การศึกษาทักษะการคิดวิเคราะห์ของผู้เรียนชาวไทยในระดับอุดมศึกษา ที่เรียนภาษาอังกฤษเป็นภาษาต่างประเทศ

An Investigation of Critical Thinking Skills in Thai EFL University Learners

ภัสรา นามแสง[1] และ อภิศักดิ์ สุขยิ่ง[2]

Pasara Namsaeng [1] and Apisak Sukying[2]

[1,2]การสอนภาษาอังกฤษ

[1,2]Program in English Language Teaching

[1,2]ภาควิชาภาษาตะวันตกและภาษาศาสตร์

[1,2]Department of Western Languages and Linguistics

[1,2]มหาวิทยาลัยมหาสารคาม

[1,2]Mahasarakham University

บทคัดย่อ

การคิดวิเคราะห์ (Critical thinking: CT) มีความสำคัญต่อการศึกษาและการทำงานอย่างยิ่ง ดังจะสังเกตได้ว่า ผู้ที่มีทักษะการคิดวิเคราะห์จะสามารถทำความเข้าใจ นำไปใช้ วิเคราะห์ สังเคราะห์ ประเมิน และ ตีความหมายของข้อมูลต่างๆ ได้เป็นอย่างดี ทักษะการคิดวิเคราะห์สามารถส่งเสริมได้โดยการเรียนการสอนในชั้นเรียนร่วมกับปัจจัยสนับสนุนทักษะการคิดวิเคราะห์อื่นๆ และการประเมินทักษะการคิดวิเคราะห์ของผู้เรียนสามารถกระทำได้โดยการใช้แบบประเมินมาตรฐาน (Standard assessment) และแบบประเมินเพื่อวัตถุประสงค์เฉพาะ (In-house assessment) การศึกษาวิจัยนี้ได้สร้างแบบประเมินทักษะการคิดวิเคราะห์ของตนเองเพื่อวัดทักษะการคิดวิเคราะห์ของผู้เรียนชาวไทยในระดับอุดมศึกษาที่เรียนภาษาอังกฤษเป็นภาษาต่างประเทศ ซึ่งเครื่องมือที่ใช้ในการวิจัยคือแบบสอบถาม (Questionnaire) และ

รับต้นฉบับ 27 มิถุนายน 2563 แก้ไขตามผู้ทรงคุณวุฒิ 24 กรกฎาคม 2563 รับลงตีพิมพ์ 29 กรกฎาคม 2563

การสัมภาษณ์แบบเจาะลึกรายบุคคล (In-depth interview) เครื่องมือที่ใช้ในการวิจัยได้รับการตรวจสอบความถูกต้อง (Validity) และความน่าเชื่อถือ (Reliability) โดยผู้เชี่ยวชาญและผู้ตอบแบบสอบถามกลุ่มย่อยก่อนที่จะทำการศึกษาจริง ผลการศึกษาเชิงปริมาณพบว่า ทักษะการคิดวิเคราะห์ผู้เรียนชาวไทยในระดับอุดมศึกษาที่เรียนภาษาอังกฤษเป็นภาษาต่างประเทศทั้ง 7 ทักษะ อยู่ระหว่าง ปานกลาง ถึง สูง และทักษะการคิดวิเคราะห์โดยรวมคิดเป็น ร้อยละ 74 ทักษะที่มีคะแนนสูงที่สุดคือ การค้นหาความจริง (Truth-seeking skill) การเปิดใจ (Open-minded skill) และความอยากรู้อยากเห็น (Inquisitive skill) ตามลำดับ นอกจากนี้ยังพบว่าทักษะที่มีคะแนนต่ำที่สุดคือ ความเป็นระบบระเบียบ (Systematic skill) และ ความมั่นใจ (Confident skill) และผลการศึกษาเชิงคุณภาพพบว่า ทักษะการคิดวิเคราะห์มีความสอดคล้องกับ ภูมิหลังของผู้เรียน บริบทในชั้นเรียน และพฤติกรรมการเรียน ซึ่งสามารถอภิปรายได้ว่า วัฒนธรรมไทย บริบทการเรียนการสอน และลักษณะการอบรมเลี้ยงดู ค่อนข้างจะส่งผลต่อทักษะการคิดวิเคราะห์ นอกจากนี้ยังพบว่าวิธีการจัดการเรียนรู้แบบร่วมมือและการอภิปรายกลุ่มเป็นกลไกในการส่งเสริมทักษะการคิดวิเคราะห์ของผู้เรียนชาวไทยในระดับอุดมศึกษาที่เรียนภาษาอังกฤษเป็นภาษาต่างประเทศอีกด้วย

คำสำคัญ : การคิดวิเคราะห์, ผู้เรียนชาวไทยในระดับอุดมศึกษาที่เรียนภาษาอังกฤษเป็นภาษาต่างประเทศ, การเรียนรู้แบบร่วมมือ

Abstract

Critical Thinking (CT) is an important skill required by higher education and employment. With CT skills, critical thinkers can comprehend, apply, analyze, synthesize, evaluate, and interpret the meaning of information. CT can be cultivated through teaching and learning, and other related factors, which can be assessed by both standard and in-house assessments. Therefore, the current study created a critical thinking self-assessment questionnaire to assess Thai EFL university learners' critical thinking skills. The research instruments were the questionnaire and in-depth interviews. The research instruments were checked their validity and reliability by experts and a different group of participants before the main study. The quantitative findings indicated that the seven CT skills of Thai EFL university participants were intermediate to high, and the overall CT skill was 74%. Specifically, the highest-scoring critical thinking skills were truth-seeking, open-minded, and inquisitive skills, respectively. By contrast, systematic and confident skills received the lowest scores. The qualitative results indicated that the participants' critical thinking skills relied on their background, classroom context, and learning behaviors. Indeed, the Thai culture, the teaching and learning context, and child-rearing background are likely to influence critical thinking skills. Collaborative learning is suggested as a mechanism to promote critical thinking in Thai EFL university learners.

Keywords: critical thinking, Thai EFL university learners, collaborative learning

Introduction

Critical thinking (CT) is a fundamental skill required by many educational institutions and employers (Changwong, Sukkamart, & Sisan, 2018). CT consists of many subskills such as being systematic, judicious, analytical, confident, open-minded, truth-seeking, and inquisitive. With these subskills, it leads to the ability to gain knowledge and comprehension, apply, analyze, synthesize, and evaluate. CT skills involve both cognitive and metacognitive strategies; however, CT weighs more on metacognitive knowledge since it deals with strategic knowledge, task knowledge, and self-knowledge (Anderson & Krathwohl, 2001; Facione, 2016a model of NeuroHIV. Clinical Relevance/ Applications: Despite the success of antiretroviral therapy in treating HIV, patients still suffer from structural brain abnormalities and mild but progressive neurocognitive decline. In vivo imaging biomarkers along with neurobehavioral parameters can be of utmost importance in evaluation of neurprotective therapies in animal models of HIV. Materials and Methods: Longitudinal MRI and behavior assays (rota-rod and open field; Phakiti, 2018). CT has been defined as a thinking process that the individual deploys into their thought by combining all skills to solve problems (Walker, 2003). It has also been defined as an ability to judge something purposefully and logically (Walker, 2003). A critical thinker has clear ideas, is logical and thoughtful, searches for the facts, and is open to new alternatives (Facione, 2016)a model of NeuroHIV. Clinical Relevance/ Applications: Despite the success of antiretroviral therapy in treating HIV, patients still suffer from structural brain abnormalities and mild but progressive neurocognitive decline. In vivo imaging biomarkers along with neurobehavioral parameters can be of utmost importance in evaluation of neurprotective therapies in animal models of HIV. Materials and Methods: Longitudinal MRI and behavior assays (rota-rod and open field. Finally, critical

thinking is viewed as a psychological process, involving assumption, evaluation, and conclusion, and the ability to resolve a problem (Petress, 2004). The current study defines CT as an ability to judge something logically by using an intrinsic psychological process.

The characteristics of critical thinking proposed by Facione (2016)a model of NeuroHIV. Clinical Relevance/ Applications: Despite the success of antiretroviral therapy in treating HIV, patients still suffer from structural brain abnormalities and mild but progressive neurocognitive decline. In vivo imaging biomarkers along with neurobehavioral parameters can be of utmost importance in evaluation of neurprotective therapies in animal models of HIV. Materials and Methods: Longitudinal MRI and behavior assays (rota-rod and open field include sub-skills such as being systematic, judicious, analytical, confident, open-minded, truth-seeking, and inquisitive. These sub-skills allow an individual to interpret, analyze, evaluate, infer, explain, and self-regulate oneself when thinking. These sub-skills are also indicators of a critical learner. However, learners do not always have the same level of critical thinking. Anderson and Krathwohl's taxonomy (2001) proposed six levels of critical thinking (from easiest to hardest) which are knowledge, comprehension, application, analysis, synthesis, and evaluation. Some individuals may be on the fundamental level of critical thinking (be able to know) or on the highest level of critical thinking (be able to evaluate). More recently, Wilson (2016) adjusted these levels to remembering, understanding, applying, analyzing, evaluating, and creating, respectively. The creating level was added as Wilson (2016) reasoned that it goes beyond the evaluating level.

Critical thinking (CT) can be fostered through personal, environmental, and educational factors. In regards to education, CT is important in both native language (L1), and English as a foreign language (EFL) contexts and has been

added to the widely adopted the Common European Framework of Reference for Languages (CEFR). Since CEFR is a guiding basis for measuring the overall language proficiency of the language learners, CT can be assessed alone through either the standard test or in-house assessments (Mahapoonyanont, 2012; Silalahi, 2017; Council of Europe, 2020). Mahapoonyanont (2012) suggested that critical thinking can be fostered via the teaching methodology, teaching and learning materials and the classroom atmosphere. Motivation, intention, and attitude of the student can also affect their critical thinking skills. Finally, personal factors, such as status and child-rearing, may also affect CT, but the individual is unlikely to be able to control such factors (Mortellaro, 2015). Indeed, it has been shown that individuals with more life experiences, better academic scores, a higher education, and are well-disciplined, have greater critical thinking (Mortellaro, 2015).

There is clear evidence that CT can be scaffolded through the teaching methodology. Slameto (2017)the Bachelor Education In-service Teachers Program (BEITP found that the student's critical thinking can be developed by implementing creative activities in the classroom. Moreover, student-related factors such as motivation, readiness and prior knowledge must still be taken into account (Slameto, 2017). Walker (2003) suggested three tactics for facilitating CT in the classroom. First, higher-level thinking questions such as asking for explanation, comparison, and clarification, will encourage students to think more broadly. Second, leading discussions in the classroom can foster a tension that will drive the student to think critically and search for evidence to support their arguments. Finally, written assignments will help students to explain the issue in detail, think logically, and comply with ideas in an orderly manner.

Previous studies also indicated a positive relationship between CT and language learning (Kusumoto, 2018; Nikoopour, Amini & Nasiri, 2011; Nosratinia & Zaker, 2015). The language learning approach such as English language learners' autonomy, creativity, and vocabulary learning strategies were found to have a positive effect on the CT skills in Australian language learners, and the English language learners' autonomy is the best indicator of CT skills (Nosratinia & Zaker, 2015). In an Iranian study, it also found that direct and indirect language learning strategies such as cognitive, metacognitive, and social strategies significantly correlated with CT. In contrast, other learning strategies such as memory, compensation, and affective factors had no relationship with CT (Nikoopour, Amini & Nasiri, 2011). Moreover, active learning through CLIL (the Content and Language Integrated Learning) was also found to increase the Japanese language learners' CT skills (Kusumoto, 2018).

Standard assessments and in-house assessments can both be used to measure CT skills (Franco, Costa, & da Silva Almeida, 2018; Sarigoz, 2012). Standard assessments are designed by specific institutions to measure individuals at an international level. Examples of standard assessments are the Halpern Critical Thinking Assessment (HCTA), which was initially proposed by Halpern in the U.S.A then expanded and translated to other countries such as Belgium, Ireland, Spain, and China, the Cornell Critical Thinking Test (CCTT), the California Critical Thinking Dispositions Inventory (CCTDI), the California Thinking Skills Test (CCTST), the Critical Thinking Assessment Battery (CTAB), ETS Tasks in Critical Thinking, and the Watson-Glaser Critical Thinking Appraisal (WGCTA). However, some of the mentioned tests have been shown to be unreliable or biased (Dwyer & Walsh, 2020; Franco, Costa, & da Silva Almeida, 2018). In-house assessments of critical thinking are designed for a specific

purpose or area. For example, Indah and Kusuma (2016) assessed Indonesian students' critical thinking by using a rubric consisting of five elements: argument, content, evidence, organization, and conclusion. Sarigoz (2012) also used an in-house assessment in which Japanese high school students were asked to complete a critical thinking self-assessment questionnaire. These studies revealed that both Indonesian and Japanese high school students have low critical thinking skills.

CT is important in both L1 and EFL contexts. Over 40 European counties have acknowledged the importance of critical thinking in language learning, and CT skills are one of the criteria of the Common European Framework of Reference for Languages (CEFR) (Silalahi, 2017; Council of Europe, 2020). As such, teaching methods must be used in language learning classrooms that will facilitate the development of CT skills. In American high school students, specific instructional activities appear to promote CT by improving thinking concepts, the ability to think of alternatives, and the ability to link relevant information (Hove, 2011). In Iran, Vaseghi & Barjesteh (2012) studied critical thinking in students with high and low English proficiency skills. The results found that the level of language proficiency was not related to critical thinking skills. Several studies in China, Taiwan, Turkey, and Iran have also shown that the Group Reading Strategy can promote critical thinking (Wang & Seepho, 2017among which the most frequently used are group discussion, concept mapping, and analytical questioning. The study aims to explore learners' voice and learning experience in the pedagogical contributions of these strategies to the development of critical thinking skills in Chinese EFL (English as a Foreign Language; Tung & Chang, 2009; Bedir, 2013; Zoghi, Mustapha & Maasum, 2010).

In Thai EF setting, there are few studies about CT and CT skills that appear to be relatively low. Changwong and his colleagues (2018) assessed the CT skills of high school students in over ten provinces and found that the overall score of CT was about 36.5%, which is considered very low. As a result, the 'PUCSC Model' was developed to teach CT, and this model appeared to improve CT skills (Changwong et al., 2018). At the university level, Ploysangwal (2018) assessed the critical thinking skills of Thai undergraduate students in twelve private universities in the capital city of Thailand through an analytical and critical reading test. The result also indicated that undergraduate students have a low level of CT. There is little known about the critical thinking skills in other parts of the country, such as northeastern Thailand. The research of CT in northeastern Thailand will raise awareness for both teachers and learners about critical thinking instruction in the classroom by determining and embedding it into all subject disciplines. As such, the current study examined the CT skills of Thai EFL university learners in northeastern Thailand. Two research questions were formulated:

1. To what extent do Thai EFL university learners have critical thinking skills?
2. What are the factors influencing Thai EFL university learners' critical thinking skills?

Research Methodology

Research design

A mixed-method research design was used. Quantitative data were collected from a questionnaire measuring participants' critical thinking skills, and qualitative data were obtained from an in-depth interview on factors influencing critical thinking. All 61 participants were asked to complete the 35

items of the critical thinking self-assessment questionnaire, and seven participants were randomly selected to be interviewed.

Participants and Setting

The participants were 61 university students from one Thai university in northeastern Thailand, aged between 18-22 years old. There were 40 females, 18 males, and three other genders. All participants were second-year English major students and were considered to be a homogenous group as their learning natures, characteristics, and language competencies were similar to one another. The participants had not previously assessed their critical thinking skills.

Research instruments

Critical thinking self-assessment questionnaire

The critical thinking self-assessment questionnaire consisted of two parts. The notion of self-assessment questionnaire was adapted from Sarigoz (2012). According to Sarigoz, the self-assessment questionnaire differs from other types of assessment because it involves the learners' emotions. When learners make a self-assessment, their feelings will be positive regarding the result of their own critical thinking skills. The first part is general information, which includes gender, faculty, Grade Point Average (GPA), and the number of hours studying English per week. For the second part, the current study used an in-house assessment by creating a critical thinking self-assessment questionnaire using the characteristics of CT provided by Facione (2016)a model of NeuroHIV. Clinical Relevance/ Applications: Despite the success of antiretroviral therapy in treating HIV, patients still suffer from structural brain abnormalities and mild but progressive neurocognitive decline. In vivo imaging

biomarkers along with neurobehavioral parameters can be of utmost importance in evaluation of neurprotective therapies in animal models of HIV. Materials and Methods: Longitudinal MRI and behavior assays (rota-rod and open field and Anderson and Krathwohl's taxonomy (2001). The questionnaire consisted of seven characteristics: systematic, judicious, analytical, confident, open-minded, truth-seeking, and inquisitive. Five questions were formed for each characteristic, resulting in 35 items. The participants were asked to rate their level of critical thinking from 1 to 5 on a Likert scale (1= very low, 2=low, 3= medium, 4= high, and 5= very high).

In-depth interview

The interview questions were in line with the critical thinking self-assessment questionnaire to gain more insightful data. Seven participants were randomly selected to be interviewed. Prepared and unprepared questions were used to assess the factors that are likely to influence critical thinking skills.

Data Collection

Research Instrument Validity

The validity of the questionnaire was assessed using the Index of Item-Objective Congruence (IOC). There were seven experts, and all experts had at least ten years of experience working in English Language teaching in the university. Six experts had obtained the academic title of Assistant Professor, and five experts obtained a PhD in the English language. The score range of IOC is from -1 to +1: -1 Incongruent, 0 Questionable, +1 Congruent. As shown in Table 1, the IOC average score for the questionnaire was 0.71, which is valid. Four items scored under 0.5 and were revised according to the expert's suggestion.

Table 1: IOC Score by Seven Experts

Items	Critical thinking skills	IOC Score by Seven Experts	Result
1-5	Systematic	0.71	Valid
6-10	Judicious	0.77	Valid
11-15	Analytical	0.91	Valid
16-20	Confident	0.54	Valid
21-25	Open-minded	0.57	Valid
26-30	Truth-seeking	0.63	Valid
31-35	Inquisitive	0.83	Valid
	Average IOC Score	**0.71**	**Valid**

Pilot Study

The questionnaire was translated into the Thai language and was again validated by the same experts. Using the learners' mother tongue helps to wave language burdens and to maximize the responses. The questionnaires were piloted by seven students to determine if they understood the questionnaire and rated the items correctly.

Completing the Critical Thinking Self-Assessment Questionnaire

The 61 participants were required to complete the critical thinking self-assessment questionnaire within 30 minutes.

In-depth Interview

After completing the questionnaire, seven participants were randomly selected for the in-depth interview. Each interview session lasted approximately 20 minutes with voice recording. The scope of the interview included factors influencing critical thinking in Thai EFL university participants. The interview

helped triangulate the data collected through the questionnaire, in which the participants can show their perspectives or provide new insights that were not found in the questionnaire. Also, using the native language of the participants helped wave language burdens. Figure 1 shows the data collection procedure for the current study.

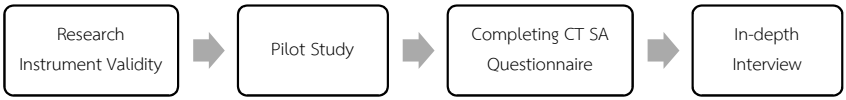

Figure 1: Data Collection Procedure

Data Analysis

The data from student's critical thinking self-assessment in forms of the five-point Likert rating scale was calculated as a percentage, mean and standard deviation (S.D.). The Statistical Package for the Social Sciences (SPSS) was used to analyze the data. The data from the in-depth interview was analyzed by content analysis. Then, an experienced inter-coder verified the data. The theme of the qualitative data was based on the collected qualitative data.

Results

In relation to Research Question 1, Figure 2 shows the CT skills of Thai EFL university participants for seven characteristics. The top-three highest scores were being open-minded (4.00 or 80%), inquisitive (3.88 or 77.60%), and judicious (3.82 or 76%), respectively. The three lowest mean scores were being systematic (3.40 or 68%), confidence (3.50 or 70%), and analytical (3.64 or 72.8%), respectively. The overall CT skill of Thai EFL university participants was 3.71 or 74.2%.

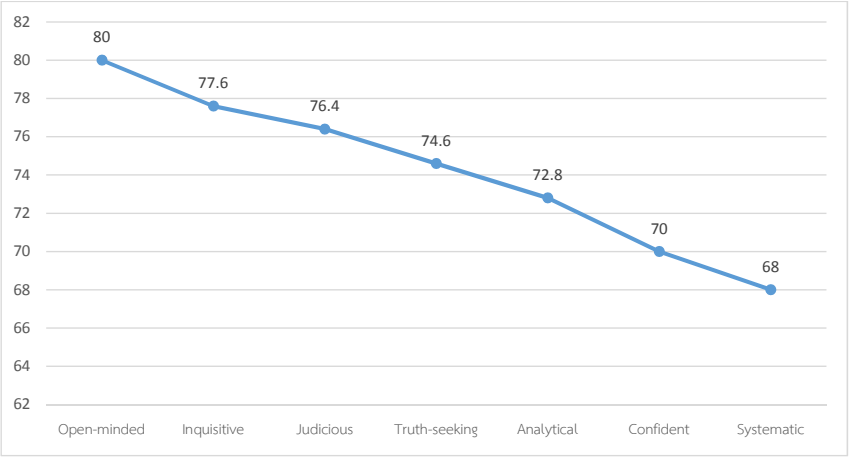

Figure 2: Thai EFL university participants' critical thinking skills

The university grading system evaluation proposed by Khon Kaen University (2015) is shown in Table 2. Based on this system, it appears that scores on the individual CT aspects range between "Fairly good" (72.8% for analytical) and "Excellent" (80% for open-mindedness) levels. The overall score for critical thinking was 74.2% which is considered a Grade B (or "good").

Table 2 The CT scores and their interpretation

Grade	Score	Interpretation
A	80-100	Excellent
B+	75-79	Very good
B	70-74	Good
C+	65-69	Fairly good
C	60-64	Fair
D+	55-59	Poor
D	50-54	Very poor
F	Below 50	Fail

To answer Research Question 2, the transcriptions of the semi-structured interview were collected from the seven participants. The content was transcribed and then translated into English and verified by an expert and an English native speaker. The in-depth interview data were coded and verified through several readings to develop theoretical themes and aspects. Table 3 shows the factors influencing Thai EFL university participants' critical thinking. Overall, the learners believed that their background, classroom context, and learning behaviors affect their critical thinking skills.

Table 3 Participants' perceptions of the factors influencing their critical thinking skills.

	Learners' Background	Classroom Contexts	Learning behaviors
Interviewee 1	- I am self-funded, and I have to work while studying. Consequently, it is quite difficult for me to catch the lesson in class. I feel like I have no time to critically think about one specific thing.	-	-
Interviewee 2	-	- When studying alone, I barely understand it; however, can I understand and think more when surrounded by peers. My classmates like sharing ideas and knowledge in the class; in which it helps build my creativity.	- I am quite a slow reader, and I somehow do not understand the thing clearly after reading. Thus, I am not confident to express my ideas sometimes.
Interviewee 3	-	- I think the courses should be more embedded with critical thinking skills. - My classmates do not talk, discuss, or critique enough during class time, in which it may block them to see the higher perspective. - The number of learners in the classroom is quite high. Then teaching and learning management is difficult, in which it can be a burden in promoting critical thinking in the classroom.	- I have a sense of involvement in the class, and I believe that studying hard is my main responsibility.
Interviewee 4	-	- I think multidisciplinary learning may help the learners to cover other aspects. For instance, if the English major learners work with the sociology major learners, the learners can analyze the information more critically because of more information supplied from different perspectives. - I think time providing in the classroom maybe not sufficient for the learners to generate critical thinking skills. - The number of learners in the classroom is too big.	-

Table 3 Participants' perceptions of the factors influencing their critical thinking skills.

	Learners' Background	Classroom Contexts	Learning behaviors
Interviewee 5	-	- Interesting things such as new vocab, new stories, new ideas, and new knowledge make the learners stimulate thinking skills more. When friends are sharing ideas, it makes me feel great to distribute my great ideas too.	- I am quite complicated compared with my classmates. When studying, I have to be very concentrated before getting the meaning of the message. Then I can start thinking after full comprehension. I need more time than others and am being disturbed easily by noise.
Interviewee 6	-	- I think the teacher should provide more time for learners to think deliberately and critically. Thus, critical thinking in the classroom will begin from that. - I believe there are too many subjects in each semester that the learners need to meet the objectives. During the examination period, I prefer memorizing the content of the subject course rather than critically thinking.	- I found myself have a fabulous idea when drawing a mind mapping. - I like to classroom to be quiet the most. - I considered myself as a fast learner but liked to keep silent in the class.
Interviewee 7	-	- I think the learning atmosphere, such as active learning may help the learners think creatively, especially problem-solving tasks. - Apart from textbooks, other learning materials such as PowerPoint Presentations, pictures, games, etc. may stimulate university learners to think more. - I think it would be better for us to be equal in the classroom whereas students and teacher can exchange their ideas and knowledge. It builds my confidence and braveness to share ideas and think out of the box.	- When studying alone, I always have marvelous ideas.

Discussion

The results showed that the overall CT skill of Thai EFL university participants was 74%, which translated to a Grade B meaning that the participants have good critical thinking skills; however, it was not that high. This result is consistent with previous findings (Ploysangwal, 2018). The current study also indicated that open-minded, inquisitive, and judicious skills were the three highest CT skills found in Thai EFL university participants. The main factors influencing Thai EFL participants' critical thinking were identified as Thai culture, the teaching and learning context, and child-rearing background.

The influence of Thai culture

The culture was identified as one of the factors that influence Thai EFL participants' critical thinking. The score of the open-minded skill is the highest among the seven essential thinking skills in Thai EFL participants. Indeed, the openness attitude underpinning the Thai society makes Thai people be able to accept the differences among groups of people living in the same area. Also, with some support from the Ministry of Education of Thailand, multicultural education is included in the Thai curriculum. As such, students are naturally exposed to the diversity of cultures, nations, and ethics living in Thailand, which leads to openness within their school community. In addition to multiculturism, multireligious and multiracial aspects are also encouraged, which is evident in Southern Thailand with Thai Buddhism and Thai Muslim students (Arphattananon, 2018; Awang et al., 2016). Altogether, with deep-rooted social norms, the openness attitude in Thai people is very well shaped.

The low scores on confident skills may also be partly explained by Thai culture. Indeed, the hierarchy of Thai society and emphasis on modesty may reduce the participants' confidence and systematic skills. Previous studies

showed that age might play an essential role in showing confidence. For instance, new staff members of Thai organizations always rely on the more experienced staff members and will always respect older people and avoid challenging the authority of older people. Especially in the public organization, the employers will not take a risk to confidently express some ideas without strong support from the seniority of the organization (Pimpa, 2012; McCann & Giles, 2007). The following interview excerpt supports this claim:

"I am quite a slow reader, and I somehow do not understand the thing clearly after reading. Thus, I am not confident to express my ideas sometimes," Interviewee 2.

The influence of teaching and learning context

The teaching and learning context plays an essential role in critical thinking in Thai EFL university participants. The score of the inquisitive skill is the second-highest, and this skill can be influenced by the teaching and learning context. As tertiary education students, the learners were required to be inquisitive in nature to solve a problem or task. A previous study indicated that an inquisitive mind is the fundamental characteristic of university learners (Dangchamroon, 2016). To become a university learner in the highly competitive universities, the universities need to carefully select the most appropriate and qualified undergraduates. Thus, it is no doubt that university learners are likely to be inquisitive as a basic qualification.

While studying in the classroom, the university learners were familiar with the teacher-centred approach, in which the teacher is believed to be the source of knowledge. The learners are told to follow the guidance without arguing. However, balancing the authority in the classroom will be better for their critical thinking skills. The following excerpt indicates that a teacher acting as a facilitator may encourage critical thinking in the learners:

> "I think it would be better for us to be equal in the classroom whereas students and teacher can exchange their ideas and knowledge. It builds my confidence and braveness to share ideas and think out of the box," Interviewee 7.

Apart from the role of teacher, classroom management such as the number of the learners in the class, studying time, learning atmosphere, content, the integration of multidisciplinary learning, and support from the classmates can also foster critical thinking skills. In one class, there are usually about forty learners, and the class lasts about one and a half hours, which is considered a big class with limited time. If the lesson is focused on a theoretical subject, the size and duration of the class may not affect teaching and learning. However, these factors are likely to have a greater impact on skill-based subjects such as listening, speaking, reading, and writing. A large number of learners in the class can cause several problems that can negatively affect the development of critical thinking. For example, learners may have a little time to practise with their classmates, as indicated in the following interview excerpts:

> "The number of learners in the classroom is quite high. Then teaching and learning management is difficult, in which it can be a burden in promoting critical thinking in the classroom," Interviewee 3.

> "The number of the learners in the classroom is too big," Interviewee 4.

A large class can also affect time management, and learners may have less time to practice critical thinking in the classroom. The below excerpt supports this claim:

> "I think time providing in the classroom maybe not sufficient for the learners to generate the critical thinking skill," Interviewee 4.

"I think the teacher should provide more time for learners to think deliberately and critically. Thus, critical thinking in the classroom will begin from that," Interview 6.

The teaching pedagogy is also an essential factor to consider. The learners' critical thinking can be influenced by the support from their classmates, learning atmosphere, the learning content, and teaching materials. Critical thinking is encouraged when the content is new, integrating, and exciting, as illustrated below:

"When studying alone, I barely understand it; however, I can understand and think more when surrounded by peers. My classmates like sharing ideas and knowledge in the class; in which it helps build my creativity," Interviewee 2.

"I think multidisciplinary learning may help the learners to cover other aspects. For instance, if the English major learners work with the sociology major learners, the learners can analyze the information more critically because of more information supplied from different perspectives," Interviewee 4.

"Interesting things such as new vocab, new stories, new ideas, and new knowledge make the learners stimulate thinking skills more. When friends are sharing ideas, it makes me feel great to distribute my great ideas too," Interviewee 5.

"I think the learning atmosphere, such as active learning may help the learners think creatively, especially problem-solving tasks," Interviewee 7.

"Apart from textbooks, other learning materials such as PowerPoint Presentations, pictures, games, etc. may stimulate the university learners to think more," Interviewee 7.

Moreover, too many subjects may affect learners' achievements. With the massive information on each subject that the learners need to work on, they tend to prefer memorizing rather than thinking. This claim is supported by the following interview excerpt:

"I think there are too many subjects in each semester that the learners need to meet the objectives. During the examination period, I prefer memorizing the content of the subject course rather than critically thinking," Interviewee 6.

The influence of child-rearing context

The learner's background can also influence critical thinking. For example, the systematic skill was the participants' lowest-scoring skill. The poor systematic skills may be explained by Thai children being interdependent with their other family members. Indeed, the elderly persons of the family affect the child's choices of education (Pimpa, 2005; Tulananda, Young & Roopnarine, 1994) and the child's guardians are likely to plan their future. Consequently, the children are unable to systematically plan ahead for their life. By contrast, in the US, children can legally become emancipated from their family members and may, therefore, need to plan ahead in terms of financial self-support, jobs, or healthcare (Sprianu et al., 2018; Public Counsel, 2013). Another example of the child-rearing context can be explained through the failure of financial planning. A previous study showed that over 62% of the older people in Thailand have a misconception about retirement planning due to several factors, including careless planning at a young age (Bank of Ayudhya Public Company Limited, 2018; Chaiphat, 2019; Vittayaamnuaykoon, 2018). This suggests that planning and systematic skills may not be sufficiently emphasised in Thai childhood and, therefore, Thai people are not mastered in preparation.

The child-rearing context can also impact learning behaviours in the classroom. It was previously demonstrated that Thai undergraduate learners have avoidance learning behaviour, such as fear to ask a question and shyness of expression (Phoewhawm, 2017). Students tend to avoid asking questions and expressing their opinions or ideas in the classroom because they are afraid that they might make mistakes. Thus, they were not likely to be confident, which also indicates that their learning behaviour and child-rearing context could be factors affecting their confidence skills (Phoewhawm, 2017). Confidence can be fostered by group discussion, which encourages the learners to engage in the classroom. The learners can freely ask and answer the questions within a supportive environment among their peers (Yoosabai, 2008; Kasemsap and Lee, 2015; think-aloud experiments and semi-structured interviews. The research results reveal different typologies of reading strategies adopted by lower and higher level English proficient students, illuminating how they utilized these strategies differently. Typologies of reading strategies utilized between students of higher and lower English proficiency levels were similar. There was no significant difference in the overall use of reading strategies between the higher and lower level English proficient students, excluding retrieval strategies that were employed more frequently by higher level students than those students with lower English proficiency. The higher level students utilized almost all subscales of strategies (excluding memory strategies Vongkrachang, 2015).

The child-rearing context can also be reflected through the learners' differences. For example, the learners may be taught to be quiet and follow their guardians' instructions *per se*. Consequently, learners may prefer to be in a quiet classroom rather than nosy one. Child-rearing context can be various leading to several types of learners' differences, for example, the learners may understand and think better with visual aids, or the learners may think of a fantastic idea when being alone. The following excerpts support this claim:

"I need more time than others and am being disturbed," Interviewee 5.

"I found myself have a fabulous idea when drawing a mind mapping," Interviewee 6.

"I considered myself as a fast learner but liked to keep quiet in the class," Interviewee 6.

"When studying alone, I always have marvelous ideas," Interviewee 7.

In summary, Thai culture, teaching and learning contexts, and child-rearing background are the factors influencing critical thinking skills in Thai EFL university participants. Given the different rearing backgrounds of the learners under the Thai culture, the teaching and learning context is likely to be the most crucial factor affecting the participants' critical thinking. The teacher can design a classroom to facilitate CT skills by considering the number of the learners in the class, time provided, learning atmosphere, learning supports, interesting learning topics, and the integration of the multidisciplinary learning fields. Together, these factors will foster learners' critical thinking.

Conclusion

This current study assessed the critical thinking skills of Thai EFL university learners. The findings indicated that Thai EFL university learners have an intermediate level of critical thinking skills (74%). The top-three highest scores of critical thinking were truth-seeking, open-minded and inquisitive skills, respectively. The lowest scores were obtained on systematic and confidence skills. The learners reported that their critical thinking skills rely on their background, classroom context, and learning behaviors. The factors influencing the participants' critical thinking are likely to include the Thai culture, the

teaching and learning context, and the child-rearing background. Overall, this study highlighted the need to further develop CT skills in Thai EFL university participants, particularly confidence and systematic skills. Moreover, understanding the level of the learner's critical thinking, and the factors affecting this level, provides a holistic view of the learners' abilities, which can help practitioners can determine the most appropriate teaching and learning activities for the learners. The use of collaborative learning may be a particularly useful method to promote critical thinking in Thai EFL learners.

Recommendation

First, the sample size could be increased and could include students at other education levels, such as primary and secondary education. Future studies should also focus on techniques to promote critical thinking skills and improve teaching methods. Finally, the term "critical thinking" may be difficult for participants to fully understand and, thus, a simpler term may be employed.

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