Teachers' Knowledge and Perceptions of Implementing Critical Thinking Practice in Cambodia: A Study of Lower Secondary Social Studies Teachers in Battambang Province

Chanthoeun Ith

Battambang Teacher Education College (BTEC), Battambang, Cambodia

Abstract

This study aimed to investigate lower secondary school social studies teachers' knowledge and perceptions of critical thinking (CT) in Battambang province, Cambodia. An explanatory sequential mixed method was used involving a survey questionnaire with 153 social studies teachers, semi-structured interviews with nine teachers, and observations of four classrooms. The results of the survey indicated that most of the teachers had accurate knowledge of CT, and they had positive perceptions of CT teaching. The findings from the interview, teachers' understanding of the definition of CT seemed to be limited. Students' poor ability in reading and writing, their less motivation in learning, and their lack of thinking habits were teachers' difficulties in engaging students in CT. The teachers also claimed that the challenges in teaching CT were related to a lack of resources and materials, time constraints, overloaded content, and lack of support. The classroom observations showed that the teachers' performance of CT teaching did not promote CT, as most of their teachings used a lecture model and gave little time for students to think, discuss or ask questions. The results and findings led to a few key recommendations: policymakers and curriculum developers should review and make clear definitions of CT in the curriculum; manuals and guidelines with clear instructions for CT teaching should be integrated into teacher training programs.

1. Introduction

The overall purpose of the Education Strategic Plan (ESP) in Cambodia is to create an educational system to promote equitable access and quality of education for young people and all learners (Ministry of Education, Youth and Sport (MoEYS), 2019).Under the ESP, several policies and strategic plans have been developed. Among the policies, a Child-Friendly School (CFS) policy was created in 2007 to support the ESP's main objectives to improve the access and quality of education in Cambodia. While MoEYS has made significant progress in most education sectors, a recent review of the ESP 2019-2023 proved that a lot remains to be done. The equity and quality of education are still a grave concern for the Cambodian government and all stakeholders in education. The Asian Development Bank (ADB) and International Labor Organization (ILO) (2015) have highlighted the learning gap as one of the quality-related issues in Cambodia's education system, contributing to failure in providing students with practical competency skills, which in turn contributes to the skills

gap in the long run. As a result, there are calls for improved equity and quality education in Cambodian education (ADB & ILO, 2015; Madhur, 2014).

Being part of practical competencies, critical thinking (CT) is often studied as part of a child or student-centered approach or active learning to support the CFS policy within the education system in Cambodia. Significant and comprehensive educational methodologies are essential to all aspects of policy implementation from the domain of teaching and learning. These methodologies focus on child-centered learning and are characterized by teaching and learning through creative ideas; participation and co-operative learning; research, analysis, critical thinking; problem-solving; and innovation and encouragement of creative and divergent thinking.

Scant literature is available on the practices of CT teaching (i.e., teaching that promotes CT) in school settings in Cambodia, especially for social studies subjects. Nith et al., (2010) found that teachers did not fully understand the concept of active learning and they could not tell whether their students were actively involved in CT. Similarly, King (2018) found that teachers' poor content knowledge of their subject matters, deficiencies in their pedagogical skills, and a lack of professional development were the main challenges to the implementation of the CFS policy.

Recently, more constructive practices of teaching and learning, teacher professional development, and student learning assessments have been introduced to promote the quality of learning and teaching (MoEYS, 2019). Still, little focus has been on practical competencies, including CT. Rather, academic competencies dominate the students learning assessment content. Likewise, CT ability is hard to find within the descriptions of teacher competencies and professional standards (MoEYS, 2021b, 2021a). Hence, fulfilling Cambodia's ambitious vision of becoming a higher-income country requires human resources with not just knowledge or academic competencies, but practical competencies, including CT.

Some empirical evidence from the recent national and international student learning assessments does not only indicate students' poor academic competencies, but deficiencies in practical competencies that require the use of problem-solving, CT, decision making, entrepreneurial, and leadership skills (Opertti et al., 2018). MoEYS has voiced its considerable concern over students' poor performance in a recent national assessment that involved 9th grade Khmer language writing and mathematics, as the students did not perform well on open-ended writing tasks (MoEYS, 2015).

In principle, language writing is a complex process that requires an application of cognitive and social skills in addition to language skills per se (Flower & Hayes, 1981). Roughly 50% of the 9th grade students performed poorly on open-ended activities, while 40% failed to grasp an appropriate expected learning outcome stipulated in the national curriculum (MoEYS, 2018c) In this sense, the national curriculum has not been properly implemented in the classroom. The challenges of implementation of a nationally standardized curriculum are related to classroom teachers' perception to curriculum as just a collection of textbooks (Chet et al., 2014), and time constraints in implementing the curriculum to respond to CT as suggested in child-centered pedagogy in the education system of Cambodia (Song, 2015). These challenges are faced to school teachers includes lower secondary school social studies teachers. Social studies teachers are within the groups having the least knowledge and awareness of newly incorporated inquiry-based learning, questioning techniques, cooperative learning, and lecturing methods (MoEYS, 2020a; The World Bank, 2011). The level of CT

knowledge is also low among teacher trainees (Vong & Kaewurai, 2016). Therefore, a dire need exists for training in CT because it can enable teachers to develop proper methods for teaching and selecting teaching content, especially in social studies subjects.

Within the Cambodian national curriculum frameworks, school subjects are assigned for practice at all school levels (MoEYS, 2021a; Opertti et al., 2018). Some of the school subjects, including social studies, require the use of a multi-disciplined approach. Social studies provide topics for teaching and learning in the Khmer language subjects from primary to upper secondary education. For instance, lower secondary education social studies covers History, Geography, Moral Civics, Home Economics, and Arts Education (MoEYS, 2016a, 2018a). In this regard, when students under-perform in Khmer language writing, it means that they under-perform in social studies. Unfortunately, an assessment of students' competencies, particularly practical ones, is not directly conducted in social studies (MoEYS, 2021a). Social studies directly involve approximately 40% of the total time allocation in the curriculum. They also indirectly involves language and life skills (MoEYS, 2016a), making social studies predominant subjects in the curriculum.

In accordance with the world's International Standard Classification of Education (ISCED), lower secondary education is referred to as Level 2 education, in which the programs are generally designed to further enhance learning outcomes from the primary or Level 1 education. Some common features of this education level are to support life-long learning or opportunities for education and vocational education that provide the skills required for employment, in contrast to literacy and numeracy, which are the focus of primary education (MoEYS, 2019; UNESCO Institute for Statistics, 2012). Jean Piaget (1896–1980) classified human cognitive development stages as sensorimotor, preoperational, concrete operational, and formal operational. The formal operational stage is the last stage of cognitive development in which individuals start with thinking in more abstract, idealistic, and logical ways; and they are between 11 years of age and adulthood (Santrock, 2011). In Cambodia, lower secondary education is for students between 13 and 15 years of age (RGC, 2007).

The purpose of the current study is to examine the knowledge and perception about Critical Thinking of lower secondary school social studies teachers in Battambang province of Cambodia. To achieve the purpose of the study, three research questions have been designed as follows:

1. To what extent are lower secondary school social studies teachers have knowledgeable about critical thinking?
2. How do Cambodian lower secondary school social studies teachers perceive critical thinking teaching?
3. How do lower secondary school social studies teachers' knowledge and perception of critical thinking emerge their practices related to critical thinking teaching?

2. Literature Review

2.1 Defining Critical Thinking

Recently, CT is considered one of the required skills for the 21st century (Trilling & Fadel, 2009), and it is regarded as an essential skill that can improve an individual's life (Ornstein & Hunkins, 2018). It is also defined as 'disciplined, self-directed thinking which exemplifies perfections of thinking appropriate to a particular mode or domain of thought' (Paul et al.,

1990, p. 361). Ennis (1985) defined Cas "reflective and reasonable thinking that is focused on deciding what to believe or do" (p. 45).

An extensive review of Cambodian preservice teacher training programs showed that no reference were made regarding CT (MoEYS, 2004, 2006, 2013, 2018b). Thinking is the only concept that has been introduced along with high and low order thinking skills and problem-solving skills. However, the concept of CT has been introduced with new teaching and learning approaches and methods, such as inquiry and concept-based learning. In fact, globally aligned definitions of CT have been adopted in Cambodia. Hang Chuon (2021), for example, defines CT as a diligent and planned intellectual process that focuses on the reflection and evaluation of existing evidence. It requires three types of skills: problem awareness, broad awareness, and a clear position to solve practical problems.

2.2 Critical Thinking and Education

From an educational perspective, the concept of CT was first introduced by John Dewey in the early 1900s as the main goal of education (Thonney & Montgomery, 2019), and later by the American educational psychologist, Benjamine Bloom, and his colleagues in 1956. They proposed the so-called Bloom taxonomy of thinking within the cognitive domain, which involves information processing skills, starting from comprehension to evaluation, and is used to assess high order thinking skills (Bloom et al., 1956). Types of CT are found in the taxonomy, particularly within the analysis, synthesis, and evaluation levels. Moreover, the educational aspect also evolves around the development process of thinking, the impact of developmental stages on CT and the developmental processes in sense-meaning making in human life (Flores et al., 2012).

2.3 Critical Thinking and Social Studies Education

CT has an important role in social studies education as a long-standing goal, and it is commonly presented in social studies syllabus (Baildon & Sim, 2009; Beyer, 2008; Patrick, 1986). The core concepts of social studies programs, such as the instruction of inquiry-based learning , reviewing issues from diverse aspects, are reinforced with the development of CT (Baildon & Sim, 2009). In the classroom, social studies aim to expand student knowledge toward making rational and critical decisions to promote the well-being and good citizens (Veltri, 2014). Khan and Inamullah (2011) argued that the goal of studying social studies is to enhance comprehensive knowledge about the world and apply CT to identify solutions and be able to respond to difficult situations.

A review of many previous studies has revealed the insufficiency or absence of CT instruction in social studies classrooms (Karabulut, 2012). Patrick (1986) stated that efforts to promote CT in social studies would not succeed if teachers did not know its meanings, its importance, and the way to use it in the classroom. According to the newly revised national general education curriculum in Cambodia (MoEYS, 2016a), the goals of social studies are to ensure learners develop and apply the academically acquired knowledge and skills for further education and social living. Moreover, students should be equipped with practical skills necessary for their daily work and being responsible learners and citizens in schools, family, community, society, and the international community (MoEYS, 2016b). Hence, CT really exists in the lower secondary social studies curriculum, given the above goals and student expected learning outcomes.

Previous research has shown that teachers' perception has great impacts on their teaching practices (Choy & Cheah, 2009). There are many studies on teachers' perceptions towards CT skills and CT teaching. Alazzi (2008), Almulla (2018), Choy and Cheah (2009) examine teachers' perception of CT skills and CT teaching using qualitative methods. Gashan (2015) studied pre-service teachers' knowledge of CT skills and perception of CT teaching using quantitative design.

In Cambodia, few studies have attempted to investigate issues concerning CT teaching, especially for social studies (Bevan, 2017; Vong & Kaewurai, 2016). Besides these studies, there appears to be no research conducted on teachers' knowledge and perception of CT teaching in social studies in Cambodian lower secondary schools. Therefore, the current study aims to fill this research gap.

3. Methodology

This study applied an explanatory sequential mixed-methods design. The explanatory sequential mixed-methods design offers reliable and valid data to answer research questions (Creswell & Guetterman, 2019). The study involved 153 social studies teachers from 30 secondary schools in Battambang province. To obtain a sample for the study, the researcher used a simple random sampling technique to select schools (proportional stratified sampling: 10% of urban and 90% of rural areas) and used a purposively selected approach to select participants for the survey questionnaire, semi-structured interviews and classroom observations based on subject and geographical factors. For the quantitative data, the researcher used a three-part self-reported survey questionnaire, which was adopted from Gashan (2015) who examined Saudi Arabian pre-service teachers' knowledge and perceptions of CT. The first part contained short demographic information (11 questions). The second part aimed to measure teachers' knowledge about CT, consisting of 16 Yes-No sentences on CT skills, six True-False sentences on CT concepts, and nine True-False sentences on CT nature. The last part was to gauge teachers' perceptions of CT and CT instruction with 17 statements on a five-point Likert scale (1. Strongly Disagree to 5. Strongly Agree). The collected quantitative data was analyzed to make descriptive statistics that depict the teachers' knowledge of CT and the extent of teachers' perceptions of CT.

After analyzing the quantitative results, the research purposively selected nine participants from the survey sample for follow-up interviews. The participants were selected based on their scores of knowledges of CT in the survey. Specifically, the participants were divided into three groups using the knowledge of CT scores, from lowest to highest. In addition, the researcher also conducted classroom observations on CT practices with four teacher participants. The participants selected for classroom observations were based on their perceptions of CT (strong to weak positive perceptions) with respect to the teaching major and experience. The main purpose of the classroom observations was to explore how lower secondary school social studies teachers implemented the knowledge and perceptions of CT in their real-life classroom practices. Classroom observations were also used to contextualize the results from either the survey questionnaire or the interviews.

In addition to descriptive statistics analysis, inferential statistics analysis was also used to examine Pearson correlation to determine the correlations between demographic variables of an individual respondent and their knowledge and perceptions of CT. The qualitative data analysis and interpretation followed the six-step qualitative process of data analysis suggested by Creswell and Guetterman (2019).

4. Results

4.1 Demographical Characteristics of the Participants

In this study, questionnaires were distributed to 165 social studies teachers who were provided with a verbal explanation of the study. After a review of the data, 12 responses were determined to be unusable, making the total number of respondents 153, as shown in Table 1.

Table 1. Demographic characteristics of the survey participants (N=153).

Demographic information	N = 153	Percentage
Gender		
Male	48	31.4
Female	105	68.6
Age range		
20–29 years	18	11.8
30–39 years	65	42.5
40–49 years	44	28.8
50 years and older	26	17
Education qualification		
High School diploma	64	41.8
Bachelor's degree	81	52.9
Master's degree	8	5.2
Teaching experience		
Less than 5 years	9	5.9
5–9 years	15	9.8
10–14 years	44	28.8
15–19 years	28	18.3
20–24 years	23	15.0
25 years and older	34	22.2
Pre-service training relevant to critical thinking		
Yes	53	34.6
No	100	65.4
In-service training relevant to critical thinking		
Yes	65	42.5
No	88	57.5

4.2 Lower Secondary School Social Studies Teachers' Knowledge of Critical Thinking from Survey Questionnaire

The survey questionnaire was used to determine the extent of lower secondary school social studies teachers' knowledge of CT and how they perceive teaching CT. Overall, teachers had high knowledge of CT The analysis of teachers' means scores indicated that 74.51% of teachers had a mean score range of 0.66 to 1.00, indicating accurate knowledge of CT, whereas only 25.49% teachers had a mean score range on knowledge of CT from 0.36 to 0.65, showing an uncertain understanding of CT. Table 2 provides detailed mean scores of teachers' knowledge of CT for each item from the teacher survey questionnaire.

Table 2. Sum, mean (M) and standard deviation (SD) for knowledge of critical thinking (N =153).

Critical Thinking Statement	Sum	M	SD
1. Examining relationship among statements.	130	.85	.359
2. Interpreting the meaning from a variety of data or experiences.	119	.78	.417
3. Assessing the quality of ideas or data.	121	.79	.408
4. Identifying alternative claims and drawing a conclusion.	147	.96	.195
5. Presenting results of one's reasoning.	112	.73	.444
6. Generating original and new insights.	105	.69	.466
7. Delivering information that committed to memory.	87	.57	.497
8. Generating questions from a particular topic.	111	.73	.448
9. Confirming, validating, or correcting one's reasoning procedure.	131	.86	.352
10. Working from specific fact to general principles.	101	.66	.475
11. Storing, retaining, and recalling information.	80	.52	.501
12. Separating relevant from irrelevant data.	100	.65	.477
13. Moving from a question or a problem toward one correct answer or a solution.	136	.89	.315
14. Making a prediction of what will happen in the future from given information.	108	.71	.457
15. Summarizing an article in one's own words.	73	.48	.501
16. Analyzing an argument through sketching a graph or drawing a picture.	113	.74	.441
17. It is important to clarify thinking whenever you are explaining something to someone; whenever someone is explaining something to you; and whenever you analyzing an article or chapter.	147	.96	.195
18. Fair-minded thinking is connected with the accurate assessment of one's own reasoning.	125	.82	.388
19. Depth in reasoning best relates to complexities in the issue: logical interpretation; clarifying the issue.	147	.96	.195
20. One main requirement of critical thinking is to analyze thinking into its most basic components.	117	.76	.426
21. Critical thinkers assess thinking in order to determine what thinking to accept and what to reject.	117	.76	.426
22. An important fact that supports the need for an analytic dimension of critical thinking is that the analysis of thinking is presupposed in every subject.	133	.87	.338
23. As people grow older, they naturally develop as critical thinkers.	118	.77	.421
24. Critical thinking is well disciplined.	114	.75	.437
25. Critical thinking enables one to think more deeply.	138	.90	.298
26. One should not analyze sympathetically points of views that are disgusting and obviously false.	106	.69	.463
27. If a statement is unclear, we benefit by asking what our purpose is in saying it.	133	.87	.338
28. Implications are conclusion you come to in a situation.	104	.68	.468
29. Critical thinking is important in learning to read well.	112	.73	.444

Critical Thinking Statement	Sum	M	SD
30. Critical thinkers use subjective standards to assess thinking.	120	.78	.413
31. Critical thinkers learn to ignore their emotions when making important decisions.	93	.61	.490

4.3 Lower Secondary School Social Studies Teachers' Perceptions of Critical Thinking from Survey Questionnaire

Regarding teachers' perceptions, 94.12% of teachers had mean scores ranging from 3.5 to 5.0, indicating agreement over CT teaching, whereas only 5.88% had a mean score range of 2.5 to 3.4, indicating a neutral opinion of teaching CT. Further details on the mean scores of teachers' perceptions of CT teaching from the teacher survey questionnaire are shown in Table 3.

Table 3. Sum, mean (M), and standard deviation (SD) for perceptions of critical thinking teaching (N = 153).

Critical Thinking Statement	Sum	M	SD
1. Critical thinking engages students' higher order thinking (analyzing, evaluating, and creating).	578	3.78	1.034
2. Critical thinking encourages students to become independent thinkers.	638	4.17	.667
3. Critical thinking encourages students to become active learners.	666	4.35	.590
4. Critical thinking can be used to achieve better learning outcomes.	678	4.43	.636
5. Critical thinking allows students a better understanding of the course topic.	667	4.36	.581
6. Critical thinking is a method of thinking that helps students enjoy the learning process.	637	4.16	.815
7. The Ministry of Education guidelines require me to teach critical thinking.	621	4.06	.728
8. The teacher's manual explains how to teach critical thinking.	598	3.91	.738
9. I used to take courses during pre-service training on how to teach critical thinking to students.	579	3.78	.835
10. My professors address how to teach critical thinking during the class.	570	3.73	.883
11. I think that students have barriers to critical thinking regardless of the strategies I use.	575	3.76	.803
12. I find some difficulties (school facilities, parents, material, time…) when I involve students in critical thinking.	584	3.82	.956
13. I have the skills necessary to promote critical thinking among students in my course.	557	3.64	.758
14. I look for specific evidence of critical thinking by students in my course.	563	3.68	.783
15. I believe that it is my responsibility to promote critical thinking in my course.	608	3.97	.716
16. If required, I could implement critical thinking into my course.	566	3.70	.828

Critical Thinking Statement	Sum	M	SD
17. For me to fully implement critical thinking into my course, I need additional support.	632	4.13	.784

4.3.1 The Importance of Critical Thinking

According to the results shown in Table 4, most (96.8%) of the participants agreed with the statement: "Critical thinking encourages students to become active learners" (M = 4.35, SD = 0.59), 96.1% agreed with the statement: "Critical thinking will allow students a better understanding of course topic" (M = 4.16, SD = .81), and 94.8% agreed with the statement: "Critical thinking can be used to achieve better learning outcomes" (M = 4.43, SD = .64). Moreover, 91.5% of them agreed with the statement: "Critical thinking encourages students to become independent thinkers" (M = 4.17, SD = .67); 85% agreed with the statement: "Critical thinking is a method of thinking which would help students enjoy the learning process" (M = 4.16, SD = .82); and 76.5% agreed with the statement: "Critical thinking engages students' higher order thinking" (M = 3.78, SD = 1.03).

Table 4. Teachers' perceptions of the importance of critical thinking.

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	M	SD
Critical thinking engages students' higher order thinking (analyzing, evaluating, and creating).	2.6	15	5.9	54.9	21.6	3.78	1.03
Critical thinking encourages students to become independent thinkers.	3.3	0	5.2	62.7	28.8	4.17	.66
Critical thinking encourages students to become active learners.	0	1.3	2	56.9	39.9	4.35	.59
Critical thinking can be used to achieve better learning outcomes.	0	1.3	3.9	45.1	49.7	4.43	.63
Critical thinking will allow students a better understanding of course topic.	0	.7	3.3	55.6	40.5	4.36	.58
Critical thinking is a method of thinking which would help students enjoy the learning process.	.7	3.9	10.5	48.4	36.6	4.16	.81

4.3.2 The Support for Critical Thinking Teaching

As shown in Table 5, the majority (83%) of the participants agreed or strongly agreed that the Ministry of Education guidelines require them to teach CT, and 74.5% of them agreed or strongly agreed that the teacher's manual explains how to teach CT, while 22.2% were unsure about it. About 70% of the participants agreed that they used to take courses related to how to teach CT to students during pre-service training, and 66.6% agreed that their professors address how to teach CT during the class. However, 38% of the participants did not think they have the skills necessary to promote CT among students in their courses. Most (81.7%) of the teachers believed that it is their responsibility to promote CT in their course, while some

(24.2%) of the respondents were unsure whether they could implement CT into their course or not, if required. Meanwhile, most (88.2%) of the participants agreed with the statement: "In order for me to fully implement CT into my course, I would need additional support".

Table 5. Teachers' perceptions of the support for critical thinking teaching.

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	M	SD
The Ministry of Education guidelines require me to teach critical thinking.	0	3.3	13.7	56.9	26.1	4.06	.73
The teacher's manual explains how to teach critical thinking.	0	3.3	22.2	54.9	19.6	3.91	.74
I used to take course related to how to teach critical thinking to students during pre-service training.	.7	7.2	22.2	52.9	17.0	3.78	.84
My professors address how to teach critical thinking during the class.	2	6.5	24.8	50.3	16.3	3.73	.88
I have the skills necessary to promote critical thinking by students in my course.	0	7.2	31.4	51.6	9.8	3.64	.76
I look for specific evidence of critical thinking by students in my course.	0	7.2	30.1	50.3	12.4	3.68	.78
I believe that it is my responsibility to promote critical thinking in my course.	.7	2.6	15	62.1	19.6	3.97	.72
If required, I could implement critical thinking into my course.	.7	8.5	24.2	53.6	13.1	3.70	.83
In order for me to fully implement critical thinking into my course, I would need additional support.	1.3	3.3	7.2	57.5	30.7	4.13	.78

4.3.3 The Difficulties of Critical Thinking Teaching

Regarding the difficulties of teaching students CT, 74.5% of the participants agreed that students still faced barriers to CT, regardless of the strategies they use for teaching (M = 3.76, SD = .80). Furthermore, 77.8% of them agreed that they had some difficulties when they involved the students in CT (M = 3.82, SD = .96).

Table 6. Teachers' perceptions of the difficulties to engage students in critical thinking.

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	M	SD
I think that students have barriers to critical thinking, regardless of the strategies I use.	.7	9.2	15.7	62.7	11.8	3.76	.80
I find some difficulties (school facilities, parents, material, time…) when I involve students in critical thinking.	2.6	10.5	9.2	58.2	19.6	3.82	.96

4.4 The Relationship between Demographic Characteristics and Teachers' Knowledge and Perceptions of Critical Thinking

Inferential statistics were analyzed to investigate whether a statistically significant association existed between teachers' knowledge and pre-service training. The correlation was computed. The Spearman rho statistic was calculated: r_s (151) = .10, p = .225. The direction of the correlation was positive, indicating that teachers with pre-service training did not differ from teachers without pre-service training. The guidelines from Cohen (1988) indicate that the effect size is small for studies in this area. The r^2 indicates that approximately 1% of the variance in the mean score of teachers' knowledge can be predicted from pre-service training. However, a statistically significant difference was found between the knowledge of groups of teachers with and without in-service training on CT. Teachers' knowledge and in-service training on CT were positively and significantly correlated: r_s (151) = .18, p = .024. The effect size was small for studies in this area, according to Cohen (1988). The r^2 indicates that approximately 3% of the variance in the mean score of teachers' knowledge can be predicted from in-service training.

In addition, a significant correlation existed between teachers' perceptions of pre-service training in CT; r_s (151) = .31, p = .000. Cohen (1988) defined the effect size of .31 as small. The r^2 value suggests that approximately 10% of the variance in the mean score of teachers' perceptions can be predicted from the pre-service training in CT. Similarly, teachers' perceptions also had a positive significant correlation with in-service training; r_s (151) = .27, p = .001. The effect size is relatively small, according to Cohen (1988). The r^2 proves that approximately 7% of the variance in the mean score of teachers' perceptions can be predicted from in-service training in CT. Therefore, teachers who received pre-service or in-service training in CT have a more positive opinion of teaching CT than do teachers who have not received pre-service or in-service training in CT and in teaching CT.

A Kruskal–Wallis nonparametric test was conducted to test for statistically significant differences between a teacher's education qualification groups in terms of knowledge of CT because of the unequal variances and ns across groups. The test indicated that the teacher's education qualification of the three groups did not differ in knowledge of CT, χ^2 (2, N = 153) = .746, p = .689. Because this result proves no statically significant difference among the three groups, no post hoc Mann-Whitney tests were conducted for teachers' knowledge (Morgan et al., 2020). Similarly, no statically significant difference existed among teachers' teaching experience group regarding knowledge of CT, χ^2 (2, N = 153) = 5.485, p = .360.

Given teachers' perceptions, a Kruskal–Wallis nonparametric test was executed to investigate whether any significant differences existed among the teachers' education qualification groups and teaching experience groups regarding their perceptions of CT and CT teaching. The results of the tests indicated no significant differences among the groups, χ^2 (2, N = 153) = 5.278, p = .071; and χ^2 (5, N = 153) = 6.198, p = .287, respectively.

4.5 Teachers' Understanding of Critical Thinking from Interviews

Although the quantitative results from the teacher survey revealed that the majority of the teachers got high mean scores of knowledges about CT, meaning most of them had accurate knowledge about CT, the interview findings proved that they were divided about the meaning of CT. In the interviews, the respondents defined CT as a method of thinking that we use to gain an understanding and to succeed in performing tasks by using reasoning and

intelligence, a way of doing or asking questions to acquire knowledge, and as a good (teaching) method. P1, who had been teaching for more than 20 years and has received both pre-service and in-service training related to CT, defined CT as follows:

CT means thinking critically to get to reality, realize what is real, not illusion, and we also have confidence in our own thinking. If we do not think, our tasks will not succeed. If we think, our answer is successful and reasonable, and the result is fruitful. (P1)

P1 explained CT in terms of 'analyzing' through seeking the 'real' matters, 'reflection' through confirming the reliability of own thinking and emphasizing the importance of 'openness for thinking' to get good answers. P1 understood CT as analyzing, openness, reflection which is the part of CT skills and dispositions. Another teacher (P6), who has been teaching for more than 9 years, but did not receive any in-service training, perceived CT with 'self-regulation'. She mentioned in the interview that:

CT enables students self-thinking, not depending only on textbooks, and helps improve their intelligence. (P6)

Moreover, P6 also shared her understanding of CT with P2 who believed that CT means intelligence. By using intelligence, individuals manage and use their knowledge to achieve the most effective outcomes in their studies, work and living. As P2 expressed her thoughts:

CT is good thinking, and thinking with intelligence and agility, that provides students with energy, and having fun. (P2)

According to P7, who has teaching experience of more than 25 years, CT was defined as having students engage in high-order thinking that requires them to make clear reason, judgment, evaluation, and creation. He stressed that:

CT means having students use high order thinking, making judgment and clear reasoning, then creating new materials or tools. It means thinking, applying, creating, and evaluating. (P7)

The participants' responses indicated that among the six core skills of CT, the teachers understood CT as the skills of analyzing with 'reasoning' and 'deep thinking', self-regulation with 'self-thinking', and evaluation with 'judgment and evaluation'. However, the teachers did not mention interpretation, explanation, and inference skills. Therefore, it seems that these three core skills are the weak points of their understanding of CT. The teachers were still divided over the concept of CT in this study, partly due to their lack of either pre-service or in-service training of CT as suggested by the survey. Another factor involves ambiguous teacher training on CT (see MoEYS, 2006, 2018, 2020). Alazzi (2008) also found that teachers were not familiar with the formal concept of CT. Cultural and institutional factors behind the teachers' understanding of CT included cultural beliefs regarding teacher-student interrelationships and national curriculum instructions and guidelines.

4.5.1 Teachers' Perceptions of Teaching Critical Thinking

In the survey questionnaire, 74.5% of the participants agreed that students still face barriers to CT, regardless of strategies they have been using. In the interviews, the teachers admitted that some of their students have difficulties in applying their CT due to several factors. P1 and P2 mentioned that:

I can say the most challenging factor is that the students do not use their thinking by giving an excuse of being out of their knowledge. (P1)

Most of the students are not familiar with the practices of CT, especially in their reading, observation and analyzing… Some of them are not used to the use of thinking. (P2)

P1 shared her opinion with P2 that students' lack of thinking habits made them unfamiliar with CT and they could not use it in reading, observing, and analyzing. Other participants (P6 and P8) believed that students lacked a habit of thinking since their teachers did not teach or train them to engage in CT or they are poor of general knowledge. They stated:

I think it is due to their lack of general knowledge and training in thinking. Their thinking is just within their comfort zone, and they do not try to think out of the box. Thus, it makes them inactive thinkers, and they could not think critically. (P6)

On the one hand, the most challenging factor is students' habit (of thinking). On the other hand, teachers' pay less attention to teaching and training of CT. Students should be trained in CT early as they engage in schooling. (P8)

4.5.2 The Strategies of Teaching Critical Thinking

Most of the participants perceived that they were teaching CT to their students, while one participant claimed that he had not often engaged his students in CT because his teaching was mainly content based. Questioning was the most common strategy that teachers used in their classes responding to teaching CT strategies as raised by all the participants. The participants mentioned using different kinds or levels of questions, from easy to difficult questions, and open-ended questions. P4, for instance, claimed that he asked questions to students from the an easy to difficult level, with open-ended questions, allowing the students to answer differently. He stated:

The students must work in groups regularly on assigned reading and questions, some of which required further research from the library or from other sources. The questions rank from easy to difficult ones… Students may come up with different answers based on their CT. In such open-ended questions, different students' answers are acceptable. (P4)

Another strategy used by the teachers for improving students' CT was group work. Group work was raised by P2, P1, P7 and P4. By having students work in groups, the teachers could encourage the students to get involved in learning, especially CT, by giving academic rewards, such as scores on monthly tests or group work competition. For example, as P2 and P1 stated:

I used a student-centered approach. They are group work, topics for inquiring learning…What I often do are to guide and motivate them… Of course, students will work hard if they are provided with scores. (P2)

I have the students to work in groups to discuss the questions based on what they have read or learned… Having them to think by providing them what to think about, making a routine of thinking, the students will use their thinking. Rewarding scores also works. (P1)

The typical practices shared by the participants are thought to be effective strategies that promote students learning. However, giving students rewards, especially material ones or

scores will not work for long, so as not promote CT that should be initiated by the students. Furthermore, group competition fail to promote learning of the 21st century skills which focus on cooperation or collaboration rather than competition (Binkley et al., 2012).

Using teaching materials to promote students CT was also raised in this study. P6 explained in the interview that she used teaching materials such as maps to ask and explain students. She said:

I often use teaching materials because in geography many maps are available. Maps enable students to think when we ask them to think about what they have never seen in the book, so they think more about what they do not know, and they can analyze by themselves…I usually explain and compare it with the real society to make them understand more. I ask students to raise their ideas and write them on the blackboard. (P6)

Most of the participants commented that they assessed their students' CT or learning mainly based on tests including oral and written tests. For example, P6 and P8 said:

For me, to encourage students use their CT, I assess their knowledge by using questions…, I test them with oral tests because we can assess who know or not because they are brave to answer, and they could not cheat. Their answers are their own ideas. (P6)

I give them a question and let them answer or write it down. So, we can know which student uses their thinking, and which student thinks less. It comes from reading a book or from their own brain. We can know them by using the method of asking them in oral tests or tests on paper. We also use quick answered questions to see how their CT is. (P8)

P6 further explained that she used questions to assess her students' understanding and thinking, particularly with oral tests since she believed that students could show their real abilities through the oral answers. Similarly, P5 confirmed that he assessed his students with oral and written tests. However, it seemed that he had misunderstanding about assessing CT, while he believed that he could assess students' CT by using quick answered questions.

Based on the data, the teachers' teaching process seemed to follow the same models commonly practiced in social studies classrooms in Cambodia. For example, P7 described his teaching activities in a Moral Civics class as follows:

First, I ask questions to review the lesson, then start asking questions, find a new lesson title, write a title, explain the title, explain the picture, explain the words to them, ask them to read the critical questions, and then let them read the text, then divide the questions or I explain, and start dividing students into four groups of three students So that they start to answer each question and put it on the board. Then we draw a concept value and let them write it in their books. After that I confirm the lesson and give a message and end the lesson. (P7)

From these findings, it can be concluded that the teachers used both materials and methods to teach CT to their students. However, the teachers just introduced the available materials without using appropriate instructions or tasks that reflect CT instructions. For example, just showing or introducing pictures and then giving students details or explanations of the lesson contents in the case of P7 will not effectively promote students' CT. Furthermore, assigning students to work in groups and assess their learning in terms of summative assessment, for example, monthly tests, or giving students scoring rewards, will hardly promote their CT. These are typical practices in the real classrooms in Cambodia. The practices of CT instructions should be varied, as argued by Ennis (1989), who has proposed

four main pedagogical approaches CT instructions: general, infusion, immersion, and mixed approaches.

4.5.3 Teachers' Practices of Critical Thinking Teaching

There are three themes of 15 activities and strategies applied in the classroom observation sheet, such as (1) starting and presenting a new lesson, (2) student learning, and (3) evaluation. The observations showed that the teachers typically started the classes by reviewing the previous lesson or presenting a new one. Students were asked questions and shared their answers with the whole class. They were also asked to observe pictures and materials and share their answers to the class. In classes, the main tasks and activities were centered around questioning either in a written or spoken manner. The classes were concluded with the teachers initiating the key concepts of the whole lessons and students copying the summary of the lessons and working on comprehension check in the textbooks. There was hardly any evidence that teachers had checked whether the lesson objectives were achieved, rather than assign the students with homework.

5. Discussion

5.1 Teachers' Understanding of Critical Thinking

Based on the results of the questionnaire, most of the lower secondary school social studies teachers were found to have accurate knowledge of CT. However, in the follow-up interviews, the way social studies teachers explained and described the concept of CT involves three main skills, such as analysis, evaluation, and self-regulation. The teachers seemed not familiar with other three skills of CT, including interpretation, explanation, and inference. These findings reflect that the teachers' understanding of CT was limited. The participants in this study perceived CT as a method of thinking in which students seek their understanding on tasks by using their reasoning abilities and intelligence. This finding is consistent with a study done by Choy and Cheah (2009) on teacher perceptions of CT, which found that most of the teachers perceived CT as a method of thinking to promote students' interest in their learning process. It is a tool to stimulate students' thinking and improve their learning outcomes. The teachers are still divided over the concept of CT in this study due partly to a lack of either pre-service or in-service training of CT as suggested by the results of the survey. Another factor involves ambiguous teacher training on CT (see MoEYS, 2006, 2018, 2020). Alazzi (2008) also found that teachers were not familiar with the formal concept of CT. Cultural and institutional factors behind the teachers' understanding of CT include cultural beliefs regarding teacher-student interrelationships, and national curriculum instructions and guidelines.

5.2 Teachers' Perceptions of Critical Thinking Teaching

The results of the survey questionnaires revealed that teachers held positive perceptions towards CT. Only few teachers were neutral over their opinion of teaching CT. The teachers' perceptions of the importance of CT seemed to be centered on students' thinking skills and abilities that they could apply those skills or abilities to broaden their knowledge to achieve better learning outcomes. Solving problems in daily life is also a focus of CT explained by the participants. Similar results were found in a research study by Choy and Cheah (2009) showing that teachers perceived CT as important skills for students' better performance in class. It is a crucial part of the learning process that involves analyzing and reasoning or high-

level thinking skills in complex information processing. Kamarulzaman and Hashim (2018) found that teachers agreed on CT as an important skill that makes students capable of applying their knowledge in their real-life situation, while promoting success in their further academic studies and employment. Although this study found that the teachers perceived the importance of CT for learning and teaching thanks to both pre- and in-service training involving CT, real practices in class remain a question. Some teachers still held misperceptions on the practices of CT as having students work in groups and be well disciplined. Moreover, the teachers mainly used questions that were limited to students' memorization. Classroom conventional tests or even national standardized tests are often designed to assess student's low order thinking: memorizing, understanding and applying (see Nith et al., 2010; MoEYS, 2018a).

Although the participants provided various responses regarding the support for CT instructions, most of them referred to the curriculum, teaching guidelines, and textbooks as the main sources of support for CT instructions. This is the case for the previous studies with schoolteachers who stated that the guidelines and coursebooks were the only materials for their teaching (Chet et al., 2014; Song, 2015). The studies conducted by Chet et al.(2014), Nith et al. (2010), Tandon and Fukao, (2015) also revealed that the teachers defined curriculum as a collection of textbooks and teacher guidelines. While occasional in-service or cascade training is common in the Cambodian context to promote teachers' professional development or improve the education quality mainly in teaching and learning (Sok & Heng, 2023) , this kind of training proves to be ineffective due to lack of financial resources and the limited number of participants (MoEYS, 2020b). Moreover, all the teachers raised that there was no teacher manuals or guidance about CT instructions. Therefore, some of them commented that the Ministry of Education should provide teachers with the teacher manuals, instructions, or training on how to teach CT to make them clearly understand and be able to teach CT to their students. The teachers' responses reflect their needs for support to practice CT teaching. In Alazzi's (2008) study, it was found that Jordian teacher's manual lacked clear instructions to help teachers CT activities.

The difficulties for teachers to engage students in CT raised by the respondents included a lack of resources and materials, time constraints, overloaded content, and teachers' required experience and teaching methods. Brodie and Irving (2007) and Snyder and Snyder (2008) also found a lack of sufficient training on CT instructions, and time constraints, due to an overload of content, are the main barriers to integrate CT into classroom practices. In the current study, roughly 60% of the participants got pre-service training on CT, but the training was just about related subjects rather than specific subjects about CT, and more than 40% of the participants claimed that they had not received in-service training about CT. Those difficulties were also identified by the previous studies (Alazzi, 2008; Almulla, 2018; Alwadai, 2014; Choy & Cheah, 2009; Romanowski & Nasser, 2012), except for students' poor ability in reading and writing. It seems to be an emerging theme of barriers to students' CT in this study. In the interviews, the teachers emphasized students' poor ability in reading and writing as a barrier to engage them in CT. They believed that students cannot think critically if they could not read or write well. This difficulty can be explained in the relationship between CT and critical reading and writing (Mendelman, 2007; Paul & Elder, 2006).

5.3 The Relationship between Demographic Characteristics and Teachers' Knowledge and Perceptions of Critical Thinking

The results of the survey indicated that teachers' knowledge and perceptions of CT had no significant correlation with the demographic factors, except pre-service and in-service training of CT, while pre-service training was significantly related to teachers' perceptions of CT and in-service training was significantly associated with teachers' knowledge and perceptions. These findings are in line with Shirazi and Heidari's findings (2019), which claimed that there was no significant relationship between CT and demographic variables, such as age, marital status and educational levels. These results are consistent with a study conducted by Vong and Kaewurai (2016), which found that pre-service teachers' age and education level had no significant association with CT, except gender factors which had negative association with CT. The results indicate that pre-service training seems to have no impact on teachers' knowledge, but it has low impact on teachers' perceptions, and in-service training tends to have impact on teachers' knowledge and perceptions. There should, therefore, be a thorough review of both pre-service and in-service teacher education and training curriculum and programs regarding CT instruction.

5.4 Teachers' Practices of Critical Thinking Teaching

The participants believed that the activities and strategies that they had been using in their classes were helpful in engaging students in CT, although most of their instructions were mainly memorization. The teachers in this study still held misperceptions over what activities and strategies they had been using to promote CT. Stobaugh (2013) suggests eliminating teachers' misperceptions over CT using a student-centered approach, such as group work and questioning to promote CT while teachers depend heavily on material and contents from textbooks and course curriculum materials. Asking students questions is of course to promote CT. However, failing to ask proper questions and provide appropriate time with various resources of information does not work. In the Cambodian context, the implementation of student-centered approach is still questionable. It has been found that teachers even lack content knowledge and pedagogical skills to implement the student-centered approach. Teachers depend mainly on coursebooks and available resources within the curriculum as found in previous studies (see Nith et al., 2010; Chet et al., 2014; King, 2018; Song, 2015). The classroom observations showed that the teachers' teaching did not sufficiently respond to CT instructions as most of their teaching remain lecture models and give little time for students to use their thinking or involve them in discussion or inquiry.

6. Conclusion

This study has shown that 75% of the 153 lower secondary school social studies teachers who participated in this study had accurate knowledge of CT. Similarly, most of them had positive perceptions toward the practices of CT instructions. The study also showed that there were no statistically significant correlations between teachers' knowledge and their demographic characteristics, such as age, gender, teaching experience, educational level, and pre-service training. However, teachers' knowledge had low positive correlation with in-service training. Second, students' poor literacy (in reading and writing) was identified as the most challenging factor behind the CT teaching practices. Moreover, the teachers' perceptions of CT teaching

turned out to be unrelated to their demographic characteristics, except pre- or in-service training. The teachers' perceptions had positive correlation with pre- and in-service training of CT. Third, teaching methods and activities were not reflective of CT. The teachers in the current study had used the right teaching methods and activities intended to promote CT. However, they failed to use the right teaching methods and activities in the right ways. Questioning, for example, is commonly used to promote CT, but the teachers just managed to ask students with low-order thinking questions of knowing or understanding.

7. Implications

Teachers' understanding and practices of CT teaching instruction are important. Therefore, to improve Cambodian lower secondary school social studies teachers' understanding and their practices of CT instruction, policy makers should consider reviewing and making clear definitions of CT in the Cambodian educational curriculum. Curriculum developers are recommended to produce teacher manuals and guidelines that provide clear instructions on how to teach or integrate CT into social studies subjects. Moreover, the concepts and instructions of CT teaching should be explicitly integrated in the teacher training programs. Additionally, CT should be set in part of professional development for pre-service and in-service teachers. The social studies teachers should make sense of CT teaching as their own responsibility, and they need to improve their teaching practices through their own professional development. In addition, if CT is to exist in the Cambodia's classrooms, hence culturally influenced traditional pedagogical practices should be considered and facilitated within the national curriculum and policies.

References

ADB & ILO. (2015). *Cambodia: Addressing the skills gap*. Asian Development Bank and International Labour Organization. https://www.adb.org/sites/default/files/publication/176283/cambodia-addressingskills-gap.pdf

Alazzi, K. F. (2008). Teachers' perceptions of critical thinking: A study of Jordanian secondary school social studies teachers. *The Social Studies*, *99*(6), 243–248. https://doi.org/10.3200/TSSS. 99.6.24 3-248

Almulla, M. (2018). Investigating teachers' perceptions of their own practices to improve students' critical thinking in secondary schools in Saudi Arabia. *International Journal of Cognitive Research in Science Engineering and Education*, *6*(3), 15–27. https://doi.org/10.5937/ijcrsee1803015A

Alwadai, M. A. (2014). Islamic teachers' perceptions of improving critical thinking skills in Saudi Arabian elementary schools. *Journal of Education and Learning*, *3*(4), 37–48. https://doi .org/10.5 539/jel.v3n4p37

Baildon, M. C., & Sim, J. B. -Y. (2009). Notions of criticality: Singaporean teachers' perspectives of critical thinking in social studies. *Cambridge Journal of Education*, *39*(4), 407–422. https://doi.org /10.1080/03057640903352481

Bevan, S. R. (2017). Thinking culturally about critical thinking in Cambodia [Doctor of Education, London South Bank University].

Beyer, B. K. (2008). How to teach thinking skills in Social Studies and History. *The Social Studies*, *99*(5), 196–201. https://doi.org/10.3200/TSSS.99.5.196-201

Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., Miller-Ricci, M., & Rumble, M. (2012). Defining twenty-first century skills. *Assessment and teaching of 21st century skills.* Springer.

Bloom, B. S., Mak D, E., Furst, E. J., Hill, W. H., & Kathwohl, D. R. (1956). Taxonomy of educational objectives: The classification of educational goals. (Hanbook1, Cognitive domain). David Mckay company, Inc.

Brodie, P., & Irving, K. (2007). Assessment in work-based learning: Investigating a pedagogical approach to enhance student learning. *Assessment & Evaluation in Higher Education*, 32(1), 11–19. https://doi.org/10.1080/02602930600848218

Chet, C., Ngin, C., Chhinh, S., Dy, S., & Ford, D. (2014). Reviews of educational contents, pedagogies and connectivity of curriculum and its relevance to economic development in Cambodia: A focus on Khmer, Mathematics and Science for Grades 9 and 12. Royal University of Phnom Penh

Choy, S. C., & Cheah, P. K. (2009). Teacher perceptions of critical thinking among students and its influence on higher education. *International Journal of Teaching and Learning in Higher Education*, 20(2), 198–206.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences.

Creswell, J. W., & Guetterman, T. C. (2019). Educational research: Planning, conducting, and evaluating quantitative and qualitative research. Pearson.

Ennis, R. H. (1985). A Logical Basis for Measuring Critical Thinking Skills. Educational Leadership, 43(2), 44–48.

Ennis, R. H. (1989). Critical thinking and subject specificity: Clarification and needed research. 18(3), 4–10.

Flores, K. L., Matkin, G. S., Burbach, M. E., Quinn, C. E., & Harding, H. (2012). Deficient critical thinking skills among college graduates: Implications for leadership. 44(2), 112–130. https://doi.org/10.11 11/j.1469-58 12.2010.00672.x

Flower, L., & Hayes, J. R. (1981). A cognitive process theory of writing. College Composition and Communication, 32(4), 365. https://doi.org/10.2307/356600

Gashan, A. K. (2015). Exploring Saudi pre-service teachers' knowledge of critical thinking skills and their teaching perceptions. *International Journal of Education and Literacy Studies*, 3(1), 26–33. https://doi.org/10.7575/aiac.ijels.v.3n.1p.26

Hang Chuon, N. (2021). Reforms of teaching methods: Teaching history using 21st century skills. The first national conference on educational pedagogy counselling, Phnom Penh.

Kamarulzaman, W., & Hashim, R. (2018). Primary school teachers' understanding of critical thinking in KSSR classroom and its importance to students. *International Journal of Engineering & Technology*, 7(4.15), 530–535. https://doi.org/10.14419/ijet.v7i4.15.28108

Karabulut, S. (2012). How to teach critical thinking in social studies education: An examination of three NCSS Journals. *Eurasian Journal of Educational Research*, 49, 197–214.

Khan, W. B., & Inamullah, H. M. (2011). A Study of lower-order and higher-order questions at secondary level. *Asian Social Science*, 7(9), 149–157. https://doi.org/10.5539/ass.v7n9 p149

King, E. (2018). CFS policy and Cambodian teacher education and training: Beeby revisited. The International Education Journal: Comparative Perspectives, 17(2), 16–29.

Madhur, S. (2014). Cambodia's skill gap: An anatomy of issues and policy options. Cambodia Development Research Institute.

Mendelman, L. (2007). Critical Thinking and Reading. *Journal of Adolescent & Adult Literacy, 51*(4), 300–302. https://doi.org/10.1598/JAAL.51.4.1

MoEYS. (2004). Education psychology.

MoEYS. (2006). Pre-service training curriculum for lower-secondary school teachers: Curriculum of regional teacher training centers.

MoEYS. (2013). Education psychology.

MoEYS. (2015). Teacher policy action plan.

MoEYS. (2016a). Curriculum framework of general education and technical education.

MoEYS. (2016b). Mid-term review report in 2016 of the education strategic plan 2014-2018 and projection to 2020.

MoEYS. (2018a). Detailed course syllabus on Khmer language for lower secondary education.

MoEYS. (2018b). Teaching methodology for common school subjects.

MoEYS. (2019). Education Strategic Plan 2019-2023.

MoEYS. (2020a). PTTC INSET training needs assessment: Report of findings.

MoEYS. (2020b). PTTC INSET training needs assessment Report of findings.

MoEYS. (2021a). A handbook on general education student learning assessment.

MoEYS. (2021b). Public education statistics and indicators 2020-2021.

MoEYS. (2018c). A workshop on the dissemination of the results of the grade 8th student national learning assessment.

Morgan, G. A., Barrett, K. C., Leech, N. L., & Gloeckner, G. W. (2020). IBM SPSS for introductory statistics: Use and interpretation (6th ed.). Taylor and Francis.

Nith, B., Wright, W. E., Hor, S., Bredenburg, K., & Singh, M. (2010). Active-Learning Pedagogies as a Reform Initiative: The Case of Cambodia. *American Institutes for Research Under the EQUP1 LWA*, 1–32.

Opertti, R., Kang, H., & Magni, G. (2018). Comparative analysis of the national curriculum frameworks of five countries: Brazil, Cambodia, Finland, Kenya and Peru. UNESCO-IBE. https://unesdoc.unes co.org/ark:/48223/pf0000263831

Ornstein, A. C., & Hunkins, F. (2018). Curriculum: Foundations, principles and issues (7th ed.). Pearson.

Patrick, J. J. (1986). Critical Thinking in the Social Studies. ERIC Digest No. 30. http://ericae. net/edo/ed 272432.htm

Paul, R., Binker, A. J. A., & Weil, D. (1990). Critical thinking handbook: K-3. Foundation for Critical Thinking.

Paul, R., & Elder, L. (2006). *Critical thinking reading & writing test*. Foundation for Critical Thinking.

RGC. (2007). Education law. Royal Government of Cambodia.

Romanowski, M. H., & Nasser, R. (2012). How critical thinking is taught in Qatari independent schools' social studies classrooms: Teachers' Perspectives. *International Journal of Education*, 4(1), p68. https://doi.org/10.5296/ije.v4i1.1304

Santrock, J. W. (2011). Educational psychology (5th ed). McGraw-Hill.

Shirazi, F., & Heidari, S. (2019). The Relationship between critical thinking skills and learning styles and academic achievement of nursing students. *Journal of Nursing Research*, 27(4), 1–7. https://doi. org/10.1097/jnr.0000000000000307

Snyder, L. G., & Snyder, M. J. (2008). Teaching critical thinking and problem-solving skills. *The Delta Pi Epsilon Journal*, L(2), 90–99.

Sok, S., & Heng, K. (2023). Research on teacher education and implications for improving the quality of teacher education in Cambodia. *International Journal of Professional Development, Learners and Learning,* 6(1), 1–9. https://doi.org/10.30935/ijpdll/14042

Song, S. (2015). Cambodian teachers' responses to child-centered instructional policies: A mismatch between beliefs and practices. Teaching and Teacher Education, 50, 36–45. https://doi.org/10. 1016/j.tate.2015.04.004

Stobaugh, R. (2013). Assessing critical thinking in middle and high schools: Meeting the common core. Routledge.

Tandon, P., & Fukao, T. (2015). Education the next generation: Improving teacher quality in Cambodia. World Bank.

The World Bank. (2011). Cambodia teacher policy: SABER policy report 2011. The World Bank.

Thonney, T., & Montgomery, J. C. (2019). Defining critical thinking across disciplines: An Analysis of community college faculty perspectives. College Teaching, 67(3), 169–176. https://doi.org/10. 1080/87567555.2019.1579700

Trilling, B., & Fadel, C. (2009). 21st century skills: Learning for life in our times. John Wiley & Sons.

UNESCO Institute for Statistics. (2012). International standard classification of education: ISCED 2011. UNESCO Institute for Statistics.

Veltri, B. T. (2014). Social studies teaching for learners who engage. In R. Papa (Ed.), Media rich instruction: Connecting curriculum to all learners (pp. 153–168). Springer.

Vong, S. A., & Kaewurai, W. (2016). Exploration of critical thinking of trainee students at Regional Teacher Training Center in Takeo Province, Cambodia. Humanities and Social Sciences, 9(1), 33–45.