



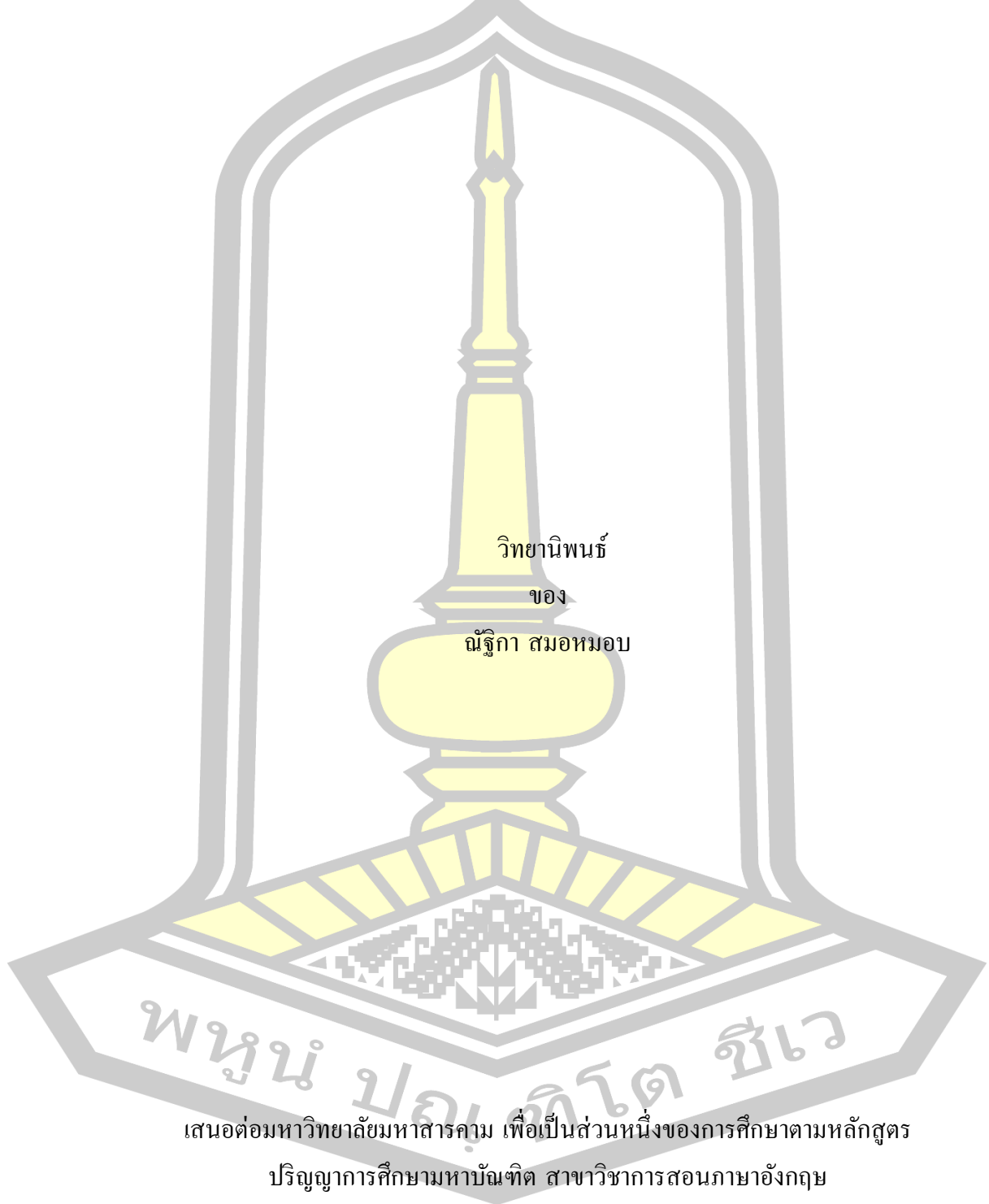
Learning Styles, Preferred Teaching Styles and Academic Achievement of Thai EFL
Primary Students

Nattika Samormob

A Thesis Submitted in Partial Fulfillment of Requirements for
degree of Master of Education in English Language Teaching
December 2020

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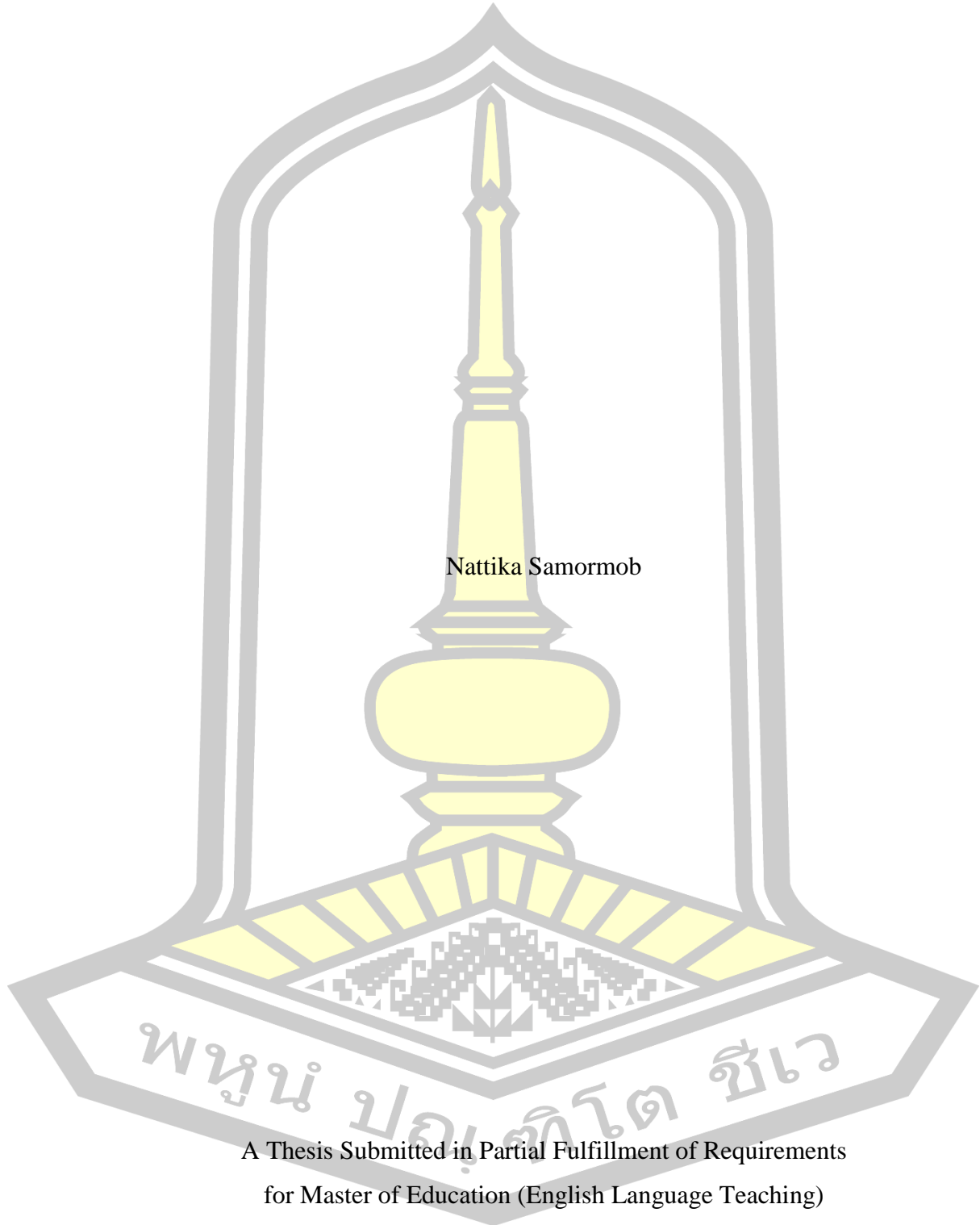


เสนอต่อมหาวิทยาลัยมหาสารคาม เพื่อเป็นส่วนหนึ่งของการศึกษาตามหลักสูตร
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December 2020

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ABSTRACT

This study aimed to (1) to identify the preferred learning styles of Thai EFL primary students, (2) investigate the teaching styles preferred by the Thai EFL primary students, (3) examine the mean differences in the academic achievement of Thai EFL primary students' learning styles and preferred teaching styles, and (4) investigate the relationship among academic achievement, learning styles and preferred teaching styles. The participants were 172 students aged 11-12 years who were studying in primary schools located in northeast Thailand. This study adopted a quantitative approach. The data was collected from two questionnaires and an academic achievement test. The data from the questionnaires and tests were entered into the SPSS program in order to generate descriptive statistics. Statistics used for data analysis consisted of descriptive analysis and two-way ANOVA.

The findings revealed that four learning styles exist among Thai EFL primary students. Auditory learner was the most common with 33.5%, followed by visual learners and kinesthetic learners at 32.3% and 20.6% respectively. The least common of the participants' learning styles was a multi-learning style (13.5%). Moreover, four preferred teaching styles appeared among the participants. The greatest percentage of preferred teaching style was the multi-teaching style at 29%. The lowest percentage of preferred teaching style was the visual teaching style at 16.1%. Moreover, the auditory teaching style was higher than the kinesthetic teaching style at 28.4% versus 26.5%. It was found that there were non-significant differences in the academic achievement of participants learning styles at the 0.23 significance level. On the other hand, there was a significant difference in the academic achievement of the participants' preferred teaching style at the 0.00 significance level. The results showed that there is a significant (0.00) correlation between academic achievement and preferred teaching style.

Keyword : Learning style, Teaching style, Academic achievement

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Nattika Samormob

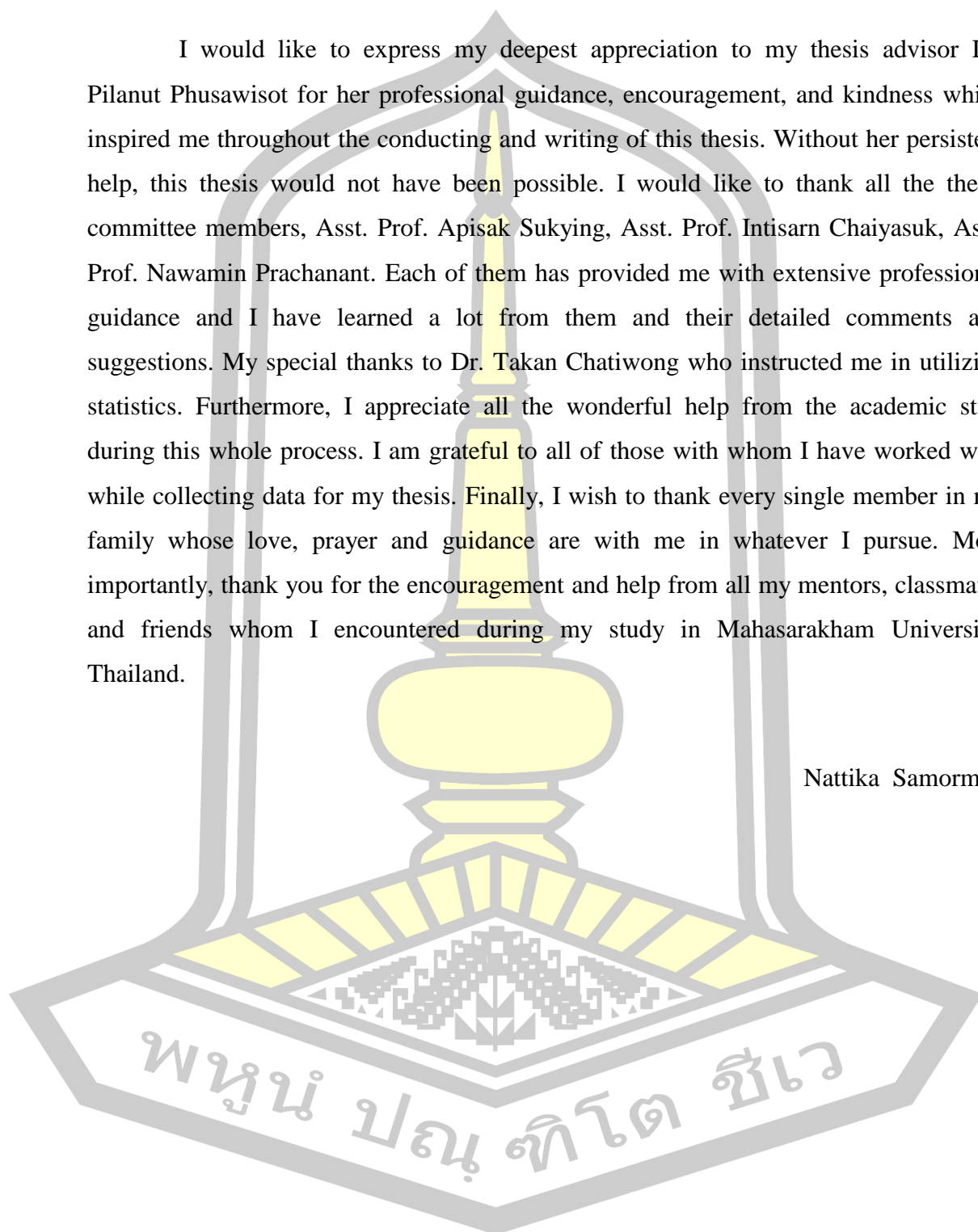
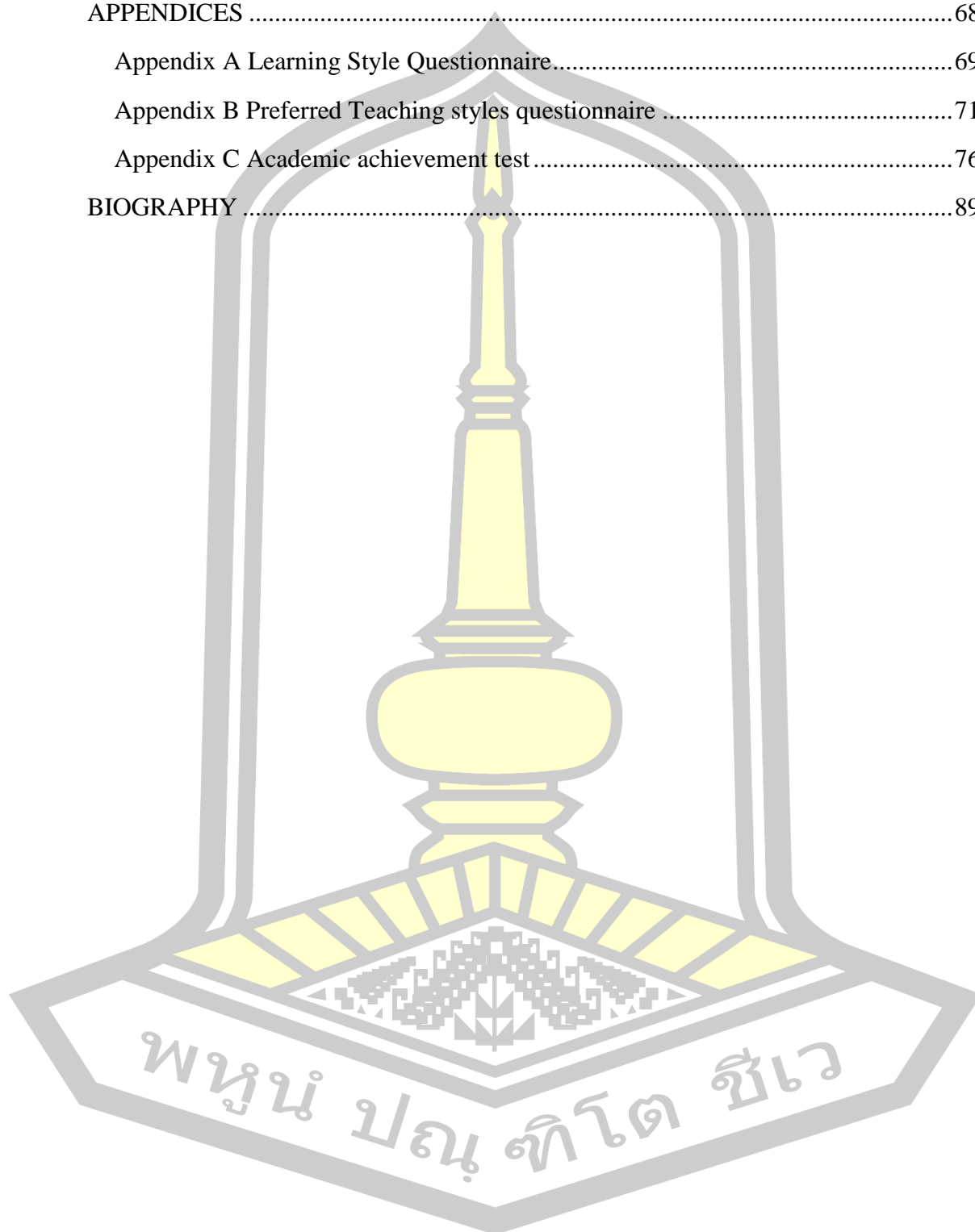


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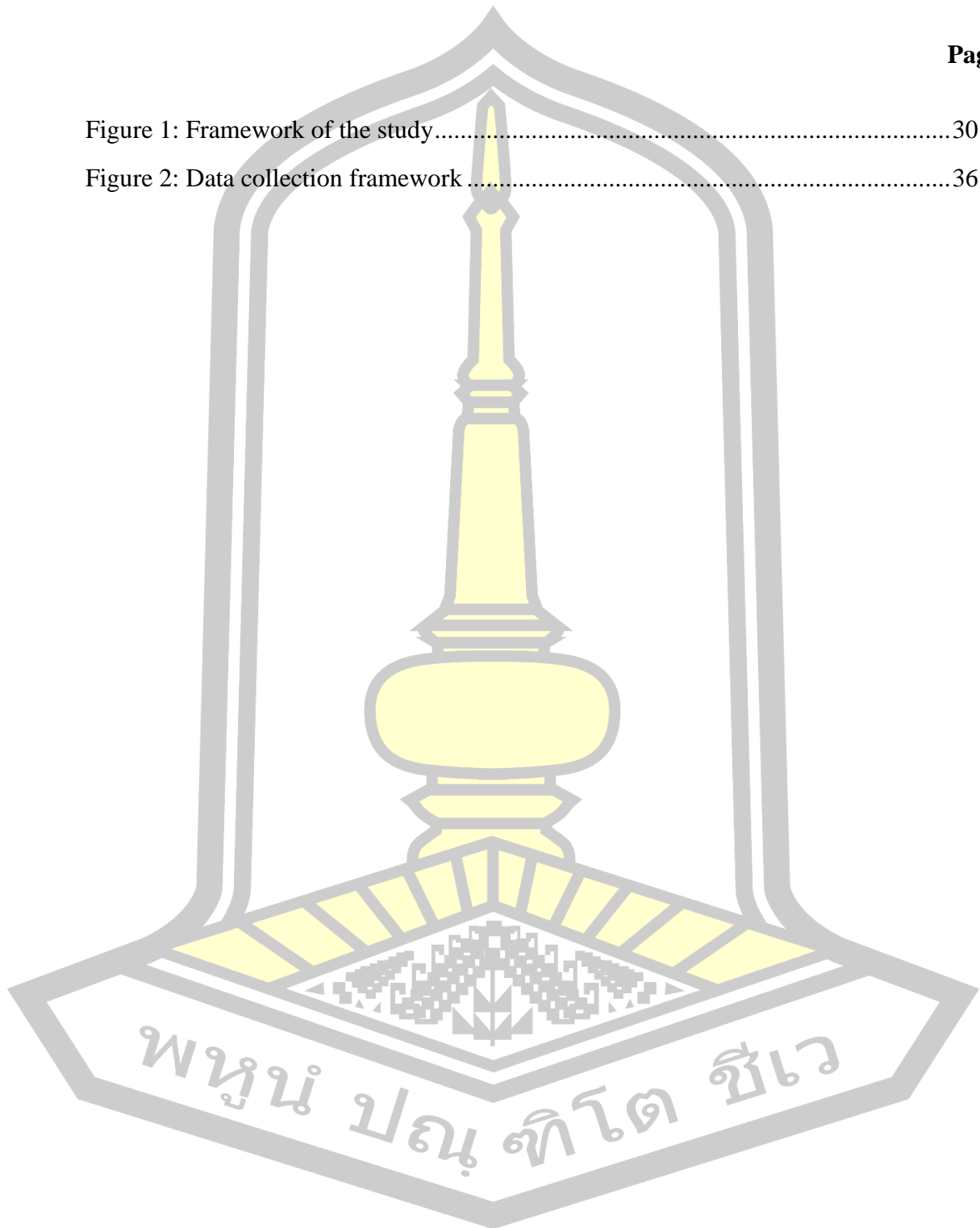


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CHAPTER I

INTRODUCTION

This chapter presents the introduction of the study, which consists of the background of the study, the purposes of the study, the scope of the study, the significance of the study, and definitions of the terms. The topics are also addressed as follows.

1.1 Background

Different students have different learning styles that allow them to perceive, process, understand, and maintain new information. A learning style is specified to individual learners and is one of the factors that affects students' learning (Asadipiran, 2016). In the classroom, learners and teachers are different in various ways. Being aware of the students' learning style preferences is beneficial for both teachers to decide on their teaching styles and for students to determine their learning styles (Asadipiran, 2016). Each student has their learning preference, and all teaching strategies do not work for all students because some of them are strong in a particular strategy, but some may be weak in that same one (Brooks, 1999). Based on the differences of the students, teachers may gain insight into ways to provide information for diverse groups of learners (Bradly, 2013). Students can learn best when they see the importance and value of the information presented in the classroom. If the students are not interested in the teaching material presented, they will not learn it effectively. To reach the ultimate goal of student learning, a combination of teaching methods and classroom rapport are important (Cuaresma, 2008). One of the challenges for teachers is matching their teaching styles with the student' learning style in order to improve academic achievement (Tomlinson, 2001). Xu (2011) stated that the divergence of individuals regarding their character, culture, learning skills, and learning styles gives rise to learners' various levels of achievement. Teachers should keep learners needs in mind alongside their learning style to provide a classroom environment for them to choose the most appropriate teaching methods (Sprenger, 2008). Moreover, cognitive factors like learner's auditory capacity, sound-symbol relations, grammatical abilities, and verbal memory learning strategies could be affected by other factors such as age,

learning styles and strategies, motivation, attitudes, and language aptitude (Phillips & Stern, 1986).

Since different people possess different characteristics; they learn in different ways, which are known as learning styles. They can be referred to as ‘a term that describes the variations among learners in using one or more senses to understand, organize, and retain experience’ (Reid, 1987). Many scholars have proposed the learning styles model. The most well-known model is perceptual learning styles, which is defined as the way individuals interact with information and conduct learning tasks dealing with multiple modality preferences (Davis, 2007). The perceptual learning styles occur by using the senses to perceive information, and it is defined as a preference for auditory, visual, or tactile learning modalities (Felder & Henriques, 1995). Visual learners learn visually from charts, graphs, and pictures. Auditory learners learn by listening to lectures and reading. Kinesthetic learners learn by experiencing and doing. Students can possess one, two, or three learning styles (Cuaresma, 2008).

Learning and teaching are two sides of the same coin, one side involving the learner, and the other side involving the teacher. The most effective teachers are those who used their students preferred learning styles as the basis for instruction. A learning style is an individual's preferred way of learning. When a teacher's teaching style matches with a student's learning style, that student typically experiences greater satisfaction and a more positive attitude toward the course. The similarities between teaching style and learning style are that both consider preferred attitudes and behaviors, both involve an application of cognitive styles, both are measurably variable, and both are styles rather than abilities i.e. an ability refers to what we can do and a style refers to our preferred ways of using the abilities that we have (Gafoor & Babu, 2012).

Reid (1987), a pioneer of perceptual learning styles, stated that identifying perceptual learners' learning styles may have wide-ranging implications in the areas of materials development, curriculum design, student orientation, and teacher training. Because of these different learning styles, teachers need to incorporate them into their curriculum activities so that all students are able to accomplish their goals in the classes (Cuaresma, 2008). Thus, teachers should explore and investigate their students

learning styles to apply the proper teaching methods that suit the preferences of their students since they are the core of the whole teaching process. Students should sometimes be taught in the style they prefer, which keeps them from being too uncomfortable for learning to occur, and sometimes in their less preferred mode, which helps them to develop the diverse strengths they will need to function effectively in their careers (Ababneh, 2015). Many ESL teachers experience student resistance when they introduce an instructional activity in the classroom. Some students want more opportunities to participate in free conversations, expressing their wish towards a more communicatively oriented approach.

On the other hand, it is believed that the teacher, when making decisions regarding the type of activities to conduct in a language classroom, should take into account such learner diversities (Zhou, 2011). Teaching styles are based on behaviors simulated by teacher-student interaction, and they can change from situation to situation since teachers employ various teaching styles in attaining their teaching and evaluation objectives (Hein et al., 2012). Teaching styles represent a teachers' permanent preferences they have in their attitudes and the behaviors they display in the teaching-learning interactions with students (Grasha, 2002).

With regard to learning styles in foreign language learning, Bailey, Onwuegbuzie, & Daley (2000) believed that research in the role of learning styles in foreign language achievement could operate to help a significant number of students improved their foreign language or second language study habits, their learning flexibility and ultimately their performance. There is no hard and fast rule in the choice of strategy to be used in the same manner as there is no single best strategy of teaching. To a skilled teacher, many of the methods have value, but there is little reason to believe that the teacher should limit the instruction to only one. It is because each teaching-learning situation is different from every other, and what proves effective to one teacher may not be so to another. Besides, a teacher who uses only one method is in danger of developing only one group of skills in his pupils and only one part of his own as a mentor. The learner who knows only one way of learning will find it hard to think about what rich possibilities remain unused in his own mind. For this reason, teachers

should be familiar with several ways of handling a teaching-learning situation instead of only one (Rivera & Sambrano, 2007).

The ultimate goal of teaching is to achieve learning. Learning means understanding or acquiring knowledge. As commonly used, learning stands for one's education or wisdom. One has learned when he or she is well-informed or enlightened. Teaching occurs consciously or unconsciously. It is taking place continuously between parents and children, doctors and patients, and among parishioners and other community workers. It happens in the home, market, workplace, and mostly in educational institutions and government offices (Salandan, 2007).

Many researchers have contributed to research on learning styles in relationship with SLA, and they have focused on two types of learning styles research. The first type of learning style research aims to identify students' learning styles using a questionnaire instrument. Several research studies have been conducted with university students and post-secondary students. The results revealed that the types of learning styles emerged differently in each research study depending on several factors such as age, gender and their cultural background (Brown, 2007; Lee & Kim, 2014; Reid, 1987). Another type of learning style research involved empirical studies which aimed to examine the relationship between learning style and other variables such as age, gender, cultural background, academic achievement, and so on (Bidabadi & Yamat, 2010; Demirbas & Demirkan, 2007; Dobson, 2010; Lee & Kim, 2014; Peacock, 2002).

In order to examine the relationship between learning styles and academic achievement, many scholars investigated the matching of learning styles and teaching styles. An amount of research has confirmed that the matching between teaching styles and learning styles has a positive impact on academic achievement, motivation, or attitude toward learning (Al-Saud, 2013; Alnujaidi, 2018; Naimie, Siraj, Piaw, Shagholi, & Abuzaid, 2010; Tuan, 2011). On the other hand, there are some research results that showed a non-significant relationship between learning styles and academic achievement. These inconsistent results need further research.

In Thai EFL context, many researchers focused on the identification of learners' learning styles (Arunreung, Sa-ngounpong, & Wichiranon, 2013; Wassanasomsit, 1999). Besides, several researchers emphasized the study of the relationship between learners' learning styles and gender, attitude, motivation, teaching styles, and academic achievement (Khamkhien, 2012; Pinchai, 2016). There has been a tremendous amount of previous studies on the learning styles in secondary or post-secondary education both in a global context and a Thai context (Alnujaidi, 2018; Arunreung et al., 2013; Khamkhien, 2012; Li & He, 2016; Pinchai, 2016; Sharp, Bowker, & Byrne, 2008; ÜNSAL, 2018; Wassanasomsit, 1999). However, little attention has been paid to the learners' learning style preferences of primary students in the EFL setting. Therefore, the learning styles and learning achievement of Thai primary students need to be investigated.

Thai EFL primary students have never paid much attention in the learning style research area. Interestingly, Thai EFL primary students are different from secondary or university students in many ways. They are young and unstable. It is hard for them to sit still in the classroom and they have less concentration when compared to adult students. The teaching styles of teachers should be applicable to all students. Learning style is one way of performing a self-assessment. It is important to help the students to know themselves in order to support them so they can grow to be autonomous learners. Moreover, they need guidance to observe their teachers and realize their preferred teaching style from the teachers. The students can give feedback to the teachers and find out the effective teaching styles that fit both teachers and students. It is challenging for the researcher to investigate the learning style, preferred teaching style and academic achievement of Thai EFL primary students.

1.2 Purposes of the Research

This research study aimed to identify Thai EFL primary students' learning styles; identify the preferred teaching styles by Thai EFL primary students; investigate the mean differences in academic achievement of Thai EFL primary students' learning styles and their preferred teaching styles; investigate the relationship among academic achievement, learning styles and preferred teaching styles. According to these proposes, the following questions needed to be answered.

1. Which learning styles exist among the Thai EFL primary students?
2. Which teaching styles will be preferred by Thai EFL primary students?
3. Are there statistically significant mean differences in academic achievement of participants' learning styles and preferred teaching styles?
4. Is there a statistically significant relationship among academic achievement, learning styles and preferred teaching styles?

1.3 Scope of the Research

The study aimed to (1) identify the preferred learning styles of Thai EFL primary students, (2) investigate the teaching styles preferred by the Thai EFL primary students, (3) examine the mean differences in academic achievement of Thai EFL primary students' learning styles and preferred teaching styles, and (4) investigate the relationship among academic achievement, learning styles and preferred teaching styles. The study was conducted over three months with Thai EFL primary students studying English as a foreign language. Their ages ranged from 11-12 years old. They are students who are studying English as a foreign language in the countryside of northeastern Thailand. Their English level is at the very beginning level. They mostly study English as a regular subject two class-hour a week. The participants number 172 students. This study adopted a quantitative approach. The data was collected from two questionnaires and an academic achievement test. The data from the questionnaires and test were entered into the SPSS program in order to generate mean score, percentage, standard deviation, and frequency statistics. Statistics used for correlation analysis was two-way ANOVA.

1.4 Significance of the Study

The present study will contribute insight into knowledge about matching learners' learning styles with teacher's teaching styles that can affect learners' academic achievement. First, this research will raise teachers' awareness of how teachers teach in order to maximize students' potential. Second, an understanding of learning styles from the study will help teachers design lesson plans, create tasks or activities, create suitable materials, and set learning outcomes that match with their students' learning styles. Third, this research can help learners to recognize their own learning styles, and they can use this advantage to support themselves in order to achieve their goals.

It can be said that this present study can lead learners to learn in their own ways, and eventually, they can become autonomous learners. Fourth, this research contributes to classroom management in terms of the way teachers give instructions in different ways to encompass learners with their styles. Fifth, it can help teachers build up various classroom environments, learning resources, or learning atmospheres in the classroom according to learners' learning styles. Last, the knowledge of matching between learners' preferred learning style and teachers' teaching styles can be of benefit to materials selection. It can aid the teacher to consider the advantages and limitations of material types in order to link them with the styles of learners and support them to easily reach their goals. Moreover, the teacher can decide to alternatively apply the materials according to the learners' learning style.

1.5 Definitions of Terms

Learning styles refer to Thai EFL primary students' preferred learning styles according to their modalities, which can be divided into auditory, visual and kinesthetic.

Visual learning style refers to Thai EFL primary students who have a preference for seen or observed things, including pictures, diagrams, demonstrations, displays, handouts, films, flip-charts, etc.

Auditory learning style refers to Thai EFL primary students who have a preference for the transfer of information through listening: to the spoken word, of themselves or others, of sounds and noises. They will be best able to perform a new task after listening to instructions from an expert.

Kinesthetic learning style refers to Thai EFL primary students who have a preference for physical experience - touching, feeling, holding, doing, practical hands-on experiences. They will be best able to perform a new task by going ahead and trying it out, learning as they go.

Multi-learning style refers to Thai EFL primary students who have preferences for more than one learning style. Their preferences are not particular for a single learning style. They can prefer two or three learning styles at the same time.

Teaching style refers to the method of Thai teachers' instruction that serves Thai EFL primary students' preferred learning style in the classroom.

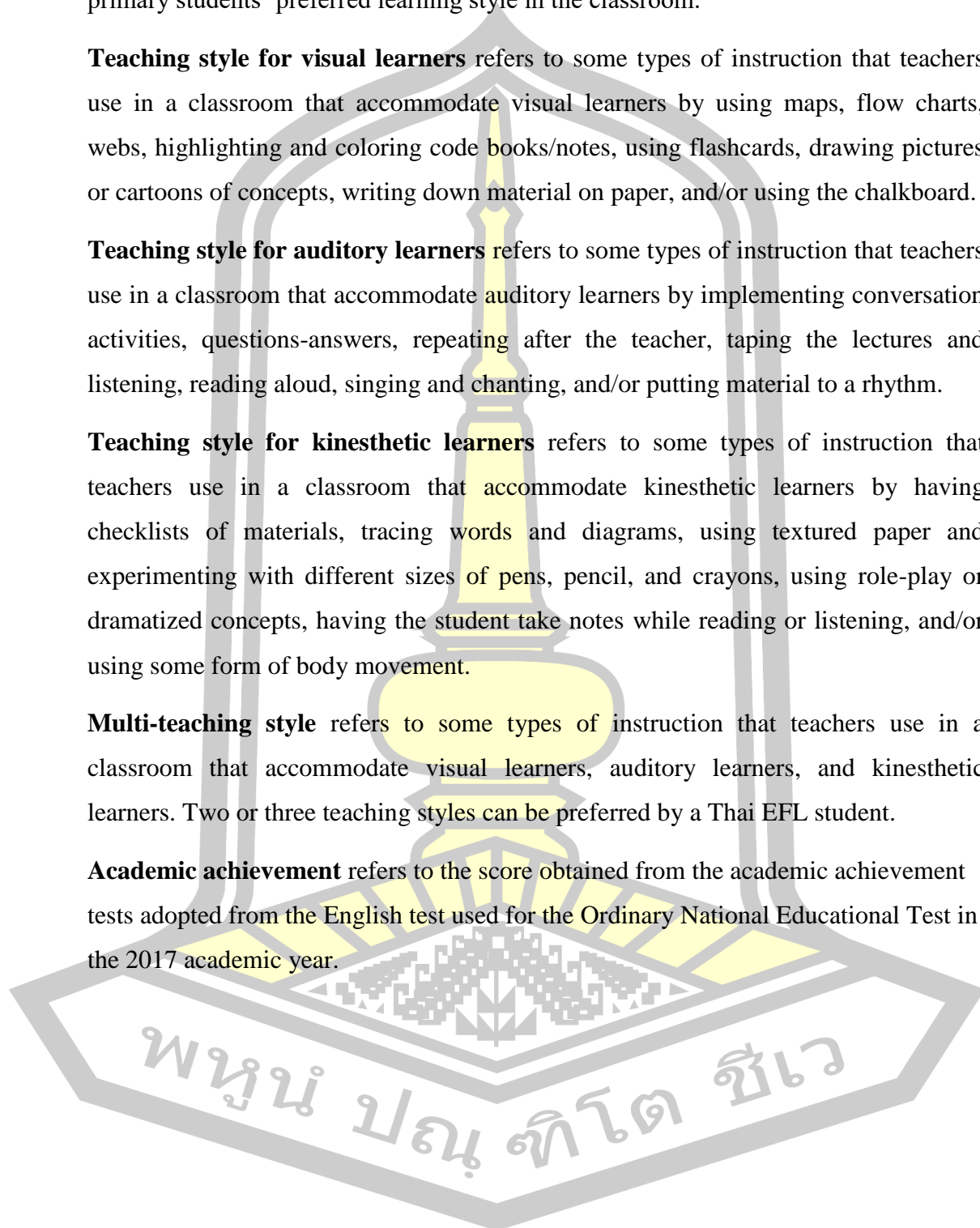
Teaching style for visual learners refers to some types of instruction that teachers use in a classroom that accommodate visual learners by using maps, flow charts, webs, highlighting and coloring code books/notes, using flashcards, drawing pictures or cartoons of concepts, writing down material on paper, and/or using the chalkboard.

Teaching style for auditory learners refers to some types of instruction that teachers use in a classroom that accommodate auditory learners by implementing conversation activities, questions-answers, repeating after the teacher, taping the lectures and listening, reading aloud, singing and chanting, and/or putting material to a rhythm.

Teaching style for kinesthetic learners refers to some types of instruction that teachers use in a classroom that accommodate kinesthetic learners by having checklists of materials, tracing words and diagrams, using textured paper and experimenting with different sizes of pens, pencil, and crayons, using role-play or dramatized concepts, having the student take notes while reading or listening, and/or using some form of body movement.

Multi-teaching style refers to some types of instruction that teachers use in a classroom that accommodate visual learners, auditory learners, and kinesthetic learners. Two or three teaching styles can be preferred by a Thai EFL student.

Academic achievement refers to the score obtained from the academic achievement tests adopted from the English test used for the Ordinary National Educational Test in the 2017 academic year.



CHAPTER II

LITERATURE REVIEW

This chapter aims to review involved literature and explain significant terms, which are learning styles, teaching styles and academic achievement. Moreover, previous studies on learning styles, teaching strategies, and academic achievement in the global context will be described. Finally, previous studies on learning styles, teaching strategies, and academic achievement in Thai contexts will be investigated.

2.1 Learning Styles

2.1.1 Definition of Learning Styles

Learning styles are methods of learners to apply in order to achieve their language learning. Several scholars have defined the definition of learning style in many ways. Keefe (1979) stated that learning style is cognitive, affective, and physiological traits that are relatively stable indicators of how learners perceive, interact with, and respond to the learning environment. Differently, Kolb (1984) defined learning style as a way or pattern with which an individual process or save information. After that, Reid (1987) narrated the learning styles generally manipulate the ways people correlate meanings to the topic being taught and enables them to correspond. In addition, the learning style can be viewed as a term that describes the variations among learners in using one or more sense to understand, organize, and retain experience. Moreover, Dunn (1990) described learning style that it is as method in which knowledge and intelligence are differentiated in each individual. Similar to Kolb (1984), Cornett (1993) viewed the learning style as the overall patterns that give general direction to learning behavior. In a couple years, Felder and Henriques (1995) explained it as an individual's characteristics used to acquire, retain, retrieve, understand, organize, retain, gather, interpret, and think about information. Moreover, learning styles would exert influence on many aspects, e.g., self-ratings and learners' academic achievements (Matthews, 1996). On the other hand, learning style aids learners to cultivate schemas or mental modals (long-term memory structures) about the topic and easily retrieve the information as and when required (Riding & Sadler-Smith, 1997).

In 1998, researchers had defined learning style in several ways. First, Reid (1998) defined learning style as “internal based characteristics, often not perceived or consciously used by learners”. Second, Sarasin (1998) stated that a perceptual perspective considers aspects of different learning style theories by synthesizing their characteristics into an approach based on behaviours and/or actions of the classroom situation. Third, the learning style is the result of the internalization of the individual’s all environment and the internalization is not just a cognitive activity, but an activity that also has physical and affective aspects (Özer, 1998). Last, the learning style is a learning method, in its sense, indicates the individual’s tendency towards learning or preferences (Cyr, 1998).

In the beginning of 2000, there were many scholars defined differently. Learning style referred to each student’s using different and unique ways to learn and remember and to be prepared to learn new and difficult information, and emphasizes the biological aspect of the learning style by explaining as the innate characteristics that the individual possesses and affect his/her success (Boydak, 2001). Learning styles are one of the main contributors to individual differences (Oxford, Ehrman, & Leaver, 2003). Oxford (2003) language learning styles as individual’s general approach to learning a language.

In 2007, learning styles were continuously defined. Davis (2007) described learning style as strategies that able to promote the processes of gathering, interpreting, thinking new information. On the other hand, Brown (2007) defines learning styles as permanent propensity within an individuals’ personality, including how they think about learning and how they experience the learning process. Moreover, learning style can be defined as an individual’s preferred or habitual ways of processing the knowledge and transforming the knowledge into personal knowledge (Wang, 2007).

After 2010, learning styles definition was still in concern. Erton (2010) defines learning styles as an individual’s characteristics and preferred way of gathering, interpreting, organizing, and thinking about information. Similarly, (Wong & Nunan, 2011) describe learning style as an individual’s normal, habitual, and preferred was of absorbing, processing, and preserving new information and skills. Dörnyei and Skehan (2014) noted that learning style is one’s inclination that is deeply rooted, but

they also emphasized “some capacity for flexibility, and scope for adaptation of particular styles to meet the demands of particular circumstances”. Learning styles can be referred to as constant preferences for adopting the learning process (Entwistle & Peterson, 2016).

To sum up, it is believed that learning style is internal based characteristics effecting behaviors of learners. Learning style is not only some mental action or process of acquiring knowledge and understanding through thought, experience and the sense but also the way learners perceive things through the senses as opposed to the mind. Including moods, feeling and attitudes of learner when they apply in surroundings or conditions. These internal factors influence the approach learner used to handle with new information. Learning style refer to internal characteristics effecting behavior of individuals. The behaviors of each indicate their style of learnings, the way they respond to the environment differently and how they process and maintain the information. Each of learning styles can learn best from different sources of information.

2.1.2 Roles of Learning Style

Learning style plays a significant role in the world of learners. Many scholars have suggested the importance of learning style in many aspects. The first advantage is learning style effect on students’ perspectives. Biggs (2001) suggests that when students recognize their own learning style, they will be able to integrate it into their learning process. Therefore, learning process will be easier, faster, and more successful. Another benefit of understanding learning style is that it assists them in solving problem more effectively. The more successful learners at dealing problems, the better they will control their own lives. Moreover, understanding learning style helps learners in learning how to learn. Consequently, learners become more autonomous and accountable for their own learning. As a result, learners’ confidence will increase and teachers control over learners will lessen. As this point, learners become the center of the learning process and control their learning while teachers act as facilitators (Gilakjani, 2011). Further, Dodds and Fletcher (2004) found out that informing economic students of learning style they appear to improve their grades and instills confidence in the choice of study methods.

Another advantage of understanding learning style is that it helps teachers to design lesson plans to match their students' styles. Being aware of learning style helps learners to determine the effective tools and efforts required to mastering a topic or subject (Cassidy, 2002). Matching is especially important when dealing with new or poor learners as they easily become frustrated at this stage of learning. On the other hand, mismatching might be convenient as to help learners experience new methods of learning and accommodate different ways of thinking and reflect on their own learning styles. However, mismatching should be treated with caution as it may lead to learners' dropouts (Tuan, 2011). Learning style theories have been cited as a successful method for helping teachers identify the incredibly diverse needs students have in the classroom (Felder & Brent, 2005; Hall & Moseley, 2005; Sternberg, Grigorenko, & Zhang, 2008). According to Zapalska and Dabb (2002) a comprehension of the way students learn improves how teacher carefully chose teaching strategies best suited to student learning. In addition, learning style provides a framework that enables teachers to knowledgeably develop a variety of instructional methodologies to profit all students (Williamson & Watson, 2007).

Bogod (2020) suggests three advantages of identifying learning styles: Academic, personal, and professional advantages. Academic benefits include enhancing students learning ability, triumph, over all educational stages, finding out how to study in an ideal way and gain good grades on tests and exams, controlling classroom limitations, alleviating frustration and levels of stress, and broadening your existing repertoire of learning strategies. Personal merits include increasing students' self-esteem and self-confidence, learning how to best optimize learners' brain, knowing students strong and weak points, learning how to make learning more enjoyable, increasing motivation for learning, and learning how to strengthen students' innate abilities and skills. Professional virtues encompass being informed of professional topics, gaining an advantage over competition, being effective in team management, developing students' sales skills, and surging power of earning.

To sum up, learning styles can benefit educational management in many aspects. The students importantly explore, get to know and understand themselves so that they will know what are their strengths or weakness. They will deal with the problem properly

with their styles of learning. Second, teachers can decide what to teach and how to teach related to learning styles of students in order to facilitate them. Materials selection is also one of the advantages from the learning styles because it helps teachers put in consideration which material serve learning style of the students. Classroom environment will be built to emphasize the students' learning style. Eventually, it can foster and promote students to achieve their academic goal.

2.1.3 Types of Learning Style

Learning styles had been proposed for decades by many researchers (Dunn, 1989; R. Felder & Silverman, 1988; Fleming, 2001; Gardiner, 1986; Gregorc, 1985; Honey & Mumford, 2000; Kolb, 1984; Pittenger, 2005). Each model has different identity that will be described as following.

Kolb (1984) proposed learning style model that identified learners based on Experiential learning theory into four groups of learners which are: diverging – people who have board cultural interests and like to collect information; assimilating – people who are interested in ideas and abstract concepts; converging – people who prefer to deal with difficult tasks and problems rather than with social issues and interpersonal issues; accommodating – people who enjoy carrying out plans and involving themselves in new and challenging experiences. As we can see, this model categorized learners into four groups according to their interests and their experiences. It identifies learners from personality and how their brains work.

Honey and Mumford (2000) also proposed learning style's model and divided learners into four groups which are: reflectors prefer to learn from activities that allow them to watch, think, and review what was happened; theorists prefer to think and solve problems through in a step-by-step manner; pragmatists prefer to try new learning to actual practice to see if they work; activists prefer the challenges of new experiences, involvement with others, assimilation and role-playing. This model based on general behavior of learners which was different from (Kolb, 1984). Kolb (1984) focused on learners' interests and experiences, Honey and Mumford (2000) adversely focused on learners' behaviors, expression, action such as how they watch, think, review, solve problems, apply new things, challenge the assimilation or role-play.

Gregoric style delineator (Gregorc, 1985) categorized four types of learners which are concrete sequential – learning with hands-on experience; abstract random – receive instruction in an unstructured manner; abstract sequential – use logic to grasp situations; concrete random – prefers trial and error approach. This learning style model based on cognitive thinking aspects and grouped learners from the process of the way learners acquire, comprehend, remember and apply incoming information or knowledge. This model is different from the past two models that two-model mentioned before focused on the interests, experiences and behaviour of learners, yet this model uses cognition of learners to categorized them.

Flemming VAK model (Fleming, 2001) categorized learners into three groups of preferred styles namely visual, auditory and kinesthetic. This model is different from other models (Gregorc, 1985; Honey & Mumford, 2000; Kolb, 1984). Fleming (2001) concentrated on sensory receivers which are visual, auditory and kinesthetic to determine learners dominate or preferred learning style. The preferred style defines the best way for learners to receive, learn information by determining what is to be learned.

Dun and Dun productivity environmental preference survey (Dunn, 1989, 1990) grouped learners into five groups which are environmental – noise level, lighting, temperature, and furniture/seating design; emotionality – motivation, responsibility, persistence, and need for structure; sociological – learning groups, presence of authority figures, varied working patterns, and adult motivation.; physiological – perceptual strengths, time-of-day energy levels, intake, and mobility; processing inclinations – global/analytic, right/left, and impulsive/reflective. Dunn (1990) divided learners according to environment, emotionality, sociological preferences, physiological characteristics and processing inclinations. Put in simply, they categorized learning referring to outer, inner, mindset, thought, deep perspective or how their brains work. It is considered on many factor involving learners.

Carl Jung and Myers Briggs (Pittenger, 2005) groped learners as follows; judging versus perceiving – attention towards the external world/things or internal world/things; thinking versus feeling – perceive world directly or perceive through impression/imaging possibilities; sensing versus intuition – learners taking decisions

through logic of through mere human values; extroversion versus introversion – learners viewing the world as a structured, planned environment or as a spontaneous environment. This model uses type indicator of psychological type. Interestingly, each group is divided into two sub small types of learners that match the contradict, then this model is unique from the others.

Gardner (1999) described human potential in eight different notions of intelligence as follow; linguistic intelligence – learners who have highly developed auditory skills and often think in terms of words; logical – Mathematic intelligence – learners who have high interest in reasoning and calculating; visual – Spatial intelligence – learners who have intelligence with drawings, verbal and physical imagery; bodily – Kinesthetic intelligence – learners who are keen about body awareness and good at physical activities, hands-on experiences and role playing; musical intelligence – learners who are sensitive to music and rhythm; interpersonal intelligence – learners who have interaction with others and learn through conducting group discussion and collaborated learning environment; intrapersonal intelligence – learners who are shy away from others and they like to learn independently; naturalist intelligence – this type of learners relates their understanding to one's natural surroundings and learn through applying their knowledge to environmental related applications. This model is outstanding from the others because it identifies learners based on the intelligence, ability or aptitude of learners. In spite of the visual intelligence and kinesthetic intelligence are similar to (Fleming, 2001).

Felder-Silverman index of learning styles (Felder & Silverman, 1988) categorized learners into four types are active–reflective or active learners learn best by working actively with the learning material, by applying the material, and by trying things out, but reflective learners prefer to think about and reflect on the material; sensing–intuitive or learners who prefer a sensing learning style like to learn facts and concrete learning material, but intuitive learners prefer to learn abstract learning material, such as theories and their underlying meanings; visual–verbal or learners who remember best and thereby prefer to learn from what they see (e.g., pictures, diagrams and flow-charts), and learners who get more out of textual representations, regardless of whether they are written or spoken; sequential–global are sequential learners learn in

small incremental steps and therefore have a linear learning progress, but global learners use a holistic thinking process and learning in large leaps and they tend to absorb learning material almost randomly without seeing connections but after they have learned enough material, they suddenly get the overall picture. This model actually grouped learners into eight groups that each two groups are contradict and it is similar to Carl Jung and Myers Briggs (Pittenger, 2005) in term of the psychological indicator in order to type learners. While, the perspectives of categories are focusing on personality, emotion, sensory and thinking process. Visual-verbal learners are similar to VAK model of Flemming and Gardner's notion of intelligence.

Although, the learning style model had been proposed from many scholars, the present study will adopt learners' learning style of VAK learning style model (Fleming, 2001). This model is obvious to identify and it is not too complex for the participants of the study. Learning styles of Flemming are divided into 3 styles which are visual, auditory and kinesthetic. Fleming (2001) defined each learning style is the following:

Table 1: Types of learning style (Flemming, 2001)

<i>Learning style</i>	<i>Definition</i>
1. Visual learners	Learners who perceive information best when viewing (spatial) or reading (linguistic). Linguistic visual learners retain information better when reading the written word, while spatial visual learners tend to understand concepts more fully when they are presented as graphs, charts, pictures, or videos. Visual learners retain information from pictures, displays or how words appear on a page or chart.
2. Auditory learners	Learners who respond best when presented with learning material that they can listen to or discuss, and often read aloud or move their lips when reading. They tend to learn more through verbal instructions, lectures, or group discussions and by talking aloud as much as possible. To help with retention, the auditory learner prefers studying in a group and putting hard to remember items into a song or rhyme.

Table 2: Types of learning style (Flemming, 2001)

<i>Learning style</i>	<i>Definition</i>
1. Visual learners	Learners who perceive information best when viewing (spatial) or reading (linguistic). Linguistic visual learners retain information better when reading the written word, while spatial visual learners tend to understand concepts more fully when they are presented as graphs, charts, pictures, or videos. Visual learners retain information from pictures, displays or how words appear on a page or chart.
2. Auditory learners	Learners who respond best when presented with learning material that they can listen to or discuss, and often read aloud or move their lips when reading. They tend to learn more through verbal instructions, lectures, or group discussions and by talking aloud as much as possible. To help with retention, the auditory learner prefers studying in a group and putting hard to remember items into a song or rhyme.
3. Kinesthetic learners	Learners who respond best when presented with situations where they can move, do, or experience something, and can lose concentration after long periods of no movement. They may use color highlighters to organize thoughts and take notes by drawing diagrams or pictures. Subsets of kinesthetic learners are actually tactile rather than kinesthetic, meaning that they learn best through handling or touching. These two categories, kinesthetic and tactile, are often grouped together. Learner learn best by moving, doing, experiencing, handling or touching. Kinesthetic learners prefer hands-on activities in which they stay actively involved in the learning process.
4. Multi-learning style	Learners who have preferences for more than one learning style. Their preferences are not particular for a single learning style. They can prefer two or three learning styles at the same time.

2.2 Teaching Styles

2.2.1 Teaching Style Definition

Many scholars have differently described the teaching styles in many aspects. Teaching style can be defined as patterns of teacher's behaviour toward students, activities and atmosphere in the classroom. Davidson (1984) suggested that teaching styles define the behaviors that teachers exhibit as they interact with learners. A teaching style is an identifiable set of classroom behaviors associated with and carried out by the instructor. The chosen teaching style "is the operational behavior of the

teacher's educational philosophy" (Conti & Welborn, 1985). In short, teaching style is a teacher's personal behaviors (Gregorc, 1985). A teaching style can be defined as a mode of expression that teacher achieves the balanced between developing a guiding vision that informs our teaching and responding flexibility to different content (Brookfield, 1990). As well, teaching styles referred to a teacher's preferred technique of solving problems, implementing tasks, and making decisions in the process of teaching, and, besides differing from individual to individual, may sometimes differ between different groups (Sternberg et al., 2008).

Heimlich (1990) added that teaching style includes the implementation of philosophy, belief and attitude. Similarly, Grasha (2002) defined teaching style as a particular pattern of needs, beliefs, and behavior that a teacher displays in the classroom. However, teaching styles depend on teachers own needs, professional goals and personal judgement (Gayle, 1994).

Based on Horenstein (2006), teaching styles can be described as a broad dimension or personality type that encompass a teacher's approach, attitude or belief towards teaching that can be observed over time. Teaching styles can be viewed as relationship between teacher and students or as the tasks of teaching such as how the teacher comes out instruction and organizes learning in the classroom environment. Teaching styles can be implicit and tacit or can be explicitly known by the teacher. The characteristics of one's teaching style may be influenced by philosophy of her students can learn by beliefs about how students should be taught. The teaching styles tend to become ingrained after many years of practice and can be difficult to change unless teachers receive intensive feedback or are influenced by powerful stimuli.

Furthermore, teaching styles can be defined as an organized and systematized sequence of activities that tutors use during teaching. The objective of teaching styles is to facilitate students' learning (Rose, 1986). Teaching styles support students by the teachers facilitate a deeper understanding of the information. The significance relies on the design, programming, elaboration and accomplishment of the learning goal. Teaching styles must be designed in a way that students are encouraged to observe, analyze, express an opinion, create a hypothesis, look for a solution and discover knowledge by themselves.

On the other hand, Kellough and Roberts (1994) stated there are other ways to label and described teaching styles, two contrasting teaching styles are the traditional and the facilitating styles, emphasizing that although today's teacher must be eclectic, that is must use aspects of each, there must be a strong learning toward one of the teaching styles.

Bustos and Espiritu (1996) added that the traditional teacher acts more as an information giver, while the facilitating teacher takes less of a central role in the classroom situation. Additionally, two basic orientations become prominent. Teachers develop teaching styles based on their beliefs about what constitutes good teaching, personal preferences, their abilities and the norms of their particular discipline. Some believe the classes should be teacher-centered where the teacher is the expert and authority in presenting information. Others take a student-centered approach, viewing their role as more of the facilitator and delegator of student learning.

To sum up, teaching style is an approach that teacher use based on their beliefs, philosophy, attitude and personality in order to encourage students to observe, analyze, express an opinion, create a hypothesis, look for a solution and discover knowledge by themselves. Teaching style can be changed or adjust depending on the needs of the teacher to develop classroom rapport.

2.2.2 The Importance of Teaching Style

There are several researchers suggested the importance of teaching styles. First, Dunn (1988) indicated that the importance of teaching the students by using strategy that adapt to their learning styles. Lujan and DiCarlo (2006) points out that teaching strategies take effect on the teaching quality both on individual point of view and on the collaboration of the group as a whole. Since the students have different learning styles and it is not entirely that individuals have common learning styles, so it is a responsibility of teachers to explore and investigate their teaching style. This would facilitate them to get exposure of different learning activities to adopt wider field of students learning styles in order to achieve more effective learning (Chatterjee, Mohanty, & Bhattacharya, 2011). A balanced of teaching style bridges the gap between learners' learning style and teachers' teaching styles as well as accommodate different learning styles (Felder & Henriques, 1995). Matching teaching styles to

learning styles enables students an equal chance to learning, allows them to realize their strengths and weakness, and positively affects their knowledge, attitudes, behavior, and motivation (R. Felder & Henriques, 1995; Oxford, 2003; Peacock, 2002; Reid, 1995). Reid (1995) indicated that “matching teaching style and learning style give all students an equal chance in the classroom and builds students’ awareness. Brown (2007) confirmed that students’ motivation, performance, and achievement will increase when their learning styles are matched with teaching styles. Felder and Silverman (1988) concluded that most of the learning and teaching style components parallel one another. A student who favors intuitive over sensory perception, for example would respond well to an instructor who emphasizes concepts (abstract content) rather than fact (concrete content); a student who favors visual perception would be most comfortable with an instructor who use charts, pictures, and film.

On the other hand, a mismatch between learning style and teaching style may lead to learning failure and frustration (Reid, 1995). Felder and Silverman (1988) claimed that a mismatch between learning style and teaching style could bring a severe consequence. It could make students become bored and inattentive in class, do poorly on tests. They are likely to get lower scores than students whose learners are better linked to the instructors’ teaching styles. Some researchers emphasized that style conflicts may lead to style wars which can have serious consequences in EFL learning (Oxford, 2003; Oxford et al., 2003). Peacock (2002) proposed that teacher should strive for a balanced teaching style that does not excessively favor any one learning style- first that tries to accommodate multiple learning styles. Teachers should take in account that all learning style through their instructional methods, classroom activities, and lesson plans (Felder & Henriques, 1995; Oxford, 2003; Peacock, 2002). Felder and Silverman (1988) concluded that an ideal classroom setting for teaching EFL would be one that has balanced teaching style in which teachers adapt their instruction to address all learning styles.

In conclusion, teaching style effect on the individual and the collaboration of a group since teaching styles can facilitate learners with different learning styles to get exposure of different learning activities. Teaching style enables students an equal

chance to learning, allows them to recognize their strength and weakness. The matching of teaching style and learning style can give positive impact on students' knowledge, attitude, behaviors, and motivation. Contrastingly, mismatching between teaching style and learning style could make dull classroom environment, inactive class, low score on tests and so on. Therefore, teacher should think about the combination of teaching style and the students learning style on instructional methods, classroom activities, lesson plans and classroom assessment.

2.2.3 Types of Teaching Style

Many researchers have suggested teaching styles in order to match with learners' learning styles. Grasha (2002) claimed that styles in teaching arise into four different clusters that make up the characteristics and ways professor's design instruction setting. A brief description of each group is detailed. First, the expert/formal authority cluster is the teacher-centered classroom in which information is presented and students receive knowledge. Second, the demonstrator/ formal authority cluster is a teacher approach that emphasizes modeling and demonstration. This approach encourages students to observe processes as well as content. Third, the facilitator/demonstrator/ expert cluster is a student-centered for the classroom. Teachers design activities, social interactions, and problem-solving situations that allow students to practice the processes for applying their course content. Last, the delegator/facilitator/expert cluster places much of the learning burden on the students. Teachers provide initiative and open group work to complete. Grasha (2002), categorized teaching style in agreement with teacher's responsibilities to handle course demand, the need for teacher to directly to control the classroom tasks and their willingness to build/maintain relationships.

Dressel and Marcus (1982) and Woods (1995), categorized teaching styles as discipline-centered, teacher-centered, and student-centered. In discipline centered model, the course has a fixed structure. In teacher-centered model, the teacher is considered as an authoritative expert, the main source of knowledge, and the focal point of all activity. In this teaching model, students are passive recipients of the information. According to Lacey et al. (1998), lecture obviously reflects teacher-centered style and requires a passive role for students. In student-centered model, on

the other hand, instruction focuses on the student and his/her cognitive development. The teacher's goal is to help students grasp the development of knowledge as a process rather than a product.

Flanders (1970) used different terminology and named teacher-centered teaching as direct style, student-centered teaching as indirect style and discipline-centered teaching as eclectic style. Weinberg (1983) also did some work on teaching styles and identified the following four teaching styles: direct teaching, peer teaching, problem solving, and group approach. First, in direct teaching style, the teacher makes all of the decisions. S/he describes and demonstrates what is to be learned, evaluates it and gives feedback. This style needs very little cognitive or affective involvement on the student's part. Second, peer teaching style pairs two students of differing ability levels with one another. The teacher describes and demonstrates the desired response. The students evaluate each other using criteria presented by the teacher. Third, in problem solving style, the teacher sets a problem and the students respond it in most appropriate ways for them. Models come from student creativity and other students' responses. And last, group approach style is used to foster social skills as well as promote acceptance among different ability levels.

Berger (1974), in addition, determined three kind of teaching behaviors as teacher oriented, student oriented, and student-teacher cooperation oriented. Lenz (1982) identified two teaching styles: proactive and reactive. Robinson (1979) categorized teaching styles into five classes ranging from "highly content centered" to "highly people centered". Alexlord (1970) identified five teaching styles: drill master, content-centered, instructor centered, intellect centered and, person centered.

Moreover, Umass Dartmouth (2020) suggested teaching styles that take student oriented into account as a criteria in order to categorize teaching styles into 3 groups: teaching style for auditory, teaching style for visual, teaching style for and kinesthetic. These styles of teaching can accommodate learner's learning styles of Flemming model (2001).

Table 3: Styles of teaching for accommodating learners (Umass Dartmouth, 2020)

Teaching styles	Styles of teaching for accommodating learners
1. Teaching style for visual learners	<p>Using maps flow charts, or webs to organize materials</p> <p>Highlight and color code books/notes to organize and relate material</p> <p>Have students pick out key words and ideas in their own writing and highlight them in different colors to clearly reveal organizational patterns</p> <p>Write out checklist of needed formulas, commonly misspelled words, etc.</p> <p>Write out and use flashcards of review of material</p> <p>Draw pictures or cartoons of concepts</p> <p>Write down material on slips of paper and move them around into proper sequence.</p> <p>Use the chalkboard to note important information</p>
2. Teaching style for auditory learners	<p>Engage the student in conversation about the subject matter</p> <p>Question students about the material</p> <p>Ask for oral summaries of material</p> <p>Have the learners tape lectures and review them with the teacher</p> <p>Have the students tape themselves reviewing material and listen to it together</p> <p>Read material aloud to the students</p> <p>Use a talking calculator</p> <p>Have the students put material to rhythm or tune and rehearse it aloud</p>
3. Teaching style for kinesthetic learners	<p>Write out checklists of materials to be learned or looked for</p> <p>Trace words and diagrams on paper</p> <p>Use textured paper and experiment with different sizes of pens, pencil, and crayons to write down information</p> <p>Use role play or dramatize concepts. Students can move objects around to image or act out the idea themselves.</p> <p>Ask the students to envision a scene in which the material to be learned is being used or acted out somehow. For example: a student could imagine being a character in a novel.</p> <p>Have the student take notes while reading or listening</p> <p>Use some form of body movement while reciting material to be learned.</p>
4. Multi-teaching style	<p>Mixed types of instruction that teachers use in a classroom that accommodate visual learners, auditory learners, and kinesthetic learners. Two or three teaching styles can be preferred by a Thai EFL student.</p>

This present study will adopt aforementioned table from Umass Dartmouth (2020) that accommodate learners' learning style which are visual, auditory and kinesthetic related to learning style model of Flemming (2001) as teaching styles in the classroom.

2.3 Academic Achievement

Academic achievement of learners can be assessed various ways. According to the basic educational core curriculum (2008) defining language assessment in order to determine learners' academic achievement. With a view to succeeding in developing the learners' learning quality, learners must be strengthened and assessed by availing of the relevant indicators, so as to achieve the learning standards prescribed. Such evaluation also reflects the learners' major capacities and their desirable characteristics, which are the main goals of measuring and evaluating the learning outcomes at all levels, i.e., classroom level, educational institution level, educational service area level, and national level. Learning assessment is a process of enhancing the learners' quality by using assessment results as data and information to show learners' developmental progress and accomplishment. The data will also be useful for strengthening the learners, thus enabling them to learn to their highest potentiality. As already mentioned, learning assessment can be divided into four levels which are classroom level, educational institution level, educational service area level and national level.

This study will adopt national test to determine academic achievement. Evaluation is conducted in order to assess learners' quality at national level, based on the learning standards prescribed in the Basic Education Core Curriculum. Educational institutions are required to arrange for assessment of all students in Grades 6. The evaluation results will provide relevant data for comparing educational quality at different levels, which will be useful for planning in order to raise the quality of education provided. The data obtained will also support decision-making at national policy level.

2.4 Previous studies on learning styles, teaching strategies, and academic achievement in global context

Learning style research have been conducted in many types. The first type of learning style research is to identify learners' learning style. For instance, Asadipiran (2016) identified preferred perceptual learning styles of Iranian young learners. Perceptual Learning style Preference questionnaire (PLSPQ) was used to measure the students' preferred learning styles. The participants were 60 high school students. The analysis of data revealed that the most preferred learning style was visual, tactile, auditory, individual, kinesthetic and group learning learners respectively.

Similarly, ÜNSAL (2018) studied the importance of learning styles in foreign language teaching and identified learning styles. The results showed that 24 students were visible learners, 6 students were auditory learners, and 11 learners are kinesthetic learners. in addition, 7 learners were found to have multiple learning styles in which two or three learning styles coexist. The multiple learning styles were distributed as 2 visual-auditory, 3 visual-kinesthetic learners and 2 visual-auditory-kinesthetic learners.

Chetty et al. (2019) investigated learning styles and teaching strategies with university students. The findings revealed that the most preferred learning style was visual style (49.8%). Then, it was followed by multi-learning style (28.28%), kinesthetic style (15.94%) and auditory style (5.98%) respectively. The research showed the contrast result from the present study. The first rank of preferred learning style in the present study was auditory, but the research revealed auditory learners in the last rank of learning style.

The second type of learning style research is to investigate the relationship between learning styles and other variables. The repeated variables conducted with learning style are teaching style and learners' achievement. Naimie et al. (2010) examined the influence of matching or mismatching learning and teaching learning styles on the achievement of learners in a university-level. A comparison was made between learning style preferences and achievement scores of matched-learning-teaching styles with mismatched learning-teaching styles. The study showed that matching learning and teaching styles positively influenced the students' achievement.

As well, Lee and Kim (2014) investigated Korean university-level EFL learners' learning style preferences. The characteristics of their learning style preferences and implication for effective English learning were examined through quantitative analysis. The 496 participants of the study were asked to answer learning style survey and their English achievement and term-end performances. The findings showed that Korean learners' auditory style preference is noticeable, and visual and individual learning styles were also considered to be primary learning styles, whereas tactile, kinesthetic, and group learning style were less favored. In terms of learners' awareness of their identified learning styles, the findings showed that style-aware group performed better than the unaware group.

Similarly, Fayombo (2015) investigated the learning preferences, the teaching strategies and their influence on the academic achievement of 171 undergraduate students. Findings showed that students' preferences for visual, auditory, kinesthetic and multiple modes of learning styles and the majority of the students benefited from the learning strategies utilized in the classroom. Additionally, the teaching strategies and learning styles contributed 20% to variance in academic achievement and this was statistically significant. These findings discussed the importance of utilizing different teaching strategies to accommodate different learning styles and promote students' academic achievement in Psychology.

As well, Nge Nge (2018) attempted to investigate the level of students' academic achievement in learning English as a foreign language and to compare the preferred learning styles with their academic achievement. The results revealed there was no significant difference among students' academic achievement according to their most preferred learning style.

Moreover, Alnujaidi (2018) investigated the differences between EFL students' preferred learning styles (PLS) and EFL teachers' preferred teaching styles (PTS) in Saudi Arabia. The participants were 130 EFL students and 102 EFL teachers. Two instruments which were the index of learning style and the index of teaching style were used to examine the participants learning and teaching styles. The results showed that EFL students preferred the sensing, visual, active, and sequential learning styles. It also showed that EFL teachers preferred the abstract, verbal, passive and

global teaching styles. These results showed that there was a mismatch between students' preferred learning styles and teacher preferred teaching styles.

Khademi, Motallebzadeh and Ashraf (2013) investigated the relationship between Iranian EFL instructors' understanding of learning style and their university student's success in reading comprehension tests. 240 Iranian EFL instructors were randomly selected at tertiary level with more than three years of experience in teaching reading comprehension courses. The findings show revealed significant relationship between the Iranian EFL instructors' recognition of learning styles and their students' success in reading comprehension test. Besides, the results of interviews showed that Iranian instructors have approximately similar attitudes toward teaching reading comprehension in Iranian context.

Furthermore, other variables were investigated with learning style. Li and He (2016) conducted a study about ambiguity tolerance and perceptual learning styles of Chinese EFL Learners. The aim of the study was to explore the relationship between Chinese EFL learners' ambiguity tolerance and their preferred perceptual learning styles. The data was collected from selected 190 participants asked to answer two questionnaires. The first questionnaire was second language tolerance of ambiguity scale and the later one was modified perceptual learning style preferences questionnaire. The findings showed that 1) the learners were sensitive to English ambiguities and were more reliable on the tactile and kinesthetic learning styles than on visual and auditory styles, 2) most Chinese EFL learners had more than one learning style preferences, 3) significant gender differences existed in ambiguity tolerances, but not in perceptual learning style preferences, 4) the four perceptual learning styles were significantly correlated with ambiguity tolerance and the auditory learning style would exert more influence on ambiguity tolerance than visual, tactile and kinesthetic learning styles. Alrabah, Wu, and Alotaibi (2018) investigated learning styles and multiple intelligences of English as a foreign language (EFL) college-level students. Convenience sampling was used to collect data from 250 students enrolled in seven academic departments at the college of Basic education in Kuwait. Google forms interfaced to facilitate participants to access and responded the survey on learning style and on multiple intelligences. Microsoft Excel was used to

generate means, percentage, ranks, and standard deviations. Results showed that while participants' dominant learning styles were global, extroverted, hands-on and visual, their dominant multiple intelligences were interpersonal, visual, and kinesthetic.

2.5 Previous studies on learning styles, teaching strategies, and academic achievement in Thai contexts

The researchers in Thai context conducted the learning styles similarly to global context which led learning style in area of identification learning style and investigation of relationship between learning style and other variables. The first type of learning style research is to identify learners' learning style. Wassanasomsit (1999) investigated learning style of EFL university-level students. convenience sampling was used to collect data. Participants were 327 of first year university students enrolling intensive English class in second semester. The instrument was a self-report survey questionnaire to categorize learning styles of EFL learners. SPSS program was adopted to generate genders, grades, means and standard deviation. Attitude of EFL students on learning styles variable was compared by t-test. The results showed that kinesthetic learning style was the most preferences of participants in all aspects. Arunreung et al. (2013) studied the English language learning styles of Liberal Arts students. The target group of this study included 248 first-year students of Liberal Arts studying English II in the academic year 2012. The tools used for this research were the Perceptual Learning Style Preference Questionnaire (PLSPQ) (Reid, 1987) and data analysis using SPSS for Windows program version 11.5. The statistics used include the percentage, mean, and standard deviation. It was found that the three main learning styles were: GLS- Group Learning Style (3.63); ALS- Audio Learning Style (3.54) and KLS- Kinesthetic Learning Style (3.45) respectively.

The second type of learning style research is to investigate learning style with other variables. A few researchers have conducted this type of research. Pinchai (2016) studied and developed lesson plans regarding students' learning style preferences in order to compare students' paragraph writing ability by implementing scaffolding writing instruction with students' learning style preferences in one group and implementing scaffolding writing instruction without students' learning style preferences in another. Participants were 74 students (37 students in a controlled

group and 37 students in an experimental group) enrolling in Intensive English class in the first semester, academic year 2016. Research instruments were scaffolding writing instruction with students' learning styles preferences lesson plans for the experimental group, scaffolding writing instruction without students' learning style preferences lesson plans for the controlled group, and paragraph writing ability tests for both groups. The data were analyzed for mean, standard deviation, and percentage. The result showed the improvement of both controlled and experimental groups. However, the experimental group had improved better when taking a look at the standard deviation.

Moreover, Khamkhien (2012) identified Thai learners' English learning style preferences and determined the impact of three variables: gender, field of study and learning experiences on preferred learning styles. 262 Thai university students studying English as a foreign language randomly selected, participated in this study. A 30-item Perceptual Learning-Style Preference Questionnaire was administered to elicit information for the study. The results indicated that Thai EFL learners preferred auditory learning most, followed by kinesthetic, group, tactile, visual and individual learning, respectively. Among these three variables, field of study is the most significant factor affecting the choice of learning styles. However, no statistically significant difference was found in learning experience, or between the mean scores of male and female students in all of the six learning styles. The results had significant implications in that the description of language learning style contributes to a better understanding of how Thai learners learn English.

Jayanama (2017) examined the learning styles of low and high proficiency students studying Foundation English at Srinakharinwirot University, studied the relationship between learning styles and academic achievement of low and high proficiency students, compared the learning styles between both groups, and investigated the relationship between learning styles and demographic variables. Although the low and high proficiency students were not investigated in this study, the results reported that there was not any significant relationship between tactile, auditory, group, kinesthetic and individual learning styles and the academic achievement of low proficiency students. Moreover, there was not any significant relationship between visual,

auditory, group, kinesthetic and individual learning style and the academic achievement of high proficiency students.

Similarly, Awang et al. (2017) reported the relationship between two variables, namely VARK learning styles with students' academic achievement that there was no significant difference among the VARK learning styles with student academic achievement. This is particularly present that these two variables have no relationship.

2.6 Summary of the chapter

The present study attempts to find out the relationship among learners' preferred learning style, preferred teaching style and academic achievement of Thai EFL primary students. The conceptual framework of learning style will adopt VAK model of Fleming (Fleming, 2001). The teaching style conceptual framework will apply the suggestion of teaching styles from (Umass Dartmouth, 2020). Last, the academic achievement will be referred to cognitive skill measured by academic achievement test. The researcher believes that these three variables are correlated in agreement with many related studies both in global and Thai context. Moreover, the attention of learning style, teaching style and academic achievement have been paid very little on primary students or young learners. Therefore, this present research will be the closure of this gap. To do so, methodology of the study will be described in the next chapter.

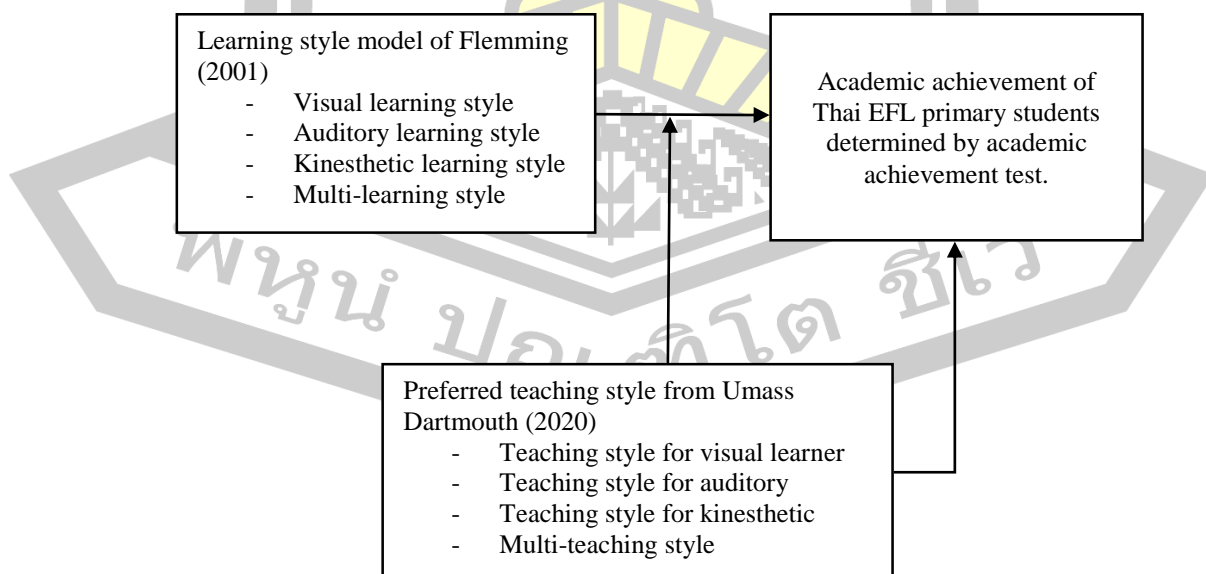


Figure 1: Framework of the study

CHAPTER III

RESEARCH METHODS

This chapter presents the research methodology of the present study including participants and setting, research instruments, data collection procedures, data analysis, and a summary of the research.

3.1 Participants and Setting

The participants are 172 Thai EFL primary students selected from primary 6 from four different government schools in northeastern Thailand. Their ages range from 11-12 years old. Their first language is the Isan language and their English language proficiency is at the very beginning levels. They have been studying English with non-native teachers since primary 1 for a total of between 3-5 years. They study English 2-3 times a week with a total of 2-3 hours/week. During class time, the language as a medium of instruction is Thai.

During the class, the participants are different in term of their learning styles. The participants like to talk, draw, write, listen, or play in the classroom. They prefer tasks that allow them to move. Some of them prefer to sit, listen and write it down. While some of them prefer to be up in front of the class. Some may sit still and enjoy drawing from their imaginations. Therefore, the classroom consists of many types of participants. Usually, the instruction in the class only allows participants to sit, listen and write it down in a repetitive fashion, this style of teaching may facilitate learning for only some type of participants. Some of the participants learning styles are ignored and they are forced to have the same style of learning as the teacher or their pupils.

3.2 Research Instruments

The present study aims to identify the participants' learning styles; identify preferred teaching styles; and predict the Thai EFL primary students' academic achievement from teaching styles and learning styles. In order to achieve the purposes of the present study, the research questions need to be answered by these following research instruments.

3.2.1 Preferred Learning Style Questionnaire

In order to answer the research question: “Which learning styles exist among the Thai EFL primary students?”, a preferred learning style questionnaire needs to be used. The preferred learning style questionnaire was reproduced based on work done by O’Brien in 1985 and translated into Thai by employing forward and backward word translation by bilingual speakers (Degroot & Vanhell, 1994). The questionnaire was answered by the participants in order to identify the most preferred perceptual learning styles which are divided into three styles: visual, auditory and kinesthetic. The questionnaire is divided into two parts. The first part collected demographic data: name, age, and class. The second part of the questionnaire consists of 30 questions related to the visual, auditory and kinesthetic elements. The questionnaire is a three-point Likert scale based on O’Brien in 1985. Although a five-point Likert scale is normally utilized for questionnaires, the three-point Likert scale based on O’Brien in 1985 provides suitable indicators for measuring learning styles. Each question has three preferences; “1 as low”, “2 as medium”, and “3 as high.” A maximum of 30 marks and a minimum of 10 marks were given for each section. If students marked “highest” in a section of visual, auditory, or kinesthetic style, they considered as having that learning style. Moreover, if students marked “highest” in more than one section of visual, auditory, or kinesthetic styles, they are considered as having multi-learning styles. To ensure that the instruments were valid and correlated to the objectives of the study. The questionnaire was checked via the index of item-objective congruence (IOC) (by three experts. The first expert is a doctoral supervisor in English responsible for 13 schools in the Elementary Education Service Area Office experienced in teaching English for primary students. The second expert is a doctoral university teacher experienced in teaching the “Teacher Profession” and “English Teaching” subjects. The third expert is a university teacher teaching “English for Business” and is an expert in the learning style research area. The findings found that the IOC of the questionnaire was 0.87. A content validity index of higher than 0.50 indicates that the content of the two parts of the questionnaire were valid and acceptable (Pinyoanuntapong, 2003). The invalid items of the questionnaire were either deleted or revised based on the comments and suggestions from the experts in

order to improve the validity. An example of the questionnaire is shown in the following table.

Table 4: The example of the preferred learning style questionnaire

No.	Items	Rating		
		3 as high.	2 as medium.	1 as low.
<i>Section one</i> (Visual)				
1	I enjoy doodling and even my notes have lots of pictures and arrows in them.			
2	I remember something better if I write it down.			
<i>Section two</i> (Auditory)				
11	My written work doesn't look neat to me. My papers have crossed-out words and erasures.			
12	It helps to use my finger as a pointer when reading to keep my place.			
<i>Section three</i> (Kinesthetic)				
21	I don't like to read directions; I'd rather just start doing.			
22	I learn best when I am shown how to do something, and I have the opportunity to do it.			

3.2.2 Preferred Teaching Style Questionnaire

In order to answer the research question “Which teaching styles will be preferred by Thai EFL primary students?”, a preferred teaching style questionnaire need to be used. The preferred teaching style questionnaire was designed by the researcher adopting a suggestion from Umass Dartmouth (2020) about teaching styles that accommodate participants' learning styles in order to determine preferred teaching styles by the participants. The instrument consists of 2 parts. The first part is demographic data pertaining to name, age and gender. The second part of the instrument is a preferred teaching styles three-point Likert scale questionnaire which contained 15 items using the three-point Likert scale. Each question has three preferences; “1 as low”; “2 as medium”; and “3 as high.” Each group of five items are

described as teaching styles that fit visual, auditory and kinesthetic learners. If students have marked “highest” in a preferred teaching style section of visual, auditory, or kinesthetic style, they considered to have that preferred teaching style. Moreover, if students have marked “highest” in more than one preferred teaching style section of visual, auditory, or kinesthetic styles, they considered to have multi-teaching styles. The questionnaire was checked via index of item-objective congruence)IOC (from the same three experts as mentioned in learning style questionnaire. The findings showed that the IOC of the questionnaire was 0.67. A content validity index was higher than 0.50 indicates that the content of the two parts of the questionnaire were valid and acceptable (Pinyoanuntapong, 2003). The invalid items of the questionnaire were either deleted or revised based on the comments and suggestions from the experts in order to improve the validity of the questionnaire. An example of the preferred teaching style questionnaire is presented in the following table.

Table 5: The example of preferred teaching style questionnaire

Teaching style	3 as high.	2 as medium.	1 as low.
Visual			
1. I prefer teacher using maps flow charts, or webs to organize materials.			
2. I enjoy when teacher highlights and color codes books/notes to organize and relate material.			
Auditory			
1. I engage in conversation about the subject matter.			
2. When the teacher asks me about the material I am eager to give oral summaries of the material.			
Kinesthetic			
1. I usually write out checklists of materials to be learned or looked for.			
2. It's fun when the teacher presents traceable words and diagrams on paper.			

3.2.3 Academic Achievement Test

In order to complete research questions three and four, “Are there statistically significant mean differences in academic achievement of participants’ learning styles and preferred teaching styles?”, and “Is there a statistically significant relationship among academic achievement, learning styles and preferred teaching styles?”, academic achievement test needed to be completed. The academic achievement test referred to is the Ordinary National Educational Test (O-NET) in the 2017 academic year. The O-NET test is a standardized test produced by The National Institute of Educational Testing Service (Public Organization) or NIETS under the Ministry of Education. The O-NET test in the 2017 academic year was selected to determine academic achievement from the three year-national mean score (2017-2019) in which the O-NET test from the 2017 academic year is in the middle rank from the three academic years. The O-NET test is a language use test that includes reading, speaking, writing and listening with 40 items. Each item has a value of 2.5 points which in total gives 100 points. The test is determined to be able to measure participants’ academic achievement correlated to the basic education core curriculum indicators.

3.3 Data Collection Procedure

To achieve the aims of the study, the data was collected step-by-step. The data collection procedure was divided into two phases, the pilot study and the main study.

3.3.1 Pilot Study

The pilot study was a test of the instruments which included the learning style questionnaire and the preferred teaching style questionnaire before being used in the main study as follows. After the IOC score calculation was completed and the items of the questionnaire were revised, both questionnaires were distributed to twenty EFL primary students who have similar characteristics to the main participants to prove reliability.

The instruments were distributed to twenty EFL primary students who did not participate as a main participant in this study. The twenty EFL primary students were randomly selected from different school in a similar setting as the main participants.

During the pilot study, some items on both questionnaires were unclear. The questionnaires were revised accordingly to make them clearer.

3.3.2 Main Study

In order to collect the data, the researcher collected the data in a step-by-step manner. First, the researcher gave participants an orientation of the data collection procedure that the participants needed in order to answer the learning style questionnaire and the preferred teaching style questionnaire. This included information that both questionnaires consist of a demographic part and a questionnaire content part. Additionally, The Ordinary National Educational Test (O-NET) from the 2017 academic year needed to be explained, that it is an academic achievement test consisting of 40 items. Before answering the questionnaire, the researcher explained the instructions for the questionnaires and the format that they are a three-point Likert scale. Then, the participants answered the learning style questionnaire as the first questionnaire. After that, a questionnaire pertaining to the identification of the participants' most preferred teaching styles was answered. Last, the participants completed the Ordinary National Educational Test (O-NET) from the 2017 academic year to determine their academic achievement.

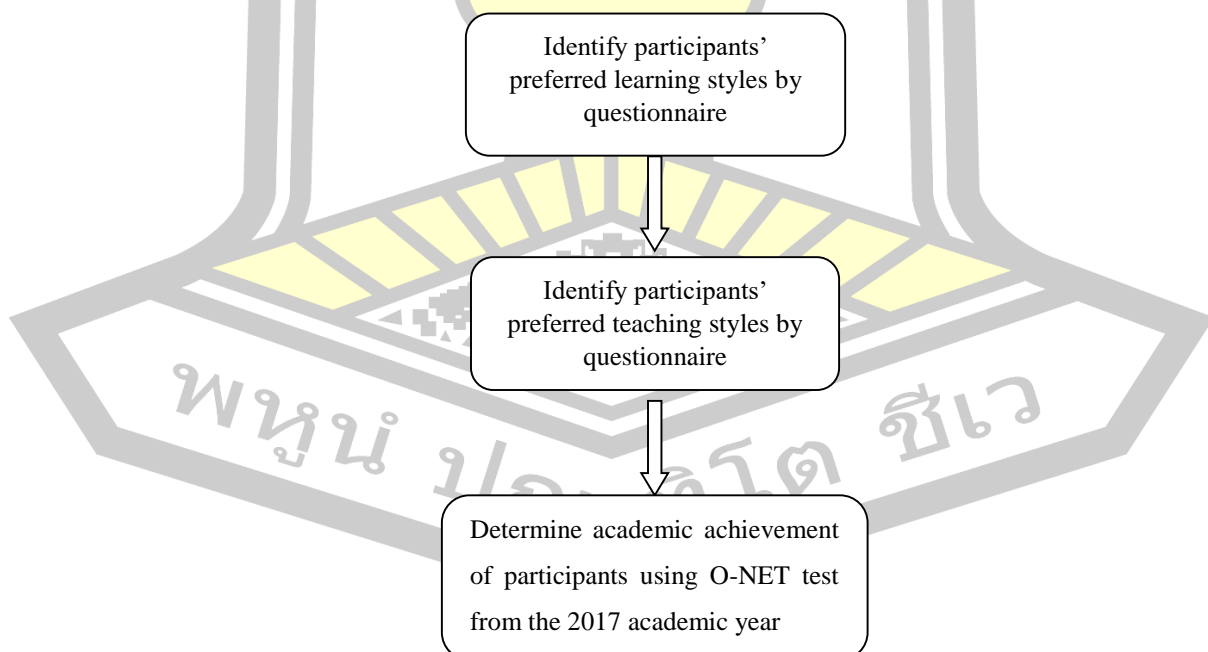


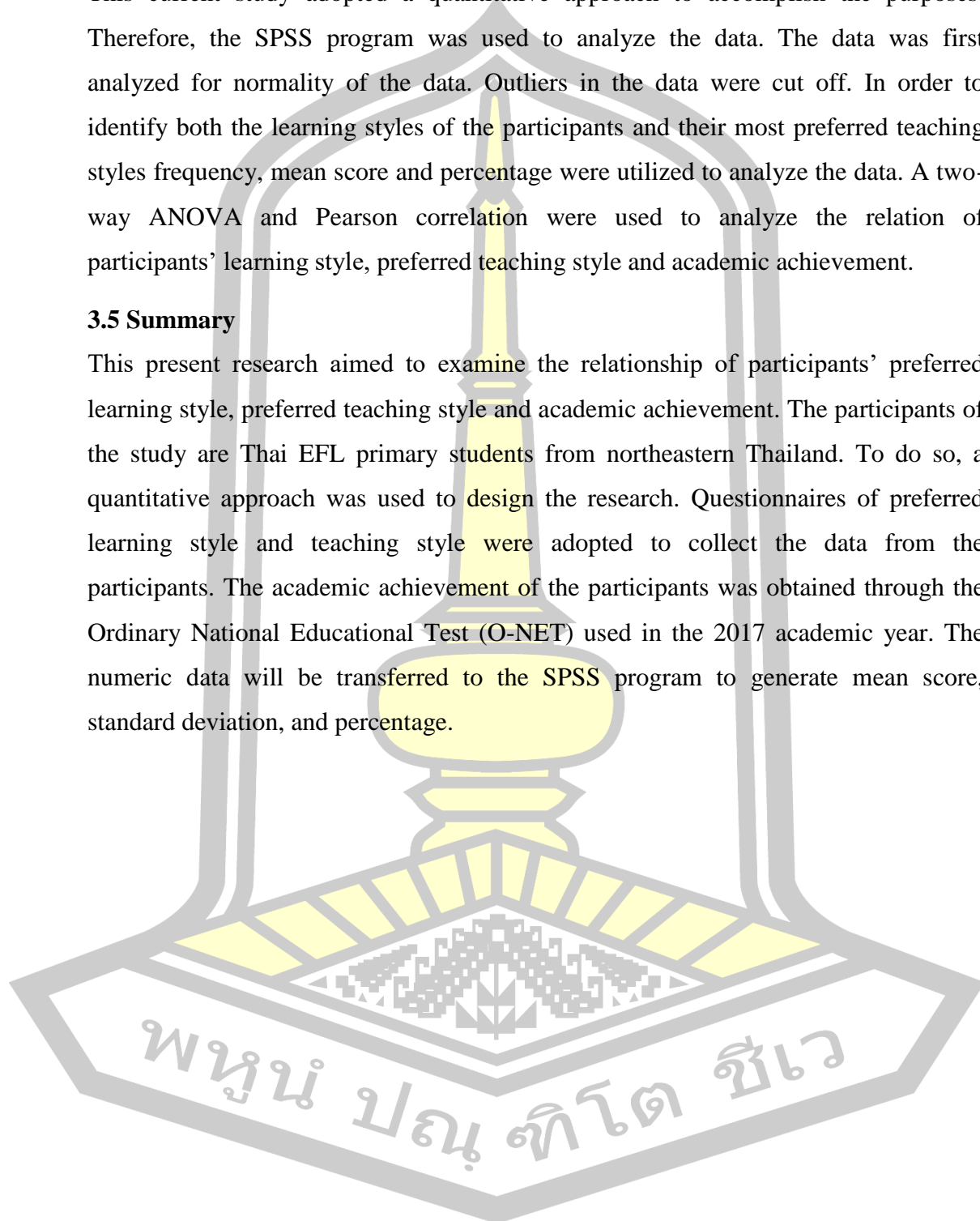
Figure 2: Data collection framework

3.4 Data Analysis

This current study adopted a quantitative approach to accomplish the purposes. Therefore, the SPSS program was used to analyze the data. The data was first analyzed for normality of the data. Outliers in the data were cut off. In order to identify both the learning styles of the participants and their most preferred teaching styles frequency, mean score and percentage were utilized to analyze the data. A two-way ANOVA and Pearson correlation were used to analyze the relation of participants' learning style, preferred teaching style and academic achievement.

3.5 Summary

This present research aimed to examine the relationship of participants' preferred learning style, preferred teaching style and academic achievement. The participants of the study are Thai EFL primary students from northeastern Thailand. To do so, a quantitative approach was used to design the research. Questionnaires of preferred learning style and teaching style were adopted to collect the data from the participants. The academic achievement of the participants was obtained through the Ordinary National Educational Test (O-NET) used in the 2017 academic year. The numeric data will be transferred to the SPSS program to generate mean score, standard deviation, and percentage.



CHAPTER IV

RESULTS

This chapter presents the results of the study in response of the four guiding research questions. The findings related to the research questions that guided the study. Data was analyzed to identify participants' learning styles, participants' preferred teaching styles and to investigate the relationship among the academic achievement of participants, participants learning styles and preferred teaching styles. Data was obtained from a learning styles questionnaire, a preferred teaching style questionnaire and an O-NET test, completed by 172 students. Below are statistical symbols that present the results.

n	=	participants
sum	=	summative
\bar{X}	=	mean
weight	=	percent weight
Sig	=	significance
*	=	significance level < 0.05
F	=	F-distribution

4.1 Research Question 1: Which learning styles exist among the Thai EFL primary students?

To answer the first research question, a learning styles questionnaire was completed by the participants. The frequency and percentage were generated by the SPSS program. The questionnaire categorized participants into visual, auditory, kinaesthetic, and multi-learning styles. Learning styles that emerged among Thai EFL primary students are presented in the following table.

พหุ ประถมศึกษา

Table 6: Frequency of participants' learning styles

Learning styles	Frequency	Percent	Rank	Cumulative Percent
Visual	50	32.3	2	32.3
Auditory	52	33.5	1	65.8
Kinesthetic	32	20.6	3	86.5
Multi-Learning Style**	21	13.5	4	100
Total	155	100		

The results show that four learning styles exist among Thai EFL Primary students. According to Table 6, auditory learners are the most popular with 33.5% followed by visual learners and kinesthetic learners at 32.3% and 20.6% respectively. The lowest percentage of learning style among the participants is multi-learning style (13.5%). Each section of the questionnaire was analyzed. The summative score, mean score, standard deviation, weight and rank are shown as follows.

**Multi-learning style occurred due to participants who have marked "highest" in more than one section of the learning style questionnaire.

Table 7: Visual learning style

No.	Items	n	Sum	\bar{X}	S.D.	Weight	Rank
1	I enjoy doodling and even my notes have lots of pictures and arrows in them.	155	339.00	2.19	0.56	73	5
2	I remember something better if I write it down.	155	320.00	2.06	0.49	68.67	8
3	I get lost or am late if someone tells me how to get to a new place, and I don't write down the directions.	155	336.00	2.17	0.72	72.33	6
4	When trying to remember someone's telephone number, or something new like that, it helps me to get a picture of it in my mind.	155	353.00	2.28	0.71	76.00	3
5	If I am taking a test, I can "see" the textbook page and where the answer is located.	155	317.00	2.05	0.74	68.33	9

Table 8: Visual learning style

No.	Items	n	Sum	\bar{X}	S.D.	Weight	Rank
6	It helps me to look at the person while listening; it keeps me focused.	155	340.00	2.19	0.68	73	4
7	Using flashcards helps me to retain material for tests.	155	337.00	2.17	0.66	72.33	7
8	It's hard for me to understand what a person is saying when there are people talking or music playing.	155	375.00	2.42	0.72	80.67	1
9	It's hard for me to understand a joke when someone tells me.	155	265.00	1.71	0.71	57	10
10	It is better for me to get work done in a quiet place.	155	372.00	2.40	0.69	80.00	2
	Visual	155	335.40	2.16	0.25	72.13	

As shown in Table 7 and 8: visual, item 8 “It’s hard for me to understand what a person is saying when there are people talking or music playing.” occupies the first rank with a percent weight of 80.67%. Item 9 “It’s hard for me to understand a joke when someone tells me.” occupies the tenth rank with percent weight (57%). Moreover, the mean score in total for this section is 2.16 and the standard deviation is 0.025.

Table 9: Auditory learning style

No.	items	N	Sum	\bar{X}	S.D.	Weight	Rank
11	My written work doesn't look neat to me. My papers have crossed-out words and erasures.	155	326.00	2.10	0.65	70.00	9
12	It helps to use my finger as a pointer when reading to keep my place.	155	369.00	2.38	0.73	79.33	1
13	Papers with tiny print, blotchy dittos or poor copies are tough on me.	155	355.00	2.29	0.64	76.33	2
14	I understand how to do something if someone tells me, rather than having to read the same thing to myself.	155	344.00	2.22	0.69	74.00	4

Table 10: Auditory learning style

No.	items	N	Sum	\bar{X}	S.D.	Weight	Rank
15	I remember things that I hear, rather than things that I see or read.	155	318.00	2.05	0.75	68.33	10
16	Writing is tiring. I press down too hard with my pen or pencil.	155	326.00	2.10	0.76	70.00	7
17	My eyes get tired fast, even though the eye doctor says that my eyes are ok.	155	350.00	2.26	0.78	75.33	3
18	When I read, I mix up words that look alike, such as “them” and “then,” “bad” and “dad.”	155	327.00	2.11	0.69	70.33	6
19	It’s hard for me to read other people’s handwriting.	155	336.00	2.17	0.74	72.33	5
20	If I had the choice to learn new information through a lecture or textbook, I would choose to hear it rather than read it.	155	326.00	2.10	0.67	70.00	8
	Auditory	155	337.70	2.18	0.30	72.60	

According to Table 9 and 10, item 12 “It helps to use my finger as a pointer when reading to keep my place.” occupies the first rank with a percent weight of 79.33%. The tenth rank is item 15 “I remember things that I hear, rather than things that I see or read.” with 68.33%. The mean score and standard deviation of the auditory section in total are 2.18 and 0.30, respectively.

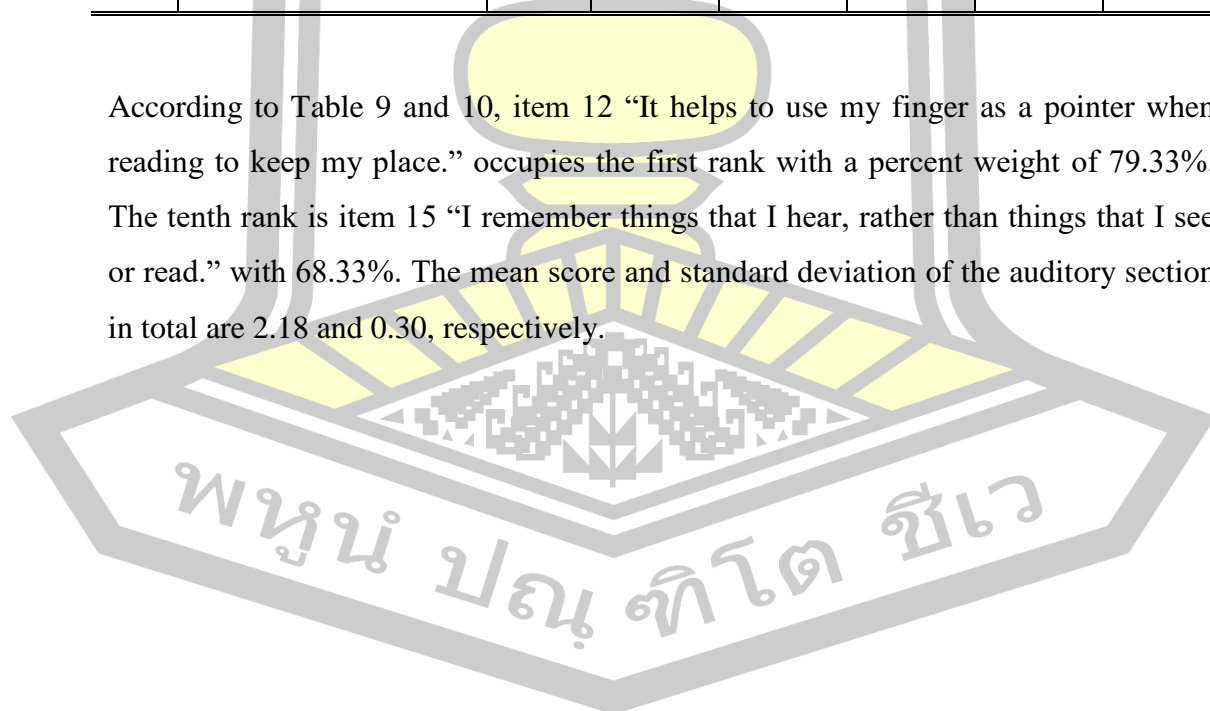


Table 11: Kinesthetic learning style

No.	items	N	Sum	\bar{X}	S.D.	Weight	Rank
21	I don't like to read directions; I'd rather just start doing.	155	322.00	2.08	0.70	69.33	7
22	I learn best when I am shown how to do something, and I have the opportunity to do it.	155	365.00	2.35	0.62	78.33	1
23	Studying at a desk is not for me.	155	225.00	1.45	0.64	48.33	10
24	I tend to solve problems through a more trial-and-error approach, rather than from a step-by-step method.	155	315.00	2.03	0.71	67.67	8
25	Before I follow directions, it helps me to see someone else do it first.	155	364.00	2.35	0.67	78.33	2
26	I find myself needing frequent breaks while studying.	155	322.00	2.08	0.70	69.33	7
27	I am not skilled in giving verbal explanations or directions.	155	333.00	2.15	0.69	71.67	4
28	I do not become easily lost, even in strange surroundings.	155	325.00	2.10	0.65	70.00	6
29	I think better when I have the freedom to move around.	155	329.00	2.12	0.69	70.67	5
30	When I can't think of a specific word, I'll use my hands a lot and call something a "what-cha-ma-call-it" or a "thing-a-ma-jig."	155	363.00	2.34	0.63	78.00	3
	Kinesthetic	155	326.30	2.11	0.29	70.17	

As presented in Table 11, item 22 "I learn best when I am shown how to do something, and I have the opportunity to do it." occupies the first rank with a percent weight of 78.33%. In contrast, item 23 "Studying at a desk is not for me." occupies the tenth rank with a percent weight of 48.33%. The mean score and standard deviation of the kinesthetic section are 2.11 and 0.29, respectively.

Table 12: Ranking of learning styles

Learning style	N	Sum	\bar{X}	S.D.	Rank
Visual	155	335.40	2.16	0.25	2
Auditory	155	337.70	2.18	0.30	1
Kinesthetic	155	326.30	2.11	0.29	3

As presented in table 12, auditory learning occupied the first rank compared to visual and kinesthetic learning. Auditory learning's mean score is 2.18 and its standard deviation is 0.30. While visual learning occupied the second rank with a mean score 2.16, and its standard deviation is 0.25. The last preferred learning style is kinesthetic learning with a mean score of 2.11 and its standard deviation is 0.29.

4.2 Research Question 2: Which teaching styles will be preferred by Thai EFL primary students?

In order to complete this research question, the preferred teaching style questionnaire was answered by the participants. The questionnaire comprises three parts: visual teaching style, auditory teaching style and kinesthetic teaching style.

Table 13: Frequency of participants' preferred teaching styles

Types of teaching style	Frequency	Percent	Valid Percent	Cumulative Percent
Teaching style for visual learners	25	16.1	16.1	16.1
Teaching style for auditory learners	44	28.4	28.4	44.5
Teaching style for kinesthetic learners	41	26.5	26.5	71
Multi-teaching style**	45	29	29	100
Total	155	100	100	

As shown in Table 13, the results show that four preferred teaching styles appear among the participants. The highest percentage of preferred teaching style is the multi-teaching style (29%). The lowest percentage of preferred teaching style is the teaching style for visual learners (16.1%). Moreover, the teaching style for auditory learners is higher than the teaching style for kinesthetic learners at 28.4% and 26.5% respectively.

**multi-teaching style occurred due to participants who marked “highest” for more than one section in the preferred teaching style questionnaire.

Table 14: Teaching style for visual learners

No.	Items	N	Sum	\bar{X}	S.D.	Weight	Rank
1	I prefer the teacher uses maps flow charts, or webs to organize materials.	155	324.00	2.09	0.62	69.67	2
2	I enjoy when the teacher highlights and color codes books/notes to organize and relate material.	155	365.00	2.35	0.63	78.33	1
3	I like when the teacher lets me pick out key words and ideas in my own writing to clearly reveal organizational patterns with highlighting different color.	155	321.00	2.07	0.68	69.00	3
4	I prefer to see flashcards for review of material and draw pictures or cartoons of concepts.	155	320.00	2.06	0.79	68.67	4
5	I enjoy writing down material on slips of paper and moving them around into proper sequence.	155	298.00	1.92	0.73	64.00	5
	Preferred visual teaching style	155	325.60	2.10	0.36	69.93	

As shown in Table 14, item 2 “I enjoy when the teacher highlights and color codes books/notes to organize and relate material.” occupies the first rank with a percent weight of 78.33%. Item 5 “I enjoy writing down material on slips of paper and moving them around into proper sequence.” occupies the fifth rank with a percent weight of 64.00%. In total, the preferred visual teaching style mean score is 2.10 and its standard deviation is 0.36.

Table 15: Teaching style for auditory learners

No.	Items	N	Sum	\bar{X}	S.D.	Weight	Rank
6	I engage in conversation about the subject matter	155	306.00	1.97	0.66	65.67	4
7	When the teacher asks me about the material I am eager to give oral summaries of the material.	155	304.00	1.96	0.64	65.33	5
8	I like to review material by listening.	155	364.00	2.35	0.69	78.33	2
9	When the teacher reads the material aloud, I understand more.	155	381.00	2.46	0.62	82.00	1
10	I enjoy the activity that put words to rhythm or tune and rehearses it aloud	155	317.00	2.05	0.72	68.33	3
	Preferred auditory teaching style	155	334.40	2.16	0.36	71.93	

According to Table 15, item 9 “When the teacher reads the material aloud, I understand more.” is the first rank with a percent weight of 82.00%. On the other hand, item 7 “When the teacher asks me about the material I am eager to give oral summaries of the material.” has the lowest percent weight with 65.33%. In total, the preferred auditory teaching style mean score is 2.16 and its standard deviation is 0.36.



Table 16: Teaching style for kinaesthetic learners

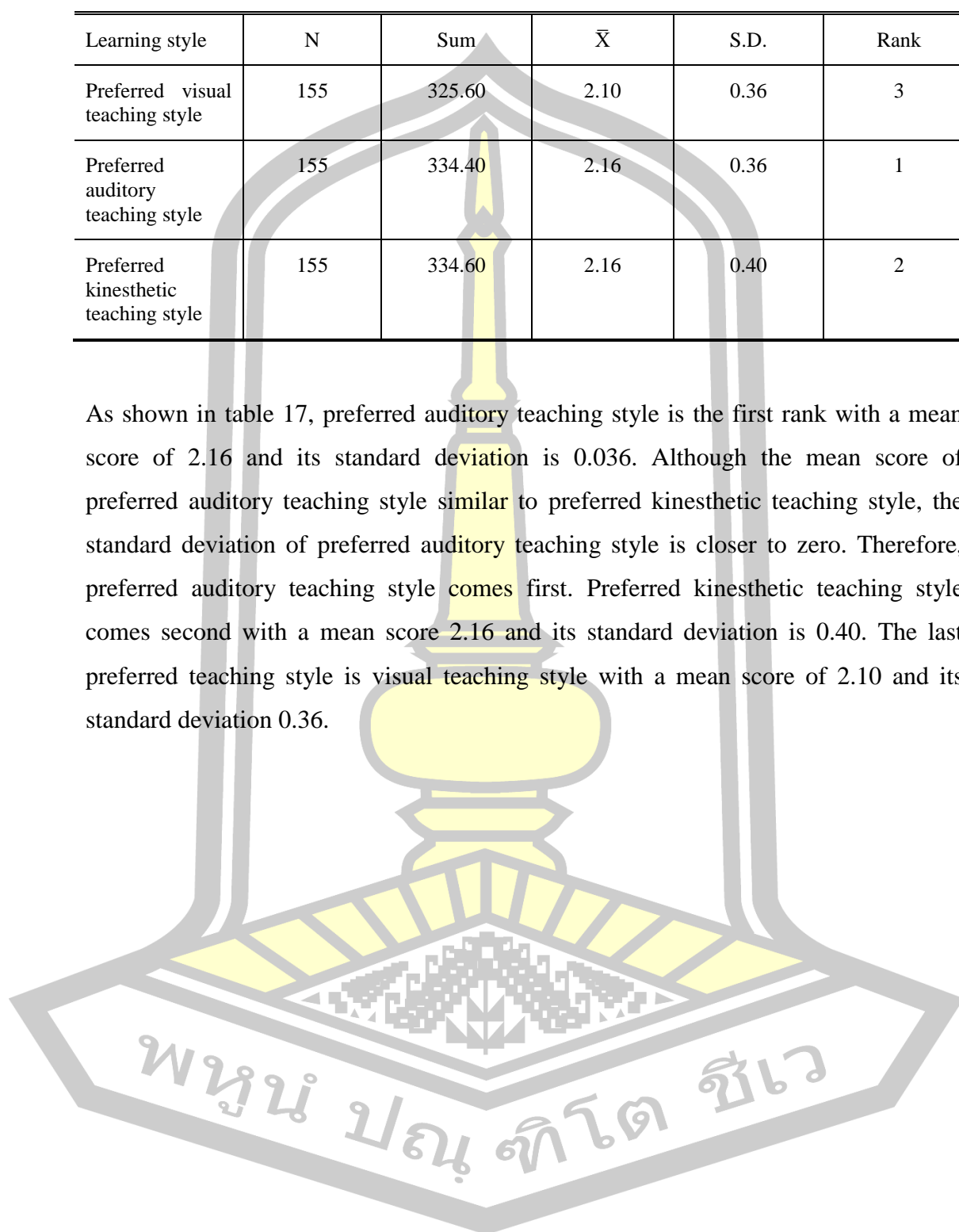
No.	items	N	Sum	\bar{X}	S.D.	Weight	Rank
11	I usually write out checklists of materials to be learned or looked for.	155	315.00	2.03	0.66	67.67	5
12	It's interesting when the teacher present traceable words and diagrams on paper	155	348.00	2.25	0.65	75.00	2
13	I am eager to act out role play or dramatize concepts. My friends and I can move objects around to explore a concept or to act out the concept themselves.	155	316.00	2.04	0.71	68.00	4
14	Taking notes while reading or listening can help me learn more.	155	332.00	2.14	0.67	71.33	3
15	I have fun when using some form of body movement while reciting material to be learned.	155	362.00	2.34	0.68	78.00	1
	Preferred kinesthetic teaching style	155	334.60	2.16	0.40	72.00	

From the Table 16, item 15 “I have fun when using some form of body movement while reciting material to be learned.” receives the highest percent weight of 78.00%. In contrast, item 11 “I usually write out checklists of materials to be learned or looked for.” received the lowest percent weight at 67.67%. In summary, the preferred kinesthetic teaching style mean score is 2.16 and its standard deviation is 0.40.

Table 17: Ranking of preferred teaching styles

Learning style	N	Sum	\bar{X}	S.D.	Rank
Preferred visual teaching style	155	325.60	2.10	0.36	3
Preferred auditory teaching style	155	334.40	2.16	0.36	1
Preferred kinesthetic teaching style	155	334.60	2.16	0.40	2

As shown in table 17, preferred auditory teaching style is the first rank with a mean score of 2.16 and its standard deviation is 0.036. Although the mean score of preferred auditory teaching style similar to preferred kinesthetic teaching style, the standard deviation of preferred auditory teaching style is closer to zero. Therefore, preferred auditory teaching style comes first. Preferred kinesthetic teaching style comes second with a mean score 2.16 and its standard deviation is 0.40. The last preferred teaching style is visual teaching style with a mean score of 2.10 and its standard deviation 0.36.



4.3 Research Question 3: Are there statistically significant mean differences in academic achievement of participants' learning styles and preferred teaching styles?

In order to examine the mean differences in academic achievement of participants' learning styles and preferred teaching styles, a compared mean, and two-way ANOVA were conducted.

Table 18: Learning style and academic achievement

Learning styles	\bar{X}	n	S.D.	Rank
Visual	30.50	50	8.82	2
Auditory	29.83	52	8.87	3
Kinesthetic	28.03	32	8.17	4
Multi-learning style	31.55	21	8.20	1
Total	29.91	155	8.61	

As presented in Table 18: the mean score of multi-learning style is the highest at 31.55 followed by visual, auditory and kinesthetic with 30.50, 29.83, and 28.03, respectively.

Table 19: Preferred teaching style and academic achievement

Preferred Teaching Styles	\bar{X}	n	S.D.	Rank
Visual teaching style	34.90	25	10.17	1
Auditory teaching style	29.66	44	8.62	3
Kinesthetic teaching style	31.29	41	7.11	2
Multi-teaching style	26.11	45	7.34	4
Total	29.91	155	8.61	

As shown in table 19, the mean score of preferred visual teaching style is the highest with 34.90 followed by kinesthetic teaching style, auditory teaching style and multi-teaching style with 31.29, 29.66, and 26.11, respectively.

Table 20: Descriptive statistic showing the significant differences in academic achievement

Source	df	Mean Square	F	Sig.
Corrected Model	15	152.16	2.32	0.01
Intercept	1	113167.69	1721.51	0.00
LS	3	96.08	1.46	0.23
PTS	3	527.80	8.03	0.00
LS * PTS	9	86.81	1.32	0.23
Error	139	65.74		
Total	155			
Corrected Total	154			

As shown in Table 20, there are non-significant differences in academic achievement of participants learning styles at the 0.23 significance level. On the other hand, there is a significant difference in academic achievement of participants' preferred teaching style at the 0.00 significance level. To illustrate deeper information, the results will be presented in the next table.

4.4 Research Question 4: Is there a statistically significant relationship among academic achievement, learning style and preferred teaching style?

Table 21: Correlation

Pearson Correlation	Academic Achievement	Learning styles	Preferred Teaching Styles
Academic Achievement	1		
Learning styles	0.015	1	
Preferred Teaching Styles	0.29**	0.03	1

**significant level is at 0.05

A Pearson correlation was run to determine the relationship between academic achievement, participants' learning styles, and preferred teaching styles. As shown in Table 4.14 it is found that there is a significant (0.00) correlation between academic achievement and preferred teaching style.

CHAPTER V

DISCUSSION AND CONCLUSION

This chapter describes a discussion and conclusion of the research related to the literature review of the current study. The first topic is a summary of the research followed by a discussion of the parts. The discussion consists of learning styles, teaching styles and academic achievement. Moreover, the conclusion, pedagogical implications, limitations of the study and recommendations for further studies will be discussed after the conclusion.

5.1 Discussion

5.1.1 Learning Styles

The first research question of the study is “Which learning styles exist among the Thai EFL primary students?”. The researcher attempted to identify the learning styles of Thai EFL primary students. Interestingly, the findings of the research show that the learning styles of Thai EFL primary students follow according to the learners’ learning style of the VAK learning style model (Fleming, 2001). There emerged four types of learning styles which were auditory learners (33.5%), visual learners (32.3%), and kinesthetic learners (20.6%), and multi-learning style (13.5%). The findings yield important results as they are in line with other studies in both global and Thai contexts. According to the literature review, ÜNSAL (2018) revealed a partial consistency with the current research as the rankings of the third and fourth preferred learning styles were similar (kinesthetic learners and multiple learning styles). However, the first two preferred learning styles were different (visual learning style and auditory learning style). Besides, Fayombo (2015) conducted research with university students and the results are partly congruent with the current study except for the first two ranks of most preferred learning styles.

On the other hand, the results contrast with Asadipiran (2016) that the most preferred learning style was a visual learning style which was not similar to the current study (Visual learning style, tactile learning style, auditory learning style, individual learning style, kinesthetic learning style and group learning style respectively). Interestingly, the other ranks of the mentioned study were not similar to the current research results. Furthermore, the results revealed a variance with (Chetty et al., 2019)

that the most preferred learning style was a visual style (49.8%). Then, it was followed by a multi-learning style (28.28%), kinesthetic style (15.94%) and auditory style (5.98%) respectively with university students.

In a Thai context, the findings of the study revealed contrasting information when compared to a study by Wassanasomsit (1999) who showed that kinesthetic learning was the most preferred learning style among university students. Arunreung et al. (2013) revealed different findings from the current study with group learning styles (3.63), ALS- Audio Learning Style (3.54), and KLS- Kinesthetic Learning Style (3.45) respectively.

As mentioned in the studies, there were some particular preferred learning styles that were relevant. The research results' differences could be attributed to many factors such as age, environment, gender, and classroom orientation. As mentioned, age can be one factor that influences the differences in the percentage of each learning style (Fayombo, 2015). The current study was conducted with primary students, while the other studies were conducted with university students (Chetty et al., 2019; Fayombo, 2015; ÜNSAL, 2018). Moreover, the setting of each study was completely different. The type of learners' learning styles may not be categorized in certain types, since they are diverse in terms of their age and environment. Furthermore, a learning style is an individual's characteristic and preferred ways of gathering, maintaining, interpreting information. (Reid, 1987; Felder and Henriques, 1995; Erton, 2010).

5.1.2 Teaching Style

The second research question attempted to identify teaching styles preferred by Thai EFL primary students. The results of participants' preferred teaching style questionnaire showed that the most preferred was the multi-teaching style at 29%, followed by the teaching style for auditory learners (28.4%), the teaching style for kinesthetic (26.5%), and the teaching style for visual learners (16.1%). The results revealed differences of information compared to other studies. Ridwan (2019) indicated that kinesthetic teaching is the most preferred teaching style within a nursing school. Moreover, Kharb (2013) revealed multifarious ways of teaching styles that medical students who have VARK preferences preferred variance of teaching styles as practical 39%, lecture 32%, self-study 18%, and tutorial 11%.

However, participants' preferred teaching styles did not match with participants' learning styles which were, in order, auditory learners (33.5%), visual learners (32.3%), kinesthetic learners (20.6%), and multi-learning style (13.5%). The most preferred teaching style was multiple teaching style while most participants preferred an auditory learning style.

As mentioned, results from the current study revealed a mismatch between the preferred learning style and the preferred teaching style of the participants. Some scholars assert the disadvantage of mismatching learning style and teaching style (Ehrman & Leaver, 2002; Felder & Silverman, 1988; Oxford, 2003; Reid, 1987). Reid (1987) stated that a mismatch between a learning style and a teaching style probably causes collapse and disappointment in the classroom. Felder and Silverman (1988) claimed that a mismatch between learning style and teaching style could bring severe consequences. It could make students become bored and inattentive in class, and/or do poorly on tests. They are likely to get lower scores than students whose learners are better aligned to the instructors' teaching styles. Some researchers emphasize that style conflicts may lead to style wars which can have serious consequences in EFL learning (Oxford, 2003; Oxford, Ehrman, & Leaver, 2002).

However, Dunn (1993) stated that there is no single instructional method that works for all students. Different strategies yield different outcomes. teaching styles in the classroom should be varied to use alternative ways of teaching that serve all of the students. There are some excerpts from the interview of learners with different learning styles.

Student 1

“Although I like to see pictures when I learn new things, I think different teaching styles that the teacher brings into the classroom help me improve the way I learn from different teaching styles.”

Student 2

“I think I understand best when teacher explains new things in the classroom. When I say it aloud, I can remember it better. I still want to see pictures and video or do other activities in the classroom. Otherwise, I will get bored.”

Student 3

“Different teaching styles that the teacher brings into the classroom excite me a lot because I don’t like to sit still. I like to learn from different activities.”

From the excerpts, student who have a particular learning style do not fit completely within that particular learning style. According to them they have to learn from different learning resources. Teachers have to be aware of students’ learning styles. At the same time, they have to think about balanced teaching styles in order to let students engage all their learning skills. Therefore, the implication is that different teaching styles is a greater benefit for learners than a single teaching style.

5.1.3 The Differences in Academic Achievement of Participants’ Learning Styles and Preferred Teaching Styles

According to research question 3 “Are there statistically significant mean differences in academic achievement of participants’ learning styles and preferred teaching styles?”, this researcher attempted to answer the question by comparing the mean score and using two-way ANOVA. The results of the learning style questionnaire and the academic achievement test revealed that multi-learning style learners received the highest mean score (31.55) followed by visual learners (30.50), auditory learners (29.83) and kinesthetic learners (28.03).

Similarly, the students revealed the connection between their learning style preferences and academic achievement, they also revealed the connection between their preferred teaching styles and academic achievement. The findings revealed that students who preferred a visual teaching style received the highest mean score (34.90) followed by the kinesthetic teaching style (31.29), the auditory teaching style (29.66), and the multi-teaching teaching style (26.11).

Interestingly, the mean score between participants’ learning styles and their preferred teaching styles was quite different. As mentioned in the results, the highest mean score for learning styles was multi-learning style, but participants who preferred a visual teaching style received the highest mean score. In order to discuss conclusions for deeper analysis, an interview of a participant who possesses multi-learning style and prefer visual teaching style needed to be addressed.

“I like to listen to music. I like to draw. I like to play volleyball. I like to do a lot of activities but when the teacher teaches me, I like it when the teacher shows me a lot of pictures. I like it when she let me draw pictures and color them.”

It could probably be explained that the participant possesses more than one learning style. She can learn best from different style in general. In the classroom, she learns from her teacher and she can learn best when the teacher utilized a visual teaching style with pictures, reading and writing.

In contrast, the mean score of visual learners received the second rank in academic achievement, yet participants who preferred a kinesthetic teaching style received second rank in academic achievement. The contrast of these results needed a further interview to prove the result. A participant who preferred a visual learning style and preferred a kinesthetic teaching style was randomly pick for interview and she revealed the following.

“I like to watch cartoons. It is fun. Moreover, I like to draw cartoon characters. When I am in the classroom, I like it when the teacher brings some fun activities. She allows me to learn from miming in response to vocabulary. I can remember it better.”

It could be explained that though she likes to watch cartoons that would classify her as a visual leaner in her general learning environment, teaching in the classroom is different. The students may feel more relaxed to express themselves in the classroom that helps them to learn better.

One more contrasting mean score between learning styles and preferred teaching style exists compared to academic achievement. Kinesthetic learners occupied the fourth rank of mean score while multi-teaching style occupied the fourth rank of mean score. The contrast of these results needed a further interview to clarify the result. A participant who preferred a kinesthetic learning style and preferred a multi-teaching style was randomly picked for an interview and he revealed the following.

“I can’t sit still. I like to walk around the classroom. It is hard for me to sit and concentrate on the teacher.”

Kinesthetic learners found that sitting in their seat was difficult for them. Moreover, they easily lost their concentration in the classroom. Particularly, when the teacher changes her teaching styles, this could confuse them.

5.1.4 Relationship among Academic Achievement, Learning Styles and Preferred Teaching Styles

According to the fourth research question “Is there a statistically significant relationship among academic achievement, learning styles and preferred teaching styles?”, this researcher attempted to answer the question by utilizing a Pearson correlation. The results revealed that there was no significant relationship between academic achievement and learning styles. However, there was a significant relationship between academic achievement and preferred teaching styles at 0.29 which is a weak association. Although the findings showed weak correlation between academic achievement and the participants’ learning style and preferred teaching styles, it was found to correlate with some studies. Nge Nge (2018) found that there was no significant difference among students’ academic achievement in English according to their most preferred learning style. Likewise, Awang et al. (2017) reported that there was no significant difference among the VARK learning styles with university students’ academic achievement. Similarly in a Thai context, Jayanama (2017) found that there was no significant relationship among tactile, auditory, group, kinesthetic and individual learning styles and the academic achievement of low proficiency students. Moreover, there was not any significant relationship among visual, auditory, group, kinesthetic and individual learning styles and the academic achievement of high proficiency students.

However, the results of this investigation of the relationship between academic achievement and the participants’ preferred teaching styles of this study revealed that there was significant correlation between academic achievement and preferred teaching style. The result showed partial consistency with Tulbure (2011) who indicated that there was a significant relationship of teaching strategies and learning outcomes.

5.2 Conclusion

On the basis of this study, it could be concluded that the researcher obtained data from a learning style questionnaire, a teaching style questionnaire and an academic achievement test. The participants in this study indicated four learning styles that emerged from the research (auditory learning style with 33.5%, visual learning style with 32.3%, kinesthetic learning style with 20.6%, and multi-learning style with 13.5%). The participants' preferred teaching styles showed four preferred teaching styles that were multi-teaching style with 29%, auditory teaching style with 28.4%, kinesthetic teaching style with 26.5% and visual teaching style with 16.1%. Moreover, the results showed that there was no statistically significant difference in academic achievement of participants' learning style at the 0.23 significance level. In contrast, there was a statistically significant difference in the academic achievement of participants' preferred teaching style at the 0.00 significance level. Furthermore, there were a statistically significant differences in the academic achievement of participants' preferred teaching style as follows: between visual and auditory teaching styles (0.00), between visual and kinesthetic teaching styles (0.02), between visual and multi-teaching styles (0.00), and between kinesthetic and multi-teaching styles (0.00). Last, there was a statistically significant relationship between academic achievement and preferred teaching style at the 0.00 significance level.

5.3 Pedagogical Implications

Based on the results of the current study, there are some suggested pedagogical implications. First, students learn differently in the classroom and they possess their own learning style. Teachers' awareness of learning styles and teaching styles is important. When teachers know their learners' learning style, they will apply an appropriate teaching style that matches with the learners' learning style but not teaching any single one teaching style. One single teaching style does not benefit all students, multi-teaching style benefits more because of the differences of learners' learning styles. Based on the findings of the study, a teacher should be aware that their students are not the same. They are differences in learning and they preferred different teaching style differently. Moreover, students need alternative choices for teaching since the multi-teaching style was of greater benefit than a matching one. Teacher should emphasize a multi-teaching style because the students relied on the

teacher. A balanced of teaching style bridges the gap between learners' learning style and teachers' teaching styles as well as accommodates different learning styles, different learners' that have a single preference for learning style, preferred diverse teaching styles in order to support their needs more than just their own preferences (Felder & Henriques, 1995). Peacock (2002) suggested that a teacher should attempt an equal teaching style that does not excessively prefer any one single learning style as to accommodate all learning styles.

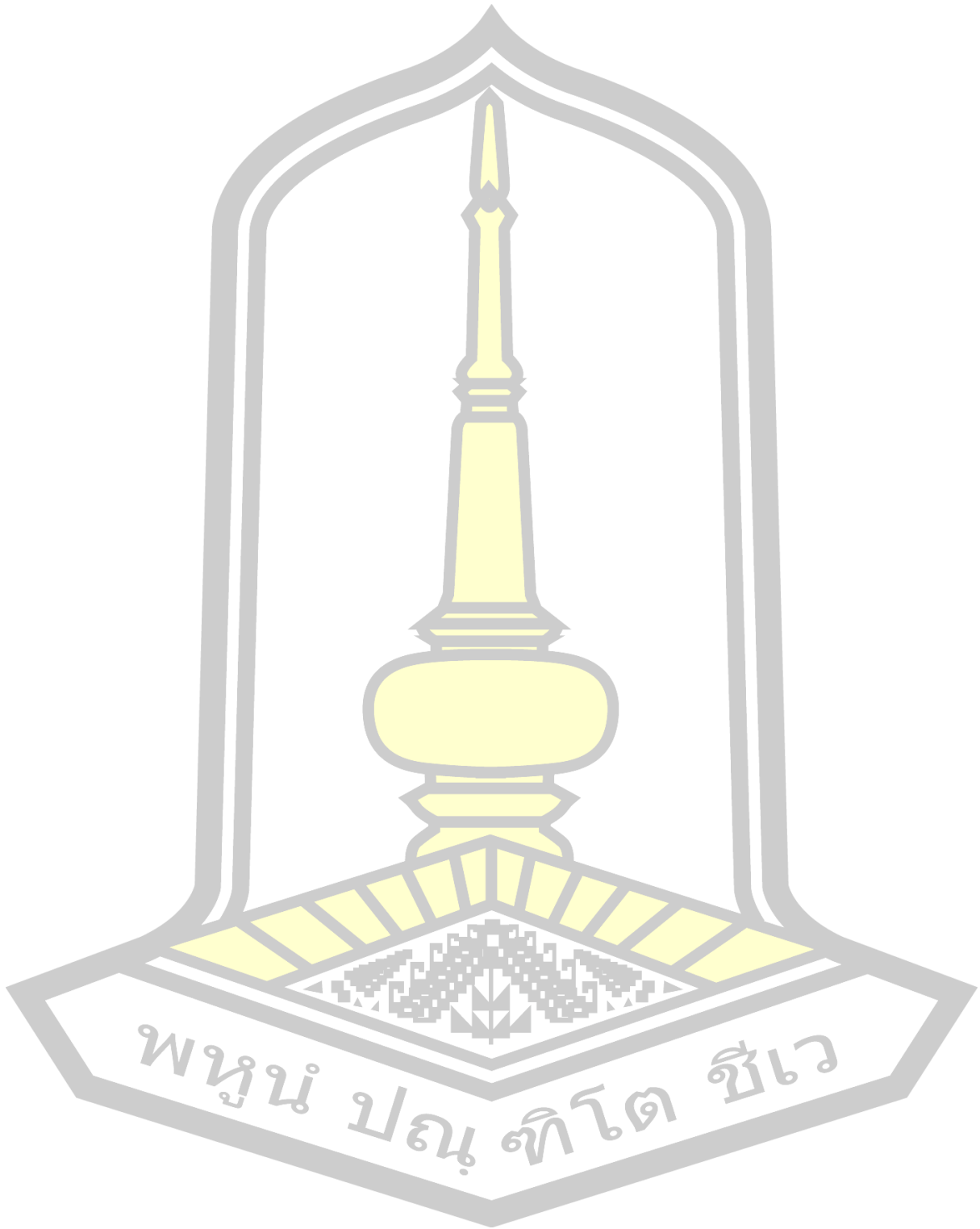
Based on the results of the current study, the teaching styles of teachers has an effect on students' academic achievement. Therefore, the teacher is an important factor in the classroom. The teacher should consider the use of all learning styles throughout their instructional methods, classroom activities, and lesson plans in order to effectively improve the students' academic achievement (Felder & Henriques, 1995; Oxford, 2003; Peacock, 2002). Felder and Silverman (1988) concluded that teachers should adapt their instruction to address all learning styles in order to support learners in a classroom setting for teaching EFL.

5.4 Recommendation for Further Studies

The research examined the learners' learning style, preferred teaching style and academic achievement. Through the findings and the limitations of the study, there are some recommendations for further studies.

1. The number of participants in further research should be increased since the number of participants is important in analysis of the data according to the quantitative design.
2. To confirm the relationship among academic achievement and learning style and preferred teaching style, a teaching step should be added for further research. Teachers should apply teaching styles under the framework of the study which are visual, auditory, kinesthetic teaching styles.

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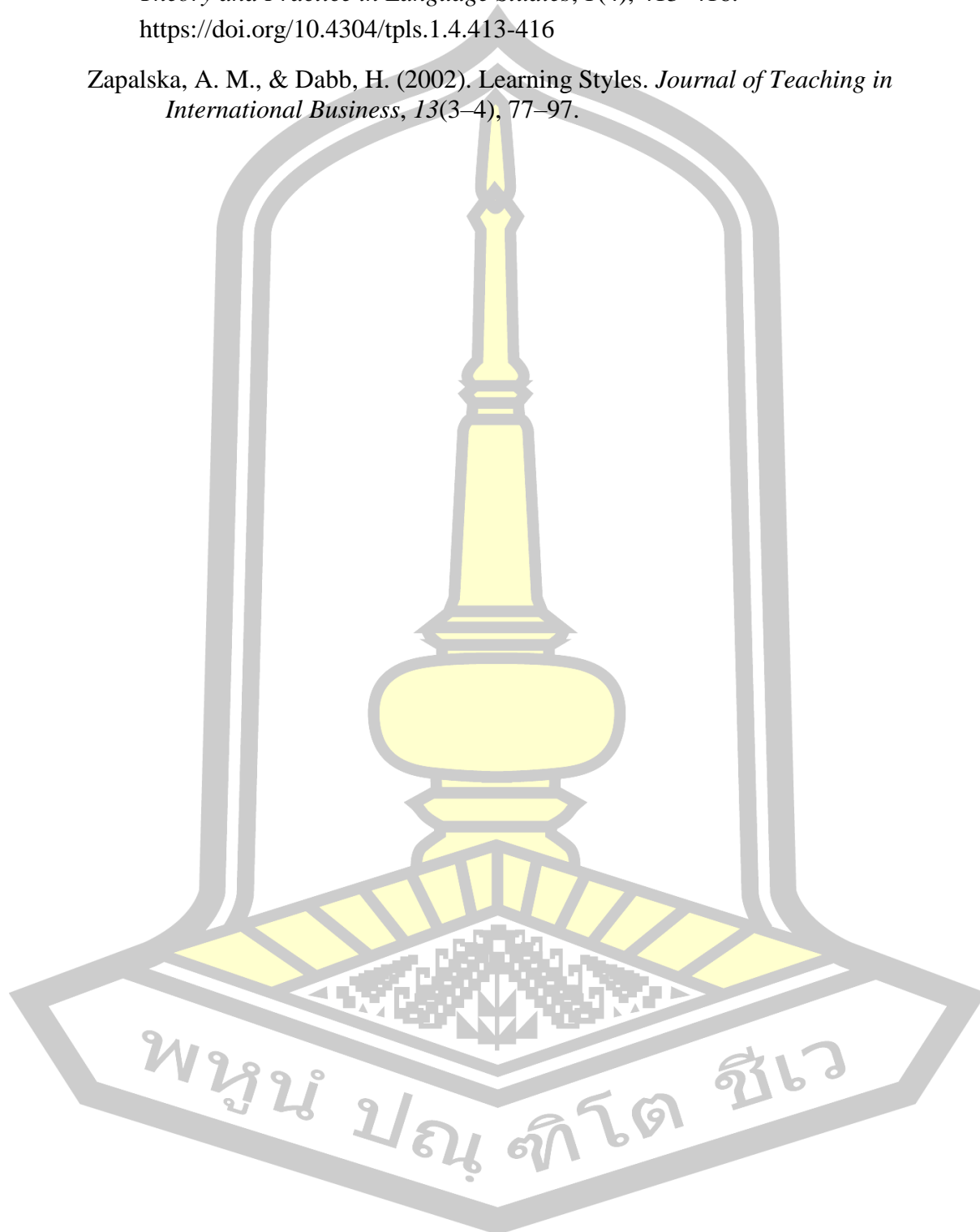
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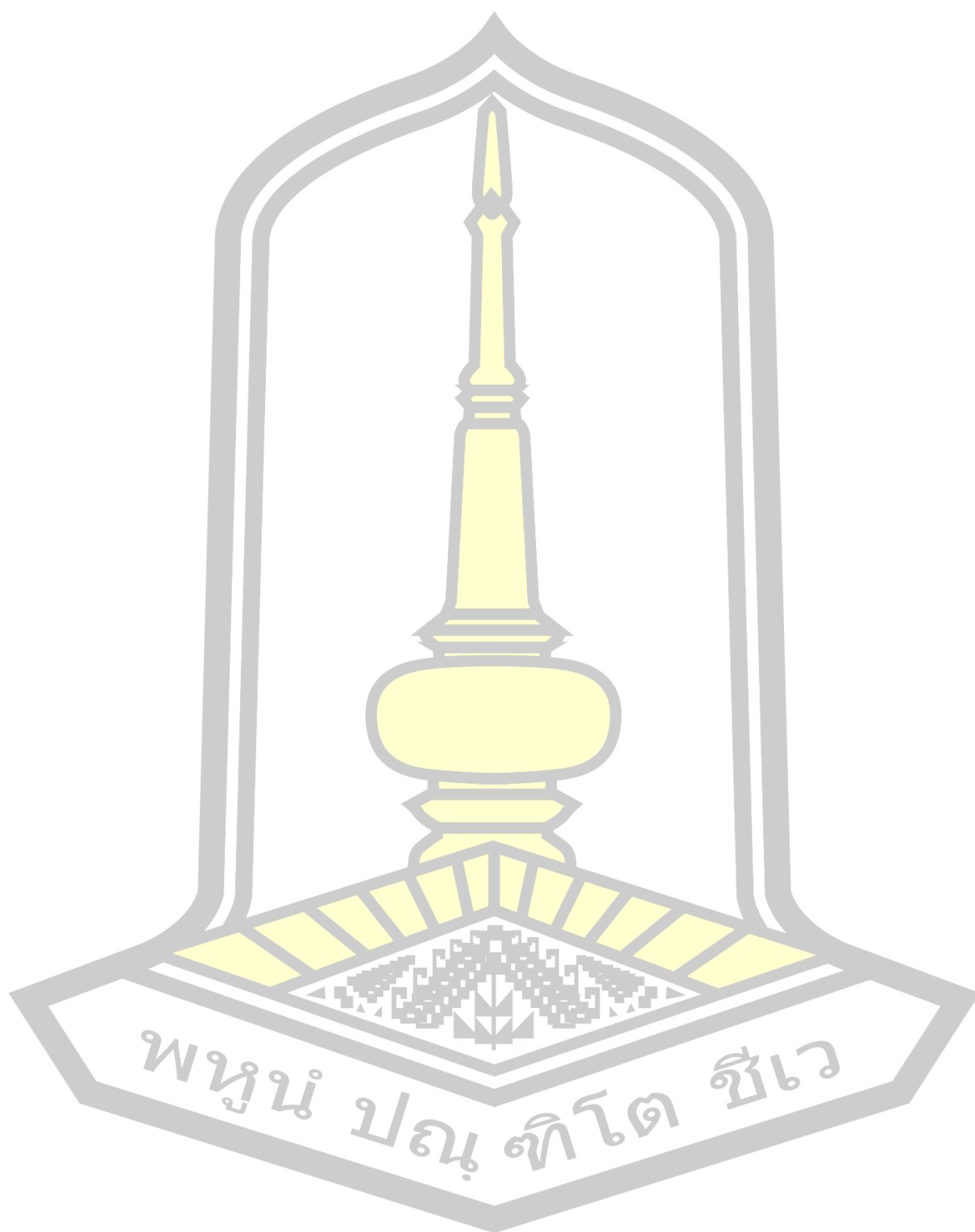
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APPENDICES



Appendix A

Learning Style Questionnaire

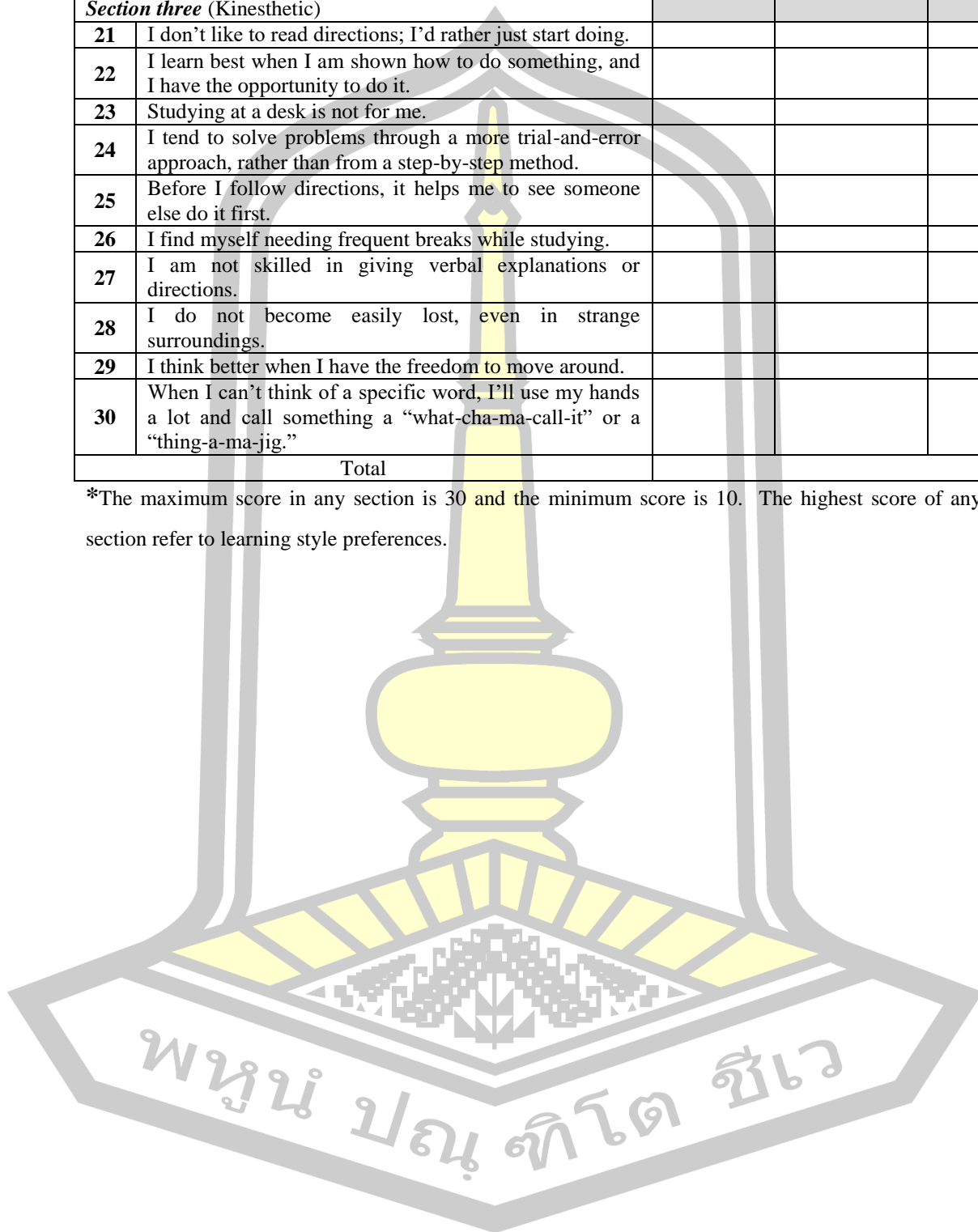
Name _____ NO _____ Class _____ Age _____

The modality (learning channel preference) questionnaire reproduced here is by O'Brien (1985). To complete, read each sentence carefully and consider if it applies to you. Mark ✓ in the table that applies to you most. Please respond to all questions.

No.	Items	Rating		
		3 as high.	2 as medium.	1 as low.
Section one (Visual)				
1	I enjoy doodling and even my notes have lots of pictures and arrows in them.			
2	I remember something better if I write it down.			
3	I get lost or am late if someone tells me how to get to a new place, and I don't write down the directions.			
4	When trying to remember someone's telephone number, or something new like that, it helps me to get a picture of it in my mind.			
5	If I am taking a test, I can "see" the textbook page and where the answer is located.			
6	It helps me to look at the person while listening; it keeps me focused.			
7	Using flashcards helps me to retain material for tests.			
8	It's hard for me to understand what a person is saying when there are people talking or music playing.			
9	It's hard for me to understand a joke when someone tells me.			
10	It is better for me to get work done in a quiet place.			
Total				
Section two (Auditory)				
11	My written work doesn't look neat to me. My papers have crossed-out words and erasures.			
12	It helps to use my finger as a pointer when reading to keep my place.			
13	Papers with tiny print, blotchy dittos or poor copies are tough on me.			
14	I understand how to do something if someone tells me, rather than having to read the same thing to myself.			
15	I remember things that I hear, rather than things that I see or read.			
16	Writing is tiring. I press down too hard with my pen or pencil.			
17	My eyes get tired fast, even though the eye doctor says that my eyes are ok.			
18	When I read, I mix up words that look alike, such as "them" and "then," "bad" and "dad."			
19	It's hard for me to read other people's handwriting.			
20	If I had the choice to learn new information through a lecture or textbook, I would choose to hear it rather than read it.			
Total				

No.	Items	Rating		
		3 as high.	2 as medium.	1 as low.
Section three (Kinesthetic)				
21	I don't like to read directions; I'd rather just start doing.			
22	I learn best when I am shown how to do something, and I have the opportunity to do it.			
23	Studying at a desk is not for me.			
24	I tend to solve problems through a more trial-and-error approach, rather than from a step-by-step method.			
25	Before I follow directions, it helps me to see someone else do it first.			
26	I find myself needing frequent breaks while studying.			
27	I am not skilled in giving verbal explanations or directions.			
28	I do not become easily lost, even in strange surroundings.			
29	I think better when I have the freedom to move around.			
30	When I can't think of a specific word, I'll use my hands a lot and call something a "what-cha-ma-call-it" or a "thing-a-ma-jig."			
Total				

*The maximum score in any section is 30 and the minimum score is 10. The highest score of any section refer to learning style preferences.



Appendix B

Preferred Teaching styles questionnaire

Name _____ NO _____ Class _____ Age _____

.....
 Instructions: Rate the following activities according to your preference.

No.	Items	Rating		
		3 as high.	2 as medium.	1 as low.
Visual				
1	I prefer teacher using maps flow charts, or webs to organize materials.			
2	I enjoy when teacher highlights and color code books/notes to organize and relate material.			
3	I like when teacher lets me pick out key words and ideas in my own writing to clearly reveal organizational patterns with highlighting different color.			
4	I prefer to see flashcards of review of material and draw pictures or cartoons of concepts.			
5	I enjoy writing down material on slips of paper and move them around into proper sequence.			
Auditory				
6	I engage in conversation about the subject matter			
7	When the teacher asks me about the material and I eager to give oral summaries of material.			
8	I like to review material by listening.			
9	When teacher reads the material aloud, I understand more.			
10	I enjoy the activity that put words to rhythm or tune and rehearse it aloud			
Kinesthetic				
11	I usually write out checklists of materials to be learned or looked for			
12	It's interesting when the teacher present trace words and diagrams on paper			
13	I eager to act out role play or dramatize concepts. My friends and I can move objects around to concept or act out the concept themselves.			
14	Taking notes while reading or listening can help me learn more.			
15	I have fun when using some form of body movement while reciting material to be learned.			

แบบสอบถามเรื่องรูปแบบการเรียนรู้

ชื่อ _____ เลขที่ _____ ชั้น _____ อายุ _____

คำสั่ง ใส่เครื่องหมาย ✓ ตามความชอบของตนเอง

ข้อ	รายการ	การให้คะแนน		
		3 มาก	2 ปานกลาง	1 น้อย
ส่วนที่ 1 (รูปแบบการเรียนรู้จากการดู)				
1	ฉันมีความสุขเมื่อฉันได้ขีดเขียน จดข้อความสั้นๆและวาดภาพ หรือดูการ์ตูนต่างๆประกอบ			
2	ฉันจดจำได้ดีขึ้นเมื่อได้เขียน			
3	ฉันหลงทางหรือหาของช้า เมื่อมีคนบอกตำแหน่งให้ฉันรู้ แต่ฉันจะหาได้ง่ายขึ้นถ้าได้เห็นภาพของตำแหน่งนั้น			
4	เมื่อฉันพยายามจำหมายเลขโทรศัพท์ หรือข้อมูลที่เป็นตัวเลข ฉันจำได้ดีขึ้น ถ้าจำได้เป็นภาพ			
5	ในขณะที่ฉันสอบ ฉันจะนึกภาพหนังสือ หน้าปกหนังสือ หรือหน้าใดหน้าหนึ่งในหนังสือที่มีคำตอบของข้อสอบอยู่			
6	ในขณะที่ฟังคนพูด การมองเห็นหน้าของคนๆนั้นทำให้ฉันมีสมาธิ หรือตั้งใจฟังได้มากขึ้น			
7	บัตรคำศัพท์และรูปภาพช่วยให้ฉันจดจำคำศัพท์ได้ดีขึ้น			
8	ฉันจะไม่เข้าใจคนอื่นพูด เมื่อเสียงดนตรีหรือมีคนพูดแทรก			
9	มันเป็นเรื่องยากสำหรับฉันที่จะเข้าใจมุกตลก			
10	ฉันชอบทำงานในที่เงียบๆ			
รวมคะแนน				
ส่วนที่ 2 (รูปแบบการเรียนรู้จากการฟัง)				
11	สมุดของฉันของฉันไม่ค่อยเรียบร้อย และมีรอยลบรอยขีด			
12	ในขณะที่ฉันอ่านหนังสือ ฉันชอบใช้นิ้วชี้คำในขณะที่ฉันอ่าน			
13	การคำที่เต็มไปด้วยรอยจุด รอยแต้ม หรือถ่ายเอกสารไม่ชัดเจนเป็นเรื่องยากสำหรับฉันในการอ่าน			
14	เมื่อมีคนบอกให้ฉันทำอะไรสักอย่าง ฉันเข้าใจได้ง่าย มากกว่าที่จะให้ฉันอ่านวิธีทำจากหนังสือ			
15	ฉันจดจำคำพูดของคนอื่นได้ดี มากกว่าจดจำคำจากการอ่าน			
16	การเขียนเป็นเรื่องยากสำหรับฉัน และฉันชอบจดจำหน้าปกปกตาหรือดินสอ			
17	ฉันมีอาการเมื่อยหรือเหนื่อยตา เมื่อต้องจ้องนาน ๆ			
18	เมื่อฉันอ่านหนังสือ คำที่มีลักษณะพ้องรูป หรือคำที่เขียนใกล้เคียงกัน ฉันชอบอ่านสลับกัน			
19	ฉันรู้สึกว่ายากเมื่อต้องอ่านลายมือของคนอื่น			
20	เมื่อต้องเรียนเรื่องใหม่ และฉันเลือกได้ระหว่างอ่านจากหนังสือ หรือฟังจากคนอื่น ฉันเลือกที่จะฟังจากคนอื่น			

ข้อ	รายการ	การให้คะแนน		
		3 มาก	2 ปานกลาง	1 น้อย
รวมคะแนน				
ส่วนที่ 3 (รูปแบบการเรียนรู้จากการลงมือทำ)				
21	ฉันไม่ชอบทำตามวิธี ขั้นตอนในการหาคำตอบ หรือทำอะไรสักอย่าง แต่ฉันชอบที่จะลงมือทำด้วยวิธีของตนเอง เพื่อที่จะหาคำตอบโดยตนเอง			
22	ฉันเรียนรู้ได้ดีที่สุดเมื่อฉัน ได้มีโอกาสลงมือทำด้วยตนเอง			
23	การนั่งเรียนที่โต๊ะมันเป็นเรื่องยากสำหรับฉัน			
24	ฉันแก้ปัญหาโดยการลองผิดลองถูก มากกว่าการทำตามขั้นตอนที่กำหนดไว้ให้			
25	ก่อนที่จะทำตามขั้นตอน ถ้าฉันได้ดูคนอื่นทำก่อน จะช่วยให้ฉันเข้าใจได้มากขึ้น			
26	ในขณะที่เรียนฉันต้องการเวลาพัก ก่อนข้างบ่อย			
27	ฉันอธิบาย ใช้คำสั่ง หรือขั้นตอนเป็นคำพูดไม่เก่ง			
28	ฉันไม่หลงทางง่าย ๆ แม้ในสถานที่ ๆ ฉันไม่คุ้นเคย			
29	ความคิดฉันไหลลื่น เมื่อฉันได้เคลื่อนไหวหรือขยับอย่างอิสระ			
30	เมื่อฉันคิดคำบางคำไม่ออก ฉันจะชอบใช้มือในขณะที่ นึกคำ ๆ นั้น แล้วจะชอบพูดว่า อะไรนะคำนั้น เหมือนมันติดอยู่ที่ปาก คิดไม่ออก			
รวมคะแนน				

ข้อเสนอแนะ / คำแนะนำ

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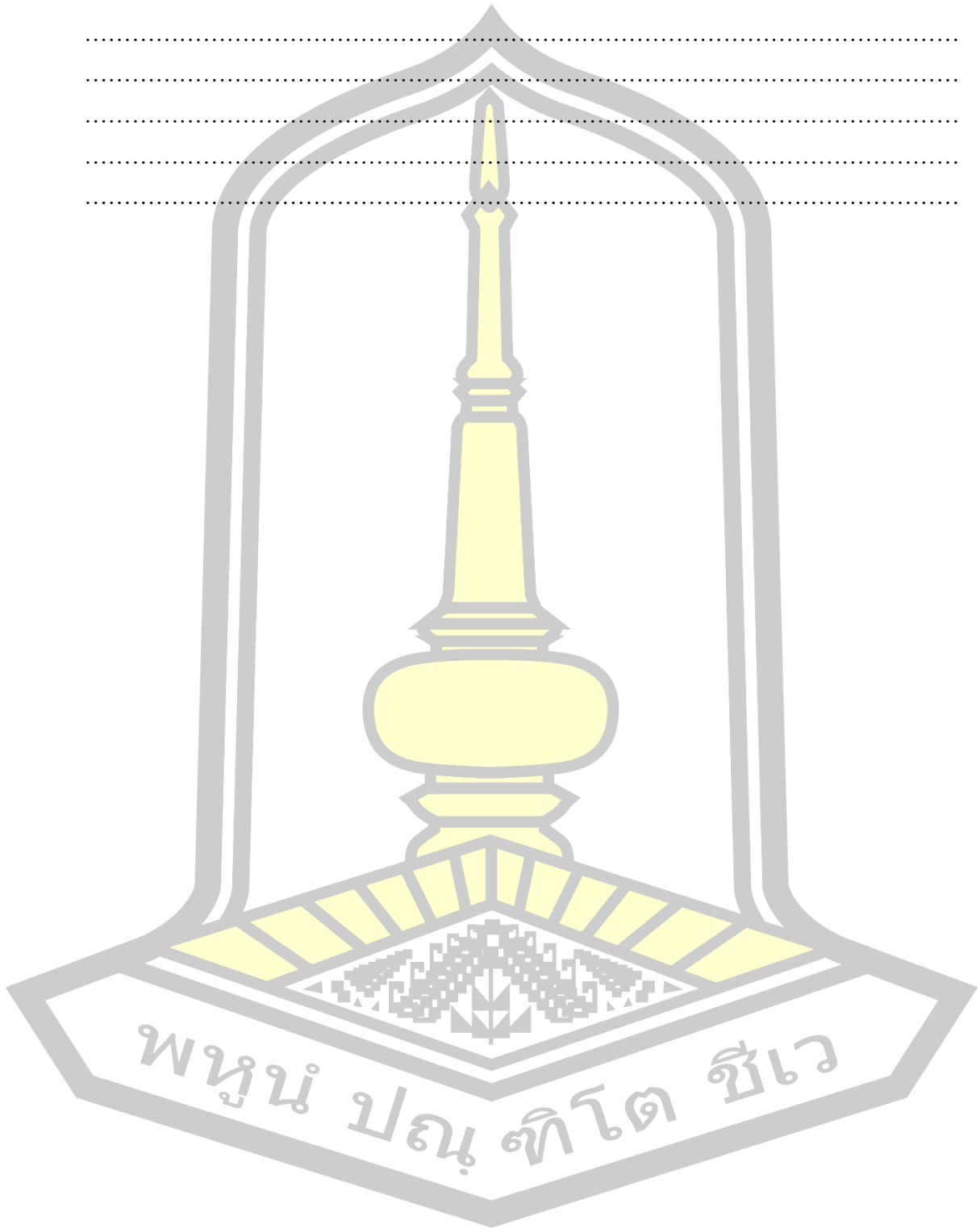
แบบสอบถาม เรื่อง รูปแบบการสอน

ชื่อ _____ เลขที่ _____ ชั้น _____ อายุ _____

คำสั่ง ใ้เครื่องหมาย ✓ ตามความชอบของตนเอง

ข้อ	รูปแบบการสอน	ให้คะแนน		
		3 มาก	2 ปานกลาง	1 น้อย
Visual				
1	ฉันชอบหากคุณครูใช้แผนผัง ชาร์ต หรือแผนผังโยงแขนงในการจัดระบบข้อมูล			
2	ฉันชอบเวลาที่คุณครูใช้ปากกาเน้นคำหลากหลายสีส่นในการเชื่อมโยงข้อมูลใน สื่อ การสอน			
3	ฉันชอบที่ครูให้ฉันเลือกคำสำคัญแล้วนำไปเขียนเป็นคำของตนเอง และใช้ปากกาเน้น คำหลากหลายสีในการจัดข้อมูล			
4	ฉันชอบดูบัตรคำศัพท์ แล้วนำมาวาดภาพหรือการ์ตูนในการสร้างความรู้ของตนเอง			
5	ฉันชอบเขียนลงบนชิ้นส่วนของกระดาษแล้วนำมาต่อให้ถูกต้องตามลำดับ			
Auditory				
6	ฉันเข้าร่วมบทสนทนาในหัวข้อต่าง ๆ			
7	เมื่อคุณครูถามฉันเกี่ยวกับบทเรียน ฉันกระตือรือร้นที่จะสรุปบทเรียน			
8	ฉันชอบบททวนบทเรียน โดยการฟัง			
9	ฉันเข้าใจมากยิ่งขึ้นเมื่อครูอธิบายบทเรียน			
10	ฉันชอบกิจกรรมที่ให้ฉันนำคำต่าง ๆ มาใส่จังหวะ ทำนอง หรือทำเป็นเพลง แล้วร้อง ออกเสียง			
Kinesthetic				
11	โดยปกติฉันชอบเขียนสิ่งที่จะต้องทำหรือเรียนรู้เป็นข้อๆ			
12	ฉันนำเสนอใจเมื่อครูแสดงอักษรประและแผนภาพบนกระดาษ			
13	ฉันกระตือรือร้นที่จะแสดงบทบาทสมมติ ฉันและเพื่อนๆ ชอบที่จะเคลื่อนตัวไปรอบ ๆ ห้อง พร้อมกับแสดงท่าทางประกอบบทเรียน			
14	การจดโน้ตในขณะที่อ่านหรือฟังทำให้ฉันเรียนรู้ได้มากขึ้น			
15	ฉันสนุกเมื่อได้ใช้ส่วนต่าง ๆ ของร่างกายในการเรียนรู้			

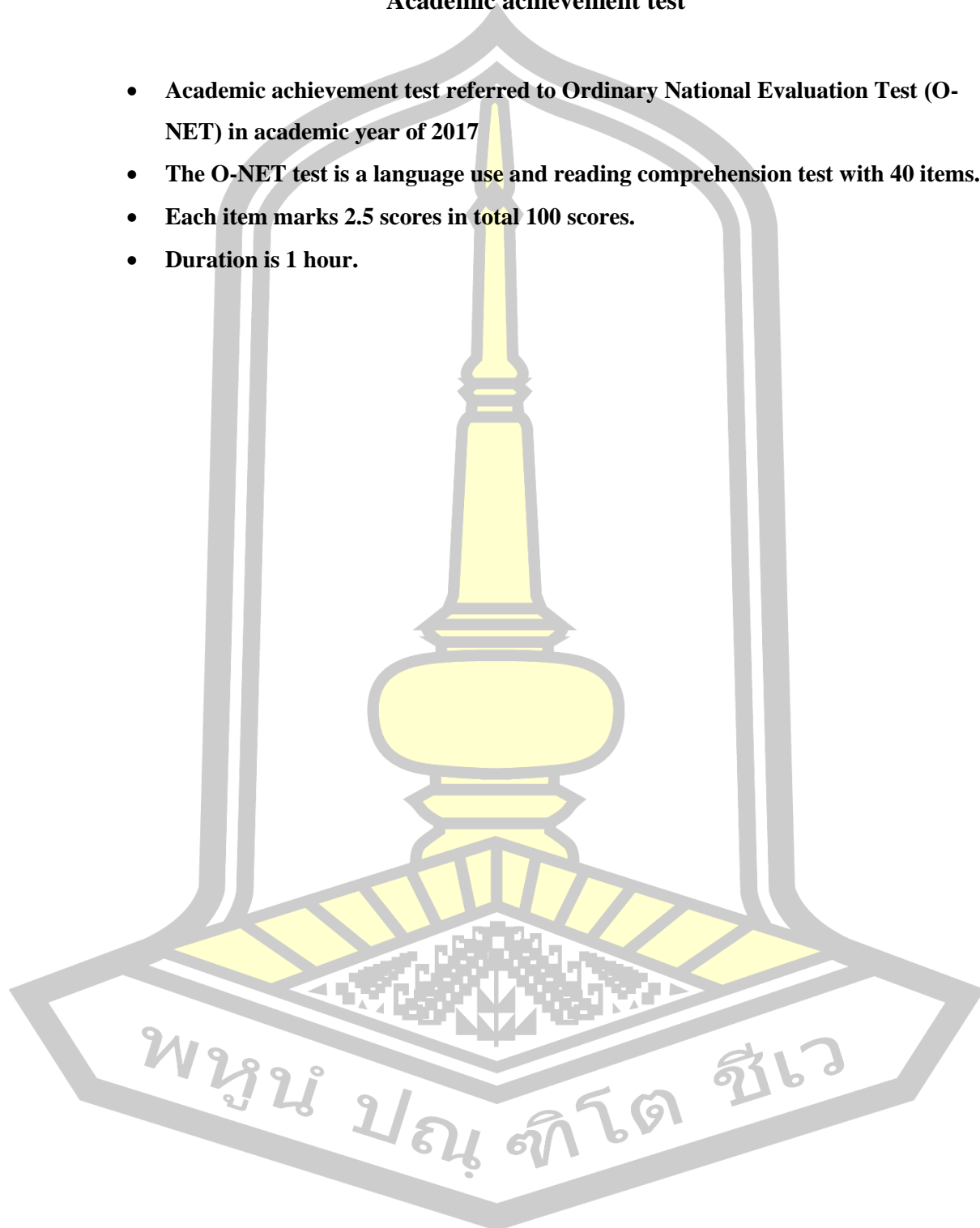
ข้อเสนอแนะ / คำแนะนำ



Appendix C

Academic achievement test

- Academic achievement test referred to Ordinary National Evaluation Test (O-NET) in academic year of 2017
- The O-NET test is a language use and reading comprehension test with 40 items.
- Each item marks 2.5 scores in total 100 scores.
- Duration is 1 hour.

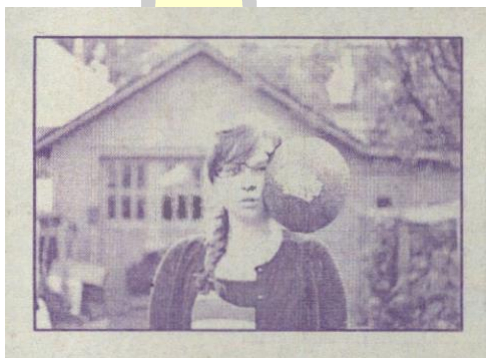


Directions: Choose the correct answer.

1. Maya is an exchange student. Your teacher introduces her to the class.
What should you say to Maya?



1. Never mind. 2. You are new.
3. Nice to meet you. 4. You're welcome.
2. Throw the ball to your friend, but it accidentally hits her face.



1. It's too bad. 2. I'm sorry.
3. No problem. 4. Don't worry.

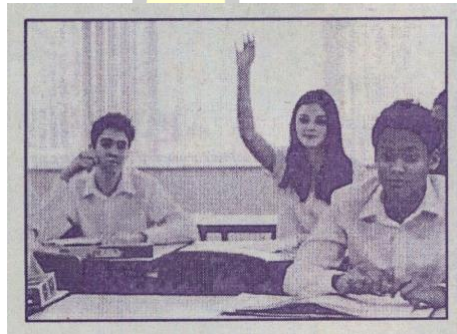
พหุ ประถมศึกษา ชีวะ

3. An old man gets on the bus. There is no seat for him. You want to give him your seat.



What should you say to him?

- | | |
|---------------------------|---------------------------|
| 1. Is this your seat? | 2. Can you sit down? |
| 3. would you like to sit? | 4. Do you like your seat? |
4. Look at the picture.

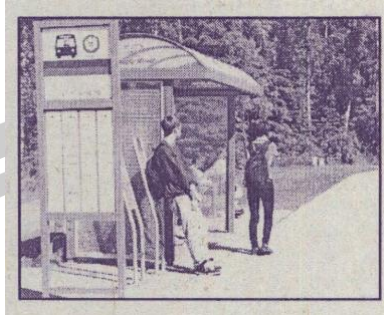


What does the woman want to do?

- | | |
|--------------------|---------------------|
| 1. Call a waiter. | 2. Ask a question. |
| 3. Raise her hand. | 4. Show her ticket. |

พหุ ประถมศึกษา ชีวะ

5. You are waiting for a bus. You want to know when the bus comes.



What should you ask?

1. What bus goes downtown?
 2. Is that the time? I must go.
 3. I'm sorry. Do you have time?
 4. Excuse me. What time is the next bus?
6. Look at the picture.



What do you think will happen after this?

- | | |
|-------------------------------|-------------------------------|
| 1. the place will be cleaner. | 2. There will be less grass. |
| 3. The trees will be greener. | 4. There will be more leaves. |

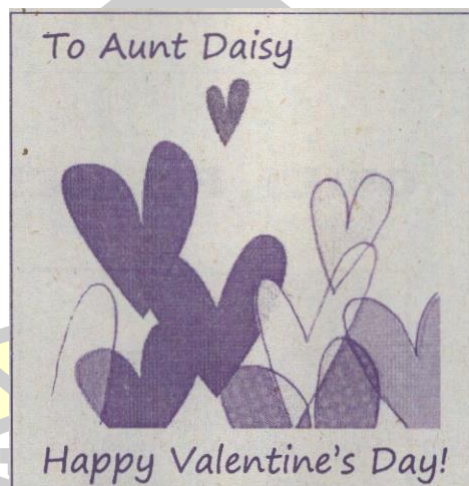
พหุบัน ปณ ทิโต ชีเว

7. Look at the picture.



Which of the following is correct about the picture?

1. You can talk freely.
 2. You have to talk noisily.
 3. You must not speak quietly.
 4. You should not speak loudly.
8. Clara made a card like this:



When should Clara give her aunt the card?

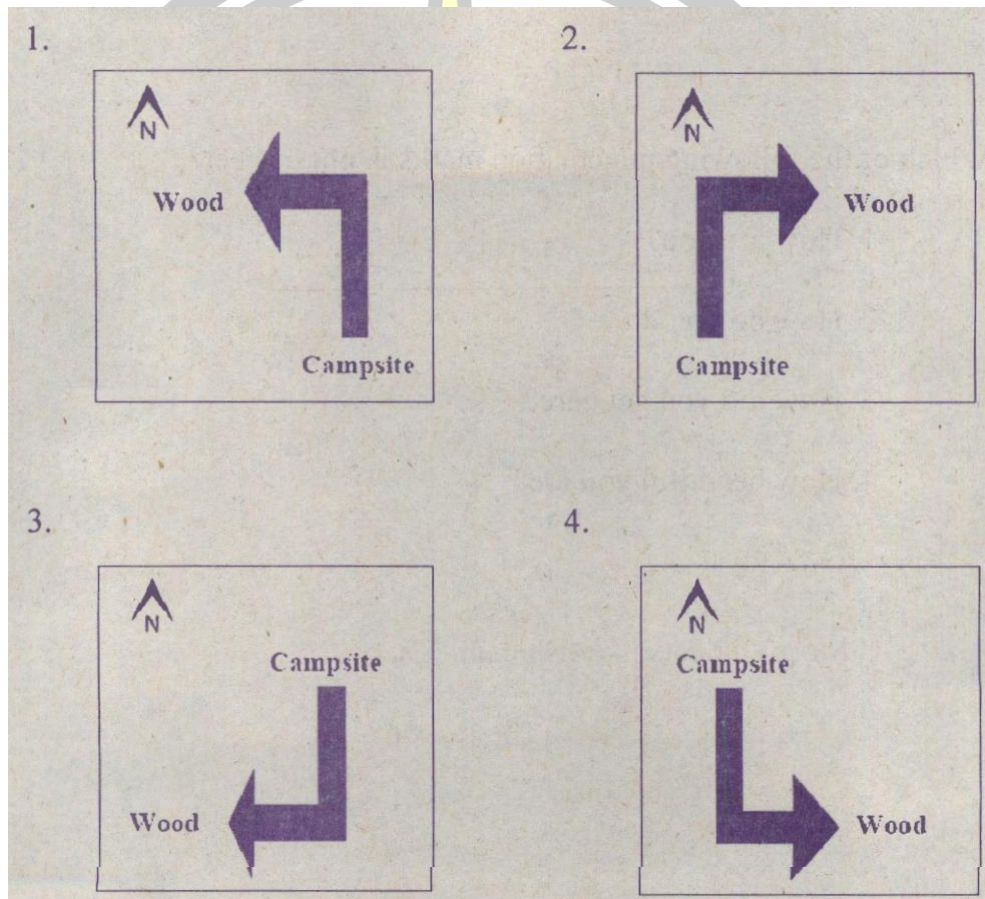
1. The last day in October.
2. The fourteenth of February.
3. The twenty-fifth of December.
4. The fourth Thursday in November.

9. On Songkran day, most Thai people go to their hometown to visit their parents. On which holiday do British people do the same?
1. Easter
 2. Halloween
 3. Christmas
 4. Valentine's Day
10. Which season does the United States of America not have?
1. Rainy
 2. Winter
 3. Spring
 4. Summer
11. Which of the following is an American breakfast?
1. bacon, eggs, and sausages
 2. sticky rice and grilled pork
 3. steamed rice and beef curry
 4. roasted chicken and papaya salad
12. Which month has the same number of days as "March"?
1. June
 2. August
 3. February
 4. November
13. What should a driver do when he sees the red traffic light?
1. Park the car.
 2. Move the car.
 3. Stop the car.
 4. Watch the car.
14. Which word has the same vowel sound as "do"?
1. go
 2. No
 3. to
 4. So
15. Which question has a different intonation from the others?
1. Is it okay?
 2. What is it?
 2. Can you go?
 4. Are you all right?
16. Which of the following is correct?
1. You can me hear.
 2. You hear me can.
 3. Can me hear you?
 3. Can you hear me?
17. Which of the following punctuation marks is not correct?
1. How are you?
 2. How do you do?
 3. How did you get here?
 4. How beautiful you are?

18. Students have to get wood for a campfire.

The map says, "From the campsite, go 400 meters to the north, and another 200 meters to the west. The wood is there."

Which map is correct?



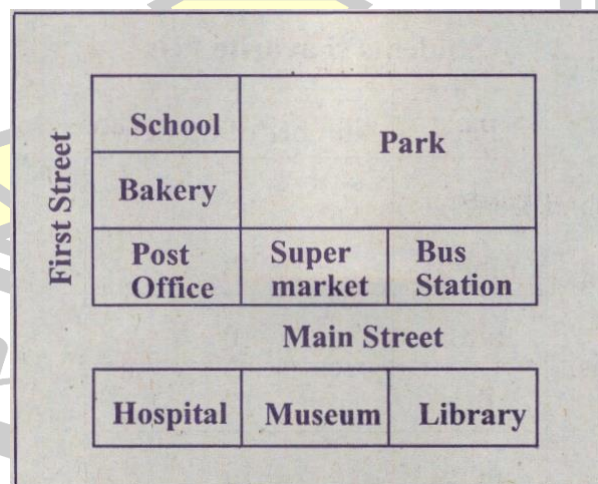
19. Look at the table.

Pets	Number of Students
hamsters	8
rabbits	2
birds	10
fish	12
dogs	13
cats	12

Which of the following is correct?

1. None of the students like dogs.
2. Most of the students like rabbits.
3. More students like fish than cats.
4. More students like birds than hamsters.

- 20-21 Look at the map.



20. Which sentence is correct?
1. The bakery is next to the bus station.
 2. The museum is opposite the supermarket.
 3. The library and the school are on the same road.
 4. The park is between the post office and the hospital.
21. Sutee is at school. How can he get to the post office?
1. Take First Street and turn right at the library.
 2. Take Main Street and turn left at the library.
 3. Walk along First street. The post office is on the corner.
 4. Walk along Main Street. The post office is straight ahead.
22. Read the conversation.
- Liam: Are you ready to order, sir?
Ken: Yes, I'd like a tomato soup and a tuna salad, please.
- Where are Liam and Ken?
- | | |
|-------------------|--------------------|
| 1. At a garden | 2. In a kitchen |
| 3. At a fish farm | 3. In a restaurant |
- 23-28 Read the email and answer the questions.

19 January 2018

Subject: science project

Hi Ping,

My group is staying at a hotel near the science exhibition hall. Bad news!

Some test tubes got broken while we were getting off the train. As you know, we need the tubes for the project. We didn't know where to find them in a short time. And the traffic was very busy during rush hour. The hotel staff suggested that we take the BTS train to a store. It was our first time to take the BTS. It's easier and faster than I thought. We got the tubes in less than an hour!

Wish me luck on the project presentation tomorrow.

Cheers!

Kan

23. Who are Ping and Kan?
- | | |
|-------------|------------|
| 1. Friends | 2. Parents |
| 3. Tourists | 4. Drives |
24. Where is the science exhibition hall?
- | | |
|---------------|-------------------|
| 1. In Yala | 2. In Bangkok |
| 2. In Lamphun | 4. In Chanthaburi |
25. Why did Kan go to a store?
1. To buy test tubes.
 2. To take a BTS train.
 3. The store is near the hotel.
 4. The hotel receptionist was there.
26. How did Kan feel about the BTS train?
- | | |
|------------|----------|
| 1. Sad | 2. Tired |
| 3. Excited | 4. Bored |
27. When is Kan going to present the science project?
- | | |
|--------------------|--------------------|
| 1. 18 January 2018 | 2. 19 January 2018 |
| 3. 20 January 2018 | 4. 21 January 2018 |
28. Which of the following is correct?
- | | |
|---------------------------|---------------------------------------|
| 1. Kan wrote the email. | 2. Ping was in the store. |
| 3. Ping took a BTS train. | 4. Kan stayed at the exhibition hall. |
29. Teacher: _____
 Student: I'm in Prathom 6.
- | | |
|------------------------|---------------------------|
| 1. Which school is it? | 2. Who is in that room? |
| 3. Where do you study? | 4. What class are you in? |
30. Rose: You look very happy.
 Ben: I am. I got an A in English.
 Rose: _____
- | | |
|---------------|---------------------|
| 1. Cheers! | 2. That's okay! |
| 2. Thank you! | 4. Congratulations! |

31. Paula: What so you think about my hand writing?

Alice: _____

- | | |
|-----------------------------|-----------------------------|
| 1. Sure, that's a test. | 2. It's nice! I like it. |
| 3. All right, on your left. | 4. I'm learning. It's easy. |

32. Brad: I failed my math test. What should I do?

Doug: _____

Brad: Yeah, you're right.

- | | |
|--------------------------|-----------------------------|
| 1. You can hurry. | 2. You can go to a gym. |
| 3. You should play more. | 4. You should study harder. |

33. Molly: _____

Nancy: I like science.

- | | |
|-----------------------------------|------------------------------------|
| 1. What does she teach? | 2. Are you doing homework? |
| 3. What is your favorite subject? | 4. Are you studying for the tests? |

34. Robin: _____

Henry: It's sunny.

- | | |
|------------------------------|-------------------------------|
| 1. What is the weather like? | 2. What is like the weather? |
| 3. Do you like the weather? | 4. Does the weather like you? |

35. Son: Please Mom, _____.

Mom: No, dear. You can't. It's time for bed.

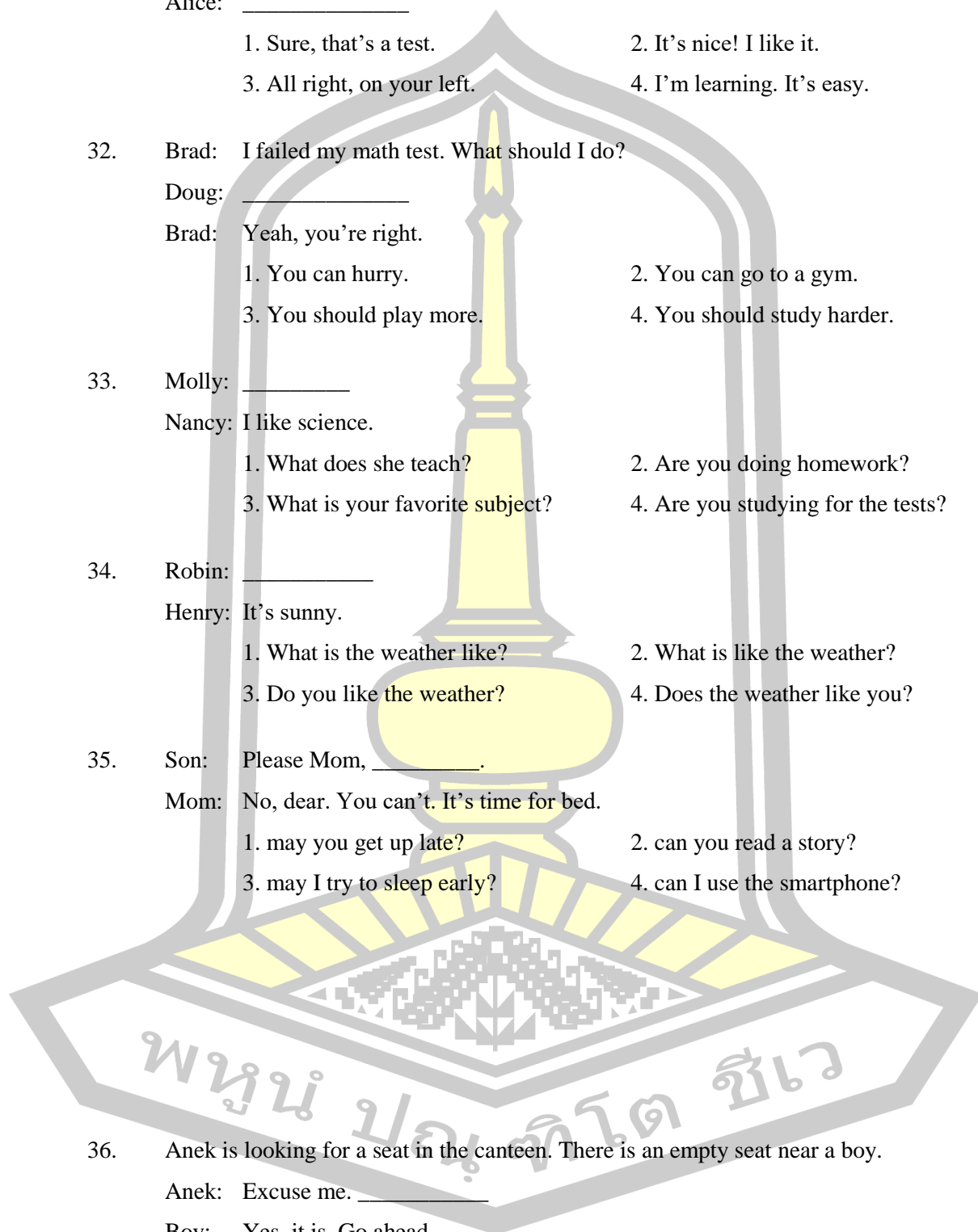
- | | |
|------------------------------|------------------------------|
| 1. may you get up late? | 2. can you read a story? |
| 3. may I try to sleep early? | 4. can I use the smartphone? |

36. Anek is looking for a seat in the canteen. There is an empty seat near a boy.

Anek: Excuse me. _____

Boy: Yes, it is. Go ahead.

- | | |
|----------------------------------|----------------------------------|
| 1. Is this table all right? | 2. Is it okay if I sit here? |
| 3. Would you mind if I sit here? | 4. Would you mind sitting there? |



37. At the reception desk

Receptionist: _____

Guest: I'm trying to find a toilet.

- | | |
|---------------------|---------------------|
| 1. Can I help you? | 2. May I tell you? |
| 3. May you tell me? | 4. Can you help me? |

38. Greg: Could you pass me the pepper, please?

Jenny: _____

Greg: Thank you.

- | | |
|------------------|------------------|
| 1. No, thanks. | 2. Yes, please. |
| 3. Here you are. | 4. Another time. |

39-40 At a Thai temple

Sook: Hey, Tom! You can't go in wearing ____ 39 ____.

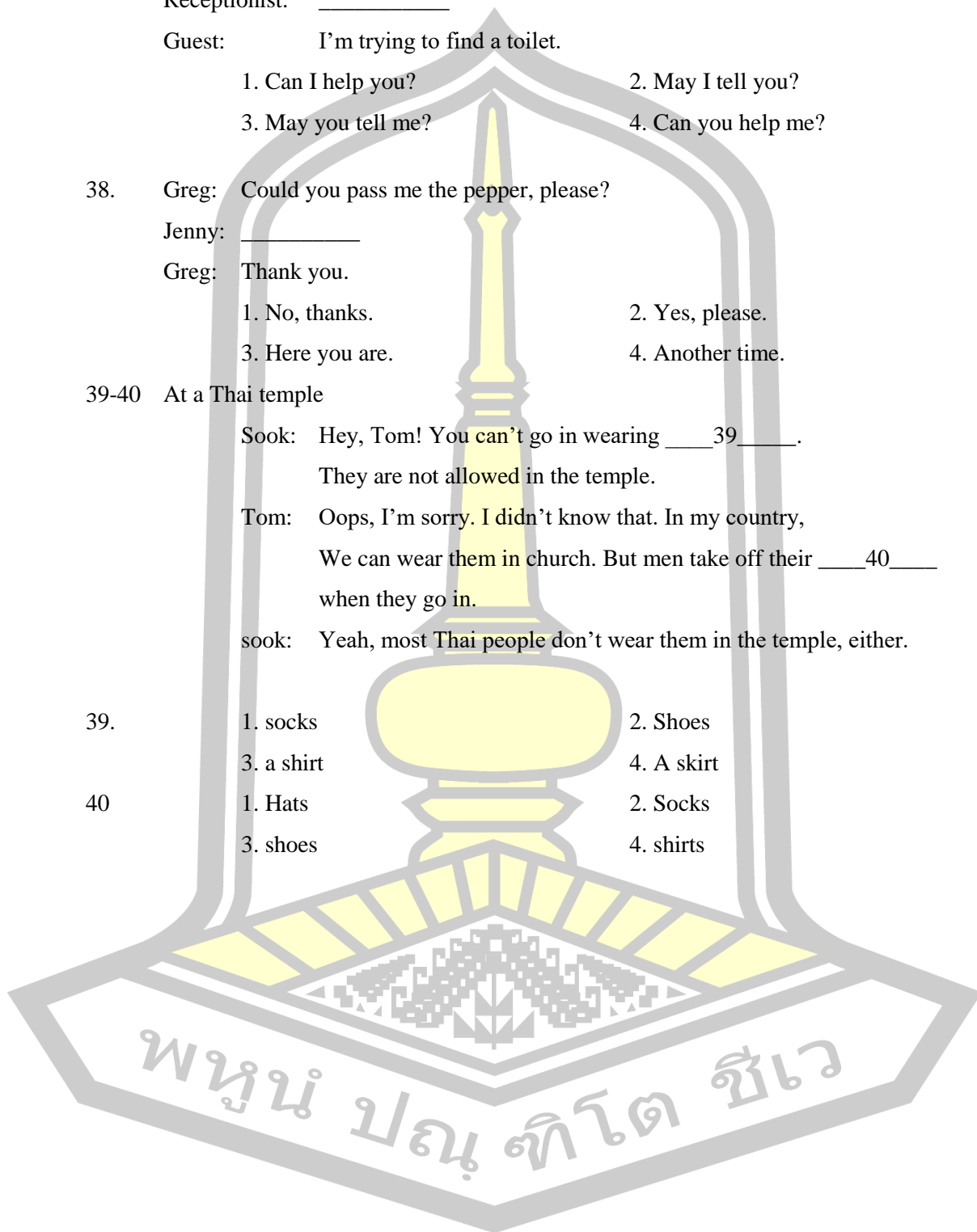
They are not allowed in the temple.

Tom: Oops, I'm sorry. I didn't know that. In my country,

We can wear them in church. But men take off their ____ 40 ____
when they go in.

sook: Yeah, most Thai people don't wear them in the temple, either.

- | | | |
|-----|------------|------------|
| 39. | 1. socks | 2. Shoes |
| | 3. a shirt | 4. A skirt |
| 40 | 1. Hats | 2. Socks |
| | 3. shoes | 4. shirts |



กระดาษคำตอบ
Answer sheet

ชื่อ.....ชั้น.....เลขที่.....

คำสั่ง: ทำเครื่องหมาย **x** ลงในช่องว่างที่ถูกต้อง

ข้อ	1	2	3	4	ข้อ	1	2	3	4
1					21				
2					22				
3					23				
4					24				
5					25				
6					26				
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17					37				
18					38				
19					39				
20					40				

พหุบัน ปณฺ ทิโต ชีเว

BIOGRAPHY

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