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# ASSESSMENT OF CRITICAL THINKING SKILLS AMONG THE UBLC COLLEGE STUDENTS AND TEACHERS

Abigail Marie Umali-Hernandez, R.N., M.A.N.[1]
Alphie G. Garing, MALT [2]
Minerva Apita-Chavez, Ph. D. [3]

Faculty, College of Engineering Information and Technology, University of Batangas Lipa City[1]
Faculty, Senior High School, University of Batangas Lipa City[2]
Program Head, General Education, College of Education, Arts and Sciences, University of Batangas Lipa City[3]

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***Abstract:*** *Critical thinking is considered as a factor in the quality of education that the local can offer. Thus, the study aims to identify the perception of the teachers and students in infusing critical thinking skills in terms of classroom instruction. This study also explores how teachers perceive their teaching of critical thinking skills and their students' perceptions about their understandings and awareness of learning critical thinking. Moreover, this propose intervention activities to develop critical thinking skills among college students. The questionnaire from the Foundation for Critical Thinking was administered to 1,050 respondents from the teachers and students. Results show the strength of the students in terms of critical thinking would be their view on determining the reliability of the sources of the information they use and receive in class. There is a need to improve the teachers' instruction to aid the students in identifying the differences among assumptions, inferences, and predictions so they can perform their assigned task properly.*

***Keywords:*** *Critical Thinking, Education, Learning*

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## Introduction

Learning is the process that allows people to adapt to the changing conditions of the world around us. It requires a man to observe, think, analyze, understand, and apply prior knowledge to come up with better alternatives to common day-to-day challenges, and solutions to problems. Educators worldwide recognize the changing scope of our world and the changing needs of our children. "Students entering the new millennium must come fully equipped with skills that enable them to think for themselves and be self-initiating, self-modifying, and self-directing (Costa, 2001). The challenge ahead for 21st century schools and beyond is allowing teachers to collaborate with the goal of creating better teaching strategies, remodeling curriculum, and constructing creative assessments for thinking skills (Rotherham & Willingham, 2009).

The ASEAN integration vision 2020 identifies the ASEAN community as "conscious of its ties of history, aware of its cultural heritage and bound by a common regional identity." To ensure that integration benefits all, actions and all programs must be purposive in nature. They must be intentionally directed to addressing the problems of unemployment, poverty and inequality (McCarthy, 2013).

In response to these needs, the Philippine Commission on Higher Education and Department of Education study the Philippine Educational System through the implementation of K to 12 curriculum Enhanced Basic Education Curriculum and Outcomes Based Education, which anchored on 21st century skills which include among others creativity, curiosity and critical thinking skills under the big heading "learning and innovation skills." (Corpuz, 2013)

Critical thinking is a physical act by verbalizing or a thought process which is showcased through writing by displaying the ability to think through problems. Slavin (2012) stated that critical thinking skills are utilize for deductive reasoning and problem solving in order to uncover reasonable discrepancies and myths. Additionally, for critical thinking to develop and become highly effective, students must encompass patterns of behaviour which parallel their skills throughout the day, not just in school (Sever, 2008)

University of Batangas Lipa City is relatively new in the academic circle of Lipa City. It is an expansion of the oldest university in Batangas Province, the University of Batangas, formerly, Western Philippine College. In its pursuit of delivering quality education to its clientele, UB, continuously update its curriculum and makes sure that its teachers are well-adept with the current teaching trends and practices. Part of this, is not only to deliver this service but to fully realize its mission by producing quality students who can think and make sound decisions; and those who can innovate and apply the knowledge, skills and attitude they learned from UBLC. As a new campus in the academic realm, no studies have been done concerning the way critical thinking is being taught by teachers and how is it learned by its students in this university. Thus, it is imperative that this study be done to determine these processes.

Furthermore, UBLC's philosophy, vision, mission and goals are directed toward development of high quality education and ensure highly globally competitive graduates. In order to be successful in the implementation and in response to the needs, the research paper aims to identify the critical thinking skills in terms of classroom instruction and propose intervention activities to develop critical thinking skills among college students.

This study explores how teachers perceive their teaching of critical thinking skills and their students' perceptions about their understandings and awareness of learning critical thinking practices.

## Literature review

Facione (2010) identified six critical thinking skills in general. These are interpretation, skill analysis, evaluation, inference, explanation and self-regulation.

Interpretation is defined as the ability, "…to comprehend and express the meaning or significance of a wide variety of experiences, situations, data, events, judgments, conventions, beliefs, rules, procedures, or criteria" (Facione, 2010, p. 5).

The skill analysis is defined as the ability, "…to identify the intended and actual inferential relationships among statements, questions, concepts, descriptions, or other forms of representation intended to express belief, judgment, experiences, reasons, information, or opinions" (Facione, 2010, p. 5).

Evaluation as a critical thinking skill is defined as the ability, "…to assess the credibility of statements or other representations which are accounts or descriptions of a person‟s perception, experience, situation, judgment, belief, or opinion; and to assess the logical strength of the actual or intended inferential relationships among statements, descriptions, questions or other forms of representation" (Facione, 2010, p. 5).

Inference is, "…to identify and secure elements needed to draw reasonable conclusions; to form conjectures and hypotheses; to consider relevant information and to deduce the consequences flowing from data, statements, principles, evidence, judgments, beliefs, opinions, concepts, descriptions, questions, or other forms of representation" (Facione, 2010, p. 6).

Explanation is, "…being able to present in a cogent and coherent way the results of one‟s reasoning. This means to be able to give someone a full look at the big picture: both „to state and to justify that reasoning in terms of evidential, conceptual, methodological, criteriological, and contextual considerations upon which one‟s results were based; and to present one‟s reasoning in the form of cogent arguments‟" (Facione, 2010, p. 6).

Lastly, Self-Regulation is to, "…self-consciously monitor one's cognitive activities, the elements used in those activities, and the resulted educed, particularly by applying skills in analysis, and evaluation to one's own inferential judgments with a view toward questioning, confirming, validating, or correcting either one's reasoning or one's results" (Facione, 2010, p. 7).

As aforementioned in the discussion of each critical thinking skill, self-regulation may be applied with each skill throughout the critical thinking process. By doing so, the information gleaned by each skill is questioned, confirmed and validated. Self-regulation is the step in which the student needs to ensure that various personal biases are removed as much as possible. Being aware of one's biases is paramount to ensuring its presence is reduced.

Teaching critical thinking in a theoretical and non-contextual manner will probably never truly demonstrate effective outcomes. Friedel, Irani, Rudd, Gallo, Eckhardt, and Ricketts (2008) studied the outcomes of students that were taught critical thinking skills overtly. This study demonstrated that those students that were taught critical thinking overtly demonstrated significantly higher levels of critical thinking.

Mazer, Hunt, and Kuznekoff (2007) conducted a study in a basic communications course that demonstrated critical thinking may be fostered through student interaction. This study also found that an effective strategy was for the instructor to teach critical thinking strategies, and then let the students engage in interactive learning approaches that enabled the students to become a part of their own education.

Schamber and Mahoney (2006) conducted a similar study in which students were taught to cultivate critical thinking skills through collaborative groups. They also found that group work enhanced critical thinking skills, and provided opportunities for students to assess their thought processes and ideas.

While it might seem that for interactive instruction or asynchronous learning to promote critical thinking that it needs to be conducted in small or manageable size classrooms, Yang (2007) conducted a study to determine if critical thinking skills could still be cultivated in large classrooms or online. He found that indeed critical thinking skills can be taught in large classrooms, and specifically that asynchronous learning is a vehicle that supports that approach. Also, well-developed Socratic dialogues have been demonstrated as a tool that promotes critical thinking skills. An additional note here, Astleitner (2002) conducted a study to determine the effectiveness of teaching critical thinking skills online. He found that there was no difference in critical thinking outcomes from either a traditional or online instruction. The environment also provides a valuable asset to be considered when teaching critical thinking.

A study conducted by Nelson Laird (2005) identified that students exposed to diversity and other various interactions demonstrate greater propensity toward critical thinking. Those students typically are found to be more open-minded, and therefore willing to exhibit greater flexibility when solving problems or understanding larger aspects of complex skills.

Ernst and Monroe (2006) conducted a similar study on how the environment affects critical thinking skills and dispositions, and they arrived at a similar conclusion. Environments play an integral part of education, and indeed critical thinking skills can be cultivated through the use of incorporating the environment and aspects of it in instruction.

Teaching critical thinking through an understanding of student dispositions and the types of forums that need to be incorporated and leveraged. Stedman and Andenoro (2007) found that by engaging students through critical thinking focused exercises helps develop critical thinking dispositions. Furthermore, a certain maturity and deeper understanding of course material may be accessed through developing critical thinking dispositions.

Yang, Newby, and Bill (2005) found a similar growth in critical thinking skills through the use of Socratic questioning in instruction. They found the Socratic-based instruction to be especially beneficial through the use of asynchronous forums. Also, Duphorne and Gunawardena (2005) conducted a study on the effects of utilizing computer designs and organizers on critical thinking skills. They found that there was no significant difference of participants that utilized the organizers compared to those that did not. They also evaluated three different computer models that would assist in organizing data and problem sets, and found that none of them increased the critical thinking abilities of participants.

Genc (2008) conducted a study looking at critical thinking dispositions between male and female teacher candidates. What he found was that females demonstrated a higher aptitude toward critical thinking, while their male counterparts demonstrated a greater capability toward analytical thinking. He, however pointed out that there there is still debate whether females are better critical thinkers (Friedel, et al, 2008), but it is an issue worth consideration. Since intelligence analysts, in the U.S. Army as well, can be either male or female, this study may provide some valuable insights to strategies toward training critical thinking skills through heterogeneous analytical teams. Genc also argues that programs need to focus or continue to improve on teaching critical thinking in education programs, and focus more on specific aspects of critical thinking. Innabi and El Sheikh (2006) conducted a similar study targeting mathematics teachers in Jordan. They found that most teachers believed that they have taught critical thinking, but could not demonstrate an understanding of what it was.

Grosser and Lombard (2008) conducted a study on the development of critical thinking abilities and teachers. They found that newer teachers teach critical thinking skills around the 12th grade level. However, by incorporating strategies in how to teach critical thinking, especially courses that are taught critical thinking in a domain-specific method, would prepare teachers to more effectively teach critical thinking.

It has been alluded to that teaching effective critical thinking can best be accomplished through domain-specific application. Grauerholz and Bouma-Holtrop (2003) conducted a study that taught a Sociology course with critical thinking applied domain-specifically. They found that students had a deeper understanding of the context of the instruction, and aptly demonstrated critical thinking skills. Conversely, Solon (2007) conducted a study that generically applied critical thinking to an introductory Psychology course. He found that there was no statistical difference in the psychology tests taken by the students; however, there was an increase in the critical thinking test scores that were taken by the students. Davies (2006) looked at domain-specific applications of teaching critical thinking, as well as critical thinking as a stand-alone instruction and did not find any difference between them. Davies research, similar to Solon (2007), found that critical thinking skills are generic and not domain-specific in nature.

However, a very comprehensive study conducted by Hatcher (2006) found that there was a significant difference in critical thinking skills when critical thinking is tailored to a domain-specific application. He found that the groups that learned critical thinking as a stand-alone course did not score as well, and lacked clarity in their usage of critical thinking skills. He found that teaching critical thinking skills and then applying them through practice proves that domain-specific applications of critical thinking produce far greater results.

Sungar and Tekkaya (2006) also conducted research on problem-based learning and its application to critical thinking. They found that students were able to perform at high order thinking levels, were more collaborative in learning, and that their critical thinking skills benefitted from the problem-based learning approach. While this was not a study conducted specifically to evaluate domain-specific application of critical thinking, it does validate the theory that critical thinking skills can benefit greatly from problem-based applications.

A study authored by Dr. Friedel that will be published in an upcoming issue of Journal of Agricultural Education, Dr. Friedel (in press), was conducted to determine if a specific problem solving method increased the critical thinking dispositions of students. What he found was that there was no specific method that directly related to an increase in critical thinking abilities; however, critical thinking dispositions benefited from problem solving instruction. Also, he found that students that went through this study were more adept to using various problem solving methodologies and styles in order to come to a solution. This in itself can significantly apply to critical thinking, and warrants further examination.

The final study was specific to U.S. Army Officers and how critical thinking instruction has been employed successfully. Schumm, Webb, Turek, Jones, and Ballard (2006) conducted a study at the U.S. Army‟s Command and General Staff College on the successful usage of critical thinking skills and reasoning. They found that students benefited from collaborative exercises, student diversity, and domain-specific application of critical thinking skills. They also found that students performed better when instructors were prepared and delivered the context of the class by utilizing the aforementioned instructional strategies. Therefore, Socratic-questioning, diversity of students, problem-solving methods, and domain-specific applications

of critical thinking directly impacted these officers‟ ability to utilize and apply critical thinking skills.

Many researchers working in the area of critical thinking lament the poor state of critical thinking in most educated adults and children. For example, Halpern (1998) points to research from the field of psychology, concluding that many, if not most, adults fail to think critically in many situations. Kennedy et al., (1991) and Van Gelder (2005) have likewise concluded that many adults lack basic reasoning skills. Halpern (1998) cites the example that large numbers of people profess to believe in paranormal phenomena, despite a lack of evidence in support of such things. Halpern attributes such failures not to the inability to reason well but to simple "bugs" in reasoning. She argues that human beings are programmed to look for patterns, particularly in the form of cause-and-effect relationships, even when none exist.

Van Gelder (2005) echoes this sentiment, characterizing humans as "pattern-seekers and story-tellers" (p. 42). This inclination results in a tendency to jump to the first explanation that makes intuitive sense without carefully scrutinizing alternative possibilities, a phenomenon that Perkins, Allen, & Hafner (1983) have termed "makes-sense epistemology" (p. 286). Moreover, the general public often finds "personal experience" to be more compelling evidence than a carefully conducted, scientific study. Given these natural tendencies toward deficient reasoning, Halpern warns that we should not expect to see dramatic improvements in critical thinking over time as a result of instructional interventions. Improvements in critical thinking, when they do occur, are slow and incremental (Halpern, 1998). One reason for this gap in basic reasoning skills may be deficient educational experiences.

Paul (1992) argues that typical school instruction does not encourage the development of higher-order thinking skills like critical thinking. Paul explains that knowledge is coterminous with thinking, especially good or critical thinking. However, typical school instruction, with its emphasis on the coverage of content, is designed as though recall were equivalent to knowledge. This type of lower-order learning is simply learning by rote or association, with the result that students memorize material without understanding the logic of it. Students tend not to recognize that their assertions, beliefs, and statements have implications, and thus require evidence to support them. For most students, believing, not thinking, is knowing (Paul, 1992).

Kennedy et al. (1991) point out that empirical research suggests that students of all intellectual ability levels can benefit from critical thinking instruction. Similarly, Lewis and Smith (1993) argue that critical thinking skills are for everyone, not just the gifted.

Another important point is that the different models and methods of instruction have been developed based on specific interpretations of concepts and principles of teaching and learning. While it is important to learn and practice the approaches developed by others, it is more important to understand the concepts and principles upon which they are based.

**Methodology**

The descriptive design was used in the study since the aim of the study is to find out the perceptions of the teachers and students on the manifested critical thinking skills in teaching and learning.

As faculty members of this institution, the researchers also injected some of their class observations and these were discussed after the data was gathered and were integrated in the findings together with the answers to the open-ended questions.

The respondents of the survey are College students and teachers were chosen. A total of 50 randomly selected faculty members and 1,000 students from the different colleges of the university participated in the study.

The researchers used the standardized questionnaire from the Foundation for Critical Thinking of Dillon Beach, California. The Foundation is a non-profit organization that seeks to promote essential change in education and society through the cultivation of fair-thinking – thinking which embodies intellectual empathy, intellectual humility, intellectual perseverance, intellectual integrity and intellectual responsibility. (Foundation for Critical Thinking, 2015) Prior to the adaptation of the questionnaire in this study, a permission was of course sought first. Upon the approval of the foundation, the said instrument was downloaded from its website. No revisions nor deviations were made and the questionnaire was employed as is. However, the questionnaire was also submitted to UBLC's Director of Publications, Research, Liaison and Linkages for review to ensure its validity.

The teachers and students were surveyed with 15 questions and 1 open-ended question. The researchers used a Likert scale survey which was also developed by the Critical Thinking Foundation. This used a five point rating scale system. The second part of the survey asked 14 questions about the teaching and learning of critical thinking skills.

The questionnaires for both the teachers and students were distributed by the researchers to the three (3) different colleges of UBLC, namely: College of Engineering and Information Technology, College of Education, Arts and Sciences and the College of Accountancy, Business, Tourism and International Hospitality Management. The respondents were given a day to accomplish the said questionnaires. An arrangement with the faculty-in-charge of the class was made for the retrieval of the said instrument once the students have fully accomplished it.

There was a total of 1,050 questionnaires distributed. 50 were given to selected faculty members available on site during the conduct of the study. The students answered the remaining 1,000 questionnaires.

The data gathered through this study was analyzed using descriptive statistics. The weighted mean of the responses of the teachers and students was computed by averaging the means of their respective responses for each of the question. The same procedure was used in getting the standard deviation (SD). The percentages of the respondents who have gave high ratings to the questions were averaged as well. Statistical Package for Social Sciences or SPSS was also utilized to determine the relationship between the teachers and students' perception on critical thinking.

## Results

### *Students Perception on Critical Thinking*

**Table 1.1: Students Perception of Critical Thinking in Instruction**

| | Mean | SD |
|---|---|---|
| 1. How often does the instructor teach so that you must think to understand the content? | 4.00 | 0.9 |
| 2. How often does the instruction explain different types of critical thinking in a way that you can explain and understand them? | 4.04 | 0.8 |
| 3. How often does the instruction encourage your critical thinking skills in the learning process? | 3.96 | 0.8 |
| 4. How often does the instruction make clear to you the reason why they are doing what they are doing (the purpose of the lesson)? | 4.00 | 1.0 |
| 5. How often does the instruction make clear to you the precise question, problem, or issue at any given time in your lesson? | 4.07 | 0.9 |
| 6. How often does the instruction help you learn how to find reliable information relevant to answering questions in the subject? | 4.04 | 0.8 |
| 7. How often does the instruction help you learn how to make inferences justified by data or information? | 3.96 | 0.8 |
| 8. How often does the instruction help you know the differences between assumptions, inferences, and predictions? | 3.75 | 0.9 |
| 9. How often does the instruction help you learn how to think within the point of view of the subject, for example, think scientifically, historically, mathematically? | 3.89 | 0.9 |
| 10. How often does the instruction enable you to think more clearly? | 4.21 | 0.7 |
| 11. How often does the instruction enable you to think more accurately? | 3.75 | 0.8 |
| 12. How often does the instruction enable you to think more deeply? | 3.89 | 0.8 |
| 13. How often does the instruction enable you to think more logically? | 3.82 | 0.8 |
| 14. How often does the instruction enable you to think more fairly? | 3.89 | 0.7 |
| 15. How often does the instruction enable you to consider multiple sides of an argument? | 3.89 | 0.8 |

**Legend:** 1 – Never; 2 – Rarely; 3 – Sometimes; 4 – Frequently; 5 – Daily

Instruction is the activities of educating or instructing; activities that impart knowledge or skill. It refers to the action of teaching and the job of a teacher. This table shows how students perceive their teacher's instruction in class.

Questions asked include the frequency of giving instruction; how critical thinking is being taught, explained and clarify certain issues; manner of giving instruction, how instruction helps them think more clearly; and to see different sides of an argument.

As seen on Table 1.1, item #10, obtained the highest weighted mean (4.21), stating that the students perceive that the teachers' instructions in delivering their lectures allow them to think more clearly. The teachers' way and manner of explaining what to do and how to do things make the activity much more feasible in the eyes and mind of the students.

As part of instruction, a teacher's explanation may be the best key to students' understanding. Facione in his study stated that explanation, being one of the critical thinking skills that help students present their thoughts in a cogent and coherent way.

However, items #8 and #11 show the lowest weighted mean scores (3.75), where only a few of them perceive that instructions given them help in knowing the differences between assumptions, inferences, and predictions; and allow an accurate way of thinking. In consideration of the critical thinking skills enumerated by Facione, students need the skill analysis to identify the difference among all these. Kennedy, et. al, in their empirical study that showed how students greatly benefitted from a well-framed instruction.

Furthermore, this would also show how important instructions are in teaching critical thinking skills. When it comes to teaching critical thinking, the abilities of teachers and how well they understand critical thinking should be examined. Teachers should understand what critical thinking is, and how they can best teach it. Also, they need to be able to recognize critical thinking, especially since the ultimate goal of teaching critical thinking should be in seeing it applied or infused within student outcomes.

**Table 1.2: Students Perception on the extent of application of Critical Thinking**

| | | Mean | SD |
|---|---|---|---|
| 1. | Use problem solving skills to find the best solution | 3.61 | 0.7 |
| 2. | Use decision making skills to consider possible options and decide what might happen as the result of the decision. | 3.64 | 0.8 |
| 3. | Make predictions based on possible and actual evidence. | 3.57 | 0.8 |
| 4. | Determine parts whole by considering the function of the parts and the relationship of the parts to the whole. | 3.57 | 0.8 |
| 5. | Compare and contrast by considering how something is alike with regard to their differences and any significant patterns | 3.50 | 0.9 |
| 6. | Analyze arguments by finding reasons and conclusions and uncover assumptions | 3.64 | 0.8 |
| 7. | Determine the reliability of sources by considering questions to ask about the information obtained and deciding if it is reliable or unreliable. | 3.86 | 0.8 |

**Legend:** 1 – Not at all; 2- Sometimes but I need help; 3 – Yes, but I get stuck in the middle; 4 – I can most of the time; 5 – I can always do this

Table 1.2 shows the students perception on the extent of their application of critical thinking. It summarizes how the students apply their problem solving skills in situations that require them to make sound decisions, look for possible options to arrive to the best solution, compare and contrast, analyse arguments and determine reliability of resources before making any judgments. This involves evaluation and inference. (Facione, 2010)

Item #7 obtained the highest weighted mean score (3.86), where students consider asking questions about the reliability of the sources of instruction they receive in class. This revealed just how outspoken and critical students can be nowadays. Still instruction plays a major role in teaching higher order thinking skills to students.

Item #5 on the other hand has the lowest weighted mean score (3.50), where some students can compare and contrast two different things with less difficulty. The students' analytical skills begin with comparing and contrasting simple things and will develop as they learn how to see the similarities and differences in far more complex things.

Despite evidence suggesting that the average person struggles to think critically, many researchers are sanguine about the capacity of humans to become critical thinkers with appropriate instruction.(Paul, 1992)

**Table 1.3: Students Perception on the frequency of application of Critical Thinking**

| | | Mean | SD |
|---|---|---|---|
| 1. | Use problem solving skills to find the best solution | 3.86 | 0.9 |
| 2. | Use decision making skills to consider possible options and decide what might happen as the result of the decision. | 3.71 | 0.9 |
| 3. | Make predictions based on possible and actual evidence. | 3.39 | 1.3 |
| 4. | Determine parts whole by considering the function of the parts and the relationship of the parts to the whole. | 3.59 | 0.9 |
| 5. | Compare and contrast by considering how something is alike with regard to their differences and any significant patterns | 3.43 | 1.0 |
| 6. | Analyze arguments by finding reasons and conclusions and uncover assumptions | 3.61 | 1.0 |
| 7. | Determine the reliability of sources by considering questions to ask about the information obtained and deciding if it is reliable or unreliable. | 3.82 | 1.0 |

**Legend:** 1-Never; 2- 1-3 times per semester; 2-3 times per month; 4- weekly; 5-daily

Table 1.3 shows the students perception on the frequency of application of critical thinking. With regards to the number of times or how often they use their critical thinking skills, students, being aware that they possess such skills, state they use it most of the time for them to be able to find the best solution to a problem, derive at the best possible conclusion or in making the soundest decision they can.

Item #1 has the highest weighted mean (3.86), stating that students most of the time perceive that they make use of their problem solving skills to find the best solution which was supported by Sungar and Tekkaya (2006).

Item #3, on the other hand, attained the lowest weighted mean score (3.39), as predictions based on possible and actual evidence were not too frequently made. Van Gelder (2005) characterized humans as "pattern-seekers and story-tellers," that they tend to jump to the first explanation that makes intuitive sense without carefully scrutinizing alternative possibilities. While Perkins, Allen, & Hafner (1983) call this "makes-sense epistemology". Moreover, the general public often finds "personal experience" to be more compelling evidence than a carefully conducted, scientific study. Given these natural tendencies toward deficient reasoning.*Teachers Perception on Critical Thinking*

**Table 2.1: Teachers Perception of Critical Thinking in Instruction**

| | Mean | SD |
|---|---|---|
| 1. How often does the instructor teach so that you must think to understand the content? | 4.92 | 0.3 |
| 2. How often does the instruction explain different types of critical thinking in a way that you can explain and understand them? | 4.50 | 0.6 |
| 3. How often does the instruction encourage your critical thinking skills in the learning process? | 4.58 | 0.5 |
| 4. How often does the instruction make clear to you the reason why they are doing what they are doing (the purpose of the lesson)? | 4.75 | 0.4 |
| 5. How often does the instruction make clear to you the precise question, problem, or issue at any given time in your lesson? | 4.75 | 0.4 |
| 6. How often does the instruction help you learn how to find reliable information relevant to answering questions in the subject? | 4.50 | 0.5 |
| 7. How often does the instruction help you learn how to make inferences justified by data or information? | 4.42 | 0.6 |
| 8. How often does the instruction help you know the differences between assumptions, inferences, and predictions? | 4.08 | 0.9 |
| 9. How often does the instruction help you learn how to think within the point of view of the subject, for example, think scientifically, historically, mathematically? | 4.33 | 0.8 |
| 10. How often does the instruction enable you to think more clearly? | 4.58 | 0.6 |
| 11. How often does the instruction enable you to think more accurately? | 4.67 | 0.8 |
| 12. How often does the instruction enable you to think more deeply? | 4.67 | 0.5 |
| 13. How often does the instruction enable you to think more logically? | 4.58 | 0.6 |
| 14. How often does the instruction enable you to think more fairly? | 4.33 | 0.8 |
| 15. How often does the instruction enable you to consider multiple sides of an argument? | 4.33 | 0.8 |

**Legend:** 1 – Never; 2 – Rarely; 3 – Sometimes; 4 – Frequently; 5 – Daily

Table 2.1 reveals the teachers perception of critical thinking in instruction. This summarizes how the teachers' instruction are explained to and understood by the students; and how it enables the students to think more deeply, logically, fairly and critically.

Item #8 got the lowest weighted mean score (4.08), where teachers observe that some of their students know the differences among assumptions, inferences, and predictions. Although this

may have obtained the lowest mean score, teachers still believe that their students can frequently identify the differences among the three.

The highest weighted mean score obtained may be seen in item #1 (4.92), where the teachers state that they should teach so that the students must think to understand the content of the lectures. Although we are already in the new era of teaching where the focus of education has shifted from the teacher's mode of instruction and style of teaching to outcomes-based education and more students' participation, it was found out that students still rely on the teacher for instruction and still sees them as provider of information

**Table 2.2: Teachers Perception on the extent of application of Critical Thinking**

| | | Mean | SD |
|---|---|---|---|
| 1. | Use problem solving skills to find the best solution | 3.58 | 1.0 |
| 2. | Use decision making skills to consider possible options and decide what might happen as the result of the decision. | 3.75 | 1.0 |
| 3. | Make predictions based on possible and actual evidence. | 3.50 | 1.0 |
| 4. | Determine parts whole by considering the function of the parts and the relationship of the parts to the whole. | 3.42 | 0.9 |
| 5. | Compare and contrast by considering how something is alike with regard to their differences and any significant patterns | 3.92 | 0.6 |
| 6. | Analyze arguments by finding reasons and conclusions and uncover assumptions | 3.92 | 0.6 |
| 7. | Determine the reliability of sources by considering questions to ask about the information obtained and deciding if it is reliable or unreliable. | 4.00 | 0.7 |

**Legend:** 1 – Not at all; 2- Sometimes but I need help; 3 – Yes, but I get stuck in the middle; 4 – I can most of the time; 5 – I can always do this

Table 2.2 show the teachers' perception on the extent of their students' application of critical thinking. This shows how students use their problem-solving skills, decision-making skills, making predictions, determining parts of the whole, analysis of arguments, and determining the reliability of sources.

Item #7 has the highest weighted mean score (4.00) where the teachers agreed that their students determine the reliability of sources by asking information on how it was obtained. This would coincide with the students' very own perception with regards to carefully determining the validity of the sources of data before accepting it.

The lowest weighted mean score derived from the table was at item #4 (3.42), where teachers perceive their students of not always determining the parts of the whole by considering the function of the parts and the relationship of the parts to the whole.

Learning and teaching critical thinking skills are transferred and acquired through the interaction of the teacher and the student. Effective ways of teaching critical thinking is extremely important. By teaching critical thinking effectively, a deliberate methodology that incorporates tangible outcomes can be employed.

**Table 2.3: Teachers Perception on the frequency of application of Critical Thinking**

| | | Mean | SD |
|---|---|---|---|
| 1. | Use problem solving skills to find the best solution | 4.17 | 0.9 |
| 2. | Use decision making skills to consider possible options and decide what might happen as the result of the decision. | 4.33 | 0.7 |
| 3. | Make predictions based on possible and actual evidence. | 3.75 | 1.1 |
| 4. | Determine parts whole by considering the function of the parts and the relationship of the parts to the whole. | 3.92 | 1.1 |
| 5. | Compare and contrast by considering how something is alike with regard to their differences and any significant patterns | 4.33 | 0.7 |
| 6. | Analyze arguments by finding reasons and conclusions and uncover assumptions | 4.08 | 0.9 |

| | | | |
|---|---|---|---|
| 7. | Determine the reliability of sources by considering questions to ask about the information obtained and deciding if it is reliable or unreliable. | 4.17 | 1.0 |

**Legend:** 1-Never; 2- 1-3 times per semester; 2-3 times per month; 4- weekly; 5-daily

Table 2.3 shows teachers' perception on the frequency of their students' application of critical thinking.

The highest weighted mean score derived was 4.33, which were seen in items #2 and #5. In item #2, teachers perceive that students use their decision making skills to consider possible options and in making decisions. In item # 5, the students, as observed by their teachers, often compare and contrast things by considering how something is alike with regard to their differences and any significant patterns.

The lowest weighted mean as shown in the table is found in item #3 at 3.75, where the teachers perceive that their students make predictions based on possible and actual evidence.

### *Relationship of Teachers and Students Perception on Critical Thinking*

**Table 3: Relationship of Teachers and Students Perception on Critical Thinking**

| | Pearson-r coefficient | P-Value |
|---|---|---|
| Perception of Critical Thinking in Instruction | -0.102 | 0.605 |
| Perception on the Extent of Application of Critical Thinking | -0.226 | 0.247 |
| Perception on the Frequency of Application of Critical Thinking | 0.225 | 0.250 |
| **Overall** | 0.179 | 0.362 |

Overall, the relationship of teachers and students perception on critical thinking, resulted to 0.179 in Pearson-r coefficient with a P-Value of 0.362. The data gathered shows that the teacher and students own perceptions on critical thinking do not have any significant correlation because the accumulated score was 0.179 that is below 0.

According to Inabi and Sheikh 2006, they found some teachers did not have a clear understanding about critical thinking skills and thus, lack the necessary skills to teach critical thinking. This could be one of the reasons why they have varying perceptions on the subject matter.

## Conclusion

The study reveals that the teachers and students' perceptions on some items have coincided with one another. The strength of the students in terms of critical thinking would be their view on determining the reliability of the sources of the information they use and receive in class. On the other hand, both of them agreed that there is a need to improve the teachers' instruction to aid the students in identifying the differences among assumptions, inferences, and predictions so they can perform their assigned task properly.

Another item that could be a focus of improvement is making predictions based on possible and actual evidence. Students need to strengthen their abilities in this aspect to develop their critical thinking skills much further. Possible and actual pieces of evidence are bases for making good inferences to later on make sound decisions.

Critical Thinking has four common threads that appear in most of its descriptions which are: Reasoned Thinking, Problem Solving, Fair-minded Evaluation and Informed Judgments (Nancy Halstead and Janice Tomson, "ETS Project, June 2006").

This study recommends that the teachers integrate more activities that would make use of critical thinking skills development among their students. The proposed intervention activities are the following: Metacognition or thinking about thinking, developing discussion questions to promote critical thinking, reflection papers, and the like.

Developing critical thinking skills among the students of this generation is a quite a challenge for the faculty in this new platform of education. It is likewise recommended that the faculty attend seminars, workshops and trainings and other post graduate courses or further studies that would enhance their ability and skills to teach critical thinking skills to keep abreast with the latest trends and technology.

**References**


Astleitner, H. (2002). Teaching critical thinking online. *Journal of Instructional Psychology*. 29(2), 53-76.

Costa, A. (Ed.). (2001). Developing minds. Alexandria, VA: ASCD.

Davies, W. M. (2006). An 'infusion' approach to critical thinking: Moore on the critical thinking debate. *Higher Education Research & Development*. 25(2), 179-193.

Duphorne, P. L., & Gunawardena, C. N. (2005). The effect of three computer conferencing designs on critical thinking skills of nursing students. *The American Journal of Distance Education*. 19(1), 37-50.

Ernst, J., & Monroe, M. (2006). The effects of environment-based education on students‟ critical thinking skills and disposition toward critical thinking. *Environmental Education Research*. 12(3-4), 429-443.

Facione, P.A. (2010). Critical thinking: What it is and why it counts (Rev. ed.). *Insight Assessment*. Retrieved from http://www.insightassessment.com/9articles%20WW.html

Friedel, C. (in press). It‟s in the Genes: Exploring relationships between critical thinking and problem solving in undergraduate Agri-science students‟ solution to problems in Mendelian Genetics. *Journal of Agricultural Education*.

Genc, S. Z. (2008). Critical thinking tendencies among teacher candidates. *Educational Sciences: Theory & Practice*. 8(1), 107-116.

Grauerholz, L., & Bouma-Holtroup, S. (2003). Exploring critical sociological thinking. *Teaching Sociology*. 31(4), 485-496.

Grosser, M. M., & Lombard, B. J. J. (2008). The relationship between culture and the development of critical thinking abilities of prospective teachers. *Teaching and Teaching Education*. 24, 1364-1375.

Halpern, D. F. (1998). Teaching critical thinking for transfer across domains: Dispositions, skills, structure training, and metacognitive monitoring. *American Psychologist*, 53(4), 449–455.

Hatcher, D. L. (2006). Stand-alone versus integrated critical thinking courses. *The Journal of General Education*. 55(3-4), 247-272.

Innabi, H., & El Sheikh, O. (2006). The change in mathematics teachers‟ perceptions of critical thinking after 15 years of education reform in Jordan. *Educational Studies in Mathematics*. 64, 45-68.

Kennedy, M., Fisher, M. B., & Ennis, R. H. (1991). Critical thinking: Literature review and needed research. In L. Idol & B.F. Jones (Eds.), Educational values and cognitive instruction: Implications for reform (pp. 11-40). Hillsdale, New Jersey: Lawrence Erlbaum & Associates.

Lewis, A., & Smith, D. (1993). Defining higher order thinking. Theory into Practice, 32(3), 131–137.

Mazer, J. P., Hunt, S. K., & Kuznekoff, J. H. (2007). Revising general education: assessing a critical thinking instructional model in the basic communication course. *The Journal of General Education*. 56(3-4), 173-199.

Nelson Laird, T. F. (2005). College students‟ experiences with diversity and their effects on academic self-confidence, social agency, and disposition toward critical thinking. *Research in Higher Education*. 46(4), 365-387.

Paul, R. W. (1992). Critical thinking: What, why, and how? New Directions for Community Colleges, 1992(77), 3–24.

Perkins, D. N., Allen, R., & Hafner, J. (1983). Difficulties in everyday reasoning. In W. Maxwell (Ed.), Thinking: The frontier expands (pp. 177–189). Hillsdale, New Jersey: Lawrence Erlbaum & Associates.

Rotherham, A., & Willingham, D. (2009). 21st century. Educational Leadership,
67(1),16-21.

Schamber, J. F., & Mahoney, S. L. (2006). Assessing and improving the quality of group critical thinking exhibited in the final projects of collaborative learning groups. *The Journal of General Education*. 55(2), 103-137.

Schumm, W. R., Webb, F. J., Turek, D. E., Jones, K. D., & Ballard, G. E. (2006). A comparison of methods for teaching critical thinking skills for U.S. Officers. *The American Journal of Distance Education*. 20(1), 39-50.

Solon, T. (2007). Generic critical thinking infusion and course content learning in introductory psychology. *Journal of Instructional Psychology*. 34(2), 95-109.

Stedman, N. L. P., & Andenoro, A. C. (2007). Identification of relationships between emotional intelligence skill and critical thinking disposition in undergraduate leadership students. *Journal of Leadership Education*. 6,192-208.

Steffen, C. (2011). Perceptions of How Teachers Perceive Their Teaching of Critical Thinking Skills and How Students Perceive Their Learning of Critical Thinking Skills. Doctoral Dissertation. Missouri Baptist University.

Sungur, S., & Tekkaya, C. (2006). Effects of problem-based learning and traditional instruction on self-regulated learning. *The Journal of Educational Research*. 99(5), 307-317.

Van Gelder, T. (2005). Teaching critical thinking: Some lessons from cognitive science. College Teaching, 53(1), 41–48.Walker, S.E. Active Learning Promotes Critical Thinking

Yang, Y. C., Newby, T. J., & Bill, R. L. (2005). Using Socratic questioning to promote critical thinking skills through asynchronous discussion forums in distance learning environments. *The American Journal of Distance Education*. 19(3), 163-181.

Yang, Y. C. (2007). A catalyst for teaching critical thinking in a large university class in Taiwan: asynchronous online discussions with the facilitation of teaching assistants. *Education Technology Research and Development*. 56, 241-264.

Perceptions of Critical Thinking Skills Questionnaire. Retrieved from The Foundation for Critical Thinking http://www.criticalthinking.org/