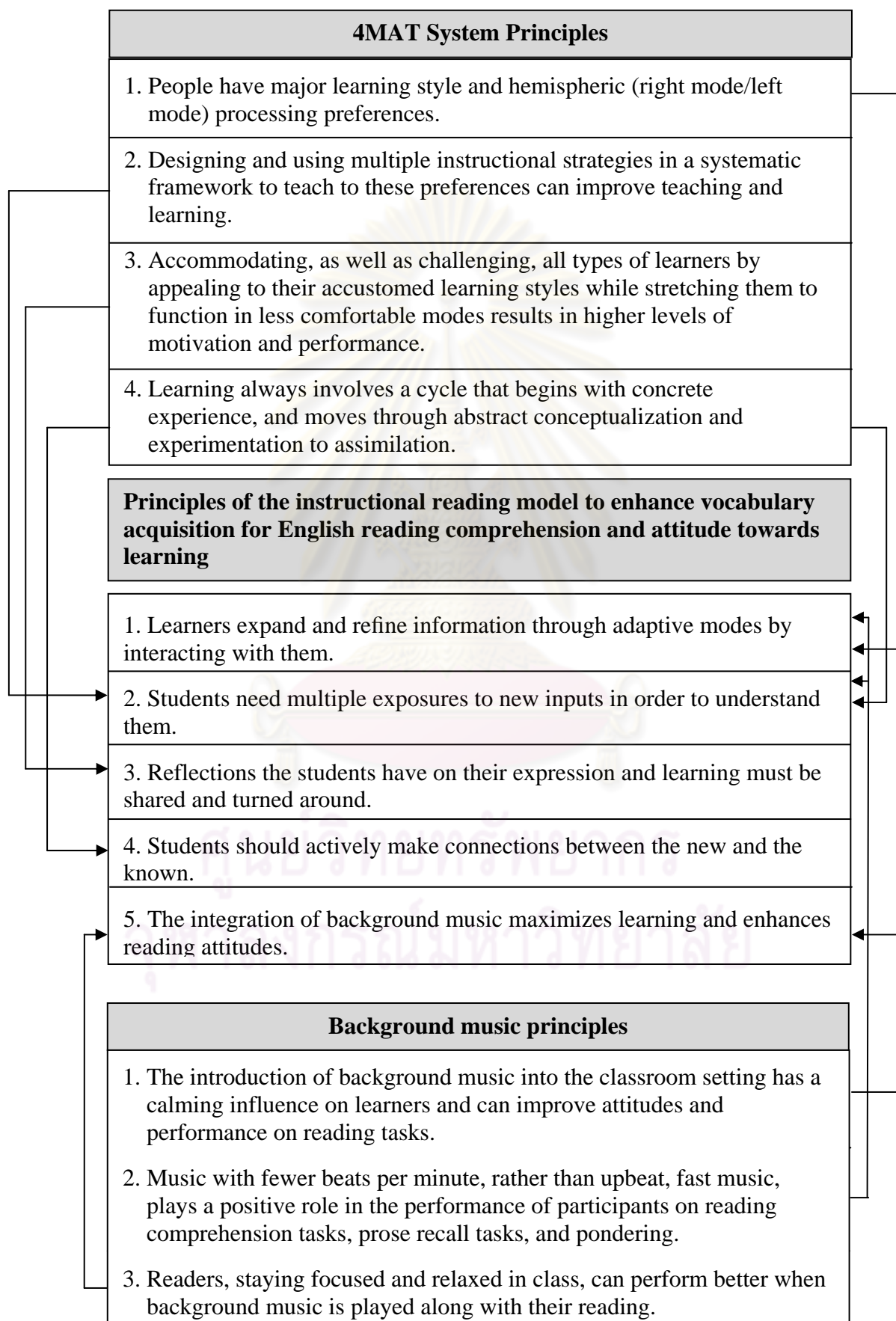
1. Learners expand and refine information through adaptive modes by interacting with them.
2. Students need multiple exposures to new inputs in order to understand them.
3. Reflections the students have on their expression and learning must be shared and turned around.
4. Students should actively make connections between the new and the known.
5. The integration of background music maximizes learning and enhances reading attitudes.

The result of the development of the instructional process to enhance vocabulary acquisition for English reading comprehension and attitude towards learning is shown in Figure 4.4.



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**Figure 4** The result of the development of the instructional process to enhance vocabulary acquisition for English reading comprehension and attitude towards learning





### **Principles of Instruction derived from 4MAT and background music**

1. Learners expand and refine information through adaptive modes by interacting with them.

In order to acquire vocabulary and master reading strategies, students should do something with the words and through practices. To maximize the internalization of learning, students must be provided an opportunity to apply what they have learned. Learning tasks such as structured exercises, simulations, cases, games, and observations had proven to be powerful learning tools because they created personal experiences for learners that serve to initiate their own process of inquiry and understanding.

2. Students need multiple exposures to new inputs in order to understand them.

A variety of instructional modes, media, and activities must be used along with various strategies to define theories into concepts. Students with different learning styles register input in different ways. So as to accommodate all types of learners and to appeal to individual interest, instructional modes, media, and in-class activities should be varied throughout the reading instruction procedure.

3. Reflections the students have on their expression and learning must be shared and turned around.

Group work and lots of student talk should be incorporated. Through group activities, students can infect each other with enthusiasm for reading, which allow more proficient students to help other peers to better understand what they read in class. Peers also provide an audience with whom students can share about what they have read.

4. Students should actively make connections between the new and the known.

Students' background knowledge must be activated especially in terms of vocabulary and content of the text. Through an introduction, students recall information that they may already know about the topic of the text. If the students keep this knowledge in mind as they read, they increase their opportunities to make sense of the information they find in the text. This activating process will also review or introduce the relevant vocabulary for the topic.)

5. The integration of background music maximizes learning and enhances reading attitudes.

Listening to background music during reading and pondering will increase focus and attention, which improves mental sharpness. Relaxation from music can facilitate changes in physiological states in the body that allow the brain to work more efficiently. Students perform better while listening to the soft, calm, relaxing music like classical music with more of a slow tempo, rather than the more upbeat music.

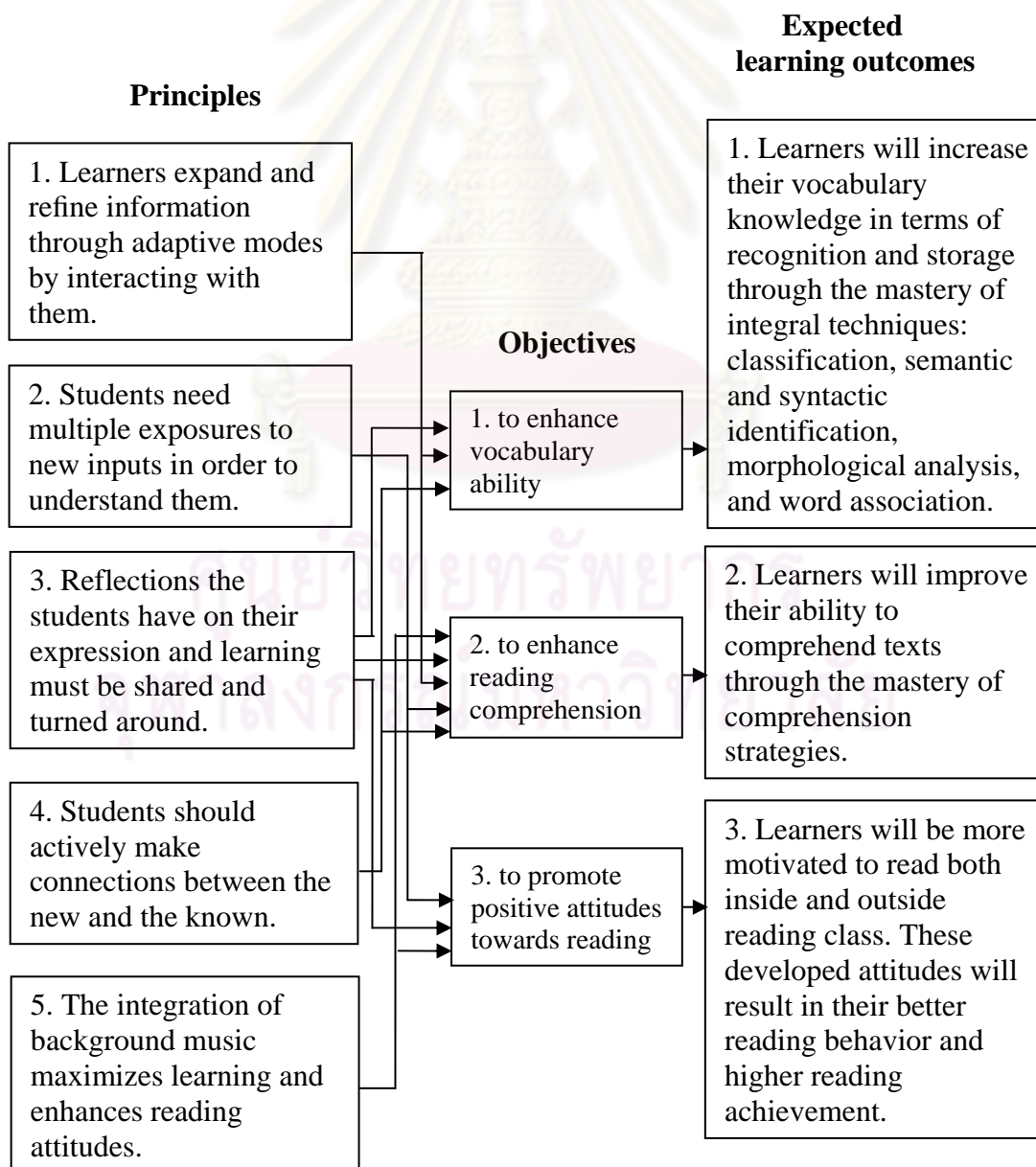
**Stage 3:** The result of specifying the expected learning outcomes and objectives

The researcher took the five principles of instructional model from Stage 2 to determine its expected learning outcomes. The developed model incorporates three main objectives as follows:

1. to enhance vocabulary ability
2. to enhance reading comprehension
3. to promote positive attitudes towards reading
- 4.

The relationship among the five principles, three main objectives, and its expected learning outcomes of the instructional reading model is shown in Figure 5.

**Figure 5** The objectives and expected learning outcomes of the instructional model as specified from the formulated principles based on 4MAT System and music



**Stage 4:** The result of developing the teaching/learning steps of the instructional model

Since 4MAT System features the cyclical framework which is flexible to deploy in any content area and subject. In order to develop it into instructional model for reading, the researcher had to articulate other relevant reading strategies and activities. This stage incorporates four steps as follows:

1. Matching 4 Quadrants with 8 steps of 4MAT cycle with typical reading phases: pre-reading, during-reading, and post-reading
2. Selecting relevant comprehension and vocabulary strategies/activities parallel to the three formulated objectives and learning outcomes in Stage 3
3. Sequencing all the selected strategies/activities along with background music.
4. Determining detailed learning activities of the sequenced steps

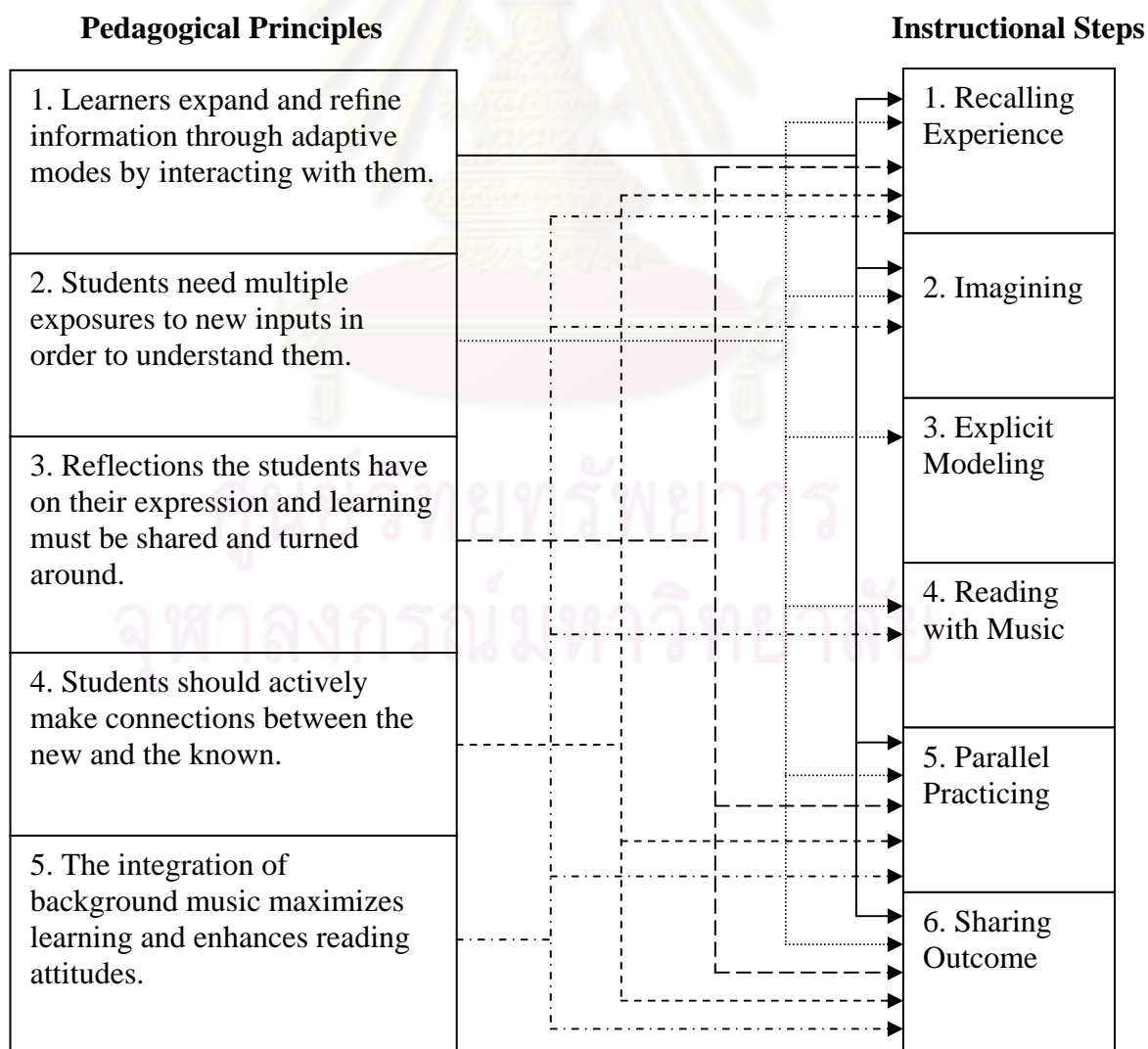
#### **4.1. Matching 4 Quadrants with 8 steps of 4MAT cycle with typical reading phases:**

The typical reading instruction consists of three phases: pre-reading, during-reading, and post-reading. The researcher started by marking Step 5 in Quadrant 3 of 4MAT cycle (Skill Practice) as during-reading, then labeled Step 1-4 as “pre-reading” and Step 6-8 as “post-reading”. As the purpose of Quadrant 1 is to engage the learner in a concrete experience leading to a search of prior knowledge and sharing it, which is akin to the background knowledge-activating step of typical reading instruction, the researcher merged the two steps in the Quadrant together and labeled it “Recalling Experience”. As for Step 7 and 8 in Quadrant 4 which serve the same purpose of knowledge application as in post-reading phase of typical reading instruction, they were combined and reinvented as “Sharing Outcome”. The two steps in Quadrant 2 remain untouched and lend themselves to the original purpose of knowledge informing. The only minor modification is that the researcher allowed the teaching of reading strategies to always flow in Step 4 as “Explicit Modeling”. The condensed process of 4MAT reading cycle and the relationship of the pedagogical principles and instructional steps of the instructional model are shown in Figure 6 and Figure 7.

**Figure 6** The matching of instructional process of 4MAT cycle, typical phases of reading instruction, and newly-developed model

4MAT		Typical Phases of Reading Instruction	Newly-developed Model
Quadrant	Step/Mode		
1	1 R	Pre-reading	Recalling Experience
	2 L		
2	3 R		Imagining
	4 L		Explicit Modeling
3	5 L	During-reading	Reading with Music
	6 R	Post-reading	Parallel Practicing
4	7 L		Sharing Outcome
	8 R		

**Figure 7** Relationship of the pedagogical principles and instructional steps of the instructional model



#### 4.2. Selecting relevant comprehension and vocabulary strategies parallel to the three formulated objectives and learning outcomes in Stage 3.

In order to develop a teaching-learning procedure of the instructional process, some relevant well-recognized reading strategies and activities have been selected and integrated as shown in the following Figure 8 and 9.

**Figure 8** The review of some relevant well-recognized reading strategies/activities selected to include in the newly-developed model

Relevant well-recognized reading strategies/activities	Review of core constructs/principles
Morphological awareness (Mahony et al., 2000)	Morphological knowledge is useful in understanding early vocabulary growth. Knowing the structure of morphemes within words can help learners guess meaning of unknown words, especially multisyllabic ones.
Activating prior knowledge (Aebersold and Field, 2002; Johnston and Pearson, 1982; Grabe and Stoller, 2002)	Connecting learners to themselves, to other texts, and to the outside world is very important as, apart from getting the learners motivated by individualizing the text, it helps them build interpretation of the new reading.
Selecting core vocabulary (Aebersold and Field, 2002)	Knowledge of content-specific vocabulary is helpful for text reading and these words should be presented before learners read the text so that they will have a general understanding of the words and recognize them when learners encounter them in the text.
Word association (Farrell, 2009)	Getting learners to connect their lexical schema not only orients them to the topic but also increases their levels of motivation. Through this, teachers can use what they learn about students; knowledge of the topic for their lesson planning.
Explicit teaching of strategies (Paris, Wasik and Turner, 1991; Farrell, 2009)	Reading strategies should be explicitly taught to EFL learners through systematic modeling of the teacher so that the learners can be fully aware of the strategies they are using currently and those they will use in the future.
Paraphrasing (Fisk and Hurst, 2003; Aebersold and Field, 2002)	Having learners rewrite the text, or parts of it, in their own words and discuss the paraphrased version with their peers is effective as it involves all four skills which lead to a deeper understanding and greater memory of the text. When learners recall information and paraphrase it in some way, in addition to knowledge, they are using the process of translation, which is a subcategory of comprehension.

<b>Relevant well-recognized reading strategies/activities</b>	<b>Review of core constructs/principles</b>
Asking questions (Aebersold and Field, 2002)	Questions can be used throughout the whole reading process, serving several purposes: monitoring comprehension, connecting learners with their existing knowledge, previewing a text, or assessing comprehension.
Analogy and visual images (Sousa, 2005)	Nonverbally, relating what is taught in the new reading to knowledge the learners possess will help them conceptualize the input through the right mode of their brain.
Analyzing good and bad examples of writing (Sousa, 2005)	Having the learners analyze and discuss good and bad examples of chapter summaries serves as a means to extend their reading and also promote group working and sharing among their peers.
Group working (Oxford, 1997; LeJune, 1999; Johnson and Johnson, 1989))	Working in group allows learners to share responsibility and points of view, through the assigned task that match their ability and that contribute to the whole group effort.
Using audiovisual aids (Sousa, 2005)	Audiovisual aids are great help to “right-mode” learners. A multimedia environment is also one way to appeal to motivation and arousal in reading class.
Summary writing (Aebersold and Field, 2002)	Summary writing functions as an assessing tool, reflecting that learners can build comprehension of a particular text both now and in the future. This leads to a transfer of skills.

**Figure 9** The integration of the selected relevant reading strategies/activities, as sorted by the objectives and expected learning outcomes of the newly-developed model

<b>Objectives of the model</b>	<b>Expected learning outcomes of the model</b>	<b>Relevant well-recognized reading strategies/activities</b>
1. To enhance vocabulary ability	1. Learners will increase their vocabulary knowledge in terms of recognition and storage through the mastery of integral techniques: classification, semantic and syntactic identification, morphological analysis, and word association.	Morphological awareness (Mahony et al., 2000) Activating prior knowledge (Aebersold and Field, 2002; Johnston and Pearson, 1982; Grabe and Stoller, 2002) Selecting core vocabulary (Aebersold and Field, 2002) Word association (Farrell 2009)

<b>Objectives of the model</b>	<b>Expected learning outcomes of the model</b>	<b>Relevant well-recognized reading strategies/activities</b>
2. To enhance reading comprehension	2. Learners will improve their ability to comprehend texts through the mastery of comprehension strategies.	Explicit teaching of strategies (Paris, Wasik and Turner, 1991; Farrell, 2009)  Paraphrasing (Fisk and Hurst, 2003)  Analogy and visual images (Sousa, 2005)  Analyzing good and bad examples of writing (Sousa, 2005)  Summary writing (Aebersold and Field, 2002)
3. To promote positive attitudes towards reading	3. Learners will be more motivated to read both inside and outside reading class. These developed attitudes will result in their better reading behavior and higher reading achievement.	Group working (Oxford,1997; LeJune, 1999)  Using audiovisual aids (Sousa, 2005)

#### **4.3 Sequencing all the selected reading strategies/activities along with background music**

After matching and sorting the selected relevant reading strategies/activities along with the objectives and expected learning outcomes of the newly-developed instructional model, the researcher sequenced them based on the six developed steps of the model condensed from the full cycle of 4MAT System. In doing this, the researcher also kept the activities originally belonging to the four Quadrants of 4MAT System in mind and made sure the integration of the new design would go side by side with the 4MAT activities. Then the researcher integrated background music along those steps, considering its intended effect as stated in the underlying rationale and principles of the model in Stage 1 and Stage 2. The sequencing of the selected reading strategies/activities along with background music is shown in Figure 10 and 11 respectively.

**Figure 10** The sequencing of the selected relevant reading strategies/activities, based on 4MAT activities and the six developed steps of the newly-developed instructional reading model

Activities in four Quadrants of 4MAT System	Six teaching/learning steps of the developed instruction reading model	Selected relevant reading strategies/activities
Quadrant 1/Type One Learner - Brainstorming - Listening - Speaking - Interacting - Small group discussion - Simulation - Games - Role playing	1. Recalling Experience	Group working Activating prior knowledge Using audiovisual aids Asking questions Word association Selecting core vocabulary Morphological awareness
Quadrant 2/Type Two Learner - Observing - Analyzing - Classifying - Drawing conclusion - Theorizing - Visualizing - Group discussion - Analogy	2. Imagining	Activating prior knowledge Analogy and visual images Mental imagery
	3. Explicit Modeling	Explicit teaching of strategies
Quadrant 3/Type Three Learner - Questioning - Model building - Experimenting - Following direction - Manipulating materials and ideas - Tinkering - Applying	4. Reading with Music	Group working Asking questions
	5. Parallel Practicing	Group working
Quadrant 4/Type Four Learner - Modifying - Adapting - Acting - Creating - Collaborating - Innovating - Case studies - Projects	6. Sharing Outcome	Group working Summary writing Paraphrasing Analyzing good and bad examples of writing



**Figure 11** The integration of background music along with the six developed steps of the newly-developed instructional reading model, based on its intended effect

<b>Six teaching/learning steps of the developed instruction reading model</b>	<b>Background music and its intended effect</b>
1. Recalling Experience	Music is used while learners are brainstorming, group working together in the activity of word association. The effect of stimulating and invigorating has been borrowed.
2. Imagining	While learners are pondering and visualizing, the music is played to foster their imagination and mental performance. Here the soothing and calming effect is intended.
3. Explicit Modeling	No music use
4. Reading with Music	While learners are silent-reading paragraph by paragraph, the music is played intermittently to keep them focused and relaxed. At this step, music can also serve as a timer as learners will start reading when music starts and stop when it is faded down.
5. Parallel Practicing	Music is used when learners are discussing and writing a summary in their group. Positive emotional effect from relaxing tune is addressed.
6. Sharing Outcome	While learners are discussing and comparing their paraphrasing work, music can yield calming effect, which indirectly minimizes stress in the class.

#### 4.4 Determining detailed learning activities of the sequenced steps

Taking the principles, objectives, expected learning outcomes of the developed model, together with relevant reading strategies/activities and integrated background music into consideration, the researcher wrote detailed learning activities of the sequenced steps through the consolidation of available information as shown in Figure 12.

**Figure 12** The learning activities of the teaching steps of the instructional reading model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students

<b>The instructional reading model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning</b>
<b>Pre-reading</b>
<p><b>Step 1: Recalling Experience</b></p> <p>Objectives: 1. To connect with students' background knowledge in terms of vocabulary  2. To arouse students' interest towards the reading text  3. To examine the vocabulary listed as the words can help students construct meanings out of the text  4. To have students reflect on the experience</p> <p>During the first step of the instructional process which serves as a warm-up, the teacher's tasks are to engage students in a concrete experience which leads to a search of prior knowledge and prior experience, especially in terms of vocabulary. This search, through leading question and modern media like video clips, is designed to create an interactive group dialogue through introducing questions which connect what students already knows and believes to the topic the teacher intends to teach. The teacher tries to use strategies which encourage diversification of ideas, dialogue, and participation and enable students to associate prior lexical knowledge with new vocabulary to come. Through idea sharing and pooling, student's beliefs and opinions begin to evolve into organizers and structures for future thinking and concept building. This phase of the process emphasizes right and left hemispheric thinking and, with symbolic thinking and the imposition of structure, the goal is engagement.</p> <p><b>4MAT equivalent:</b> Quadrant 1 The connection and Sharing the connection</p> <p><b>Brain mode:</b> Right and left</p> <p><b>Music use:</b> Music is used while learners are brainstorming, group working together in the activity of word association.</p> <p><b>Assessment:</b> Engagement, participation in answering the posed questions and generation of ideas</p> <p><b>Focused Reading/Vocabulary Strategies:</b>  Word association is used to connect pictures or video clips with learners' prior experience in terms of vocabulary. This activity, together with the core vocabulary list, can pave the way to the reading text. For these activities, teachers can use what</p>

they learn about their students' knowledge of the topic for their lesson planning. Selecting core vocabulary and doing vocabulary activities can help learners learn the words, which can facilitate them later on in the during-reading stage.

Word generating, through brainstorming, can help learners learn the words in the context of the topic of the reading. And the framework and all the associations that readers have of the word within that framework will help them learn.

### **Step 2: Imagining**

**Objective:** To extend the experience of reading strategies into their own personal perception

Step two of the process is designed to create a context for students to represent the subjective nature of his/her existing knowledge as a preparation for the analysis of ideas. In this step, students are encouraged to symbolize their present state of understanding of the subject matter in as many nonverbal forms as possible. Image making, which is central to this step, is a right mode activity. The emphasis here is the expansion of representations of meaning. This step requires students to begin to shift from reflective experience to reflective thinking.

**4MAT equivalent:** Quadrant 2 Images that connect

**Brain mode:** Right

**Music use:** Music is played while learners are pondering and visualizing, using analogy.

**Assessment:** Quality of student production and reflection

#### **Focused Reading/Vocabulary Strategies:**

Mental imagery is of help for readers who use it before or during reading. The activity has shown that learners understand and remember what they read better than those who do not visualize.

Analogy can nonverbally help learners to relate the strategies to be taught and content in the new reading to knowledge the learners possess. This will help them conceptualize the input through the right mode of their brain.

### **Step 3: Explicit Modeling**

**Objective:** To become more knowledgeable about how to use targeted reading strategies

Step three of the instructional process engages students in objective thinking. The emphasis here is analysis of concepts, facts, generalizations and theories. At this stage, the teacher presents targeted reading strategies and experience

in complete and systematic ways. Well-delivered lecture, which belongs to left hemisphere, builds upon the personal connections established in step one to foster conceptual thinking.

**4MAT equivalent:** Quadrant 2 Information delivery

**Brain mode:** Left

**Music use:** None

**Assessment:** Teacher verbal and/or written, checking student understanding

**Focused Reading/Vocabulary Strategies:**

Explicit teaching of reading strategies can benefit EFL learners. These strategies should be taught through systematic modeling of the teacher so that the learners can be fully aware of the strategies they are using currently and those they will use in the future.

**During-reading**

**Step 4: Reading with Music**

Objective: To provide guided practice upon applying the strategies learned

At this stage, the teacher asks students to read along with music. Students are allowed to apply the strategies they have learned in step three to real practice as the emphasis shifts from acquisition and assimilation to testing and adaptation. Upon reading, students are supposed to employ comprehension monitoring techniques which focus on assessing what the text has stated as compared to the reader's expectation. In this left hemisphere stage, the goal is reinforcement and diagnostic evidence of the student's ability to apply the concepts taught.

**4MAT equivalent:** Quadrant 3 Skills practice

**Brain mode:** Left

**Music use:** Music is used while learners are silent-reading paragraph by paragraph.

**Assessment:** Quality of student work. Student comprehension through comprehension questions

**Focused Reading/Vocabulary Strategies:**

Questions can be used by both teachers and learners throughout this during-reading process, serving several purposes: for readers, questions can help them monitor comprehension, and for teachers, they can help assess comprehension.

**Post-reading****Step 5: Parallel Practicing**

**Objective:** To give students the opportunity to personalize the learned strategies by doing a collaborative reading-writing task.

Step five of the reading process treats the student as a scientist. In this learning set, students test the limits and contradictions of their understanding. Students are encouraged to develop their own applications which demonstrate that they understand and can apply what has been learned. Parallel reading texts and summary writing are the essence of this phase where the focus of reading, a receptive skill, has shifted to writing, a productive one, to optimize full comprehension. The right mode emphasis in this learning set is designed to encourage students to create personal applications their experiences with the ideas and vocabulary learned from the previous steps.

**4MAT equivalent:** Quadrant 3 The Learning used

**Brain mode:** Right

**Music use:** Music is used when learners are discussing and writing a summary in their group.

**Assessment:** Students on-task behavior and engagement in their writing task

**Focused Reading/Vocabulary Strategies:**

Summary writing functions as an assessing tool, reflecting that learners can build comprehension of a particular text both now and in the future. This leads to a transfer of skills.

Locating topic sentences in the paragraph involve many skills for readers. If the topic sentence is clearly stated in the paragraph, the readers use only scanning technique. But if the paragraph is implicit, containing no topic sentence in any one part of the paragraph, the readers then must construct that main sentence through synthesizing the information throughout the paragraph. Somehow, this activity will lead to comprehension in general.

### **Step 6: Sharing Outcome**

Objectives: 1. To provide guidance and feedback on students' projects; to encourage students; to polish the project.  
2. To allow students to share what they learned and to evaluate the learning.

The final step of the process requires students to critically examine the place of the newly acquired knowledge and experience in their existing world view. The central issue of this post-reading stage here is what must be done to integrate this learning into a meaningful conceptual division. Working in groups, students in this learning set, edit, and refine their work from earlier steps. While sharing the paraphrasing work, they also face and resolve contradictions implicit in the tension between new and earlier schema. This is the culminating stage where both left and right hemispheres are used, bringing students back to where they start, a completion of the cycle.

**4MAT equivalent:** Quadrant 4 Critiquing the work and Outcome

**Brain mode:** Left and right

**Music use:** Music is used while learners are discussing and comparing their paraphrasing work

**Assessment:** Students' willingness and ability to edit, refine, analyze, and complete their own work

#### **Focused Reading/Vocabulary Strategies:**

Having learners paraphrase the text, or parts of it, in their own words and discuss the paraphrased version with their peers is effective as it involves all four skills which lead to a deeper understanding and greater memory of the text. When learners recall information and paraphrase it in some way, in addition to knowledge, they are using the process of translation, which is a subcategory of comprehension.

### **Content of the instructional reading model based on 4MAT and background music**

There are two parts of the content of the instructional reading model based on 4MAT and background music: reading texts and reading strategies, all of which are from the reading textbook "Interactions 2" (Hartman and Kirn, 2007).

#### 1. Reading texts (used in terms of drilling purposes)

Reading texts are a multi-paragraph passage, each of which was not authentic but was written and simplified to serve the targeted vocabulary and reading strategies, used as the principle learning materials in reading class. To respond to the principles

and objectives of the model, ten reading texts were chosen as the content part on the following basis:

- 1.1 Discourse variety
  - 1.2 Level of difficulty
  - 1.3 Learners' interest
2. Reading strategies (used in terms of concepts learned)

Reading strategies are mental activities that readers use in order to construct meaning from a text. They indicate how readers make sense of what they read and what they do when they do not understand the passage. A number of principle reading strategies as determined by the textbook used in the course Reading I were covered by the model.

<p><b>Chapter 1</b>  <b>Topic:</b> Education and Student Life  <b>Reading text:</b> Education: A Reflection of Society  <b>Reading Strategies:</b> - Skimming the topic and main idea  - Predicting content of a reading</p>
<p><b>Chapter 2</b>  <b>Topic:</b> City Life  <b>Reading text:</b> A City That's Doing Something Right  <b>Reading Strategies:</b> - Identifying the topic and main idea  - Identifying supporting details  - Drawing meaning from the context</p>
<p><b>Chapter 3</b>  <b>Topic:</b> Business and Money  <b>Reading text:</b> Banking on Poor Woman  <b>Reading Strategies:</b> - Understanding conclusions  - Skimming for the topic and the main ideas</p>
<p><b>Chapter 4</b>  <b>Topic:</b> Jobs and Professions  <b>Reading text:</b> Changing Career Trends  <b>Reading Strategies:</b> - Previewing a reading  - Identifying important details  - Skimming for the topic and the main ideas</p>
<p><b>Chapter 5</b>  <b>Topic:</b> Lifestyles Around the World  <b>Reading text:</b> Trendspotting  <b>Reading Strategies:</b> - Understanding pronoun reference  - Marking text when you read</p>
<p><b>Chapter 6</b>  <b>Topic:</b> Global Connections  <b>Reading text:</b> Global Trade  <b>Reading Strategies:</b> - Identifying inference  - Skimming for main ideas</p>

<p><b>Chapter 7</b>  <b>Topic:</b> Language and Communication  <b>Reading text:</b> If We Could Talk with Animal...  <b>Reading Strategies:</b> - Previewing the reading  - Distinguishing facts from assumptions  - Understanding italics and quotation mark</p>
<p><b>Chapter 8</b>  <b>Topic:</b> Tastes and Preferences  <b>Reading text:</b> The Silk Road: Art and Archaeology  <b>Reading Strategies:</b> - Previewing the reading  - Synthesizing and applying information from a reading  - Recognizing summaries in a reading</p>
<p><b>Chapter 9</b>  <b>Topic:</b> New Frontiers  <b>Reading text:</b> The Human Brain—New Discoveries  <b>Reading Strategies:</b> - Previewing the reading  - Predicting content of a reading  - Identifying the main ideas</p>
<p><b>Chapter 10</b>  <b>Topic:</b> Ceremonies  <b>Reading text:</b> Rites of Passage  <b>Reading Strategies:</b> - Understanding chronology: scanning for time words  - Understanding symbols</p>

### Assessment of the instructional reading model based on 4MAT and background music

This newly developed instructional process covers two phases of assessment scheme.

1. Before-process and after-process assessments
2. On-process assessment

#### 1. Before-process and after-process assessments

Prior to the teaching procedure based on the developed model, pre-tests which include vocabulary knowledge test, reading comprehension test, and self-report questionnaire on attitude are administered to the learners so that their background proficiency before the intervention can be detected. After the treatment, the same tests will be administered to the group again. Or new tests which are parallel to the pre-test in terms of level of difficulty and validity can be used as an alternative. After that, the scores of the pre-test and post-test will be compared. If the post-test scores are higher, it implies that their vocabulary knowledge and reading comprehension have been enhanced, and attitudes towards reading have been promoted.



## 2. On-process assessment

Students' performance and behaviors, reflecting the effectiveness of the instructional process, is assessed and evaluated along the six steps across the whole reading process. The assessment can be conducted through production, presentation observations, in-class activity participation, discussion, and idea exchanges, and can be assigned to each step as follows:

### ***Phase 1: Pre-reading***

Step 1: Recalling Experience:

**Assessment:** Engagement, participation in answering the posed questions and generation of ideas

Step 2: Imagining:

**Assessment:** Quality of student production and reflection

Step 3: Explicit Modeling:

**Assessment:** Teacher verbal and/or written, checking student understanding

### ***Phase 2: During-reading***

Step 4: Reading with Music:

**Assessment:** Quality of student work. Student comprehension through comprehension questions

### ***Phase 3: Post-reading***

Step 5: Parallel Practicing:

**Assessment:** Students on-task behavior and engagement in their writing task

Step 6: Sharing Outcome:

**Assessment:** Students' willingness and ability to edit, refine, analyze, and complete their own work

Students ability to report and demonstrate what they have learned. Expressions of student enjoyment in the sharing of their learning. Quality of students' final products.

## Model documents

The model documents consist of an instructional manual and ten lesson plans as follows:

1. The developed instructional manual is a guideline of how to implement the model. It shows the teachers what to study and what to prepare before the implementation, as well as what to do in each particular teaching/learning step. The manual also features the roles of the teacher and learners, learning environment, and other supplementary components that will enable the implementation of the model reach its goals as planned.

2. Ten lesson plans, each of which lasts three hours, cover the period of ten weeks. Each lesson plan shares the same format: titles, learning outcomes, content, instructional media, assessment, and specified time. It is designed on the basis of the developed instructional model. In case of extra worksheets and handouts, they will be placed in the section of appendix. The details of the ten lesson plans are in accordance with the content of the model.



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## Appendix C

### Instructional manual of the model

#### Introduction

This instructional manual is designed to accompany the “Reading Instructional Model Using the 4MAT System and Music to Enhance Vocabulary Acquisition for English Reading Comprehension and Attitude towards Learning of Undergraduate Students” with the purpose to equip interested teachers with the needed details concerning the model. Thus, it is very important for the teachers to study all the necessary details in terms of instructional procedure, objectives, content, and assessment before starting the implementation.

#### 1. Documents to be used

- 1.1. Instructional model
- 1.2. Instructional manual
- 1.3. A sample lesson plan

#### 2. Things to study

2.1. The instructional model covers the rationale and background of the model. It also elaborates how the underlying core concepts have been consolidated into an instructional model for reading and how the synthesized principles were broken down into objectives, instructional process, and teaching/learning activities.

##### 2.2. A sample lesson plan

2.2.1. This is one example of the ten lesson plans, each of which lasts three hours, covering the period of ten weeks. Each lesson plan shares the same format: titles, learning outcomes, content, instructional media, assessment, and specified time. It is designed on the basis of the developed instructional model. In the case of extra worksheets and handouts, they will be placed in the section of the appendix. It is advisable for the teachers to study it carefully and prepare instructional media as suggested so as achieve the desired goal of the model.

2.2.2. Since the model is targeted to undergraduate students, the configuration of objectives and content is less rigid when compared with those of secondary or elementary school. In terms of content, it consists of two parts: reading texts and reading strategies.

2.2.2.1. Reading texts are multi-paragraph passages, each of which were not authentic but was written and simplified to serve the targeted vocabulary and reading strategies, used as the principle learning materials in the reading class. To respond to the principles and objectives of the model, ten reading texts, all of which are from “Interactions 2” (Hartman and Kirn, 2007), were chosen as the content part on the following basis:

- Discourse variety
- Level of difficulty
- Learners’ interest

The use of alternative or parallel texts is allowed as long as they correspond to the three bases above. However, please remember that the change of reading passages would affect the selected core vocabulary in the vocabulary test and also the overall diversity of the ten reading texts of the entire course.

2.2.2.2. Reading strategies are mental activities that readers use in order to construct meaning from a text. They indicate how readers make sense of what they read and what they do when they do not understand the passage. Ten principle reading strategies from the same text book, all of which are proved to be used by successful strategic readers, were selected for the model.

<p><b>Chapter 1</b>  <b>Topic:</b> Education and Student Life  <b>Reading text:</b> Education: A Reflection of Society  <b>Reading Strategies:</b> - Skimming the topic and main idea  - Predicting content of a reading</p>
<p><b>Chapter 2</b>  <b>Topic:</b> City Life  <b>Reading text:</b> A City That’s Doing Something Right  <b>Reading Strategies:</b> - Identifying the topic and main idea  - Identifying supporting details  - Drawing meaning from the context</p>
<p><b>Chapter 3</b>  <b>Topic:</b> Business and Money  <b>Reading text:</b> Banking on Poor Women  <b>Reading Strategies:</b> - Understanding conclusions  - Skimming for the topic and the main ideas</p>
<p><b>Chapter 4</b>  <b>Topic:</b> Jobs and Professions  <b>Reading text:</b> Changing Career Trends  <b>Reading Strategies:</b> - Previewing a reading  - Identifying important details  - Skimming for the topic and the main ideas</p>

<p><b>Chapter 5</b>  <b>Topic:</b> Lifestyles Around the World  <b>Reading text:</b> Trendspotting  <b>Reading Strategies:</b> - Understanding pronoun reference  - Marking text when you read  - Expressing and supporting an opinion  - Studying for exams: organizing information  - Summarizing a paragraph</p>
<p><b>Chapter 6</b>  <b>Topic:</b> Global Connections  <b>Reading text:</b> Global Trade  <b>Reading Strategies:</b> - Identifying inference  - Skimming for main ideas  - Understanding the literal and figurative meanings of words  - Organizing information using an outline</p>
<p><b>Chapter 7</b>  <b>Topic:</b> Language and Communication  <b>Reading text:</b> If We Could Talk with Animals...  <b>Reading Strategies:</b> - Previewing the reading  - Distinguishing facts from assumptions  - Understanding italics and quotation mark</p>
<p><b>Chapter 8</b>  <b>Topic:</b> Tastes and Preferences  <b>Reading text:</b> The Silk Road: Art and Archaeology  <b>Reading Strategies:</b> - Previewing the reading  - Synthesizing and applying information from a reading  - Recognizing summaries in a reading</p>
<p><b>Chapter 9</b>  <b>Topic:</b> New Frontiers  <b>Reading text:</b> The Human Brain—New Discoveries  <b>Reading Strategies:</b> - Previewing the reading  - Predicting content of a reading  - Identifying the main ideas  - Distinguishing facts from assumptions</p>
<p><b>Chapter 10</b>  <b>Topic:</b> Ceremonies  <b>Reading text:</b> Rites of Passage  <b>Reading Strategies:</b> - Understanding chronology: scanning for time words  - Understanding symbols</p>

2.3. Preparation of instructional media, evaluating instruments, and teaching materials

2.3.1. Instructional media include audiovisual equipment, pictures, video clips, and background music in the form of CDs or mp3 files. Please remember that the quality of loudspeakers is as important as the chosen music. Cracks and aural disruption of all kinds can turn the soothing sounds into noise, which may lead to counterproductive results.

2.3.2. The evaluating instruments include pre-tests, post-tests, and all types of questionnaires.

2.4. The teachers should make sure all the equipment is in the right condition ready for use and the number of worksheets, handouts, and paper-based tests is enough for the learners before embarking on the procedure.

### **3. Application of Instructional Process**

3.1. The teachers should follow both steps of each activity and try to stick to the time specified in the plans. Since the developed model is based on the wheel of 4MAT System, the cycle consists of a variety of activities which take at least 160 minutes to move around and stretch all four types of learners. Thus, a three-period (3 hrs) class is recommended. It is a good idea also if the teachers prepare or even practice in advance, anticipating unexpected difficulties or events which may arise during teaching.

3.2. The sequencing of the ten reading strategies in the ten lesson plans was predetermined on the scaffolding basis, which means shifting of the plans may bring about less productive results for the learners along the continuum. The teachers may apply their personal techniques when exposing their group to the targeted reading strategies as long as they are in the scope of 4MAT and the control of time.

3.3. The use of background music in all instructional steps except Step 3 will be closely controlled by the teacher. No more than 3 different songs should be used in a cycle. The volume should be at the “moderate” level, not too soft and not too loud. Its role in this academic setting is like a background. Research says good instrumental music should be like a background of smoke which people can hardly feel, but instead, gradually absorb without knowing. In class, when it comes into and off scene, “fade in” and “fade out” techniques should be used. In addition, only the classical tracks in the list are recommended. Other soft instrumental music may not yield the same result as expected. All the pieces of music have been chosen on the following basis:

- Their beats are 50-60 per minute.
- They feature the piano, violin, harp, or organ as the principle instruments.
- They are categorized in the genre of light classical Baroque music.
- They are low information load music

The list of the pieces of music can be seen below:

Titles		Playing time
<b>Wolfgang Amadeus Mozart</b>		
1.	Piano Sonata in C, K330, 3rd Movement	2.36
2.	Sonata for Piano and Violin, C Major, K 296, Andante Sostenuto	5.34
3.	Oboe Concerto in C, 2nd Movement	6.51
4.	Concerto Grosso in D minor, Op.6, No.10, Air	3.21
5.	Piano Concerto No.20, 2nd Movement	9.37
6.	Flute and Harp Concerto, Andantino	8.33
7.	Concerto Grosso in B minor, Op.6, No.12, Largo	2.25
8.	Concerto Grosso in B minor, Op.6, No.12, Larghetto	3.45
9.	Eine Kleine Nachtmusik	5.46
10.	Flute and Harp Concerto in C	4.45
11.	Clarinet Concerto in A	5.32
12.	Piano Sonata in F, K533, 3rd Movement	2.23
13.	The Magic Flute, K620, Papageno Arias No. 2 and 20	1.58
14.	Piano Sonata in D, K576, 3rd Movement	1.46
15.	Concerto for Flute and Harp in C, K299, 1st Movement	3.10
<b>Friedrich Handel</b>		
16.	Concerto Grosso in C minor, Op.6, No.8, Allemande	8.40
17.	Concerto Grosso in B Flat major, Op.3, No.1	4.42
18.	Concerto Grosso in B Flat major, Op.3, No.2	2.46
19.	Concerto Grosso in D minor, Op.6, No.10, Air	3.21
20.	Concerto Grosso in A minor Op. 6 No. 4	10.53
21.	Organ Concerto in B flat major, Op.4, No.6, Larghetto	3.06
22.	Organ Concerto in B flat major, Op.4, No.6, Andante allegro	5.29
23.	The Messiah, Pastoral Symphony	3.09
24.	Largo (from 'Xerxes')	3.07
25.	Fireworks Music	3.44
<b>Johann Sebastian Bach</b>		
26.	Concerto Brandenburg No.4 in G Major, Allegro	7.29
27.	Concerto Violín No.1 in A Minor, Allegro	4.46
28.	Air on the G String	3.43
29.	Minuet	3.56
30.	Erbarme Dich	6.46

3.4. Group configuration is another important point that should deserve special attention when the instructional cycle starts. As the 4MAT System relies much on group work, especially in Quadrants Three and Four (Steps 4-6 of the present reading model), learners are then supposed to work together in several activities. So as to minimize tension of the class during the first weeks, the teachers may allow the learners to form their groups the way they like it to be with only one condition: the number of members will be controlled. But when the procedure progresses, the teachers may introduce more systematic means of grouping, e.g. counting, using their student ID codes, or lottery drawing. When the learners are randomly assigned into groups this way, all the groups will be automatically balanced in terms of mixed-ability cooperative work.

3.5 The roles of teachers and learners are a striking focus in the 4MAT-based model. One outstanding feature of this newly-developed model is that the teacher should be trained to be flexible and equipped with multiple methods of instruction. Along the six steps, when the activities change, the teachers will adopt a number of roles as follows:

#### **Step 1: Recalling Experience**

As “*The Meaning Connector*”, the role of the teacher at this stage is to help forge connections between the content and the student’s lives. The teacher is supposed to:

- Connect students directly to the concept in a personal way through question asking
- Begin with a question, situation, or vocabulary item that is familiar to learners and build on what they already know
- Construct a learning experience that allows diverse and personal student responses
- Facilitate the work of cooperative teams of learners when they work together in groups
- Encourage learners to share their answers, perceptions, and beliefs
- Summarize and review similarities and differences from what is elicited

At this stage, learners act as “*The Meaning Maker*”, who are supposed to:

- Connect personal life and the content through the picture or clip by identifying what they see and relating it to what they know

- Display their experiences through words and questions
- Share their perceptions and beliefs among peers



- Check and monitor their own vocabulary knowledge

### **Step 2: Imagining**

As “*The Image Articulator*”, the teacher’s role here is to draw attention to aspects of structure and objectivity implicit in the learner’s representations of what they know. The role here includes:

- Use another medium (not reading or writing) to connect students’ personal knowledge to the concept (i.e. visual arts, music, movement, analogies, etc.).
- Involve learners in reflective production that blends the emotional and the cognitive
- Encourage learners to use their right mode as much and independently as possible

At this stage, learners act as “*The Visualizer*”, who are supposed to:

- Notice the nonverbal activity assigned by the teacher and seek relationship between this and the concept they are taught
- Identify their mental pictures through words or dialog with the teacher

### **Step 3: Explicit Modeling**

As “*The Instructional Leader*”, the role of the teacher is to present information and experience in complete and systematic ways.

- Provide “acknowledged body of knowledge” related to the concept
- Emphasize the most significant aspects of the concept in an organized, explicit manner
- Present information sequentially so learners see continuity
- Draw attention to important, discrete detail
- Use a variety of delivery systems: interactive lecture, text, films, visuals, CAI, demonstrations, etc.
- Clarify the reason for this concept delivering for the learner

At this stage, learners act as “*The Meaning Maker*”, who are supposed to:

- Analyze the concept taught either deductively or inductively
- Arrange the information, using their left mode, systematically

#### Step 4: Reading with Music

The teacher's role here is "*The Coach*" who assists as learners refine their ability so as to find applications of their ideas. The teacher should:

- Check for understanding of concepts and skills by using relevant standard materials, i.e. worksheets, text problems, workbooks, teacher prepared exercises, etc
- Provide opportunities for learners to practice the strategies taught in Step 3 in combination with those they have been taught earlier, in various ways (learning centers, games fostering skills development, etc.)
- Use concept of mastery learning to determine if re-teaching is necessary and how it will be carried out
- Assess the learner application and also their comprehension by noticing how they answer the comprehension-check questions at the end of each paragraph

At this stage, learners act as "*The Mindful Reader*", who are supposed to:

- Notice key words, phrases, or sentences and keep marking those key points
- Consider the key points and seek the relationship between them
- Monitor their own comprehension by seeing how the text progresses
- Assess from time to time what the text has stated as compared to what they think it is going to say
- Examine the first sentence of each paragraph for a statement of a main idea that foreshadows the rest of the paragraph
- Affirm their prediction by stopping at the end of the paragraph and ask if the main idea predicted at the beginning of the paragraph is supported by the other information in the paragraph

#### Step 5: Parallel Practicing

The teacher's role is "*The Counselor*" who encourages learners to take the application of learned reading strategies to more sophisticated, personal levels. What the teacher should do includes:

- Provide learners with post-reading drills or exercises
- Encourage tinkering with ideas/relationships/connections
- Require learners to shift their receptive reading skills to productive writing skills in some personal, meaningful way
- Assess the learners' application and also their comprehension by noticing their how they complete the drills/exercises
- Give feedbacks

At this stage, learners act as “*The User of Content and Skills*”, who are supposed to:

- Summarize the main gist of each paragraph into a sentence
- Work with peer, reviewing the information from the text and discuss those pieces of information

### **Step 6: Sharing Outcome**

The teacher’s role here is “*The Facilitator*” who can guide the refinement of the old schema and encourage the formation of a more complete perspective and to join in the celebration and facilitate entry into the next unit of study

- Help learners analyze their use of the written language and syntactic structure
- Convert mistakes into learning opportunities
- Summarize by reviewing the whole, bringing learners “full circle” to the experience with which the learning began
- Support learners in learning, teaching, and sharing with others
- Establish a classroom atmosphere that celebrates the sharing of learning
- Make learners’ learning available to the larger community by turning the group work to other groups around the class
- Establish a positive attitude toward the diversity of different people’s experience

Learners at this stage act as a “*Knowledge Broker*” who is supposed to:

- Synthesize what they have learned in earlier steps
- Rewrite concluding sentence into a new structure, while using the core vocabulary and keeping the original meaning
- Express their opinions and comments within their group
- Share their opinions and comments regarding the paraphrasing work within the whole class

3.6. Variation of activities in Steps 1, 3, 5, and 6 is suggested throughout the period of ten weeks to deal with monotony which may minimize students’ interest.

Step 1: A video clip in Step 1 can be replaced by a photo or realia.

Step 2: Other forms of analogy, like dominoes, Lego bricks, paper folding, can be substituted for jigsaw pieces in Step 2.

Step 5: When it comes to the fifth or sixth week or later, the class has shown some progress, summary writing in Step 5 can be replaced with outlining activities, or other activities which are parallel to the reading strategies covered in Step 3.

#### 4. Assessment and Evaluation

This newly developed instructional process covers two phases of the assessment scheme.

1. Before-process and after-process assessments
2. On-process assessment

##### 1. Before-process and after-process assessments

Prior to the teaching procedure based on the developed model, pre-tests which include the vocabulary knowledge test, reading comprehension test, and self-report questionnaire on attitude are administered to the learners so that their background proficiency before the intervention can be detected. After the treatment, the same tests will be administered to the group again. Or new tests which are parallel to the pre-test in terms of level of difficulty and validity can be used as an alternative. After that, the scores of the pre-test and post-test will be compared. If the post-test scores are higher, it implies that their vocabulary knowledge and reading comprehension have been enhanced, and attitudes towards reading have been promoted.

##### 2. On-process assessment

Students' performance and behaviors, reflecting the effectiveness of the instructional process, is assessed and evaluated along the six steps across the whole reading process. The assessment can be conducted through production, presentation observations, in-class activity participation, discussion, and idea exchanges, and can be assigned to each step as follows:

##### *Phase 1: Pre-reading*

Step 1: Recalling Experience:

**Assessment:** Engagement, participation in answering the posed questions and generation of ideas

Step 2: Imagining:

**Assessment:** Quality of student production and reflection

Step 3: Explicit Modeling:

**Assessment:** Teacher's checking student understanding, either verbally or in writing

***Phase 2: During-reading***

Step 4: Reading with Music:

**Assessment:** Quality of student work. Student comprehension through comprehension questions

***Phase 3: Post-reading***

Step 5: Parallel Practicing:

**Assessment:** Students on-task behavior and engagement in their writing task

Step 6: Sharing Outcome:

**Assessment:** Students' willingness and ability to edit, refine, analyze, and complete their own work

Students' ability to report and demonstrate what they have learned. Expressions of student enjoyment in the sharing of their learning. Quality of students' final products.



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## Appendix D

### Sample lesson plan for the experimental group (with Appendices)

**Course: Reading I**

**Total Time: 160 minutes**

**Reading Topic: A City That's Doing Something Right** (from "Interaction 2", Hartman and Kirn, 2007)

**Concept to Teach: Reading Strategy: Identifying main idea and supporting details**

**Objectives: by the end of the lesson students will be able to:**

1. distinguish the main idea from supporting details
2. identify the meanings of the core vocabulary
3. draw meaning from context

#### **Audio-visual Media**

1. Accompaniment Music (for Step 1, 2, 4, 5, 6)
  - 1.1. Mozart's Flute & Harp Concerto in C
  - 1.2. Mozart's Clarinet Concerto in A
  - 1.3. Mozart's Eine Kleine Nacht Musik
2. PowerPoint slides
3. A video clip

#### **Synopsis of the reading text:**

The text discusses government solutions to the environment problems in a city named Curitiba in Brazil. Though not money-wasting, these solutions have been considered clever and can be good examples for other countries facing the same kind of problems to follow.

#### **Assessment:**

Teacher evaluates learners from activities, focusing on ability to apply the strategies taught, reading proficiency (comprehension), vocabulary knowledge, attitudes towards the lesson and the class (how much attention and effort they have paid).

**Step 1: Recalling Experience****Estimated time: 40 minutes**

Learning activities	Media / Materials	Learning outcomes	Remarks
<p>1.1. Teacher (T) displays a video clip of the well-preserved city of Curitiba in Brazil. After students (Ss) have watched, T asks two questions:</p> <ul style="list-style-type: none"> <li>- Do you agree that people in Curitiba are happier than people in a Bangkok?</li> <li>- What makes Curitiba different from Bangkok?</li> </ul> <p>T asks Ss to think of 5 words the picture and the music remind them of. T elicits answers from 3-4 Ss randomly. (8 min)</p> <p>1.2. T puts Ss in groups of 5 and asks them to think of 5 English words from the video clip that come to mind, regardless of their parts of speech. T distributes each group blank sheets of paper for them to write on. T pools all important words from each group by writing them down on the board, classifying into 4 columns: noun, verb, adjective, adverb, and ask the whole class to identify the meaning of each unfamiliar-looking word by analyzing its prefixes, suffixes, and stems. T provides Explanation for some words. (12 min)</p>	<p>A video clip</p> <p>Worksheet 1 (Core Vocabulary List)</p> <p>Blank sheets of paper</p>	<p>1. Ss get interested in the lesson and predict the topic of the text to come.</p> <p>2. Ss can list a group of new words, some of which are the synonyms of the core vocabulary.</p> <p>3. Ss will be able to construct meaning of the unknown words through their morphological knowledge and idea sharing among their peers.</p>	<p>The music (Mozart's Flute &amp; Harp Concerto in C) is played along while Ss are pondering. And stop the music when the time is due.</p>

Learning activities	Media / Materials	Learning outcomes	Remarks
<p>1.3. T gives Ss Worksheet 1, which is a list of “Core Vocabulary”. T asks the group members to look through the word list and identify the meaning of each unknown word. T tells Ss they may use the pooled words on the board which can be synonyms and the small parts within each word (morphological components) to guess the meaning of unfamiliar words in the list. T asks all the groups to classify the words into 3 categories:</p> <ul style="list-style-type: none"> <li>- 1st Category: “I know the word well.”</li> <li>- 2nd Category: “I have seen the word, but I am not sure of its meaning.”</li> <li>- 3rd Category: “I have never seen the word before.”</li> </ul> <p>1.4. After 5 minutes, T asks each group to rotate the 3rd Category words around the class. Each group, when receiving this set of words from other groups, is supposed to write down the meaning or give the synonyms in the space next to the words of which the meaning they think they know. After all the groups finish, T pools the leftover still-unknown words in the category on the board and give some clues so that the whole class can get the meaning more simply. T gives short pinpoints in terms of word meanings as going through the table while at the same time explains the morphological units of each word (e.g. efficiently, pollution). (20 min)</p>		<p>4. Ss will be able to analyze the meaning of the target words through morphological awareness and relate them semantically.</p> <p>5. Ss will be able to construct meaning of the target words through idea sharing.</p> <p>6. Ss will be able to construct meaning of the target words through idea sharing and relationship of decontextualized words.</p>	

**Assessment:** Engagement, participation in answering the posed questions and generation of ideas



**Step 2: Imagining**  
**Estimated time: 20 minutes**

Learning activities	Media / Materials	Learning outcomes	Remarks
<p>2.1. T provides each group with pieces of jigsaw and asks them to put all the pieces together to create a picture of Curitiba. After 5 minutes, T then asks Ss to stop where they are and asks questions:</p> <ul style="list-style-type: none"> <li>- How is this unfinished jigsaw picture like reading an unseen passage?</li> <li>- Though the work is incomplete, can you guess the picture with the jigsaw pieces put in the right places? Is this similar to using the clues to guess the meaning of unknown words and also the overall meaning of the text?</li> <li>- What can we learn from this activity that can be applied to locating the main ideas of the paragraph and of the whole passage?</li> </ul> <p>T elicits answers from all the group and discuss the benefit reading strategic knowledge with Ss.</p>	<p>Small sets of jigsaw pieces (20-30 pieces per set)</p>	<ol style="list-style-type: none"> <li>1. Ss will be able to visualize the analogy, the relationship of the jigsaw game and reading strategies in their mind, which can help them connect their personal knowing to the concept to be taught.</li> <li>2. Ss will be able to be aware of the importance of the of reading strategies</li> </ol>	<p>Play music (Mozart's Clarinet Concerto in A) along while Ss are pondering. And stop the music when the time is due.</p>

**Assessment:** Quality of student production and reflection

**Step 3: Explicit Modeling**  
**Estimated time: 30 minutes**

Learning activities	Media / Materials	Learning outcomes	Remarks
<p>3.1. Distributing Handout 1 with Worksheet 2, T discusses the reading strategy of how to use context clues in guessing meaning of unknown words in the handout and asks the Ss to do the worksheet. T has Ss look at the example which is done already so that they know what words or clues in the context they can use in guessing meaning of the unfamiliar word. T then asks Ss to do the rest. (10 min)</p>	<p>Handout 1 with Worksheet 2: “Getting Meaning from Context” and its exercises</p>	<p>1. Ss will have a clear idea of how guess the meanings of unknown words with the help of the context clues.</p>	
<p>3.2. T uses PowerPoint slides while going along and elaborating once Ss have finished. T pinpoints the contextual meanings of some core vocabulary, including the context clues, in the sentences. (10 min)</p>	<p>PowerPoint slides of exercises in Worksheet 2</p>	<p>2. Ss will be able to go along with T analyzing their own mistakes</p>	
<p>3.3. T distributes Handout 2: “Identifying Main Ideas” to Ss and discusses another reading strategy of how to draw the main idea from a paragraph. T asks Ss to apply the strategies in the following step. (10 min)</p>	<p>Handout 2: “Identifying Main Ideas”  Worksheet 3: “Identifying Main Ideas</p>	<p>3. Ss will be able to differentiate between main ideas and other supporting details in the paragraph.</p>	

**Assessment:** Teacher verbal and/or written, checking student understanding

**Step 4: Reading with Music****Estimated time: 50 minutes**

Learning activities	Media / Materials	Learning outcomes	Remarks
<p>4.1. T gives Handout 3: the reading passage “<b>A City That’s Doing Something Right</b>” and asks Ss to read the text paragraph by paragraph. T gives Ss 2-3 minutes each paragraph to read silently and asks them to monitor text comprehension by applying the strategies learned. After Ss finish each paragraph, T asks them 2-3 questions that either test their ability to locate main ideas or to identify specific details in the text. (This is done by the T choosing the first S for the first question and then S chooses one person for the next question. Then the system goes on up to the end.) (30 min)</p>	<p>Handout 3: the reading passage “A City That’s Doing Something Right” with Worksheet 3: “After You Read” exercise</p> <p>PowerPoint slides showing questions from the reading passage</p>	<p>1. Ss will be able to apply the learned strategies and construct meaning of the text.</p> <p>2. Ss will be able to catch the gist of the passage by means of the comprehension questions.</p>	<p>Play music (Mozart's Clarinet Concerto in A, Eine Kleine Nacht Musik, and Mozart's Flute &amp; Harp Concerto in C) along all over again while Ss are reading. And stop the music when time to read each paragraph is due.</p>
<p>4.2. T asks Ss to go to “After You Read” exercise in Worksheet 3. T gets them to work in group to complete the “supporting details” boxes in the exercise, reminding them what they write in each box is not necessarily a sentence. T gives each group a transparency and gets them write on it. (10 min)</p>	<p>Transparencies</p>	<p>3. Ss will be able to practically distinguish the main idea from minor supporting details.</p>	<p>Play music along all over again while Ss are working out. And stop the music when the time is due.</p>
<p>4.3. T elicits answer from each group, using transparencies and OHT. T and Ss join discussion about the possibilities of the answers. (10 min)</p>		<p>4. Ss will have clearer ideas of how to apply the strategies.</p>	

**Assessment:** Quality of student work. Student comprehension through comprehension questions

**Step 5: Parallel Practicing**  
**Estimated time: 15 minutes**

Learning activities	Media / Materials	Learning outcomes	Remarks
5.1. T distributes Worksheet 4: “Parallel Reading”, which is a text of 3 short paragraphs, sharing the same theme as in Handout 3. T then asks Ss to read the text and write a summary out of each paragraph. T models the first paragraph as an example and asks Ss to compare that summary with the topic and asks each group to write out on that, reminding them that what they will write must be a sentence of no longer than 2 lines. T circulates while Ss are working and also edit the sentences to make them grammatically correct.	Worksheet 4: “Parallel Reading”  Transparencies	1. Ss will be able to see the similarities of the topic sentence and paragraph summary.	Play music (Mozart's Clarinet Concerto in A, Eine Kleine Nacht Musik, and Mozart's Flute & Harp Concerto in C) along all over again while Ss are reading. And stop the music when the time is due.

**Assessment:** Students’ on-task behavior and engagement in their writing task

**Step 6: Sharing Outcome**  
**Estimated time: 25 minutes**

Learning activities	Media / Materials	Learning outcomes	Remarks
6.1. T asks each group to choose 1 sentence from Step 5 and each member in the group is supposed to rewrite it while keeping the original meaning and using as many as core vocabulary from Step 1. (5 min)	Transparencies	1. Ss will be able to write a new sentence structure while maintaining the original meaning.  2. Ss will be able to use synonym/antonym and associate words to see their relationship.	The music (Mozart's Flute & Harp Concerto in C) is played along while Ss are writing and discussing. And stop the music when the time is due.

Learning activities	Media / Materials	Learning outcomes	Remarks
<p>6.2. When finished, T tells each group to rotate what they have written to other members in their own group until each one has read all the paraphrased sentences in the group. T asks group members to discuss which paraphrase in their group they like best and why. Finally, each group will decide on only one best version of paraphrased sentences. They are supposed to write it down on the transparencies. (5 min)</p> <p>6.3. T calls on 1 representative from each group to report to the class on the positive aspects of the paraphrased sentence that they like in terms of the main idea of the paragraph and the use of core vocabulary included. T gives comments and also briefly reviews the strategies to draw a wrap-up of the lesson. (15 min)</p>		<p>3. Ss pool thoughts and ideas in groups through the discussion and group writing.</p> <p>4. Ss will be able to express their opinions through oral presentation and in-class opinion sharing.</p>	

**Assessment:** Students' willingness and ability to edit, refine, analyze, and complete their own work

Students' ability to report and demonstrate what they have learned

Expressions of student enjoyment in the sharing of their learning.

Quality of student final products

### Sample lesson plan for the control group (PPP method)

#### Step 1: Warm-up (Presentation)

Estimated time: 35 minutes

Learning activities	Media / Materials	Learning outcomes
<p>1.1. Teacher (T) shows a few pictures of the well-preserved city of Curitiba in Brazil. T then tells students (Ss) to take a sheet of paper and write down what they just saw. What they write can be either words or phrases. They should write quickly, not worrying about spelling or grammar. (10 min)</p> <p>1.2. When Ss have finished writing, T calls on a few Ss and asks them to tell the whole class what they wrote. (5 min)</p> <p>1.3. T then asks Ss to form small groups (3-4) and discuss what they think about environment problems in big cities. They have one person in the group write down the group's opinions. T tells Ss that some of the information might (or might not) be mentioned in the text. (10 min)</p> <p>1.4. T collects what each group has written and reads them to the class to see if other information regarding the topic can be added. T takes notes on the board so that Ss can see the important ideas and key words. T tells Ss to keep the information not mentioned in mind and to look for answers as they read. (10 min)</p>	<p>2-3 pictures of the city "Curitiba"</p> <p>Blank sheets of paper</p>	<p>1. Ss get interested in the lesson and predict the topic of the text to come.</p> <p>2. Ss connect the topic to read with their background knowledge.</p> <p>3. Ss can recognize and understand words often associated with environment problems and pollution that will appear in the text.</p>

**Assessment:** Engagement, participation in discussing and generation ideas

**Step 2: Pre-reading (Presentation)****Estimated time: 25 minutes**

Learning activities	Media / Materials	Learning outcomes
<p>2.1. T introduces Handout 1: “Getting Meaning from Context” and Worksheet 2. T has the Ss look at the example which is done already so that they realize the benefit of using semantic devices or the clues in the sentences which can help them guess the meaning in general of an unknown word without consulting a dictionary. (10 min)</p> <p>2.2. T does items 2-3 along with the whole class before having them do items 4-11 individually. Then briefly give them the possible answers of what they have done. T also pinpoints the “context clues” in each item. (15 min)</p>	Handout 1 with Worksheet 2: “Getting Meaning from Context” and its exercises	<p>1. Ss will be able to guess the meanings of unknown words from the context clues.</p> <p>2. Ss will be able to be aware of the importance of the context clues.</p>

**Assessment:** Quality of student production and reflection**Step 3: During-reading (Practice)****Estimated time: 50 minutes**

Learning activities	Media / Materials	Learning outcomes
<p>3.1. T asks Ss to read the reading passage “A City That’s Doing Something Right” in Handout 3 paragraph by paragraph silently. T gives Ss 2 minutes each paragraph to read and ask them 4-5 questions that either test their comprehension and unknown vocabulary or identify specific details in the text.</p> <p>3.2 T simplifies the paragraphs, in the case of long or lexically dense ones, by retelling or drawing a summary out of each paragraph.</p>	Handout 3 with Worksheet 2: “Getting Meaning from Context” and its exercises	<p>1. Ss will be aware of the value of using reading strategies they have learned.</p> <p>2. Ss will be prepared to deal with reading problems.</p>

**Assessment:** Quality of students’ work. Student comprehension through comprehension-check questions**Step 4: Post-reading (Practice)**

**Estimated time: 50 minutes**

Learning activities	Media / Materials	Learning outcomes
<p>4.1. T explains the differences between main ideas and supporting details in Handout 2: “Identifying Topics, Main Ideas, and Supporting Details” and asks Ss to go to Worksheet 3: “After You Read” exercises. T gets Ss to see the differences among the main idea, topic sentences, and major supporting details and have them sum up the relationship of the three, all of which are indispensable to a paragraph. (25 min)</p> <p>4.2. T has Ss work by group to complete the boxes in the exercise. T tells Ss what they write in each box is not necessarily a sentence. Ss work together in group. T circulates to see if help is needed. (10 min)</p> <p>4.3. After 10 minutes, T uses PowerPoint slides while going along the exercises once the students have finished. T talks about the contextual meanings of some core vocabulary and add some other hidden messages of the text. (15 min)</p>	<p>Handout2: “Identifying Topics, Main Ideas, and Supporting Details” and Worksheet 3: “After You Read” exercise</p> <p>PowerPoint slides</p>	<p>1. Ss will be able to identify supporting details, which are different from main ideas and topic sentences through the exercise.</p> <p>2. Ss will be able to catch the gist of the passage by means of the comprehension questions.</p> <p>3. Ss will be provided a chance to increase their ability to consciously analyze the structure of a reading text.</p>

**Assessment:** Students’ on-task behaviors and engagement in their group work



## Handout 1

### Getting Meaning from Context

The first way to figure out the meaning of a word is from its context. The **context** is the other words and sentences that are around the new word. When you figure out the meaning of a word from context, you are making a guess about what the word means. To do this, you use the hints and clues of the other words and sentences. You won't always be right, but many times you will be. You might not be able to guess the exact meaning of a word, but you may be close enough to get the meaning of the sentence it is in. A basic strategy for unlocking the meaning of an unfamiliar word is to search the context of the sentence in which a new word appears for clues. Sometimes this can be easy to do because the author may have provided a *definition* or a *synonym* right there next to or near a term that you can use to unlock its meaning. A *definition* is a statement giving the meaning of a word. A *synonym* is a word that means almost the same as another.

You do not need to look up the meanings of new words if you can guess them from the context. Here are three types of clues that will help you guess new words.

**1. The words *for example, for instance, such as, and among them* introduce examples that may help you. (Sometimes examples appear without these words, in parentheses, or between dashes.)**

#### Example

Context: Almost four billion people will be living in cities in **developing countries** such as India and Nigeria.

Meaning: You can guess that developing countries are not rich.

**2. Sometimes another word or words in another sentence or sentence part has the opposite meaning from a new vocabulary item.**

#### Example

Context: In some cities, instead of **worsening**, urban life is actually getting much better.

Meaning: You see that *worsening* is the opposite of *getting better*.

**3. A definition or explanation follows the connecting words *that is or in other words*.**

#### Example

Context: The downtown shopping area is now a **pedestrian zone**—in other words, an area for walkers only, no cars.

Meaning: A *pedestrian zone* is an area for walkers only.

## Handout 2

### Identifying Topics, Main Ideas, and Supporting Details

Understanding the *topic*, the *gist*, or the larger conceptual framework of a textbook chapter, an article, a paragraph, a sentence or a passage is a sophisticated reading task. Being able to draw conclusions, evaluate, and critically interpret articles or chapters is important for overall comprehension in college reading. Textbook chapters, articles, paragraphs, sentences, or passages all have topics and main ideas. The *topic* is the broad, general theme or message. It is what some call the subject. The *main idea* is the "key concept" being expressed. *Details*, major and minor, support the main idea by telling how, what, when, where, why, how much, or how many. Locating the topic, main idea, and supporting details helps you understand the point(s) the writer is attempting to express. Identifying the relationship between these will increase your comprehension.

#### Applying Strategy

The successful communication of any author's topic is only as good as the organization the author uses to build and define his/her subject matter.

#### Grasping the Main Idea:

A paragraph is a group of sentences related to a particular topic, or central theme. Every paragraph has a key concept or main idea. The main idea is the most important piece of information the author wants you to know about the concept of that paragraph.

When authors write they have an idea in mind that they are trying to get across. This is especially true as authors compose paragraphs. An author organizes each paragraph's main idea and supporting details in support of the topic or central theme, and each paragraph supports the paragraph preceding it.

A writer will state his/her main idea explicitly somewhere in the paragraph. That main idea may be stated at the beginning of the paragraph, in the middle, or at the end. The sentence in which the main idea is stated is the *topic sentence* of that paragraph.

The topic sentence announces the general theme ( or portion of the theme) to be dealt with in the paragraph. Although the topic sentence may appear anywhere in the paragraph, it is usually first - and for a very good reason. This sentence provides the focus for the writer while writing and for the reader while reading. When you find the topic sentence, be sure to underline it so that it will stand out not only now, but also later when you review.

### Handout 3

#### Reading Text

#### A City That's Doing Something Right

There's good news and bad news about life in modern cities—first, the bad. People who *study* population growth **predict** a nightmare by the year 2025: the global population will be more than eight billion, and almost four billion of these people will be living in cities in **developing countries** such as India and Nigeria. Population growth is already causing unbelievable overcrowding. Due to this overcrowding, many cities have problems with air **pollution**, disease, and crime. People spend hours in **gridlock**—that is, traffic so horrible that it simply doesn't move—when they **commute** daily from their homes to their work and back. There isn't enough water, transportation, or housing. Many people don't have access to health o services or jobs. Now the good news: *in some* cities, instead of **worsening**, urban life is actually getting much better.

#### A City and Its Mayor

It might not be a surprise to find that life in **affluent** cities is improving. But what about cities that *aren't* rich? The city of Curitiba, Brazil, proves that it's possible for even a city in a developing country to offer a good life to its residents. The former mayor of Curitiba for 25 years, Jaime Lerner is an architect and a very practical person. Under his leadership, the city planners established a list of **priorities**—in other words, a list of what was most important to work on. They decided to focus on the environment and on the quality of life. With an average income of only about \$2,000 per person per year, Curitiba has the same problems as many cities. However, it also has some **creative** solutions.

#### Garbage Collection

One creative solution is the method of garbage collection—*Gambio Verde*, or Green Exchange. This does far more than clean the streets of **trash**. In neighborhoods that garbage trucks can't reach, poor people bring bags of trash to special centers. At these centers, they exchange the trash for fresh **produce** such as potatoes and oranges. They receive one kilo of produce for every four kilos of trash that they bring in. At a **recycling plant**, workers separate glass bottles, plastic, and cans from other trash. *Two-thirds* of Curitiba's garbage is recycled, which is good for the environment. And the plant gives jobs to the poorest person, which improves their lives.

### Transportation

Due to careful planning, Curitiba does not have the same traffic problems that most cities have. The statistics are surprising. The population has grown fast, to over two million people, but traffic has actually *decreased* 30 percent. Curitiba needed a **mass-transit** system but

couldn't afford an expensive subway. City planners began, instead, with an unusual system of buses in the center lanes of five wide major streets. At each bus stop, there is a forty-foot-long glass tube. Passengers pay *before* they enter the tube. Then they get on the bus "subway style"—through wide doors.

This allows people to get on and off the bus quickly and **efficiently**. People don't **crowd**

onto the bus; loading and unloading takes only 30 seconds. This makes commuting more pleasant and also helps to **solve** the problem of air pollution.



*Passengers exit efficiently through the tube in Curitiba, Brazil.*

### A Creative Social Program

There is an **agricultural operation** just outside Curitiba that looks like other farms but actually helps to solve a social problem, in addition to growing **crops**. At *Fazenda da Solidaridade* (Solidarity Farm), the workers are not experienced farmers. Instead, they are drug addicts and alcoholics who volunteer to spend up to nine months in a program called *Verde Saude* (Green Health). The program helps in two ways. First, it gives them jobs. They **cultivate** medicinal plants and then process them into herbal teas, syrups, and other products that are sold in health food stores. Second, it helps them to get off drugs and alcohol and to turn their lives around. In exchange for their labor, they receive counseling, medical care, and job training.

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### The Environment

industries such as Pepsi and Volvo have offices in the city being willing to incorporate green space in their plants in order to take advantage of the city's low tax rate. Bringing natural beauty into the city is a priority. For this reason, Curitiba gave 1.5 million young trees to neighborhoods to plant and take care of. And the downtown shopping area is now a **pedestrian zone**—in other words, for walkers only, no car—and is lined with gardens. Curitiba provides the city people with 22 million square meters of 80 parks and green areas—more than three times the amount that the World Health Organization recommends for **urban dwellers**.



*“There is little in the architecture of a city that is more beautifully designed than a tree,” says Jaime Lerner.*

### A Symbol of the Possible

Clearly, overcrowding in big cities worldwide is the cause of serious problems. However, the example of Curitiba provides hope that careful planning and creative thinking can lead to solutions to many of them. Curitiba is truly, as Lewis Mumford once said of cities in general, a “symbol of the possible.”

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### Examples of Comprehension Questions

**Paragraph A**

*What is the consequence of population growth as predicted by the year 2025?  
What is the “good news as mentioned in the paragraph?*

**Paragraph B:**

*Who is Jaime Lerner?  
What is the first priority the city has decided to focus on?*

**Paragraph C:**

*What are the details of “Cambio Verde” campaign?  
What are the benefits of garbage recycling as mentioned in the paragraph?*

**Paragraph D:**

*How does the city solve its traffic problems?  
What is one by-product the commuting system in the paragraph can provide?*

**Paragraph E:**

*How unusual are the workers in “Solidarity Farm” when compared to other agricultural areas?  
What do they do with the agricultural produce in the farm?*

**Paragraph F:**

*How does the government reward the companies with green areas?  
What are the 2 evidences showing that the city of Curitiba is filled with green trees?*

**Paragraph G:**

*What can be learnt from the city of Curitiba?  
What does the phrase “symbol of the possibles” mean?*

### Worksheet 1: Core Vocabulary

1 agricultural operation	11 cultivate	21 pollution
2 crops	12 priorities	22 solve
3 developing countries	13 recycling plant	23 global
4 difficulties	14 priorities	24 overcrowding
5 affluent	15 produce	25 access
6 pedestrian zone	16 commute	26 advantage
7 gridlock	17 predict	27 encourage
8 creative	18 trash	28 neighborhoods
9 mass transit	19 urban dwellers	29 pleasant
10 efficiently	20 worsen	30 recommend

### Worksheet 2

#### Getting Meaning from Context Exercise

This activity will help you with vocabulary the first reading selection. Figure out the meanings of the underlined words and writ them on the lines. Use punctuation, logic, examples, opposites, and connecting won help you.

0. People who study population growth predict a nightmare by the year 2025: the global population will be more than 8 billion, and almost 4 billion of these people will be living in cities in developing countries such as India and Nigeria.

predict = \_\_\_\_\_

1. People spend hours in gridlock—that is, traffic so horrible that it simply doesn't move—when they commute daily from their homes to their work and back.

gridlock = \_\_\_\_\_

commute = \_\_\_\_\_

2. It might not be a surprise to find that life in affluent cities is improving, but what about cities that aren't rich?

affluent = \_\_\_\_\_

3. Under his leadership, city planners established priorities—in other words, r of what was most important.

priorities = \_\_\_\_\_

4. In neighborhoods that garbage trucks can't reach, people bring bags of trash special centers.

trash = \_\_\_\_\_

5. They exchange the trash for fresh produce—such as potatoes or oranges— for bus tickets.

produce = \_\_\_\_\_

6. At a recycling plant, workers separate glass bottles, plastic, and cans from other trash.

recycling plant = \_\_\_\_\_

7. Curitiba needed a mass-transit system but couldn't afford an expensive subway. City planners began, instead, with an unusual system of buses.

mass-transit = \_\_\_\_\_

8. There is an agricultural operation just outside Curitiba that looks like other farms but actually helps to solve a social problem, in addition to growing on.

agricultural operation = \_\_\_\_\_

crops = \_\_\_\_\_

9. They cultivate medicinal plants and then process them into herbal teas.

cultivate = \_\_\_\_\_

10. Curitiba provides the city people with twenty-two million square meters of parks and green areas; this is more than three times the amount that the World Health Organization recommends for urban dwellers.

urban dwellers = \_\_\_\_\_



**Worksheet 3****After You Read****IDENTIFYING THE MAIN IDEA**

A reading passage may include many ideas, but there is only one main idea. This is the most important idea, or point of the reading. It is the main points, thoughts, or opinion that the author has about the topic. It is an “umbrella” that includes all of the more specific ideas and details. The main idea is usually stated in the introduction. Often, it is repeated in the conclusion.

Usually one or two sentences in an essay or article state the main idea of the whole passage (the “umbrella” idea). You can usually find the main idea near the beginning of an essay.

**Identifying the Main Idea** In the article that you just read, the main idea is in Paragraph B. Write the main idea below. Then find another sentence in the conclusion, Paragraph G, which seems to mean about the same. Write that sentence in the provided blank below.

From Paragraph B: \_\_\_\_\_

\_\_\_\_\_

From Paragraph G: \_\_\_\_\_

\_\_\_\_\_

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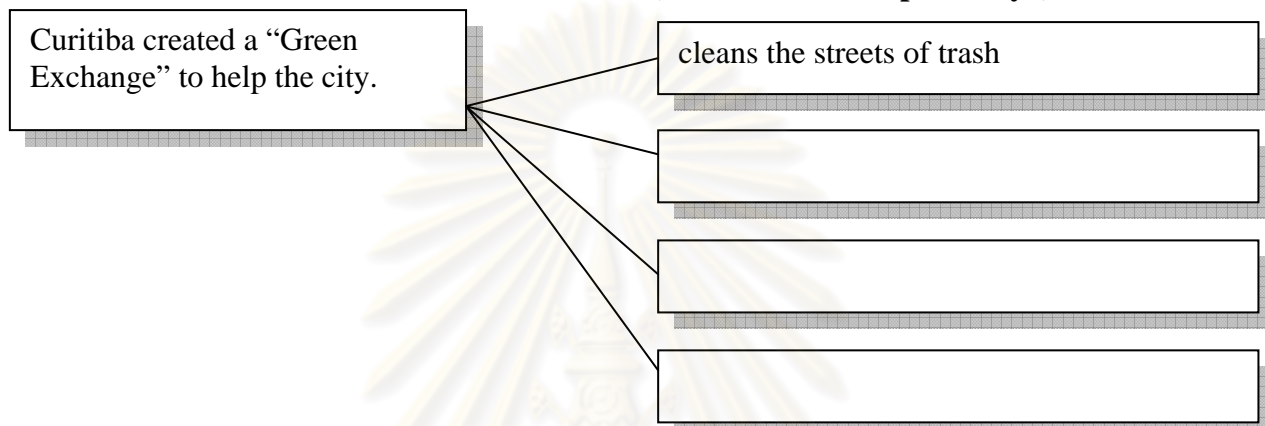
### Identifying Supporting Details

Every paragraph includes a main idea and specific details (facts, ideas, and examples) that support and develop the main idea. You can organize the main ideas and details on different types of graphic organizers. One way to do this is to put the main idea in a box on the left and the details in boxes to the right. See the example below.

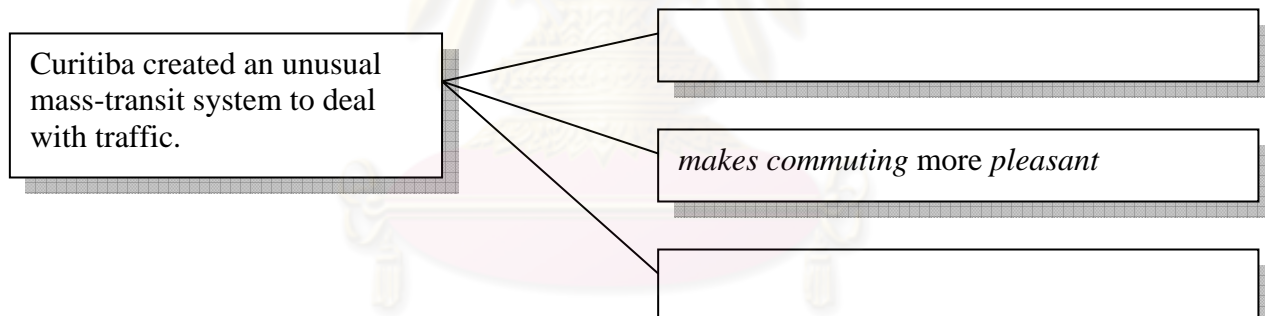
**Identifying Supporting Details** Complete this graphic organizer with information from Paragraphs C, D, and E to answer the questions. Follow the examples.

**Main ideas:**

**Details:**  
(How does this help the city?)



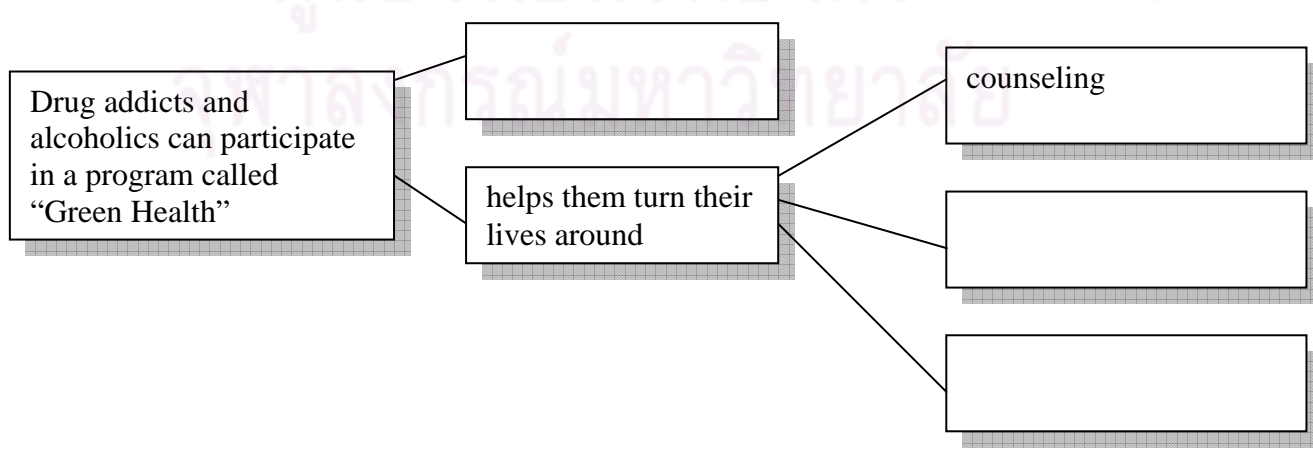
(What is good about this system?)



**Main ideas:**

**Details:**  
(How does this help drug addicts and alcoholics?)

**Details:**  
(What helps addicts turn their lives around?)



People have worried about smog for many years, and the government has spent billions of dollars to try to clean up the air of big cities. But now we find that there is no escape from unhealthy air. Recent studies have shown that air inside many homes, office buildings, and schools is full of pollutants: chemicals, mold, bacteria, smoke, and gases. These pollutants are causing a group of unpleasant and dangerous symptoms that experts call “sick-building syndrome.” First discovered in 1982, sick-building syndrome most often includes symptoms similar to those of the flu (watering eyes, headaches, and so on) and respiratory infections such as tonsillitis, bronchitis, and pneumonia.

Topic: \_\_\_\_\_

Main idea: \_\_\_\_\_

\_\_\_\_\_

Although most common in office buildings and schools, the indoor pollution that causes sick-building syndrome can also occur in houses. Imagine a typical home. The people who live there burn oil, wood, or gas for cooking and heating. They might smoke cigarettes, pipes, or cigars. They use chemicals for cleaning. They use products made of particleboard, which is an inexpensive kind of board made of very small pieces of wood held together with a chemical. They use products such as computers, fax machines, and copiers that are made of plastic. These products give off chemicals that we can't see, but we do breathe them in. In some homes, carbon monoxide from cars in the garage can enter the house. And in many areas, the ground under the building might send a dangerous gas called radon into the home. The people in the house are breathing in a “chemical soup.”

Topic: \_\_\_\_\_

Main idea: \_\_\_\_\_

\_\_\_\_\_

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## Appendix E

### Questionnaire eliciting students' satisfaction towards the model

#### Instructions:

1. The questionnaire is intended to investigate the student's opinions towards the Reading Instructional Model Using the 4MAT System and Music to Enhance Vocabulary Acquisition for English Reading Comprehension and Attitude towards Learning.

2. Answer all the questions on this questionnaire and give additional comments if you wish. Your answers will not affect your grade and will be kept confidential. They will academically be used to develop the instructional model only.

3. Please read each statement carefully and put a mark ( ✓ ) in the opinion box provided.

4. This questionnaire consists of two parts:

Part 1: Students' Personal Information

Part 2: Students' Opinions on the Reading Instructional Model Using the 4MAT System and Music to Enhance Vocabulary Acquisition for English Reading Comprehension and Attitude towards Learning of Undergraduate Students

#### Part 1: Students' Personal Information

**Instructions:** Please put a mark ( ✓ ) in the box provided.

##### 1.1 Gender

Male

Female

##### 1.2 Grade Point Average

Below 2.00

2.00-2.50

2.51-3.00

3.01-3.50

3.51-4.00

**Part 2:** Students' Opinions on the Reading Instructional Model Using the 4MAT System and Music to Enhance Vocabulary Acquisition for English Reading Comprehension and Attitude towards Learning of Undergraduate Students

**Instructions:** Please read all 20 items in this part carefully and put a mark ( ✓ ) in the box which correspond with your opinion.

Items	Opinions				
	Strongly Agree (5)	Agree (4)	Not Sure (3)	Disagree (2)	Strongly Disagree (1)
1. The reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning is interesting.					
2. The use of video clip in Step 1 is appropriate and useful.					
3. Pooling core vocabulary in Step 1 before reading the text makes the reading easier.					
4. Using nonverbal activities in Step 2 to introduce the reading strategies to be taught in Step 3 is interesting and appropriate.					
5. I like the way the teacher taught and modeled reading strategies explicitly in Step 3.					
6. Reading strategies in Step 3 should be taught before starting to read the text in Step 4.					
7. Silent reading paragraph by paragraph, timed by background music, is appropriate.					
8. Answering all comprehension-check questions after each paragraph is appropriate and useful as it helped me understand the paragraph better.					
9. Doing the parallel reading activity in Step 5 allowed me a good opportunity to review the reading strategies learned in Step 3 again.					
10. Writing a paragraph summary out in a form of one sentence helped me know better how to locate or draw the main idea.					
11. Paraphrasing in Step 6 is useful as I could practice both reading and writing skills.					
12. Seeing writing work of other groups is appropriate as I could know how good or bad I was when compared with peers.					

Items	Opinions				
	Strongly Agree (5)	Agree (4)	Not Sure (3)	Disagree (2)	Strongly Disagree (1)
13. The background music played while doing the group work helped maintain relaxing atmosphere.					
14. The background music played while I was reading in Step 4 could keep my focus and attention.					
15. Background music made learning more interesting and reading less boring.					
16. I have realized the benefit of background music and know that it can be used while reading.					
17. This instructional reading model can improve my reading comprehension in general.					
18. This instructional reading model can learn vocabulary better in general.					
19. My attitude towards reading is now better in general after being taught through this instructional reading model.					
20. I want to have an opportunity to be taught through this instructional reading model again in other higher reading courses.					

Comments:

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## Appendix F

### Reading comprehension and vocabulary ability test

#### Instructions:

1. This exam has 6 pages, including 2 parts:

Part I	Reading comprehension	30	items / points
Part II	Vocabulary	30	items / points
	Total	60	items / points

2. Read the instructions carefully, and mark your answers on the separate computer card with a 2B pencil.

#### Part I: Reading Comprehension

Read the two passages and choose the best answer. (30 points)

#### Passage 1: Questions 1 – 12

5 Home schooling is a choice made by some parents to provide elementary, middle or high school education to their children in their own home. Many parents, frustrated by corrupt school boards, lack of religious instruction, underpaid teachers or unsafe conditions, have opted to teach their kids at home. Most parents cite family togetherness, more control over curriculum, and having a say over what their children learn as reasons to home school. Many of the families who home school also do so for religious reasons.

10 There are many advantages to home schooling. For instance, parents teach their children one-on-one, rather than twenty-or-thirty-to-one in a crowded classroom. With more personal attention, children often understand the material more quickly instead of lagging behind because they don't understand. Parents also like being able to enjoy more time together as a family, instead of a few hurried hours in the evening.

15 Children are safe in a home school situation. They don't have to worry about playground bullies or guns and knives in the rest rooms. They're also less likely to be influenced by peer pressure and partake in drugs and alcohol. In addition, parents get to choose their children's curriculum and work at each child's own pace. Students also have a better chance of learning the material rather than skating by with mediocre grades. There's no such thing as "social promotion" in a home school.

20 There are disadvantages as well. For instance, home schooling is often lonely because children aren't socializing with other children their own age. They don't get to commiserate with their peers about things when they are disappointed, and they do not get to participate in school sponsored extra curricular activities. Parents are also isolated socially as days are spent teaching children, rather than communicating with other adults in a work environment or neighborhood groups. In addition, students may not get the benefits of many of the services and programs available to those within the school system.

30 If you're interested in learning more about home schooling, it's imperative you learn your state's home schooling laws. You can contact your state's Homeschooling Association to learn more details. If you will be home schooling, and your child previously went to a public school, be sure to pay a visit to the school's office and withdraw your child. Otherwise, he'll still be marked as absent. Too many absences can result in being paid visits by truant officers or social workers. Call ahead of time to find out what information will be needed.

1. Homeschooling means \_\_\_\_\_.
  - a. bringing teachers from school to home
  - b. buying materials at school and using them at home
  - c. driving children from home to school
  - d. teaching children at home instead of at school
  
2. According to paragraph 1, many parents home school their children due to many reasons EXCEPT that \_\_\_\_\_.
  - a. they need their children to learn more religious concepts
  - b. they do not like dishonest administration in some schools
  - c. schools are not a safe place for kids
  - d. there are no good schools in their neighborhood
  
3. What does the underlined word “do so” in paragraph 1 refer to?
  - a. Being frustrated by corrupt school boards
  - b. Citing family togetherness
  - c. Choosing to teach their kids at home
  - d. Having a say over what their children learn
  
4. What qualifications should the parents who want to homeschool their children have?
  - a. Traditional
  - b. Wealthy
  - c. Educated
  - d. Active
  
5. According to paragraph 2, which is NOT correct?
  - a. Class at home is far less crowded than in a regular school.
  - b. Children get more attention by their parents than by the teachers.
  - c. Parents can save more money teaching their children at home.
  - d. Parents do not have to spend a lot of time traveling to and from school.
  
6. According to paragraph 3, children who are homeschooled \_\_\_\_\_.
  - a. are safe from danger and violence outside
  - b. have more social skills than those in regular schools
  - c. lack a chance to attend non-academic activities organized by the school
  - d. still take full advantage of some school service programs
  
7. The underlined phrase “work at each child’s own pace” in paragraph 3 means that \_\_\_\_\_.
  - a. children can individually learn as fast or as slow as they can
  - b. parents want to speed up their home schooled children
  - c. all children need to learn in different atmosphere
  - d. children are more comfortable staying at home
  
8. It can be inferred that home schooled children probably \_\_\_\_\_.
  - a. want to have close relationship with their parents
  - b. sometimes learn more different things than the students in traditional schools
  - c. do not want to go to universities to join other students
  - d. have better grades than the students in traditional schools
  
9. The underlined word “commiserate with” in paragraph 4 can best be replaced by \_\_\_\_\_.
  - a. comfort
  - b. discourage
  - c. interest
  - d. ignore



10. What is the main idea of this reading passage?
- Not many children in the United States are homeschooled.
  - Parents choose to homeschool their children for several reasons.
  - Most children in the United States are homeschooled.
  - Homeschooling is better than traditional schooling.
11. Who is the reading passage probably most useful to?
- Parents
  - Young children
  - Social workers or officers
  - School teachers
12. The tone of the passage can best be described as \_\_\_\_\_.
- negative
  - humorous
  - informative
  - frightening

### Passage 2: Questions 13 – 20

Not too long ago, most Americans associated tattoos with sailors, bikers and sideshow artists in circus. But tattoos have become more popular in recent years, and the people who get them are as diverse as the styles and designs they choose. And some people who would never think of tattooing pictures or symbols onto their bodies use permanent makeup -- a type of tattoo -- to emphasize their eyes and lips. Artists create tattoos by injecting ink into a person's skin. To do this, they use an electrically powered tattoo machine that resembles (and sounds like) a dental drill. The machine moves a solid needle up and down to puncture the skin between 50 and 3,000 times per minute. The needle penetrates the skin by about a millimeter and deposits a drop of insoluble ink into the skin with each puncture.

When you look at a person's tattoo, you're seeing the ink through the epidermis, or the outer layer of skin. The ink is actually in the dermis, which is the second layer of the skin. The cells of the dermis are far more stable than the cells of the epidermis, so the tattoo's ink will stay in place, with minor fading and dispersion, for a person's entire life.

13. In the past, tattoos were worn by people of many careers EXCEPT \_\_\_\_\_.
- people working in boats
  - cyclists
  - circus performers
  - movie actors
14. According to paragraph 1, apart from the purpose of decorating their bodies, people get tattoos \_\_\_\_\_.
- because they come in the form of symbols
  - as a facial makeup
  - in order to heal some diseases
  - to show their anti-social attitudes
15. What does the underlined phrase "To do this" in paragraph 1 refer to?
- Using an electrical tattoo machine
  - Injecting ink into the skin
  - Using permanent makeup
  - Choosing tattooing pictures or symbols

16. \_\_\_\_\_ is needed to create tattoos.
- a. A dental drill  
b. A sewing machine motor  
c. Invisible ink  
d. Ink that does not dissolve in water
17. The underlined word “deposits” in paragraph 2 can best be replaced by \_\_\_\_\_.
- a. leaves  
b. absorbs  
c. sprays  
d. excludes
18. The tattoo ink can last \_\_\_\_\_.
- a. as long as the life of epidermis  
b. longer than the cells of the dermis  
c. very long since it is injected into the inner layer of the skin  
d. until it fades and disperses once a person gets old
19. The main purpose of the reading is to \_\_\_\_\_.
- a. convince more people to wear tattoos  
b. identify some bad points of tattooing  
c. suggest an appropriate way to choose tattoo designs  
d. explain how tattooing can be done
20. What would be an appropriate title for this reading passage?
- a. A Brief History of Tattoos  
b. The Beauty of Tattoo Designs  
c. Tattoos and their Various Purposes  
d. People’s Attitudes towards Tattoos

### Passage 3: Questions 21-30

5 Airline business is a branch of global business that is easily affected by surrounding factors economically, globally, politically, and socially. Since the first operation of airline companies in the 1940s, this business has made huge economic profits consistently throughout the world. The airline business has been rapidly growing as can be observed from the fast development of airport facilities, the constant invention of new aircraft types, and the rapid improvement of in-flight services, including in-flight entertainment systems in order to give passengers comfort and convenience.

10 The development of airports around the world ensures that these facilities will accommodate the increasing number of passengers who make the trip by air. Many big airports around the world are built to be an airline hub for the airline companies. Primarily, the airports control the movement of the aircraft when they take off and land. But in addition, the airport terminals provide many luxurious facilities to  
15 accommodate the passengers before boarding the aircraft. These will entertain the passengers while waiting for their flights at the airports.

20 The aircraft itself has been much developed within these decades. The continuing development of aircraft capacity in carrying passengers on each flight could vary from 70 up to 550 passengers in one flight. The flights can go further and further from the East to the West, the North to the South and can fly non-stop 19 hours. Since the first development of jet-engine aircraft in the 1980s, the aircraft’s configuration has been designed to meet the passengers’ needs. Moreover, the pollution emission has become one of the serious problems that most airlines in the world are now concerned with; hence, every modern development of new aircraft  
25 types is concerning with how to save the world from being damaged by gas emission from airplanes.

- 30 Due to the fact that this business has been rapidly growing and the number of passengers is increasing, the improvement of the in-flight services is a must to ensure that the passengers will not choose other airline companies whenever they make their flight reservations. Actually, services on board are not the first priority that must be considered, instead 'safety' is. Within the world of competitive business, the finest in-flight services and state-of-the-art entertainment systems on board could encourage their passengers to remain with a particular airline company, not others.

21. Which one does NOT affect the development of airline business?
- What happens in the world around us
  - The relationship between production, trade, and supply of money
  - The Stability of the government
  - The educational level of people in the country
22. Which one is NOT evidence of the rapid growth of airline business, as mentioned in paragraph 1?
- Modern airport facilities
  - Competent airline staff
  - New aircraft types
  - On-board services
23. What was originally the main function of the airports?
- Controlling the aircraft when taking off and landing
  - Providing the passengers with comfort and convenience
  - Accommodating the passengers before embarking and after disembarking the aircraft
  - Serving as a duty-free shopping complex
24. What does the underlined word "These" in paragraph 2 refer to?
- Flights at the airports
  - Airline companies
  - Luxurious airport facilities
  - Waiting passengers
25. According to paragraph 3, apart from the constantly-designed configuration of aircraft, most airlines are now concerned with \_\_\_\_\_.
- cost saving policy
  - unique modes of entertainment
  - environmental problems
  - new marketing strategies
26. The most important factor most airlines include in their operations is \_\_\_\_\_.
- high technological aircrafts
  - in-flight service
  - safety
  - well-qualified personnel
27. The word "**capacity**" in paragraph 3 can best be replaced by \_\_\_\_\_.
- service quality
  - number
  - load
  - engine size
28. What does the underlined word "state-of-the-art" in paragraph 4 probably mean?
- Having best qualities
  - Belonging to government
  - Being worth a lot of money
  - Having artistic beauty

29. What should the reading passage be entitled?
- Why Some Passengers Hate Flying
  - Service beyond Safety
  - Airline Business: A Fast-Growing Industry
  - Airports: The Heart of Aviation
30. This type of reading passage can be found in \_\_\_\_\_.
- a magazine article
  - an on-board passenger manual
  - an airline annual report
  - a cabin log

## Part II: Vocabulary

### Choose the best word to fill in each blank. (20 points)

31. Michael's \_\_\_\_\_ class passed the university entrance examination. Every student in his class will be able to attend a university.
- entire
  - rigid
  - isolated
  - rural
32. Students need to have a lot of \_\_\_\_\_. They must have a lot of self-control to focus on school instead of fun things like hobbies and too much social life.
- drawback
  - discipline
  - identity
  - pleasure
33. When you have a lot of things to do, it is helpful to make a list of \_\_\_\_\_ to decide what you should do first.
- dwellers
  - priorities
  - values
  - nutrients
34. It is easy to \_\_\_\_\_ to work every day when the inexpensive public transit system works so quickly.
- commute
  - cultivate
  - constitute
  - contribute
35. At the auto-test facility, the driver will find out the \_\_\_\_\_ of the car, or how many people and how much equipment will fit inside.
- manufacturing
  - negotiation
  - capacity
  - decease
36. That film really \_\_\_\_\_ me. It was very violent and contained rude language.
- afforded
  - influenced
  - enrolled
  - offended
37. It is necessary for you to be \_\_\_\_\_ when looking for a new job. If you are too rigid in your requirements, you could miss a great job.
- compulsory
  - subsidiary
  - flexible
  - worthless
38. I can't listen to music when I'm studying. It \_\_\_\_\_ me too much and I can't concentrate.
- distracts
  - distinguish
  - reassures
  - reflects
39. Tom and Tony are identical twins. It is almost impossible to \_\_\_\_\_ between them.
- perceive
  - distinguish
  - implement
  - identify
40. Sometimes, teenagers have an \_\_\_\_\_ desire to be trendy and fashionable. For example, they spend a lot of money on silly clothes or listen to music that they don't really like, just to be "in trend".
- anonymous
  - identical
  - irrational
  - affluent
41. Children with only one parent at home may face \_\_\_\_\_ in living. Their parents may not spend time with them because they work long hours and are always, busy, even at home.
- symptoms
  - opponents
  - obstacles
  - circumstances

42. With enough care and warmth from parents, kids seem to do well in so many \_\_\_\_\_: their schoolwork, self-image, and the way they look toward the future.  
a. characters      b. options      c. gestures      d. areas
43. Cities need effective and strong transportation systems, harbors, and so on because \_\_\_\_\_ is very important to the health of a city.  
a. infrastructure      b. intoxication      c. subsidy      d. subsidiary
44. Our guide knows a lot about \_\_\_\_\_. He gave us very useful information about the old palace we visited this morning.  
a. essence      b. archaeology      c. intuition      d. ideology
45. The wall paintings around the temple \_\_\_\_\_ a famous story of Thai literature.  
a. regains      b. vocalizes      c. decorates      d. depicts
46. My brother is a \_\_\_\_\_; he counsels children with behavioral problems.  
a. psychologist      b. consumer      c. pitcher      d. primate
47. Patricia is a young woman, but her \_\_\_\_\_ is beyond her years. She got her doctoral degree when she was only 25 years old.  
a. echo      b. intelligence      c. chatter      d. destination
48. It is now known that human brains are not completely \_\_\_\_\_ until we reach our twenties.  
a. mature      b. startling      c. precise      d. vast
49. Though separated as very young \_\_\_\_\_, twins may even have a lot of similarities when they grow up and become adults.  
a. pregnancies      b. origins      c. infants      d. insights
50. One way to keep ourselves calm and happy is to do meditation. In so doing, it will help improve our \_\_\_\_\_ state.  
a. logical      b. tropical      c. global      d. mental
51. The building is well-known for its classical \_\_\_\_\_. The design is quite complicated.  
a. architecture      b. aspect      c. agriculture      d. achievement
52. Usually for most tourists traveling to Great Britain, London is their final \_\_\_\_\_. Only few want to go further north to Edinburgh or Dublin.  
a. distraction      b. destination      c. determination      d. decoration
53. According to the Japanese government, the new industrial site will cover a large \_\_\_\_\_ of land between Tokyo and Yokohama.  
a. reduction      b. rotation      c. region      d. rite
54. It is a pity at all to visit this beautiful city of Jerusalem. Tomorrow, we will stop at a \_\_\_\_\_ where dead bodies of the ancient people were kept.  
a. calligraphy      b. maturation      c. mausoleum      d. chatter
55. The \_\_\_\_\_ of traditional customs with modern rituals is common in Korean weddings today.  
a. arabesque      b. intuition      c. infrastructure      d. incorporation
56. For many people, the \_\_\_\_\_ from teenager to adult is very difficult as they have to pass through many different phases of mental development.  
a. trousseau      b. acquisition      c. transition      d. obstacle

57. My grand father told us that he did not want to have his body buried in a cemetery when he died. So after his \_\_\_\_\_, we scattered his ashes into the sea.  
a. capacity                      b. cremation                      c. contribution                      d. cognition
58. Everybody has a dream job in mind, but they hardly realize the reality that all types of work are not always good; they have \_\_\_\_\_.  
a. drawbacks                      b. priorities                      c. constitution                      d. gourmet
59. In some cultures, marriage can greatly change a person's \_\_\_\_\_. For example, in some places, a woman is much more respected and important as soon as she is married.  
a. status                      b. statue                      c. lexigram                      d. leisure
60. Although his wife died years ago, the old man still keeps good memory of her in his mind. He realizes that he will never get \_\_\_\_\_ close to her again.  
a. efficiently                      b. enthusiastically                      c. securely                      d. physically

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## Appendix G

### Reading attitude questionnaires (English version)

#### Instructions:

1. The questionnaire is intended to investigate the student's opinions towards reading attitudes.
2. Your answers will not affect your grade.
3. Please read each statement carefully and put a mark ( ✓ ) in the opinion box provided.
4. This 30-item questionnaire should take 30 minutes to complete.

Items	Opinions				
	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1. English reading is enjoyable and it is what I want to improve.					
2. English reading is my hobby.					
3. I do not feel bored whenever reading long English texts.					
4. It is not difficult for me to read English text books.					
5. I am very much eager to join my English reading course.					
6. I have no worry even though I do not understand what I am reading.					
7. I enjoy learning English vocabulary.					
8. I feel anxious when I am not sure whether I understand what I am reading.					
9. It is difficult for me to read the assigned texts in my English courses.					
10. I am scarred when I have to read unfamiliar English texts.					
11. I feel tired of reading English in my daily life, e.g. newspapers or web sites.					
12. I feel stressed when I have to read English texts with difficult vocabulary.					
13. I feel worried when I cannot guess the meaning of the words in the reading texts.					
14. It is difficult for me to draw the main idea of the text.					
15. It is tiring for me to memorize difficult vocabulary from the reading texts.					

Items	Opinions				
	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
16. English reading ability benefits other courses.					
17. English reading ability is advantageous to my daily life.					
18. The reading strategies I study in my English courses can help me understand the texts.					
19. The reading strategies I study in my English courses can be applied to my daily life.					
20. The reading strategies I study in my English courses can be applied to other English courses.					
21. English reading ability is advantageous when applying for a job.					
22. English reading helps enhance my English knowledge and knowledge of the world.					
23. Reading ability is useful to personality shaping.					
24. I am not kind of person who reads a lot.					
25. My reading ability is not so high as my other classmates.					
26. I cannot draw the main idea of the text that I am reading.					
27. I cannot guess the meaning of the unknown vocabulary.					
28. I cannot guess the meaning and understand the English texts read in my reading course.					
29. I cannot apply the reading strategies I have studied to my daily life.					
30. I know very little English vocabulary.					

Additional Comments:

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----- Thank You -----



## Appendix H:

### Reading attitude questionnaire (Thai version)

#### แบบสอบถามเจตคติต่อการอ่านภาษาอังกฤษ

##### คำชี้แจง

1. แบบสอบถามนี้ สร้างขึ้นเพื่อถามความคิดเห็นของนักศึกษาที่มีต่อการอ่านภาษาอังกฤษ
2. การตอบแบบสอบถามนี้ไม่มีผลต่อคะแนนในชั้นเรียน
3. วิธีตอบแบบสอบถาม ให้นักศึกษาอ่านข้อความแล้วทำเครื่องหมาย ✓ ลงในช่องที่สอดคล้องกับความคิดเห็นของตน
4. แบบสอบถามนี้มีทั้งหมด 30 ข้อ ใช้เวลา 30 นาที

ข้อความ	ระดับความคิดเห็น				
	เห็นด้วยอย่างยิ่ง	เห็นด้วย	ไม่แน่ใจ	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างยิ่ง
1. การอ่านภาษาอังกฤษเป็นกิจกรรมที่ข้าพเจ้าชอบและต้องการพัฒนา					
2. การอ่านภาษาอังกฤษเป็นกิจกรรมที่ข้าพเจ้าทำในเวลาว่าง					
3. ข้าพเจ้าไม่รู้สึغب่อยเวลาที่ต้องอ่านข้อความหรือบทความภาษาอังกฤษยาวๆ					
4. การอ่านตำราภาษาอังกฤษไม่ใช่เรื่องยากสำหรับข้าพเจ้า					
5. ข้าพเจ้ารู้สึกกระตือรือร้นในการเรียนวิชาการอ่าน					
6. ข้าพเจ้าไม่รู้สึกกังวลใดๆ ถึงแม้จะไม่เข้าใจสิ่งที่อ่านก็ตาม					
7. การศึกษาคำศัพท์ภาษาอังกฤษเป็นสิ่งที่ข้าพเจ้าชอบและทำอยู่เสมอ					
8. ข้าพเจ้ารู้สึกวิตกเมื่อไม่แน่ใจว่าเข้าใจสิ่งที่อ่าน					
9. การอ่านบทความที่อาจารย์มอบหมายในวิชาภาษาอังกฤษเป็นเรื่องยากสำหรับข้าพเจ้า					
10. ข้าพเจ้ารู้สึกกลัวเมื่อต้องอ่านข้อความหรือบทความภาษาอังกฤษที่ไม่คุ้นเคย					

ข้อความ	ระดับความคิดเห็น				
	เห็นด้วยอย่างยิ่ง	เห็นด้วย	ไม่แน่ใจ	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างยิ่ง
11. ข้าพเจ้ารู้สึกเบื่อเมื่อต้องอ่านภาษาอังกฤษในชีวิตประจำวัน เช่น หนังสือพิมพ์หรือเว็บไซต์					
12. ข้าพเจ้ารู้สึกเครียดเมื่อต้องอ่านข้อความหรือบทความภาษาอังกฤษที่มีคำศัพท์ยาก					
13. ข้าพเจ้ารู้สึกกังวลเมื่อไม่สามารถเดาความหมายของคำศัพท์ในเรื่องที่อ่านได้					
14. การจับประเด็นของบทความหรือบทอ่านเป็นเรื่องยากสำหรับข้าพเจ้า					
15. การท่องคำศัพท์ยากๆ จากบทความที่อ่านเป็นเรื่องน่าเบื่อสำหรับข้าพเจ้า					
16. ความสามารถในการอ่านภาษาอังกฤษมีประโยชน์ต่อการเรียนวิชาอื่น					
17. ความสามารถในการอ่านภาษาอังกฤษมีประโยชน์ต่อชีวิตประจำวันของข้าพเจ้า					
18. วิธีอ่านที่เรียนในวิชาภาษาอังกฤษเป็นสิ่งที่มีความสำคัญต่อการทำความเข้าใจกับเรื่องที่อ่าน					
19. วิธีอ่านที่เรียนในวิชาภาษาอังกฤษสามารถนำไปประยุกต์ใช้ได้จริงในชีวิตประจำวัน					
20. วิธีอ่านที่เรียนสามารถนำไปประยุกต์ใช้ได้จริงในการเรียนวิชาภาษาอังกฤษอื่นๆ					
21. ความสามารถในการอ่านภาษาอังกฤษถือเป็นข้อได้เปรียบในการสมัครงาน					
22. การอ่านภาษาอังกฤษช่วยให้มีความรู้และเข้าใจเรื่องต่างๆ ได้ดีขึ้น					
23. ความสามารถในการอ่านมีประโยชน์ต่อการสร้างบุคคลให้มีคุณภาพ					
24. ข้าพเจ้าคิดว่าตนเองเป็นคนอ่านภาษาอังกฤษไม่มากพอ					

ข้อความ	ระดับความคิดเห็น				
	เห็นด้วยอย่างยิ่ง	เห็นด้วย	ไม่แน่ใจ	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างยิ่ง
25. ความสามารถในการอ่านของข้าพเจ้าอยู่ในระดับไม่สูงเมื่อเทียบกับเพื่อนในชั้นเรียน					
26. ข้าพเจ้าไม่สามารถจับประเด็นสำคัญของเรื่องที่อ่านได้					
27. ข้าพเจ้าไม่สามารถเดาความหมายของคำศัพท์ที่ไม่รู้จักได้					
28. ข้าพเจ้าไม่สามารถตีความและเข้าใจบทความที่ใช้ในวิชาภาษาอังกฤษได้					
29. ข้าพเจ้าไม่สามารถนำวิธีการอ่านที่เรียนมาประยุกต์ใช้ในชีวิตประจำวันได้					
30. ข้าพเจ้าคิดว่าตนเองรู้คำศัพท์ภาษาอังกฤษไม่มาก					

ข้อเสนอแนะเพิ่มเติม

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\*\*\*\*\*ขอขอบคุณ\*\*\*\*\*

## Appendix I

### Evaluation form for the instructional model

#### Guidelines for evaluation:

This evaluation form is to evaluate the validity of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning.

#### Instructions:

The evaluation scheme of this form is based on 4-point rating scale. Please put a mark (✓) in the rating box (1-4) which accord with your opinions. Specifying additional comments for “Need revision” items will be highly appreciated. The meaning of the four numbers in the scale can be interpreted as:

4	means	Very good
3	means	Good
2	means	Moderately acceptable
1	means	Need revision

Items	Opinions			
	Very good (4)	Good (3)	Moderately acceptable (2)	Need revision (1)
<b>The principles of the model</b>				
1. The theoretical grounded ideas underlying the developed model are clearly explained.				
2. The application of the theoretical grounded ideas as the foundation of the newly-developed model is appropriate.				
3. The principles of the theoretical grounded ideas are well-synthesized from their core constructs.				
4. The principles of the newly-developed model are well-related to its theoretical grounded ideas.				
5. The principles of the newly-developed model are clear and serve as a good framework of the entire model.				
<b>The objectives of the model</b>				
6. The objectives of the newly-developed model correspond well to their principles.				

Items	Opinions			
	Very good (4)	Good (3)	Moderately acceptable (2)	Need revision (1)
7. The objectives of the newly-developed model are plausible.				
<b>The expected learning outcomes of the model</b>				
8. The expected learning outcomes of the newly-developed model yield full benefits to learners.				
<b>The teaching/learning processes of the model</b>				
9. The teaching/learning processes of the newly-developed model are well-consolidated from its theoretical grounded ideas.				
10. The teaching/learning processes of the newly-developed model are a good interpretation of its principles.				
<b>The learning activities of the model</b>				
11. The learning activities of the newly-developed model serve its objectives well.				
12. The learning activities of the newly-developed model are practical.				
<b>The assessment scheme of the model</b>				
13. The assessment scheme of the newly-developed model serves its objectives well.				
14. The assessment scheme of the newly-developed model is appropriate and practical.				
<b>The overall perspective of the model</b>				
15. Considering all aspects, the newly-developed model is sound.				

Additional Comments:

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----- Thank You -----

## Appendix J

### Evaluation form for the instructional manual

#### Guidelines for evaluation:

This evaluation form is to evaluate the validity of the instructional manual of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning.

#### Instructions:

The evaluation scheme of this form is based on 4-point rating scale. Please put a mark (✓) in the rating box (1-4) which accord with your opinions. Specifying additional comments for “Need revision” items will be highly appreciated. The meaning of the four numbers in the scale can be interpreted as:

4	means	Very good
3	means	Good
2	means	Moderately acceptable
1	means	Need revision

Items	Opinions			
	Very good (4)	Good (3)	Moderately acceptable (2)	Need revision (1)
1. The details in the teaching manual are clear enough for the effective implementation of the plan.				
2. The details in the teaching manual are extensive, covering all aspects of the implementation.				
3. Alternatives and variation given in the plan are helpful.				
4. Language use in the plan is clear and easy to understand.				
5. Recommendations concerning the roles of teacher and learners are clear and practical.				

Additional Comments:

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----- Thank You -----

## Appendix K

### Evaluation form for the lesson plan

#### Guidelines for evaluation:

This evaluation form is to evaluate the validity of the lesson plan of the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning.

#### Instructions:

The evaluation scheme of this form is based on 4-point rating scale. Please put a mark (✓) in the rating box (1-4) which accord with your opinions. Specifying additional comments for “Need revision” items will be highly appreciated. The meaning of the four numbers in the scale can be interpreted as:

4	means	Very good
3	means	Good
2	means	Moderately acceptable
1	means	Need revision

Items	Opinions			
	Very good (4)	Good (3)	Moderately acceptable (2)	Need revision (1)
<b>Components of the lesson plan</b>				
1. The lesson plan was well-written, covering all four main components: objectives, content, instructional procedure, and assessment of the plan.				
2. The four main components of the plan are well-related.				
<b>Objectives of the lesson plan</b>				
3. The objectives of the lesson plan are clear.				
4. The objectives of the lesson plan correspond to the principles of the model.				
<b>Content of the lesson plan</b>				
5. The content of the lesson plan is appropriate.				
6. The content of the lesson plan corresponds to its objectives.				

Items	Opinions			
	Very good (4)	Good (3)	Moderately acceptable (2)	Need revision (1)
<b>Teaching/learning activities</b>				
7. The teaching/learning activities of the lesson plan are clear.				
8. The teaching/learning activities of the lesson plan corresponds to its objectives.				
9. The teaching/learning activities of the lesson plan corresponds to the model in general.				
<b>Assessment and evaluation of the lesson plan</b>				
10. The assessment and evaluation schemes of the plan are clear.				
11. The assessment and evaluation schemes of the plan are appropriate.				
12. The assessment and evaluation schemes of the plan correspond to the objectives of the plan.				

Additional Comments:

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 ----- Thank You -----



## Appendix L

### Evaluation form for the students' satisfaction questionnaire

#### Guidelines for evaluation:

This evaluation form consists of two parts: IOC (Item-objective Congruence) analysis for the content validity of all 20 statements and rating-scale analysis for the structure and overall design of the questionnaire.

#### Part 1:

Please put a mark (✓) in the rating box (+1, 0, -1) as to how much each item is appropriate. Specifying extra comments for “not appropriate” items will be highly appreciated. The meaning of the three numbers in the scale can be interpreted as:

+1	means	appropriate
0	means	not sure
-1	means	not appropriate

Items	Appropriateness			Comments
	+1	0	-1	
1. The reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning is interesting.				
2. The use of video clip in Step 1 is appropriate and useful.				
3. Pooling core vocabulary in Step 1 before reading the text makes the reading easier.				
4. Using nonverbal activities in Step 2 to introduce the reading strategies to be taught in Step 3 is interesting and appropriate.				
5. I like the way the teacher taught and modeled reading strategies explicitly in Step 3.				
6. Reading strategies in Step 3 should be taught before starting to read the text in Step 4.				

Items	Appropriateness			Comments
	+1	0	-1	
7. Silent reading paragraph by paragraph, timed by background music, is appropriate.				
8. Answering all comprehension-check questions after each paragraph is appropriate and useful as it helped me understand the paragraph better.				
9. Doing the parallel reading activity in Step 5 allowed me a good opportunity to review the reading strategies learned in Step 3 again.				
10. Writing a paragraph summary out in a form of one sentence helped me know better how to locate or draw the main idea.				
11. Paraphrasing in Step 6 is useful as I could practice both reading and writing skills.				
12. Seeing writing work of other groups is appropriate as I could know how good or bad I was when compared with peers.				
13. The background music played while doing the group work helped maintain relaxing atmosphere.				
14. The background music played while I was reading in Step 4 could keep my focus and attention.				
15. Background music made learning more interesting and reading less boring.				
16. I have realized the benefit of background music and know that it can be used while reading.				

Items	Appropriateness			Comments
	+1	0	-1	
17. This instructional reading model can improve my reading comprehension in general.				
18. This instructional reading model can learn vocabulary better in general.				
19. My attitude towards reading is now better in general after being taught through this instructional reading model.				
20. I want to have an opportunity to be taught through this instructional reading model again in other higher reading courses.				

**Part 2:**

The evaluation scheme of this form is based on 4-point rating scale. Please put a mark (✓) in the rating box (1-4) which accord with your opinions. Specifying additional comments for “Need revision” items will be highly appreciated. The meaning of the four numbers in the scale can be interpreted as:

4	means	Very good
3	means	Good
2	means	Moderately acceptable
1	means	Need revision

Items	Opinions			
	Very good (4)	Good (3)	Moderately acceptable (2)	Need revision (1)
1. All statements are purposeful and support the study.				
2. Each statement is a good representation of the teaching/learning steps and other components of the model.				
3. There is no overlapping of the statements.				
4. Proportionally, the points in the questionnaire cover all aspect of the study.				
5. The instructions are clear.				
6. The language is appropriate to the students.				
7. The format is user-friendly.				
8. The questionnaire can reflect the true satisfaction of the students in general.				

Additional Comments:

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----- Thank You -----



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## Appendix M

### Evaluation form for the reading comprehension and vocabulary ability tests

#### Guideline for evaluation

The test is based on the reading book: Interaction 2 Silver Edition (Hartman & Kirn, McGrawhill, 2007). All the reading passages in this test are from various sources with their themes parallel to the texts in the book. And all the vocabulary items are “Core Vocabulary”, a group of focused words from 10 chapters in the book.

The test is divided into 2 parts: the first part is reading comprehension, of which all the 30 items are grounded on Raygor & Raygor’s three level of reading comprehension. The testing scheme is as follows:

#### Proportion of the Test Items on Each Reading Skill

Comprehension Level	Reading Comprehension Skills	Items
1. Literal comprehension	- Recognizing and using pronoun references	1, 2,
	- Recognizing the meaning of words	3, 5,
	- Stating the main idea of a sentence, paragraph, or passage	6, 13,
	- Identifying the sequence of events	14,
	- Identifying signal words or discourse markers	15,
	- Classifying ideas into main topics and supporting details	16,
	- Recognizing the topic in a text	18,
	- Skimming	21,
	- Scanning	22,
	- Locating topic sentences or generalizing	23,
		24,
		25,
		26
		<b>16 items</b>

<b>Comprehension Level</b>	<b>Reading Comprehension Skills</b>	<b>Items</b>
2. Interpretive comprehension	<ul style="list-style-type: none"> <li>- Guessing meaning of unknown words</li> <li>- Paraphrasing or restating the text in different words</li> <li>- Recognizing the use of language, expressions</li> <li>- Predicting, recognizing patterns of relationships or ideas</li> <li>- Summarizing and drawing conclusion</li> <li>- Drawing inferences and reading between the lines</li> <li>- Inferring the main idea</li> </ul>	4, 7, 8, 9, 10, 11, 17, 27, 28  <b>9 items</b>
3. Critical comprehension	<ul style="list-style-type: none"> <li>- Identifying purposes and attitudes of the author</li> <li>- Posing questions about the text</li> <li>- Identifying tone of the language</li> <li>- Identifying genre of the text</li> <li>- Identifying title of the text</li> <li>- Distinguishing between facts and opinions</li> <li>- Critiquing the text</li> <li>- Critiquing the author</li> <li>- Judging how well the objectives were met</li> <li>- Reflecting on what has been learned from the text</li> </ul>	12, 19, 20, 29, 30  <b>5 items</b>
<b>Total</b>		<b>30 items</b>

**The second part deals with another 30 items of contextualized vocabulary test, focusing merely on conceptual meanings of each word. (See the word list in Appendix A.) Operational Definitions of Terms (as used in the research)**

**Vocabulary Acquisition for English Reading Comprehension** referred to the ability to acquire vocabulary items and develop understanding in English reading. In this research, the vocabulary acquisition for English reading comprehension was separately measured by two tests: 1.) the vocabulary recognition test and 2.) the reading comprehension test, both of which were designed by the researcher.

**Vocabulary Recognition** referred to the ability to recognize an item of vocabulary, in the form a specific visual stimulus pattern, and match it to the mental lexicon where the meaning of this word is stored. It is the ability used by readers to construct meaning of a reading text and is an important prerequisite for reading comprehension

**Reading Comprehension** referred to the ability to understand or attribute meaning to what is read and can be divided into three levels:

1. *Literal comprehension.* This level of comprehension represents the minimum of involvement on the part of the reader. It is the simple understanding of the words and ideas of the author. The author's message is received but not examined, evaluated, or utilized in any way. The level includes the following reading skills: recognizing and using pronoun references, recognizing the meaning of words, stating the main idea of a sentence, paragraph, or passage, identifying the sequence of events, identifying signal words or discourse markers, classifying ideas into main topics and supporting details, recognizing the topic in a text, skimming, scanning, and locating topic sentences or generalizing.

2. *Interpretive comprehension.* This level involves an effort to grasp relationships, compare facts with personal experiences, understand sequences, see cause-and-effect relationships, and generally interpret the message. It requires a more active participation on the part of the reader. The reading skills included at this level are guessing meaning of unknown words, paraphrasing or restating the text in different words, recognizing the use of language, expressions, predicting, recognizing patterns of relationships or ideas, summarizing and drawing conclusion, drawing inferences and reading between the lines, inferring the main idea.

3. *Critical comprehension.* At this highest level of comprehension the reader evaluates the author's ideas, either accepting or rejecting them or applying them to some new situation. The author's message is received, understood, and utilized in some way, mentally or physically. This critical level includes the reading skills of identifying purposes and attitudes of the author, posing questions about the text, identifying tone of the language, identifying genre of the text, identifying title of the text, distinguishing between facts and opinions, critiquing the text, critiquing the author, judging how well the objectives were met, and reflecting on what has been learned from the text.

In this research, reading comprehension ability was used as criteria to measure students' reading comprehension.

Please put a mark (✓) in the rating box as to how much each item is appropriate. Specifying extra comments for “not appropriate” items will be highly appreciated. The meaning of the three numbers in the scale can be interpreted as:

+1 means appropriate  
 0 means not sure  
 -1 means not appropriate

Items	Degree of Appropriateness			Comments
	+1	0	-1	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				



Items	Degree of Appropriateness			Comments
	+1	0	-1	
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				

Items	Degree of Appropriateness			Comments
	+1	0	-1	
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				

Items	Degree of Appropriateness			Comments
	+1	0	-1	
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				

Items	Degree of Appropriateness			Comments
	+1	0	-1	
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				

Additional Comments:

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----- Thank You -----

## Appendix N

### List of focused words as determined by the content

#### Core Vocabulary List

Lesson	Nouns	Verbs	Adjectives	Adverbs	Idioms/ Expressions
1	aspect constitution contrast discipline indigenous people native people primary school secondary school statistic status tuition value	achieve afford determine reflect value	compulsory egalitarian entire identical isolated rural universal vocational		on the one hand on the other hand
2	agricultural operation crops developing country difficulty gridlock mass transit pedestrian zone pollution priorities produce recycling plant trash urban dweller	commute crowd cultivate predict solve worsen	affluent creative	efficiently	
3	capacity character collateral eradication fund grant literacy microlending poverty requirement	fund lift plow	anonymous subsidiary worthless		social ills peer pressure take the initiative
4	career counselor cell phone construction drawback globalization identity job hopping	distract keep up with overwork upgrade vary	flexible leisure passionate rigid secure temporary worldwide		on the move

Lesson	Nouns	Verbs	Adjectives	Adverbs	Idioms/ Expressions
4	job security livelihood manufacturing jobs outsourcing pleasure post self-confidence stress telecommuting workforce				
5	competitive edge essence fad influence lifestyle profit slang trend trendspotting	distinguish enroll influence invest spot	gourmet slang	enthusiast ically suddenly	
6	benefit consumer fuel gap goods harbor infotech (information technology) infrastructure nutrients obstacle priority protectionist policies (policy) soil standard subsidy tide	contribute create reduce	economic global landlocked startling tropical		goes without saying in turn
7	brain chatter creatures degree echo gender gesture grin lexigram mammal	acquire claim coin echo feed reassure vocalize wag		upright	head (of something) head back picked up shedding light on

Lesson	Nouns	Verbs	Adjectives	Adverbs	Idioms/ Expressions
7	organ pod prey primate species subject swagger				
8	arabesque archaeologist architecture armor calligraphy caravan caves cowry shell destination document fabric fertility frescoes mausoleum merchant mosque mummy network oasis pitcher silk spice statue	decorate depict flower spread	exquisite fertile holy significant vast		to this end
9	blood vessel colleague hemisphere insight intuition logic maturation maturity memory neuroscientist origin toxin wiring	rotate	cognitive exposed logical mature precise repressed		going into training
10	bride coffin coming-of-age rituals	chant regain vary wail	indigenous nomadic previous deceased		ask for (a woman's) hand

Lesson	Nouns	Verbs	Adjectives	Adverbs	Idioms/ Expressions
10	cremation delivery funeral guidance incorporation monk negotiation pregnancy proposal pyre rite of passage scriptures taboo trousseau vision				



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## Appendix O

### Evaluation form for the reading attitude questionnaire

#### Guideline for evaluation

The questionnaire, adapted from Stokmans' 24-item reading attitude scale (1999). The present study focuses on two components of attitudes: affective (feelings and emotions) and cognitive (personal, evaluative beliefs).

The questionnaire is implicitly divided into 2 parts: the first part of the questionnaire features affective component, covering comfort (7 items) and anxiety (8 items). The second part deals with cognitive component, covering value (8 items) and self perception (7 items). The testing scheme is as follows:

#### Part One: Affective Component

Comfort	=	Items 1-7
Anxiety	=	Items 8-15

#### Part Two: Cognitive Component

Value	=	Items 16-23
Self Perception	=	Items 24-30

#### Scoring system:

As the Comfort section and Value section feature items with positive meanings, the scores of 5 will be given to "Strongly Agree" and 1 will be given to "Strongly Disagree". For the Anxiety and Self Perception sections, featuring items with negative meanings, it was the other way round as the scores of 5 will be assigned to "Strongly Disagree", while 1 will be assigned to "Strongly Agree".

#### Operational Definitions of Terms (as used in the research)

**Attitude towards Learning** referred to an individual disposition related to English reading activities and situations, as well as L1 reading, which can be defined by two components: 1.) cognitive, which is personal, evaluative beliefs; and 2.) affective, which is feelings and emotions. The attitude towards learning in this research will be measured by the reading attitude questionnaire designed by the researcher.

Please put a mark (✓) in the rating box (+1, 0 -1) as to how much each item is appropriate. Specifying extra comments for “not appropriate” items will be highly appreciated. The meaning of the three numbers in the scale can be interpreted as:

+1 means appropriate  
 0 means not sure  
 -1 means not appropriate

Intended meaning	Items	Appropriateness			Comments
		+1	0	-1	
<b>Affective Component: Comfort</b>					
<i>Comfort towards English reading skills</i>	1. การอ่านภาษาอังกฤษเป็นกิจกรรมที่ข้าพเจ้าชอบและต้องการพัฒนา English reading is enjoyable and it is what I want to improve.				
<i>Comfort towards English reading as a hobby</i>	2. การอ่านภาษาอังกฤษเป็นกิจกรรมที่ข้าพเจ้าทำในเวลาว่าง English reading is my hobby.				
<i>Comfort towards long English reading texts</i>	3. ข้าพเจ้าไม่รู้สึกเบื่อเวลาที่ต้องอ่านข้อความหรือบทความภาษาอังกฤษยาวๆ I do not feel bored whenever reading long English texts.				
<i>Comfort towards textbook reading</i>	4. การอ่านตำราภาษาอังกฤษไม่ใช่เรื่องยากสำหรับข้าพเจ้า It is not difficult for me to read English text books.				
<i>Comfort towards reading courses</i>	5. ข้าพเจ้ารู้สึกกระตือรือร้นในการเรียนวิชาภาษาอังกฤษ I am very much eager to join my English reading course.				
<i>Comfort towards reading comprehension</i>	6. ข้าพเจ้าไม่รู้สึกกังวลใดๆ ถึงแม้จะไม่เข้าใจสิ่งที่อ่านก็ตาม I have no worry even though I do not understand what I am reading.				
<i>Comfort towards vocabulary acquisition</i>	7. การศึกษาคำศัพท์ภาษาอังกฤษเป็นสิ่งที่ข้าพเจ้าชอบและทำอยู่เสมอ I enjoy learning English vocabulary.				

Intended meaning	Items	Appropriateness			Comments
		+1	0	-1	
<b>Affective Component: Anxiety</b>					
<i>Anxiety towards comprehension</i>	8. ข้าพเจ้ารู้สึกวิตกเมื่อไม่แน่ใจว่าเข้าใจสิ่งที่อ่าน I feel anxious when I am not sure whether I understand what I am reading.				
<i>Anxiety towards reading assignments</i>	9. การอ่านบทความที่อาจารย์มอบหมายในวิชาภาษาอังกฤษเป็นเรื่องยากสำหรับข้าพเจ้า It is difficult for me to read the assigned texts in my English courses.				
<i>Anxiety towards unfamiliar texts</i>	10. ข้าพเจ้ารู้สึกกลัวเมื่อต้องอ่านข้อความหรือบทความภาษาอังกฤษที่ไม่คุ้นเคย I am scared when I have to read unfamiliar English texts.				
<i>Anxiety towards reading in everyday life</i>	11. ข้าพเจ้ารู้สึกเบื่อเมื่อต้องอ่านภาษาอังกฤษในชีวิตประจำวันเช่นหนังสือพิมพ์หรือเว็บไซต์ I feel tired of reading English in my daily life, e.g. newspapers or web sites.				
<i>Anxiety towards reading texts with unknown vocabulary</i>	12. ข้าพเจ้ารู้สึกเครียดเมื่อต้องอ่านข้อความหรือบทความภาษาอังกฤษที่มีคำศัพท์ยาก I feel stressed when I have to read English texts with difficult vocabulary.				
<i>Anxiety towards guessing meaning of unknown words</i>	13. ข้าพเจ้ารู้สึกกังวลเมื่อไม่สามารถเดาความหมายของคำศัพท์ในเรื่องที่อ่านได้ I feel worried when I cannot guess the meaning of the words in the reading texts.				
<i>Anxiety towards main idea conceptualizing</i>	14. การจับประเด็นของบทความหรือบทอ่านเป็นเรื่องยากสำหรับข้าพเจ้า It is difficult for me to draw the main idea of the text.				

Intended meaning	Items	Appropriateness			Comments
		+1	0	-1	
<i>Anxiety towards in-text vocabulary acquisition</i>	15. การท่องคำศัพท์ที่ยากๆ จากบทความที่อ่านเป็นเรื่องน่าเบื่อสำหรับข้าพเจ้า It is tiring for me to memorize difficult vocabulary from the reading texts.				
<b>Cognitive Component: Value</b>					
<i>Value of reading ability regarding other subjects</i>	16. ความสามารถในการอ่านภาษาอังกฤษมีประโยชน์ต่อการเรียนวิชาอื่น English reading ability benefits other courses.				
<i>Value of reading ability regarding everyday life</i>	17. ความสามารถในการอ่านภาษาอังกฤษมีประโยชน์ต่อชีวิตประจำวันของข้าพเจ้า English reading ability is advantageous to my daily life.				
<i>Value of reading strategies regarding comprehension</i>	18. วิธีอ่านที่เรียนในวิชาภาษาอังกฤษเป็นสิ่งที่มีความสำคัญต่อการทำความเข้าใจกับเรื่องที่อ่าน The reading strategies I study in my English courses can help me understand the texts.				
<i>Value of reading strategies regarding application in everyday life</i>	19. วิธีอ่านที่เรียนในวิชาภาษาอังกฤษสามารถนำไปประยุกต์ใช้ได้จริงในชีวิตประจำวัน The reading strategies I study in my English courses can be applied to my daily life.				
<i>Value of reading strategies regarding other English subjects</i>	20. วิธีอ่านที่เรียนสามารถนำไปประยุกต์ใช้ได้จริงในการเรียนวิชาภาษาอังกฤษอื่นๆ The reading strategies I study in my English courses can be applied to other English courses.				
<i>Value of reading ability regarding job obtaining</i>	21. ความสามารถในการอ่านภาษาอังกฤษถือเป็นข้อได้เปรียบในการสมัครงาน English reading ability is advantageous when applying for a job.				

Intended meaning	Items	Appropriateness			Comments
		+1	0	-1	
<i>Value of reading regarding knowledge acquisition</i>	22. การอ่านภาษาอังกฤษช่วยให้มีความรู้และเข้าใจเรื่องต่างๆ ได้ดีขึ้น English reading helps enhance my English knowledge and knowledge of the world.				
<i>Value of reading ability regarding personality shaping</i>	23. ความสามารถในการอ่านมีประโยชน์ต่อการสร้างบุคลิกให้มีคุณภาพ Reading ability is useful to personality shaping.				
<b>Cognitive Component: Self Perception</b>					
<i>Self-perception in terms of extensive reading</i>	24. ข้าพเจ้าคิดว่าตนเองเป็นคนอ่านภาษาอังกฤษไม่มากพอ I am not kind of person who reads a lot.				
<i>Self-perception in terms of reading ability</i>	25. ความสามารถในการอ่านของข้าพเจ้าอยู่ในระดับไม่สูงเมื่อเทียบกับเพื่อนในชั้นเรียน My reading ability is not so high as my other classmates.				
<i>Self-perception in terms of locating the main idea</i>	26. ข้าพเจ้าไม่สามารถจับประเด็นสำคัญของเรื่องที่อ่านได้ I cannot draw the main idea of the text that I am reading.				
<i>Self-perception in terms of guessing meaning of unknown words</i>	27. ข้าพเจ้าไม่สามารถเดาความหมายของคำศัพท์ที่ไม่รู้จักได้ I cannot guess the meaning of the unknown vocabulary.				
<i>Self-perception in terms of comprehension ability in reading courses</i>	28. ข้าพเจ้าไม่สามารถตีความและเข้าใจบทความภาษาอังกฤษที่ใช้ในวิชาภาษาอังกฤษได้ I cannot guess the meaning and understand the English texts read in my reading course.				
<i>Self-perception in terms of reading strategy application</i>	29. ข้าพเจ้าไม่สามารถนำวิธีการอ่านที่เรียนมาประยุกต์ใช้ในชีวิตประจำวันได้ I cannot apply the reading strategies I have studied to my daily life.				

Intended meaning	Items	Appropriateness			Comments
		+1	0	-1	
<i>Self-perception in terms of vocabulary knowledge</i>	30. ข้าพเจ้าคิดว่าตนเองรู้คำศัพท์ภาษาอังกฤษไม่มาก I know very little English vocabulary.				

Additional Comments:

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-----Thank You-----

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## Appendix P

### Result of experimenting instrument evaluation

#### Mean score of experts' opinions on validation of the instructional model

Items	Opinions				$\bar{x}$
	Very good (4)	Good (3)	Moderately acceptable (2)	Need revision (1)	
<b>The principles of the model</b>					3.70
1. The theoretical grounded ideas underlying the developed model are clearly explained.	3 (75%)	1 (25%)			3.75
2. The application of the theoretical grounded ideas as the foundation of the newly-developed model is appropriate.	2 (50%)	2 (50%)			3.50
3. The principles of the theoretical grounded ideas are well-synthesized from their core constructs.	2 (50%)	2 (50%)			3.50
4. The principles of the newly-developed model are well-related to its theoretical grounded ideas.	3 (75%)	1 (25%)			3.75
5. The principles of the newly-developed model are clear and serve as a good framework of the entire model.	4 (100%)				4.00
<b>The objectives of the model</b>					3.63
6. The objectives of the newly-developed model correspond well to their principles.	3 (75%)	1 (25%)			3.75
7. The objectives of the newly-developed model are plausible.	2 (50%)	2 (50%)			3.50
<b>The expected learning outcomes of the model</b>					4.00
8. The expected learning outcomes of the newly-developed model yield full benefits to learners.	4 (100%)				4.00
<b>The teaching/learning processes of the model</b>					3.63
9. The teaching/learning processes of the newly-developed model are well-consolidated from its theoretical grounded ideas.	2 (50%)	2 (50%)			3.50
10. The teaching/learning processes of the newly-developed model are a good interpretation of its principles.	3 (75%)	1 (25%)			3.75

Items	Opinions				
	Very good (4)	Good (3)	Moderately acceptable (2)	Need revision (1)	$\bar{x}$
<b>The learning activities of the model</b>					<b>3.88</b>
11. The learning activities of the newly-developed model serve its objectives well.	3 (75%)	1 (25%)			3.75
12. The learning activities of the newly-developed model are practical.	4 (100%)				4.00
<b>The assessment scheme of the model</b>					<b>3.63</b>
13. The assessment scheme of the newly-developed model serves its objectives well.	2 (50%)	2 (50%)			3.50
14. The assessment scheme of the newly-developed model is appropriate and practical.	3 (75%)	1 (25%)			3.75
<b>The overall perspective of the model</b>					<b>3.75</b>
15. Considering all aspects, the newly-developed model is sound.	3 (75%)	1 (25%)			3.75
Total					<b>3.72</b>

#### Mean score of experts' opinions on validation of the instructional manual

Items	Opinions				
	Very good (4)	Good (3)	Moderately acceptable (2)	Need revision (1)	$\bar{x}$
1. The details in the teaching manual are clear enough for the effective implementation of the plan.	3 (75%)	1 (25%)			3.75
2. The details in the teaching manual are extensive, covering all aspects of the implementation.	3 (75%)	1 (25%)			3.75
3. Alternatives and variation given in the manual are helpful.	4 (100%)				4.00
4. Language use in the manual is clear and easy to understand.	4 (100%)				4.00
5. Recommendations concerning the roles of teacher and learners are clear and practical.	3 (75%)	1 (25%)			3.75
Total					<b>3.79</b>



**Mean score of experts' opinions on validation of the sample lesson plan**

Items	Opinions				
	Very good (4)	Good (3)	Moderately acceptable (2)	Need revision (1)	$\bar{x}$
<b>Components of the lesson plan</b>					3.75
1. The lesson plan was well-written, covering all four main components: objectives, content, instructional procedure, and assessment of the plan.	3 (75%)	1 (25%)			3.75
2. The four main components of the plan are well-related.	3 (75%)	1 (25%)			3.75
<b>Objectives of the lesson plan</b>					3.50
3. The objectives of the lesson plan are clear.	1 (25%)	3 (75%)			3.25
4. The objectives of the lesson plan correspond to the principles of the model.	3 (75%)	1 (25%)			3.75
<b>Content of the lesson plan</b>					3.63
5. The content of the lesson plan is appropriate.	2 (50%)	2 (50%)			3.50
6. The content of the lesson plan corresponds to its objectives.	3 (75%)	1 (25%)			3.75
<b>Teaching/learning activities</b>					3.66
7. The teaching/learning activities of the lesson plan are clear.	3 (75%)	1 (25%)			3.75
8. The teaching/learning activities of the lesson plan corresponds to its objectives.	2 (50%)	2 (50%)			3.50
9. The teaching/learning activities of the lesson plan corresponds to the model in general.	3 (75%)	1 (25%)			3.75
<b>Assessment and evaluation of the lesson plan</b>					3.58
10. The assessment and evaluation schemes of the plan are clear.	2 (50%)	2 (50%)			3.50

Items	Opinions				
	Very good (4)	Good (3)	Moderately acceptable (2)	Need revision (1)	$\bar{x}$
11. The assessment and evaluation schemes of the plan are appropriate.	2 (50%)	2 (50%)			3.50
12. The assessment and evaluation schemes of the plan correspond to the objectives of the plan.	3 (75%)	1 (25%)			3.75
Total					<b>3.63</b>

**Mean score of validation of students' opinion questionnaire towards the instructional model by experts**

Items	Opinions				
	Very good (4)	Good (3)	Moderately acceptable (2)	Need revision (1)	$\bar{x}$
1. All statements are purposeful and support the study.	3 (75%)	1 (25%)			3.75
2. Each statement is a good representation of the teaching/learning steps and other components of the model.	3 (75%)	1 (25%)			3.75
3. There is no overlapping of the statements.	2 (50%)	2 (50%)			3.50
4. Proportionally, the points in the questionnaire cover all aspect of the study.	3 (75%)	1 (25%)			3.75
5. The instructions are clear.	4 (100%)				4.00
6. The language is appropriate to the students.	4 (100%)				4.00
7. The format is user-friendly.	4 (100%)				4.00
8. The questionnaire can reflect the true satisfaction of the students in general.	3 (75%)	1 (25%)			3.75
Total					<b>3.81</b>

## Appendix Q

### Results of data collecting instrument evaluation

#### Power of distribution and level of difficulty of vocabulary ability test

Items	Distribution (D)	Difficulty (P)	Items	Distribution (D)	Difficulty (P)	Items	Distribution (D)	Difficulty (P)
1	0.78	0.23	11	0.48	0.50	21	0.25	0.23
2	0.78	0.43	12	0.41	0.43	22	0.41	0.56
3	0.73	0.47	13	0.65	0.36	23	0.65	0.56
4	0.80	0.40	14	0.73	0.40	24	0.46	0.60
5	0.80	0.40	15	0.43	0.23	25	0.65	0.63
6	0.78	0.43	16	0.48	0.63	26	0.73	0.26
7	0.68	0.30	17	0.60	0.40	27	0.78	0.36
8	0.80	0.40	18	0.26	0.29	28	0.23	0.35
9	0.30	0.28	19	0.63	0.33	29	0.80	0.40
10	0.58	0.43	20	0.68	0.31	30	0.73	0.53

#### Power of distribution and level of difficulty of reading comprehension test

Items	Distribution (D)	Difficulty (P)	Items	Distribution (D)	Difficulty (P)	Items	Distribution (D)	Difficulty (P)
1	0.79	0.28	11	0.49	0.51	21	0.26	0.34
2	0.81	0.41	12	0.59	0.44	22	0.47	0.61
3	0.74	0.48	13	0.66	0.37	23	0.66	0.57
4	0.79	0.44	14	0.49	0.64	24	0.42	0.57
5	0.80	0.41	15	0.44	0.34	25	0.66	0.64
6	0.80	0.41	16	0.74	0.41	26	0.24	0.41
7	0.69	0.31	17	0.61	0.41	27	0.79	0.37
8	0.79	0.44	18	0.69	0.32	28	0.74	0.54
9	0.31	0.31	19	0.64	0.34	29	0.80	0.41
10	0.42	0.44	20	0.27	0.41	30	0.74	0.27

## Appendix R

### Results of data analysis

The mean scores of students' opinions towards the reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning of undergraduate students

The average scores of each item can be interpreted through the following criteria:

Average scores	Interpretation
3.68-5.00	Very satisfied
2.34-3.67	Moderately satisfied
1.00-2.33	Hardly satisfied

Items	Very satisfied		Moderately satisfied		Hardly satisfied	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
1. The reading instructional model using the 4MAT System and music to enhance vocabulary acquisition for English reading comprehension and attitude towards learning is interesting.	4.12	.453				
2. The use of video clip in Step 1 is appropriate and useful.	4.65	.276				
3. Pooling core vocabulary in Step 1 before reading the text makes the reading easier.	4.73	.587				
4. Using nonverbal activities in Step 2 to introduce the reading strategies to be taught in Step 3 is interesting and appropriate.			3.62	.617		
5. I like the way the teacher taught and modeled reading strategies explicitly in Step 3.	4.27	.824				
6. Reading strategies in Step 3 should be taught before starting to read the text in Step 4.	4.33	.654				
7. Silent reading paragraph by paragraph, timed by background music, is appropriate.	4,27	.753				
8. Answering all comprehension-check questions after each paragraph is appropriate and useful as it helped me understand the paragraph better.	3.95	1.000				
9. Doing the parallel reading activity in Step 5 allowed me a good opportunity to review the reading strategies learned in Step 3 again.			3.56	.437		

Items	Very satisfied		Moderately satisfied		Hardly satisfied	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
10. Writing out a paragraph summary in a form of one sentence helped me know better how to locate or draw the main idea.	4.23	.876				
11. Paraphrasing in Step 6 is useful as I could practice both reading and writing skills.	4.42	.706				
12. Seeing writing work of other groups is appropriate as I could know how good or bad I was when compared with peers.	4.67	.463				
13. The background music played while doing the group work helped maintain relaxing atmosphere.	4.35	.865				
14. The background music played while I was reading in Step 4 could keep my focus and attention.	4.56	.877				
15. Background music made learning more interesting and reading less boring.	4.85	.695				
16. I have realized the benefit of background music and know that it can be used while reading.	3.96	.489				
17. This reading instructional model can improve my reading comprehension in general.	3.88	.612				
18. This reading instructional model can help me learn vocabulary better in general.	4.12	.492				
19. My attitude towards reading is now better in general after being taught through this reading instructional model.	4.00	.598				
20. I want to have an opportunity to be taught through this reading instructional model again in other higher reading courses.	4.36	.873				
<b>Grand mean scores</b>	4.25	.623				

## Biography

Nakontheop Tipayasuparat graduated from Faculty of Liberal Arts, Thammasat University with B.A. in English in 1990 and also obtained his M.A. in Teaching English as a Foreign Language from Thammasat University in 2000. Currently, he is a lecturer of English, Faculty of Liberal Arts, Rangsit University.



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