The development and validation of the Blended Socratic Method of Teaching (BSMT): An instructional model to enhance critical thinking skills of undergraduate business students

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ABSTRACT

Enhancing critical thinking skills is one of the paramount goals of many educational institutions. This study presents the development and validation of the Blended Socratic Method of Teaching (BSMT), a teaching model intended to foster critical thinking skills of business students in the undergraduate level. The main objectives of the study were to 1) to survey the critical thinking skills of undergraduate business students, and 2) to develop and validate the BSMT model designed to enhance critical thinking skills. The research procedure comprised of two phases related to the two research objectives: 1) surveying the critical thinking skills of 371 undergraduate business students at Naresuan University International College focusing on the three critical thinking competencies of the RED model—recognize assumptions, evaluate arguments, and draw conclusion, and the determination of the level of their critical thinking; and 2) developing the instructional model followed by validation of the model by five experts. The results of the study were: 1) the undergraduate business students have deficient critical thinking based on the RED Model competencies as they scored "below average" on the critical thinking appraisal, and 2) the developed model comprised six elements: focus, syntax, principles of reaction, the social system, the support system, and application. The experts were in complete agreement that the model is "highly appropriate" in improving the critical thinking skills of the business students. The main essence of the model is the syntax comprising of five steps: group assignment, analysis and writing of case studies; group presentation of the business case analysis in class; Socratic discussion/questioning in class; posting of the case study on the class Facebook account; and online Socratic discussion/questioning. The BSMT model is an authentic and comprehensive model combining the Socratic method of teaching, information and communication technology (ICT), and business case analysis.

Introduction

Critical thinking has been recognized as indispensable part of human life as well as in accomplishing tasks at work.

Before making any decision, a person has to gather, analyze, evaluate, and synthesize all the necessary information, as well as envision the consequences of the course of each alternative. To be successful in business, someone must possess critical thinking skills in order to make informed decisions quickly in a highly competitive and rapidly changing environment. According to the American Management Association (2010), businesses these days

place special importance on critical thinking skills when employing people. Similarly, in a survey of 400 senior HR professionals, it was revealed that the respondents place critical thinking as the most important skill for their employees (Chartrand, Ishikawa, & Flander, 2013).

Critical thinking, as defined by the National Council for Excellence in Critical Thinking (2013), is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. Since critical thinking skills are a high priority and demanded by the job market, educators are of a consensus that it should be one of the primary concerns for any educational institution to produce graduates with a high level of thinking skills, and these skills should be emphasized in every school curriculum.

In Thailand, education policy requires that Thai students should be able to reason, criticize, know how to solve problems, and apply these skills in real life situations (The Office of the National Education Center, 1996). The importance of critical thinking is also stressed in the National Education Act of 1999, as stipulated in Section 24. In addition, according to the Partnership for 21st Century Learning (n.d.), 21st century skills have been used by educators and put at the center of learning. Likewise, educators believed that schools must provide students with a broader set of "21st century skills" to thrive in a rapidly evolving, technology-saturated world (Jerald, 2009), and critical thinking is one of those skills.

Unfortunately, despite long-standing and numerous efforts of many sectors in Thailand to foster critical thinking; student's deficient critical thinking is still a persistent problem. This is due, in part, to the teaching methods used. That is, students are still taught to listen, rather than to question (AMP Group, 2011). Other factors contributing to these problems include Thai culture, the school system, and religion (Kaowiwattanakul, 2012).

Lack of critical thinking skills is a phenomenon existing, not only in Thailand, but in many parts of the world as well. As evidence of the crisis, the Business Roundtable, a network of company chief executives, found in a 2009 survey of 600 employers that it was difficult to find qualified employees who possess critical thinking (Taylor, 2010).

To deal with the lack of critical thinking skills among Thai students, this study presents an instructional model combining the Socratic method of teaching and information communication technology (ICT) by using the popular social media platform—Facebook. This model is known as the Blended Socratic Method of Teaching (BSMT). Many scholars have asserted that the Socratic method of teaching is an effective way to promote critical thinking skills since it aims to elicit student responses through a series of probing questions which encourage them to think logically before offering their answers (Anonymous, 2011). Furthermore, Paul and Elder (1997) stated that the Socratic method has been demonstrated for ages as the most powerful teaching method for enhancing critical thinking skills. In addition, since students these days are categorized as digital natives (The Economist Intelligence Unit, 2008) and using technology is becoming the trend in teaching and learning

(Iordache & Lamanauskas, 2013), ICT is integrated into the model. Hence, the Socratic method was blended with ICT by using social media—Facebook. Blended learning which refers to the combination of traditional face-to-face teaching and online education (Gilbert & Flores-Zambada, 2011) is gaining popularity due to findings showing numerous benefits to student learning.

This study focused on undergraduate business students. In addition to the importance of critical thinking in business, it is said that an ordinary citizen interacts with businesswomen and businessmen far more frequently than with members of other professions (Colby, Ehrlich, Sullivan, & Dolle, 2011). Hence the focus of this study was undergraduate business students.

From a holistic perspective, why do we have to be concerned with critical thinking? The answer is very simple—it is not only for business students, but also for people in general because whenever we are dealing with human life, we are almost always dealing with thinking. Hence, the researcher developed an instructional model that will alleviate the problem of business students' deficient critical thinking skills.

Research Questions

1. What is the level of the critical thinking skills of the undergraduate business students?
2. How can the appropriateness of the instructional model be developed and validated to improve the critical thinking skills of the business students in the undergraduate level?

Research Objectives

1. To survey the critical thinking skills of undergraduate business students.
2. To develop and validate the BSMT model to improve the critical thinking skills of the undergraduate business students.

Literature Review

Components of Teaching Models

According to Joyce, Weil, and Calhoun (2009), there are different essential components of a teaching model. In this study, the six components presented by Joyce et al. (2009) were adopted in developing the instructional model by Boa, Wattanatorn, and Tagong (2016), namely 1) focus; 2) syntax; 3) principles of reaction; 4) the social system; 5) support system; and 6) application.

The RED Model of Critical Thinking

Critical thinking has been variously defined, with some focusing on its attributes or components, while others focus on its applicability. In order to better explain critical thinking skills, a model known as the RED Model of Critical Thinking, which was used as a basis in developing the instructional model, is discussed.

Halpern (2003) defined critical thinking as a form of cognition which is purposeful and goal-oriented. She defined it as the use of cognitive skills or strategies that increase the probability of a desirable outcome. On the other hand, Menkes (2005) similarly defined critical thinking as a form of cognition like Halpern (2003). They both mentioned using critical thinking in choosing the best decision under certain situations. Menkes (2005) defined critical thinking as cognitive skills that determine how well someone gathers, processes, and applies information in order to identify the best way to reach a particular goal or navigate a complex situation, whereas, Chaffee (2013) defined critical thinking as a purposeful, organized cognitive process that we use to understand the world and make informed decisions.

There is no universal definition of critical thinking. Despite this, there are still common aspects that overlap. Although defined differently, the above definitions of critical thinking include using reasoning/logic, judgment, metacognition, and reflection and questioning (Halpern, 2003). As such, the researcher adopted a definition that will sum up the different definitions mentioned above. Therefore, the RED Model is adopted in this study.

The RED stands for recognizing assumptions, evaluating arguments, drawing conclusions, a model developed by Pearson Education, Inc. (2013). The RED model lays out a path for understanding how critical thinking works. Also, it was stated that the RED is an effective and powerful critical thinking tool that provides a systematic, step-by-step process for examining issues, events, people, and problems.

Socratic Method of Teaching

The Socratic method of teaching is referred to as the method of dialectics (Lavine, 1984) developed by Socrates, one of the three famous Greek philosophers. It is an approach by which one seeks the truth via a process of questions and answers (Magee, 2001). In this study, the dialectic style was used in class and in Facebook discussions to enhance RED.

There are several reasons why the Socratic method of teaching was chosen for this study: 1) the Socratic method is the oldest and still the most powerful teaching tactic for fostering critical thinking (Paul & Elder, 1997); and 2) it is time to reclaim the Socratic method as a relevant framework for actively engaging students with the critical thinking process (Reich, 2003).

Blended Learning

In this study, blended learning is defined as a learning approach which combines the classroom and Facebook Socratic discussion between and among the student-interlocutor and Socratic teacher focusing on business case studies. There are different types of blended learning; the BSMT model is a type of face-to-face driver where technology is a supplementary tool in learning (Bhashkar, 2013; Christensen Institute, 2012). In this type, the students can study at home, in the classroom or in a technology lab.

Methods

Phase I: Survey of the Critical Thinking Skills of Undergraduate Business Students

Population. The population consisted of all (371) undergraduate business students enrolled in the Bachelor in Business Administration program (B.B.A.) from first year to fourth year, majoring in Human Resource Management (HRM), Tourism Management, and International Business Management at Naresuan University International College (NUIC), first semester, academic year 2014.

Instruments. A standardized questionnaire known as the Watson-Glaser Critical Thinking Appraisal (WGCTA) was used as the data collection instrument. It was used to assess the abilities of the students in three skills areas of the RED. The test consists of 40 multiple-choice questions and can be completed in 50 min.

Reliability. Numerous researchers have considered the Watson-Glaser Critical Thinking Appraisal (WGCTA) as a reliable and valid instrument in measuring critical thinking (Watson & Glaser, 1991). Likewise, in this study, the WGCTA reliability was calculated as 0.74 reliable using Cronbach's alpha.

Data analysis. The SPSS program was used to determine the mean ($\bar{x}$) and standard deviation (S.D.). The overall performance of the students on the test was scored according to the correct answers obtained from the test administered. The interpretation of the scores is below:

91st percentile and above - Well above average
71st — 90th percentiles - Above average
31st — 70th percentiles - Average
11th — 30th percentiles - Below average
10th percentile and below - Well below average

Phase II: Development and Validation of the BSMT Model

The instructional model was developed in the sequence shown in Figure 1.

Expert Validation of the Model

Five experts assessed the quality of the teaching model and the guidelines in using it. The criteria for the experts were: a) 10 year's teaching experience in higher education; b) a doctoral degree; and c) in the following fields: curriculum and instruction, business, and education.

Instrument: Evaluation forms were designed to assess the appropriateness of the BSMT model with guidelines for using them. The evaluation for the model had two parts: 1) appropriateness of the BSMT model, and 2) conformity of the components of the BSMT model. In addition, the evaluation for the guidelines for using the BSMT model had two parts: 1) how to use the BSMT model and 2) appropriateness of the lesson plan. The evaluation forms were designed using a five-point Likert rating scale with the following scores: 5 = Highly Appropriate; 4 = Appropriate; 3 = Neutral; 2 = Less Appropriate; and 1 = Least Appropriate.
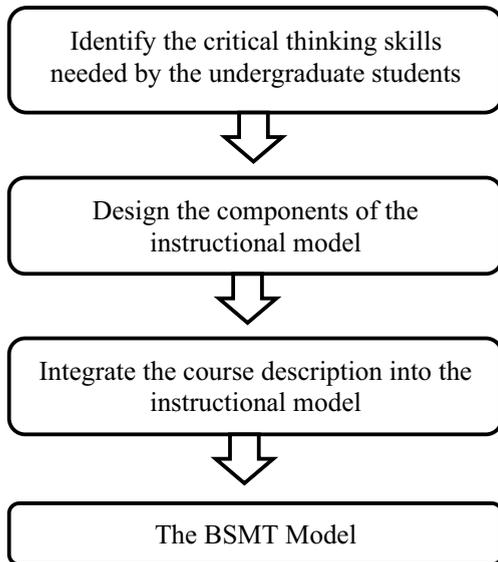
Figure 1 Development of the BSMT model

Data Analysis: The SPSS program was used to determine the $\bar{x}$ and S.D. and to analyze the ratings given by the experts.

Results

Phase I: Survey of the Critical Thinking Skills of Undergraduate Business Students

The results for this phase are provided in Table 1. Based on the percentile provided by the Watson & Glaser (1991), the mean score of 13.26 with a standard deviation of 3.85 fell within the 11th—30th percentile which is interpreted as "below average."

Phase II: Development and Validation of the BSMT Model

Based on the findings in Phase I, the BSMT model (Boa et al., 2016) was developed to alleviate the critical thinking deficiency of the undergraduate business student (Figure 2).

Figure 2 presents the different components of the Blended Socratic Method of Teaching (BSMT) model namely, focus (objectives of the model), syntax (instructional process), principles of reaction (teacher's reaction to students' responses), the social system (activities), the support system (teaching materials), and application (Boa et al., 2016). The components of the BSMT model were adapted from the result of the previous study of Boa et al. (2016).

Table 1
Overall critical thinking test score of undergraduate business students

	Mean	Standard deviation	Level of critical thinking
		(n = 371)	
Critical thinking test score	13.26	3.85	Below Average

Component 1: Focus (Objectives of the Model)

The fundamental objective of the model is to foster the RED of students through the mixing of dialectic style, presentation, business case analysis and social media—Facebook (Boa et al., 2016), hence the essence of blended learning with the addition of the Socratic method.

Component 2: Syntax (Instructional Process)

The heart of the model is the instructional process or syntax. It provides the sequential steps which show how to use the model, as shown in Figure 3:

Step 1: Case Reading and Writing Case Analysis in Groups. The first step involves the assignment of students to their respective groups, cases and writing of the business case analysis according to the weeks assigned to the group. There are several activities (Boa et al., 2016) involving the following: 1.1) students are grouped into three to four people by the instructor in the first class meeting, and they are free to choose who will be in their group; 1.2) there are 10 cases for 10 weeks which will be assigned to each group by the instructor; 1.3) the date of the case presentation is assigned and announced by the instructor at the first class meeting; and 1.4) the group completes the assigned case analysis before coming to class. There is a prescribed format for writing the case analysis.

One of the significant qualities of business students is the ability to work in teams. As such, students in this instructional model will work in a team in investigating and writing the case analysis. Additionally, this method promotes active learning and motivates students to engage with the material.

Step 2: Business Case Analysis Presentation. The model chronologically provides the activities that the students should follow in the presentation of the business cases. According to Boa et al. (2016), the activities are the following: 2.1) students prepare a PowerPoint presentation; 2.2) the presenters provide a hard copy of the case analysis to the instructor; 2.3) those who are not presenting should pay close attention to the presentation; 2.4) the first part of the presentation should include the facts of the case—nature of the case, character, events/incidents, and other important facts; 2.5) discuss issues and problems; 2.6) present an alternative course/s of action; 2.7) answer the problems; and 2.8) state the conclusion. The activities are not exclusive; the instructor may choose to include other activities.

There are many benefits of using the case method of learning. Learning occurs most effectively when concepts and techniques are experienced not in an abstraction but in realistic situations (Kuh, 2008).

Step 3: Socratic Discussion in Classrooms. Socratic discussion begins after the group presentation in class. Probing questions can be asked directly to the presenters. However, anyone in class can answer the questions. Everyone (instructor and students) is encouraged to participate by answering, commenting on or asking questions. In order to monitor the student's participation, the instructor has class cards for each student. It is of utmost importance that the
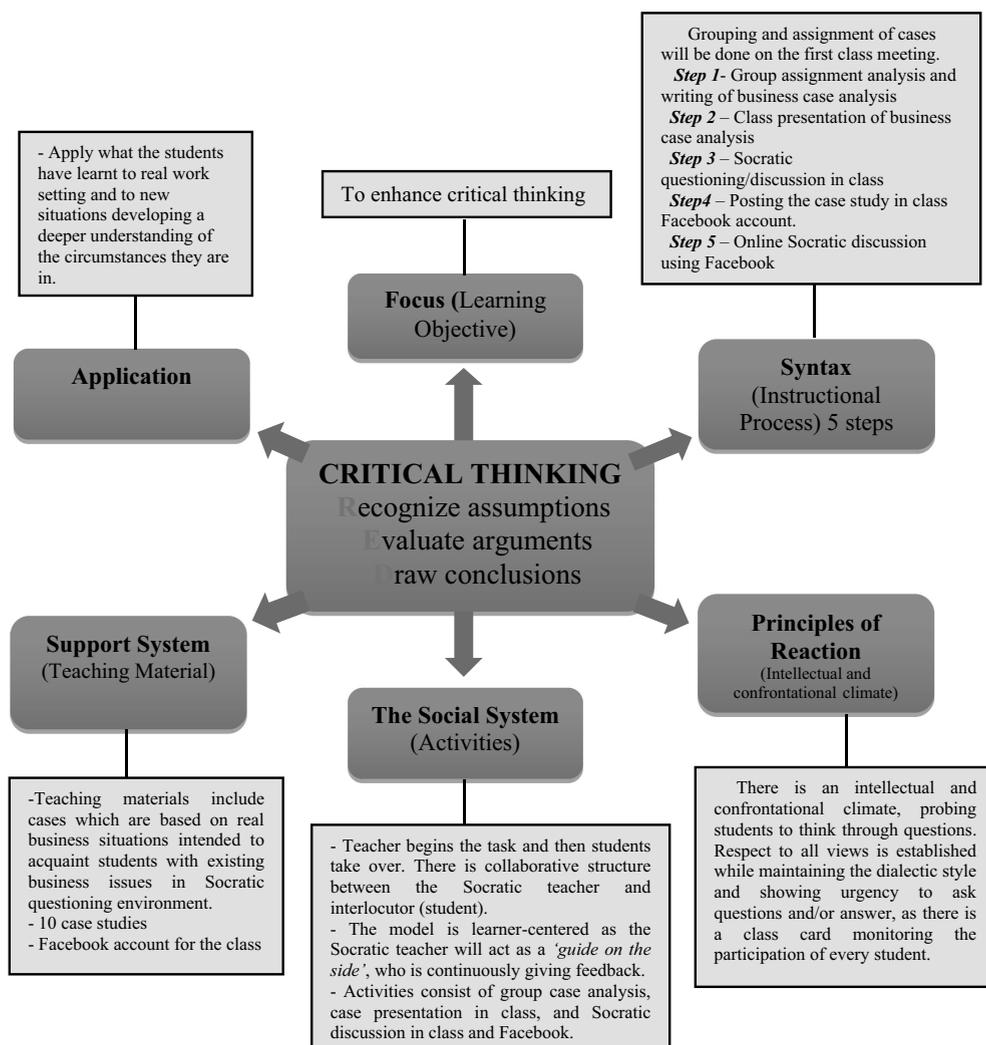
Figure 2 Blended Socratic method of teaching (BSMT) model
Source: Boa et al. (2016)

Socratic teacher/instructor knows the names of each student in class so that, he/she can continuously monitor the discussion without interruption by asking for a student's name. The instructor should bear in mind that he/she should not give answers to any questions. During this stage, there are sub-stages/activities: 3.1) the instructor/student asks probing questions; 3.2) the presenter/student/ instructor asks more probing questions. There is no limit to the number of questions. No answer is given except to factual questions; 3.3) the members of the class evaluate the questions and provide more arguments and probing questions; 3.4) the instructor concludes the discussion but does not answer the question posed by the instructor or student (Boa et al., 2016). In addition, it is said that the questioning strategy is the foundation of the Socratic approach (Whiteley, 2006).

Step 4: Posting the Case on the Class Facebook Group. As there is limited time for Socratic discussion in class, the business case presented will be posted by the presenters on the class Facebook account. Every student in the class is required to be in the Facebook account created by the instructor. The account is exclusive to the members of the class.

Step 5: Online Socratic Discussion. The Socratic discussion using Facebook immediately ensued as there are no time or question limitations in this discussion. The activities involved in this step are as follows: 5.1) students are instructed to post their questions and/or answers, and the instructor continuously monitors and asks probing questions to students but does not give answers as a rule; 5.2) the instructor/student asks probing questions; 5.3) the presenter/student/instructor asks more probing questions; 5.4) the members of the class evaluate the questions/comments and provide more arguments and probing questions; and 5.5) the instructor is expected to conclude the discussion (Boa et al., 2016). Also, the Socratic teacher/instructor does not answer the questions.
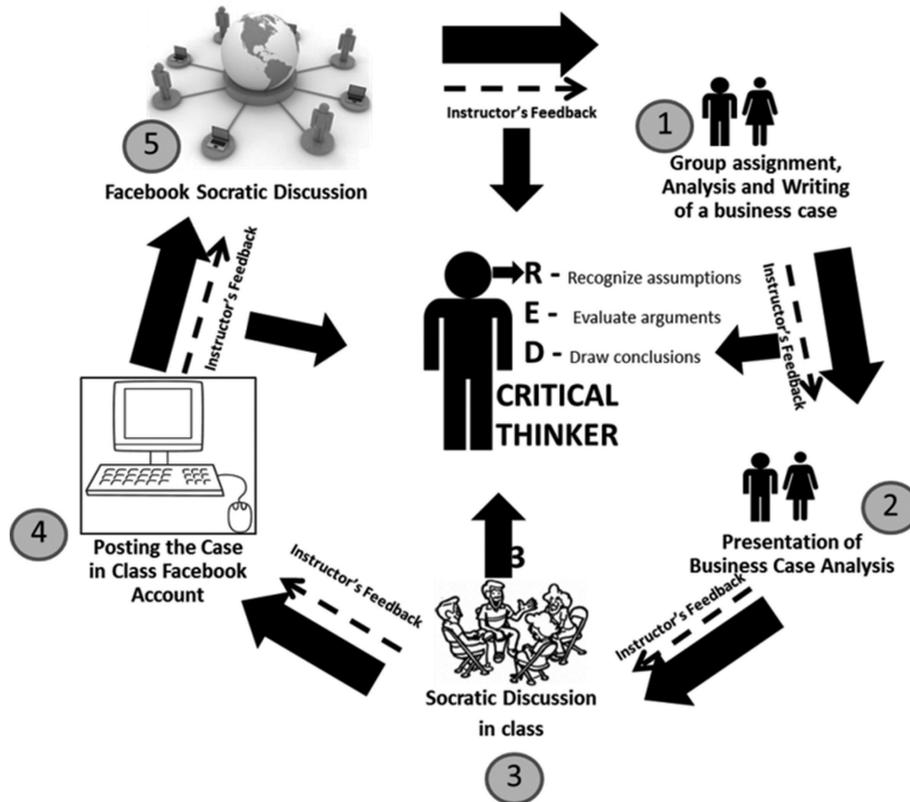
Figure 3 Syntax of the BSMT model
Source: Boa et al. (2016)

If the students feel the need to discuss the case further, he/she can do so anytime and anywhere.

Feedback from the Socratic Teacher (Instructor). As stated by (Boa et al., 2016), the Socratic teacher maintains the status of *"guide on the side,"* facilitating the discussion and guiding the students to be on track with the discussion, and at the same time participating in the discussion by providing more probing questions. This is considered as an integral aspect of the BSMT model.

Component 3: Principles of Reaction (Teacher's Reaction to Students' Responses)

In this component, the Socratic teacher is expected to maintain a dialogic mode of interaction among the members of the class and lead students to focus on the case at hand (Boa et al., 2016). Furthermore, the class environment is characterized by discomfort, yet the discussion is intellectual and productive at the same time. The use of class cards by the Socratic teacher to monitor student participation adds a feeling of urgency. Additionally, respect for the ideas/opinions presented by the students shall be maintained at all times.

Component 4: The Social System (Activities)

The BSMT model involves activities which are considered learner-centered, such as business case analysis in groups, presentation of case analysis, Socratic questioning in class, and online Socratic discussion using Facebook. The

role of the Socratic teacher as a *"guide on the side"* shall be maintained throughout the learning process.

Component 5: The Support System (Teaching Materials)

Boa et al. (2016) stated that the support system of the model created consists of 10 business case studies based on real issues/problems happening in organizations. One case study is allotted for each week of the class. Using the case studies helps business students to be acquainted with real working scenarios and at the same time nurtures their critical thinking skills. The case studies have at least 9 pages about business ethics and social responsibility.

Component 6: Application

The BSMT model applies to what the undergraduate business students have learnt from real work environments and to be able to comprehend any situations they are in. It is intended for older students and serves as a framework for developing course content in business (case study), and developing a process to enhance critical thinking skills of students through the use of face-to-face and online discussion which could be done synchronously or asynchronously anytime, anywhere.

Expert Validation of the Model

The five experts rated the BSMT model and the guidelines in using it as *"highly appropriate"* (mean = 4.83 and standard deviation = 0.54) in all items. The five experts

commented positively on the appropriateness of the BSMT model. When it came to the components in the development of the model as well as the related literature, the experts commented: *"Good organization and thorough review of related literature"* and *"Well documented research and succinctly conceptualized in details and very easy to administer, leading to the construction and evaluation of the proposed model in authentic educational settings."* Other experts commented that the model is a breakthrough and that teaching professionals should be aware of it.

Conclusion and Discussion

This study considered the first and second phases in the development of the Blended Socratic Method of Teaching (BSMT) model in order to improve the critical thinking skills of students, particularly undergraduate business students. The instructional model was developed due to the uttermost significance of critical thinking skills in business field. Likewise, it is a disturbing revelation that despite the comprehensive efforts of fostering critical thinking skills, employers are still complaining lack of critical thinking skills among their workforce.

The first phase of the study revealed that the undergraduate business students have deficient critical thinking, particularly related to the RED Model. Aside from theoretical and research findings proving the deficiency of the critical thinking of undergraduate business students, one may conclude that they scored *"below average"* on the critical thinking test because the test administered was in the English language, but the students were non-native English speakers. Although the students were given ample opportunity to ask questions to the proctor and even allowed to look up unfamiliar vocabulary in a dictionary, the comprehension of the text might have affected their test scores. Furthermore, before administering the critical thinking test, its objectives were discussed with the students. However, some students did not take the test seriously, knowing that they would not get a grade for it. Hence, the score was not satisfactory.

Additionally, the undergraduate business students obtained *"below average"* because they might not have known how to draw conclusions from observed or supposed facts. In short, they might not think beyond the given facts or circumstances. In addition, the students might not have been able to separate fact from fiction and they might not perceive what was presupposed or taken for granted. Again, they might not think beyond what is presented to them. Perhaps significantly, in a Thai classroom, students are taught to listen but not to think (Buranapatana, 2006; Petchtone & Sumalee, 2014; Raktham, 2008). The students in this study were mostly from Thailand.

The finding is consistent with other studies by Ackerman, Gross, and Perner (2003), Barnett (1997), Kayes (2006) and Snyder and Snyder (2008). These authors reiterated that successful workers need critical thinking because in the face of complex problems, the ability to think critically provides the tools to resolve and manage the unknowable. There was no research finding within the knowledge of the researcher that contradicts the findings that business students have deficient critical thinking skills.

Therefore, the theoretical and research findings in this study support the consensus that undergraduate business students have deficient critical thinking. Hence, the researcher developed the BSMT model in order to deal with the persistent lack of critical thinking skills amongst business students.

The five experts who validated the instructional model unanimously rated it as *"highly appropriate"* in enhancing the student's critical thinking skills based on its six essential components.

The *"highly appropriate"* rating by the experts on the BSMT model could be explained by the fact that they understood and acknowledged the purpose, necessity, and usefulness of the BSMT model in enhancing the critical thinking skills and perceived that the model would be an effective tool because it consisted of essential components based on well-accepted components of teaching models by Joyce et al. (2009). The model was likewise systematically developed following the principles in the development of a teaching model (Groccia, 1997; Joyce et al., 2009).

Moreover, the experts deemed the instructional model highly appropriate because the background and rationale for the development of the model were succinctly explained and presented. The necessity and immediacy of developing the model were likewise clearly proven in the study.

Additionally, the model presented in its syntax (instructional process), which is considered the essence of the model, chronological steps for using the model so that it can be easily used by any teachers interested in the model. In the syntax, several interesting activities were combined, aiming to foster critical thinking, such as working in groups, analyzing and writing a business case studies, group presentation, and Socratic discussion/questioning in class and online using Facebook.

In addition, one of the remarkable features of the BSMT model is the fact that it is focused on the learners whereby the Socratic teacher/instructor maintains the role of an active facilitator during the questioning. The model deviates from the Thai classroom culture mainly characterized by a teacher-centered approach. As such, it might be considered a breakthrough that might transform the traditional Thai classroom culture and eventually make critical thinking a part of the teaching community. In addition, the presence of the Socratic discussion created an engaging and motivating learning environment for the students, hence the BSMT model provides a highly appropriate model for fostering critical thinking.

The support system, comprising business case studies, made the model applicable to a real work setting, acquainting students with workplace situations that they may encounter in the future. The Facebook discussion, on the other hand, provided an important medium for transforming the classroom in accordance with the learning styles of students nowadays, who are known as digital natives.

Notwithstanding the fact that the BSMT model is considered as a highly appropriate or obtained excellent evaluation from the experts and the students on whom it

was experimented, some of its limitations are: the model was designed for older students only; the confrontational climate of the discussion may be perceived negatively by students; and from the teacher's perspective, being a *'guide on the side'* and preparing teaching materials are time consuming. The model needs to be modified to suit the goals of a course for younger students. The confrontational climate is another limitation, in which the teacher is required to respect all views while maintaining the dialectic style. The BSMT model is student-centered and the Socratic teacher/instructor should maintain the role of a "guide on the side" or an active facilitator and should provide interesting materials. As such, the teacher should give immediate and continuous feedback which is time consuming for the teacher. Likewise, the BSMT model has its weaknesses: the testing period was only for 10 weeks, the study was conducted with undergraduate business students only, and there was no control or experimental group in the study.

Recommendation

For educators and other members of the teaching community who are interested in using the BSMT model, the following must be remembered: 1) a thorough study of the model, particularly the guidelines on how to use it should be considered in detail before using it; 2) teachers should study in detail the syntax or the instructional process of the model to effectively apply it to teaching, as it is considered as the core of the model; 3) the teacher/instructor must have an adequate support system (teaching materials) that will create a comfortable learning environment and provide interesting material as well; 4) the model is specifically applicable to older students (university students) though some parts of the model may be modified to suit the goals of a course; 5) the teacher should remember to foster respect during the Socratic questioning in class and online through Facebook, as the model requires a confrontational climate; maintaining respect will help students feel comfortable during the discussion; 6) as the model is learner-centered, the teacher should bear in mind to provide feedback throughout every step of the model as well as being a *"guide on the side"*; and 7) the teacher should make sure that the students have access to a computer and the Internet before using the BSMT model.

Conflict of interest

There is no conflict of interest to declare.

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