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# Instructional model development to enhance critical thinking and critical thinking teaching ability of trainee students at regional teaching training center in Takeo province, Cambodia

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## ABSTRACT

The main purposes of this research are to develop, implement, and evaluate an instructional model based on the cognitive approach to enhance critical thinking among trainee students and to develop their abilities in teaching critical thinking to learners. The model was designed utilizing 4 main components of research and development processes and implemented with 15 trainee students whose majors were English and Khmer at the Regional Teacher Training Center. The received data was analyzed using scoring rubrics, descriptive statistics, the Wilcoxon test, and content analysis. The results revealed that there were 6 main components of the developed instructional model: principle, objective, learning content, learning instruction, learning materials, and evaluation. The developed instructional model was at the highest level of applicability ( $\bar{X} = 4.21$ ,  $SD = 0.23$ ). Critical thinking learning instruction was designed into 8 steps consisting of: triggering activity, identifying problem, investigating related data, discussing findings, evaluating findings, creating solutions, presenting solutions, and reflecting learning outcome. Trainee students' post critical thinking was much higher than pre-critical thinking implementation, while their abilities in teaching critical thinking were at the exemplary level ( $\bar{X} = 20.62$ ,  $SD = 0.28$ ). Trainee students' perceptions toward learning critical thinking and teaching instruction were at the highest level ( $\bar{X} = 4.28$ ,  $SD = 0.19$ ).

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## Introduction

Rebuilding the teacher training system in Cambodia still presents some challenges, especially the lack of comprehensive training system, teachers to fulfill the current needs, guidance from the concerned authorities, and limitations regarding the quality of teacher training and the training curriculum and program. Furthermore, the policies

of training improvement which are under development need to be immediately enhanced (UNESCO, 2010–2013, p. 25). Concerning this matter, the institutions should train trainee students to be a competent human resource by nurturing them to have high capacity, knowledge, skills, morality, inventive and creative ideas, enterprise spirits, and in particular critical thinking skills (MoEYS, 2011).

The research "Exploration of Critical Thinking of Trainee Students at Regional Teacher Training Center in Takeo Province, Cambodia" conducted by Vong and Keawurai (2014) reported that trainee students' critical thinking abilities were generally at a low level ( $\bar{X} = 1.88$ ). This

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finding reflected that trainee students' critical thinking abilities needed to be immediately strengthened. Fisher (2011, p. 1) stated that enhancing students' abilities for critical thinking is considered as an important goal of education. The goal of education for critical thinking is to develop students drawing on sound thinking, reasons, and good judgment in searching for clarity and authenticity (Marzano et al., 1988).

## Literature Review

Critical thinking is considered as one of the compulsory skills needing improvement in the 21st century (Trilling & Fadel, 2009, p. 7), and considered as a skill that can be enhanced in a person's life (Ornstein & Hunkins, 2004, pp. 119–120). In daily life, critical thinking is utilized to create sharp decision making, to form an opinion based on reasons, to surmount individualistic discernment and predisposition, and to indicate persuading motives in sustaining conclusions regarding what should be done and accepted as true (Bassham, Irwin, Nardone, & Wallace, 2011, p. 1).

Stupinsky, Renaud, Daniels, Haynes, and Perry (2008) conducted research on critical thinking dispositions and perceived academic control and achievement of pre-service teachers. Their findings revealed that college students who had high academic achievement were strongly committed to think critically. In an investigation of the discernment of critical thinking, Alazzi (2008) agreed with the recognition of critical thinking in the junior high school environment and inferred that more exploration on how critical thinking is taught, learned, and judged is required to explicate. McMahon (2009) clarified that any student who was completely involved in strengthening critical thinking performed through teaching or digital methods as a doorway to acquire critical thinking, appeared to obtain a profound comprehension of aspect and implementation. However, learning based on memorization inevitably interrupts the enhancement of critical thinking (Chapman, 2001).

Critical thinking can be taught and learned (Halpern, 1993). Students will improve their critical thinking when teachers use appropriate instructional methods and curriculum materials (Gadzella & Masten, 1998; Halpern, 1993; McMillan, 1987), active learning strategies (Kim, 2009), and student-to-student and student-to-instructor interactions (Cooper, 1995; Howe & Warren, 1989). In addition, critical thinking is considered as the aim of instruction in which the students learn to apply cognitive skills such as hypothesizing, designing, performing, and analyzing a series of investigations (Dell'Olio & Donk, 2007, p. 33; Gomez, 2002; Wiles & Bondi, 1989). The cognitive approach emphasizes the importance of mental processes in learning which occurs through the surrounding environment with an active role for learners' perceptions, thoughts, beliefs, attitudes, and values in constructions, acquisitions, retrieval, or forgetting (Schunk, 2008, pp. 17–18). Furthermore, cognitive processing expresses the way that students learn or concerns the development of their thinking abilities such as analysis, inference, induction, and evaluation are identified as key elements of critical thinking (Adler, 2000).

The cognitive approach covers certain theories including constructivist learning theory, cognitive development theory, social-cognitive theory, cognitive information processing theory, and adult learning theory in which the key principles form the basic root in fostering learners to use critical thinking in order to construct new knowledge themselves. Constructivist learning theory is extensively related to students constructing new knowledge based on their past experiences (Bruner, 1960), cognitive development theory focuses on learning constructed through stages of development (Dewey, 1916; Piaget, 1963), social-cognitive theory is learning that occurs through social interaction (Meichenbaum, 1977), cognitive information-processing theory is concerned with students learning through analyzing the information (Broadbent, 1958), and adult learning theory is related to individual needs and freedom (Knowles, 1984).

It is clear that critical thinking is really important for classroom, workplace, and especially for daily life (Ornstein, Pajak, & Ornstein, 2011, p. 89), but teaching and evaluation of critical thinking in the current collegiate environment and curricula are insufficient (Gupta, 2005). Due to its necessity, this research will investigate how the cognitive approach consisting of constructivist learning theory, cognitive development theory, social-cognitive theory, cognitive information processing theory, and adult learning theory is used to develop an instructional model to enhance critical thinking and the critical thinking teaching ability of trainee students at the Regional Teacher Training Center (RTTC) in Takeo province, Cambodia.

## Research Objectives

The main purposes of this research were:

1. To develop an instructional model based on the cognitive approach to enhance critical thinking among trainee students and to develop their abilities in teaching critical thinking to learners.
2. To implement the developed instructional model to enhance critical thinking among trainee students and to develop their abilities in teaching critical thinking to learners.
3. To evaluate the developed instructional model to enhance critical thinking among trainee students and to develop their abilities in teaching critical thinking to learners.

## Research Method

### *Design of Instructional Model Development*

The research was conducted using three main steps as follows:

**Step I:** The development and validation of the instructional model consisted of three sub-steps as follows:

1. Critical analysis of related theories was done to draft an instructional model. The deductive method was used to investigate and gather the best findings

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