

CHAPTER 1

INTRODUCTION

1.1. Background and rationale of the study

Today, the world population is challenged by various factors, including those changes caused by in socio-economic and environmental conditions, along with increased toxic elements that the occupants of this planet absorb, encounter or ingest on a daily basis, which impact their physical and mental health. Obviously, these health-related issues affect all aspects of people's lives in a fundamental, and often in a negative way. There is a long list of diseases and disorders that are caused by these natural or unnatural factors. A particular disorder, which is the focus of this research, is ADHD or Hyperactive Attention-Deficit Hyperactivity Disorder. This study concentrates on the role ADHD in education and its negative impact of student's learning capabilities. ADHD is a deficiency in the functioning of the brain that results in the symptoms (Levy et al., 1997). It is called behavioral abnormalities in terms of lack of concentration or lack of organized thoughts, as well as the absence of patience. Students with ADHD cannot focus on anything for a long time and lose control, showing signs of distraction and unusual behavior. They are unable to study and distract their classmates by expressing themselves in inappropriate ways. According to Forness and Kavale (2001), students' academic success is often dependent on their abilities to attend to tasks and to classroom expectations under teacher's classroom management with minimal distraction. Such requirements enable them to obtain necessary information, complete assignments and to participate in classroom activities, which in turn enhance their learning achievements.

Currently, the prevalence of ADHD patients in Thailand is relatively small, however, it is likely to surge with the increasing number of patients with ADHD. The Department of Mental Health Promotion of Ministry of Public Health stated that Thai students suffer from ADHD at a rate of 8.1% or an estimated 1 million students (Ministry of Public Health, 2013). The symptoms of this disorder are worrisome and will affect the future of Thai children. However, there is a misperception or lack of knowledge among teachers and parents. They still do not realize the significance of this disorder and do not fully understand the implications. They often perceive that the symptoms may be caused by the stubbornness or disobedience, which might be due to lack of attention and warmth in the family. They perceive these

adverse reactions to gradually diminishing and finally disappearing, as students mature over time (Visanuyothin et al, 2013). Because of this misperception and insufficient knowledge of ADHD, teachers, family and friends often perceive learners with ADHD symptoms a source of social problems and often react negatively towards them, which in turn results these learners to suffer from depression, be confused and to lead unhappy lives. Moreover, this will lead to more aggressive behaviors, and the tendency to hurt others and in some cases, it will result in drug abuse in order to relieve the suffering. In general, the practice of care to assist patients with such ailments includes counseling to adjust their lifestyle and to prescribe medication in case of those with more severe symptoms. The counseling method however, does not seem to be effective, which shows that asking patients to adjust and to exhibit normal behavior would be unproductive and may aggravate the problems that occur as patients cannot control the symptoms of their disorder .

Students with ADHD are often recognized once at school, where their symptoms become more apparent and often result in failing grades. Having said this, 30-40% ADHD students' unwanted symptoms disappear when they grow up and in their adulthood, and they may stop taking medicines. (Barkley,1997). It is fair to state that entering the school may be a turning point for ADHD students, where their symptoms become apparent. If students with ADHD are not educated in an empathetic and supportive environment that caters their learning styles and preferences, they will greatly suffer, which in turn will affect their learning achievements and self-efficacy. Moreover, if teachers do not understand the symptoms of the disorder , the students may be repeatedly blamed in front of classmates . As such, teachers or educators should realize the severity of the problem and its significance in order to conduct methods of teaching that facilitate ADHD learners' and improves the quality of their lives.

Many ADHD students fail at school. This may be attributed to unsuitable teaching methods, learning activities and environment. The instructional system in most schools has been designed for regular students in mainstream, and it is not prepared to meet the learning needs of students with ADHD. ADHD students are often placed in the same class with regular students, receiving the same methods of teaching (Trankasombat, 2541). By becoming exposed to unsuitable environments and to stressful and unproductive teaching methods, , students with ADHD may develop aggressive behavior and low self-esteem, which in turn may result in undesirable outcomes, causing societal problems in long term. Schools and teachers can play a key role in identifying and supporting students with ADHD. In order to fulfill this important role, it is imperative for teachers to have explicit knowledge about ADHD. Therefore, teachers should gain a deep understanding and knowledge of this disorder in order to effectively

participate in the process of teaching and learning, as well as educating and treating children with ADHD.

The World Health Organization (WHO) is very much concerned regarding the misunderstanding and unawareness surrounding the symptoms of ADHD. Unless ADHD students are treated and educated properly, they may display a higher risk of experiencing behavioral and educational difficulties in school. Furthermore, this may have a negative impact on their educational performance, which will frequently persist and impact their adulthood. As a result, they may be harmed unreasonably by parents or relatives because of their lack of knowledge and misconceptions of ADHD.

The challenge is to develop the potentiality of ADHD students in long-term by an appropriate education plan. This includes managing the classroom in accordance with the learning styles and needs of ADHD students. This will help students to experience productive and successful learning. Although ADHD symptoms can cause severe impairment, many learners with ADHD can concentrate on new things that meet their interests (Jenson, 2000). Provided that students learn through multimedia including digital tools ((Parker, 2000; Appelbaum, & US Department of Education) in a suitable learning environment, they may learn effectively, and such learning environment may enhance their creativity and life quality.

Students with ADHD have a short attention span and are easily distracted. Deficits in their work have been found to be closely associated both with low academic achievements and in memorization, which are common amongst ADHD students with attention problems, and typical of children with ADHD (Gathercole et al., 2008). According to U.S. Department of Education (2010), assistive technology for ADHD can be helpful for adults or children with symptoms of ADHD, whether those symptoms are predominantly inattentive, hyperactive or impulsive, or a combination of both inattentive hyperactive ADHD. In its simplest form assistive technology for ADHD means any technology (software, hardware or device) that can be used to assist an individual with ADHD to perform tasks that have been difficult to initiate, complete or even remember to pursue

Technology is prevalence and is consistently coordinated into instructive practices to encourage learning for students of all capacities. As specialized features are offered, students with disabilities are increasingly able to interact with classroom technologies, and teachers are increasingly able to make use of content for varying students based on their needs or preferences. Moreover, new technologies use educational applications specifically designed for students with disabilities. These tools emerge on a daily basis and are developed by researchers, curriculum developers, teachers, parents and even students themselves. These

emerging educational applications have been options and increasingly utilized in instructional systems (Schiller,1996). Devices and apps, when used properly, may help combat issues with focus and help ADHD students stay engaged with their work. Younger students may benefit from tools that teach fundamental skills. Digital apps that have received high ratings include “Starfall, Cool Math, ABC Mouse, Brain Pop and Fun Brain”. Older students may benefit from apps that support study skills. Some good examples include: “The Chemical Touch, World Atlas, Graphing Calculator and AccelaStudy” for foreign language study. These digital tools can help students to stay on task, improve focus to remind them to turn in their work, and to create a higher level of productivity (Namahoe,2016).

With the convenient access to the Internet and self-access, it is definitely beneficial for younger generations of learners to make use of their learning preferences and unlimited online information in order to foster their success of learning and to gain necessary 21st century skills so that they can live and work happily. In order to realize and understand the diversity of generational perspectives, preferences and outlooks should be considered to help activate effective leaning experiences and to bring about a more meaningful and productive learning process. As a result of the constant use of digital and mobile technologies, today’s students are self-educators and online information experts.

Due to this important aspect of education and the significance of assistive technology, it is worth to develop an appropriate English course using assistive technology for ADHD learners, which meets the needs of this particular group of students, in order to investigate its effectiveness regarding students’ learning achievements, creativity and self-efficacy.

1.2. Research Objectives

Due to the misalignment between the teaching and learning practices of school instructional support, and the needs, learning styles and preferences of students with ADHD, the effectiveness of an English course for students with this disorder has been questioned.

Therefore, the objectives of the study are:

1. To develop an English course using assistive technologies for students with ADHD at Chiang Mai Rajabhat University Demonstration School.
2. To study the effectiveness of an English course using assistive technology by
 - 2.1. comparing English reading and comprehension abilities of the students before and after participating in the course,
 - 2.2. examining the degree of creativity of the students studying the course, and
 - 2.3. examining the degree of self-efficacy of the students studying the course.

1.3. Research Questions

This study aims to develop a course and to investigate the effectiveness of this course. Therefore, the study attempts to answer the following questions:

1. What components should be incorporated into the English course, using assistive technologies?
2. How effective is this English course using assistive technologies?
 - 2.1. Will the scores of the students' post-test be significantly higher than those of the pre-test?
 - 2.2. What is the degree of students' creativity?
 - 2.3. What is the degree of students' self-efficacy?

1.4. Statements of Hypotheses

The hypotheses set in this study are as follows:

1. The score of the post-test is significantly higher than that of the pre-test at the level of .05.
2. The students show positive creativity in their learning process. The students' post-test scores in creativity of visualized composition tasks were significantly higher than their pre-test scores ($p < 0.05$).
3. The students show positive self-efficacy during their learning process [more than the average value ($> 3.50/5.0$)].

1.5. Scope of the Study

According to the research objectives, the scope of this study is as follows:

1. The population was students with ADHD at Chiang Mai Rajabhat University Demonstration School in Chiang Mai Province in Thailand.
2. The independent variable of this study was the English course, using assistive technology. The dependent variables were the students' English reading comprehension ability, the student's creativity and self-efficacy.

1.6. Limitation of the Study

This was a case study. The sample for this study was selected using Convenient Purposive Selected Sampling method for data collection. The findings of the study may not be applicable to the entire population of primary schools in Chiang Mai.

1.7. Definition of Terms

Terminology and descriptions in this study are as follows:

1. The English course using assistive technology

The English course using assistive technology refers to a course operated at Chiang Mai Rajabhat University Demonstration School, which aims to enhance students' English reading ability, creativity and self-efficacy. The course design focuses on the needs analysis. The course requires the learners to be exposed to necessary vocabulary and interactive storytelling and to finish some writing and drawing tasks using some applications. Easy pedagogical tasks were considered and used based on learning styles and preferences of ADHD students.

2. English reading comprehension ability

English reading comprehension ability refers to the ability of learners to understand the reading passage and to correctly answer the comprehension questions.

3. Students' creativity

Students' creativity refers to the creativity found in the students' visualized composition tasks. The students' creativity was measured by a rubric for assessing students' creativity adapted from Brookhart (2013). The rubric covered four different levels of creativity and furthermore, four different areas including variety of ideas and contexts, variety of sources, combining ideas, and communicating something new.

4. Students' self-efficacy

Students' self-efficacy refers to ADHD students' belief in his or her innate ability to achieve goals, their ability to exhibit coping behavior and the effort to face the obstacles. The students' self-efficacy was measured by students' self-efficacy questionnaire and the teachers' fieldnotes. The scale for assessing students' self-efficacy was adapted from Gaumer et al. (2016).

5. Assistive technology

Assistive technology refers to audio-visual mobile applications with interactive storytelling. Applications used in this particular study include: “Matilda In Australia by Atlas Mission Application”, “If I could touch the sky by StarfallFun To Read Application” and “Four Seasons by Four Seasons Application”

6. Needs

Needs in this study refers to necessary features obtained from literature, interviews with five primary school students with ADHD, with their parents and teachers at Chiang Mai Rajabhat University Demonstration School, along with relevant document analysis which subsequently dictated task formulation, teaching and learning content and activities, and skills to be focused on, combined with course evaluations.

7. Course components

Course components refer to the course content, teaching and learning activities together with student evaluation.

1.8. Significance of the Study

In this study, an English course using assistive technologies for students with ADHD was developed. The study may be beneficial in two aspects:

1. Students with ADHD at Chiang Mai Rajabhat University Demonstration School may benefit from this study, if it is successful in several ways:

a) Students with ADHD at Chiang Mai Rajabhat University Demonstration School improve their English reading comprehension abilities

b) Students with ADHD at Chiang Mai Rajabhat University Demonstration School gain more creativity skills

c) Students with ADHD at Chiang Mai Rajabhat University Demonstration School gain more self-efficacy, which is basically necessary for their future careers and for being an active contributor to the society .

d) Students with ADHD at Chiang Mai Rajabhat University obtain lifelong learning skills to access available digital multimedia to cater their needs and shortcomings .

2. The study may promote both academic knowledge and competencies in English language teaching in three aspects:

a) Theoretically, this study concerns itself with the appropriate content of the lessons, course materials, activities and course assessment. It also provides necessary information concerning easy task-based learning.

b) Pedagogically, the study covers the process of constructing an English course using assistive technology, which is designed based on relevant underpinning theories and needs analysis in order to create, implement and evaluate a suitable course for ADHD students. . Moreover, , the insightful information obtained during the course development may also be beneficial and valuable to other similar courses. To exemplify, teachers who have students with ADHD or any other special needs students may see the effectiveness and benefits of this course, and may be able to use ideas to develop or utilize this course as a model for their own courses.

c) Practically, this study demonstrates the strong link between theory and practice. The study demonstrates a method for the development of an English course using assistive technology in order to enhance ADHD students' abilities in English reading and comprehension, their creativity and self-efficacy. The study includes a teaching method that utilizes audio-visual mobile applications with interactive storytelling, and easy pedagogical task-based learning in order to improve students' English reading and comprehension abilities , as well as their creativity and self-efficacy, and furthermore to prepare students to be successful professionals in their future careers.