MOVING TOWARDS CRITICAL THINKING IN CLASSROOM

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Abstract

Problems are multitudinous; they can be economic, political conflicts, high failure rate among students and many more. We can solve these through critical thinking, a self-guided, self disciplined dispositions aims to take the reasoning to a higher level naturally. Survey indicated that schools and universities are not teaching the skills and dispositions of the critical minds and thus students' intellects are not cultivated. The need for designing a typical class day is imperative so that students could design and be actively and thoughtfully involved in the thinking process. To inculcate students' critical thinking in strategic management class, an innovative and teaching-learning approach was crafted. The students, working in groups, were required to think of a product of their choice to innovate. The end products were used as replica in learning the concepts and principles in class and forcing the students to reason out clearly. Results indicated that students' improvement in application, analysis and evaluation were evident. Relatively the students were able to think deeply for themselves (85%), motivate to ask questions at the rate of agree and strongly agree of 75% and 25% respectively, and think within the logic of strategic management (95%) and complexities (90%). Simultaneously, students' final examination average marks were satisfactory at 65%. However, fostering critical thinking in classroom is least effective in the absence of explicated replica as a teaching-learning tool.

Key words: critical thinking, students' intellect, thinking process, strategic management,

INTRODUCTION

Critical thinking in classroom makes students reflect better as a well-educated person but requires going through the rigorous process of education. Education improves the lives of students. Synonymous to education is disciplined based teaching and conceptualization of ideas that helps the students to acquire abilities to think into the contents or logic of each subject using analytical reasoning skills. Asking students good questions, deep and analytical thinking question, enables them to implicate good thoughts not only in university classrooms but also at work and life. However, how far the university students make use of these deep, analytical reasoning abilities to acquire a culture of purposive and reflective thinking remains unnoticed by many academicians. Some employ lecture in the entire two hour class session where the students will attentively pay attention and comprehend in the first half of an hour. Along the class sessions, do we train the students to be critically minded? Lecturers are the moderators in cultivating intellectual traits among students in classrooms through teaching approaches; identify students thinking' flaws and make them realize these defects. This study aims to inculcate, investigate the acceptance and performance outcomes of a group of bachelor students over a disciplined-based critical thinking approach in a classroom setting.

LITERATURE REVIEW

Critical thinking is purposeful and reflective judgment about what to believe or what to do which requires skilled, active, interpretation and evaluation of observations, communications, information, and argumentation Fisher & Sriven (1997), self-guided, self disciplined thinking that aims to take the persons' reasoning all naturally to a higher level Elder (2008), an art of analyzing and evaluating with the goal of improving thought where a person has to possess an attitude of being disposed, knowledge of the methods of logical enquiry and some skills of applying these methods Glaser (1941), a way of taking up the problems of life, a well cultivated critical thinker raises vital problem questions and problems, gather and assess relevant information, come with well-reasoned conclusions and solutions, testing them against relevant criteria and standards and communicate effectively with others in figuring out solutions to complex problems, without being unduly influenced by others thinking Summer (1940).

One needs to examine any evidence that supports the issue prior to conclusion. The process involves the ability to recognize problems, gather pertinent information to comprehend and use language with accuracy, clarity and discrimination, to interpret data, appraise the evidence and evaluate the arguments, to recognize the existence or non-existence of logical relationship between propositions to render accurate judgments about specific things and qualities in everyday life. Along the process, willingness and ability to evaluate one's thinking is imperative as it does not have all relevant information, making unjustified inferences, uses inappropriate concepts or fails to notice important implications. It focuses in developing the intention of truth-seeking, open-minded, systematic, analytical, inquisitive, confident in reasoning and prudent in making judgment. Those who are ambivalent on these aspects of the disposition toward critical thinking are more likely to encounter problems in their critical thinking skills. Failure to recognize the importance of correct dispositions can lead to various forms of self- deception and closed mindedness Summer (1940). It is based on concepts and principles, not on hard and fast, or step by step procedures Paul & Elder (2008).

There is difference between a decision making through weighting information to come to a logical conclusion and making snap judgments without understanding the information Elder (2008). In teaching and learning process, the use of a critical thinking assignment that requires students to use appropriate cognitive skills, as shown in the following list, is necessary to develop students' critical thinking abilities. The list is based on the work of Drs. Paul and Elder, created by Connie Wolfe, Surry Community College:

1. Demonstrate a clear understanding of the assignment's purposes
2. Clearly define the issue or problem
3. Accurately identify the core issues
4. Appreciate depth and breadth of the problem
5. Demonstrate fair-mindedness towards the problem
6. Identify and evaluate relevant significant points of view
7. Examine relevant point of view fairly.
8. Gather sufficient, credible, relevant information
9. Gather information that opposes as well as supports the argued position

10. Accurately identify assumptions
11. Make deep rather superficial inferences
12. Make inferences that is consistent with each other
13. Identify the most significant implications and consequences of the reasoning
14. Distinguish probable and improbable implications.

METHODOLOGY

A preliminary observation on the students' responses to questions relating to concepts and principles of the sample course was conducted through a two page article of a well known local film & music producer's article. This article was distributed to the students in class to test their reflective reasoning skills. It was found that that the students were confused (90%), not having deep thinking (92%), failed to consider important information (86%), think illogically (80%) and some are inattentive (60%). These could be great impediments to student's good academic performance if not improved as such a different teaching and learning approach was designed where the students have a innovate a product that will be used as a replica or gadget in course of the study.

An exploratory case study was undertaken among the 24 graduating students, 20% males and 80% females, in bachelor in accountancy in strategic management class using critical thinking. The students, working in groups of three, are taught of the fundamental concepts and practices in the given course through lecture-question-answer setting using the said gadget. Uniquely, the class could make use of 9 different gadgets in coping up with the various hierarchies of learning difficulties as required in the syllabus

The students were clearly instructed of the processes, measures and the expected outcomes. As said earlier, each group of students was required to come up with a prototype of a commercially oriented innovative product. This product, as an end output, should be able to solve a student's most pressing problem. Each student was required to apply the knowledge learned in class into this product in view making this product commercialize and competitive in the local market. Similarly, the students were taught of the importance of critical thinking in classroom. The students were instructed to think purposively and possess the cognitive skills required to successfully appreciate the requirements of the course.

Going through the various phases of learning difficulties of understanding, applying, analyzing, evaluating and creating new knowledge for the given innovative product for competitiveness, the students were instructed to make use of their best thinking abilities that would result to a product preferred by the customers. Similarly they are free to re-shape and modify the concepts and principles learned to suit the local market attributes. Each group was required to present the product outcomes and judged by chosen lecturer based on the pre-determined sets of criteria which were fully disclosed to the group. The data was collected through impartial observation, survey both open and close ended questionnaire and interview. The questionnaire was framed on a 4-lickert scale measure.

FINDINGS AND DISCUSSIONS

Survey findings indicate that 20% strongly agree, 80% agree of the students' willingness to undertake the innovative project. Most of the students are motivated and learn better by using the product as replica in the learning process in classroom with a mean of 3.4, motivated to ask questions at the rate of agree (75%) and strongly agree (25%), and think within the logic of strategic management (95%) and carry out complexities (90%). These indicate that students have the right attitude to learning new approaches if given the guidance and opportunities rather than a rigid lecturer-centered approach. The attitude of willingness and motivation was manifested by the students' actions and receptiveness towards the prototype project where all students submit punctually the progress reports on time as and when required. Without knowledge of reimbursement, they were willing to dole out funds for the project from their own subsidy or budget, repayment by the university was made accordingly. One added value in this approach is the tangible representations of the product help the students to be motivated to learn, go through the various intensity of the learning process, attentive in class and most importantly they have logical ideas during the questioning process in classroom.

On cognitive thinking, the students were able to remember and define the concepts and principles learned in class with a mean of 3.25, understand (mean of 3.25), apply (mean of 3.33), analyze (mean of 3.75), identify opportunities (mean 3.45), identify threats (mean of 3.05), identify resources needed (mean of 3.25), analyze product's good features to become competitive (mean of 3.5), evaluate product's bad features (mean of 2.95), evaluate product's value creation power (mean of 2.85), and create new idea for the product to be competitive (mean of 3.1). These tests are not only centered to the lowest level of cognitive skills of memorizing and defining but the students were encouraged to develop their own intellectual values that enable them to put through the prototype product. Similarly, the students' projects were assessed and judged based on the criteria, in twofold, shown in Table 1. The quantitative results were converted into the corresponding grade equivalents and form part as part and parcel of the students' grade for the given course of study. The students' presentations were assessed based on introduction, conclusion, and fluency, clarity of discussion on product competitiveness, personality projections, power point layout and designs. The product features, appeal, assumptions, application, analysis and evaluation of external and internal environment are equally given emphasis in the second judging. It is assumed that a good critical thinking process results to good and competitive product outcomes.

Table 1: Criteria used in judging the project

No.	*Criteria*	*Presentation*	*Criteria*	***Product Competitiveness***
1	Introduction	√	Description	√
2	Content's clarity	√	Assumptions	√
3	Fluency	√	Application of concepts	√

4	Personality projection	√	Difficulties encountered and corrective measures	√
5	Layout / design of PowerPoint	√	External environmental Analysis & evaluation	√
6	Depth of response	√	Internal environmental Analysis & evaluation	√
7	Conclusion	√	Competitive feature & appeal	√

With higher agree response level among students, development of the students' higher levels of intellectual or cognitive abilities such as analyzing and evaluating the applicability of the concepts prior to laying out parts or components of the product, manifest that the fundamentals of classroom learning in the sample course is fully adhered to. These learning processes not only strengthen the students' perceptions or acuity of the real world aspects after university but also sharpening their decision making abilities that is vital in becoming well-educated person.

The students working in groups were able to modify and re-shape their ideas to match their innovative project with relevant external and internal environmental issues surrounding the given industry which would have not notice when tangible stature is not accessible during the learning process. The physical presence of the product also made them to think logically and deeply. As the students were engaged in disciplined-based thinking, ability to set the products' competitive standards (92%) as the project outcome, as stated earlier, become evident. The result of this study differs from the study conducted by Gardiner (1995) where 78% of the students lacked appropriate intellectual standards to use in assessing ones thinking. With the difference in time and setting, the recent study indicates that the students have the confidence and acumen to set the standards in assessing their thinking. They were able to decide which was good and which one is bad thinking. The students were not given some advices on what the product should have to make it better than others (competitive).

Based on observations of project outcomes, majority of the products have commercial value given their presentation, unique features, aesthetic appeal and the promotional approaches and propaganda as portrayed during the judgment session.

The judging of the prototype products' features and aesthetics including the promotional leaflets, as an outcome of reflective thinking of the group, has been based on set of criteria to measure the students' learning outcomes. Based on table 2, the average score was 73 (grade B+ based on university grading scale). The score ranges from 65.2 to 80.5 or a grade point equivalent of B to A. This means that the students, as a whole, have pleased the judges as manifested by the groups' respective scores. This resonated the critical thinking skills of the students, working in groups, have been embedded into the innovative products based on reasoned argument that if the judges were not thrilled by the decisive product outcomes then scores would have receded. This

further showed that the students' retentions of what they have learned in class were above average as opposed to the research undertaken by Gardiner (1995) among 68 private universities where students' retention was rated low. Furthermore, the student's project was an innovative front digressing from common classroom tests adopted by many in measuring students learning comprehension. The project did not require the students to rely of memorizing and shallow application and analysis of concepts and principles but rather engaging them intellectually into the real world of making sound decisions thorough analysis and evaluation of circumstances within the surrounding environment.

Table 2: The Groups' Product competitiveness outcome assessment by 5 judge team

Product	*Total point*	*Mean Score*	*Rank*	*Equivalent Grade*
Easy Squeezy	805	80.5	1	A
Travel Kit	793	79.3	2	A-
Acquaponic	790	79	3	A-
Funstudy Box	778	77.8	4	A-
Urban pot	769	76.9	5	A-
Let's Lunch	746	74.6	6	A-
E-vase	740	74	7	B+
Safety Book	652	65.2	8	B

*based on set criteria of judging.

Observations in classroom showed that students, in a case study and problem-based learning activity, were motivated to ask questions (25%) on how the concepts to be applied from one case study to another as opposed to a quiet scenario at the end of each class. Further, it revealed that 100% of students actively engaged or follows through the thinking process, ability to answer questions logically and intelligently (85%). When doubtful of the discussions or were evident in classrooms while some students preferred to come for consultation. Other students' traits such as yawning, chatting, unwanted scribbling were not seen in classroom. The students' attentiveness results to improve understanding, retention, application, analysis and evaluation which were unanimous to Gardiner's study previously mentioned.

Further observations revealed that the students were not only able to assess the appropriateness of their own reasoning but also train them to analyze and evaluate situations as well their own line of thinking prior to casting an answer or decision logically. It was also observed that some students opted to change their first impression answer that was illogical to a more intellectual one. This was a good learning process to inculcate. Attitudinal change in thinking appeared a commendable attitude as opposed to being intellectually arrogant. An intellectually arrogant person is one who remains to an answer or belief even though subsequently finds a more rational one. Some people exemplify intellectual arrogance. For instance, a person readily changes his

thinking disposition if subsequently, after having second thought, found a better one. This person has intellectual humility. Indoctrinating intellectual humbleness amongst students is a righteous deed as human's first thought is sometimes illogical, misleading and inappropriate.

In matters relating to students' performance, the students' average final grade was satisfactory at 65% or equivalent grade of B which conforms to the university's quality objective of obtaining 50% of graduates' posses a cumulative grade point average of 3.00 and higher. The average mark of 65% have been made possible by fostering critical thinking in classroom as well as the use of other teaching tools i.e. tangible replicate, as an aide in teaching and learning process. This project facilitates brilliant ideas to flow quickly among students as compared to verbal illustrations where 50% of class fails to catch up, as observed.

Gardiner (1995) has discovered that all faculties and universities aspire to developed students' thinking abilities, but research showed that in practice they tend to aim at facts and concepts in the disciplines, at the lowest cognitive levels rather than development of intellect and values. On the contrary, this current case study deviates from the said survey findings.

Observations indicate the faculty of accountancy of University Teknologi MARA (UiTM) Pahang has implemented diverse learning modes. Problem-based learning, case study reporting and presentation, question and answer techniques, interviews with corporate entities or accountants on arrays of disciplined related topics and industrial attachment were constantly undertaken to foster critical thinking skills amongst students in classroom. These initiatives drove students to think deeply and purposively not only to assist students in coping the final examinations but also to appreciate better the realities in life i.e. make a reasoned judgment in classroom so as to cast logical answers. This process, if practice ardently by lecturers and students in all the four subsequent semesters of studies; sustains some sort of critical thinking culture among UiTM students. Developing a culture of being careful, purposive, deliberate determination of the most appropriate judgment or decision, to make or whether to withdraw from any given line of thinking are highly commendable in a classroom that are worth persevering. This mirrors the seriousness of the faculty towards teaching and learning effectiveness that would ultimately enable the students to build intellectual confidence in classrooms and in real life to becoming well-educated persons in the society.

CONCLUSIONS AND SUGGESTIONS

This study has inculcated and investigated the acceptance and performance outcomes of a group of bachelor students over a disciplined-based critical thinking approach in classroom. It was found that 100% of the student either strongly agree and agree of using students' innovative projects, in groups, with a mean of 3.4 and use them in the teaching and learning process, motivated to ask questions at the rate of agree (75%) and strongly agree (25%), and think within the logic of strategic management (95%) and carry out complexities (90%). The innovative projects were assessed based on set criteria as shown in Table 1. These learning processes not only strengthen the students' perceptions or acuity of the real world aspects after university but also sharpening their decision making abilities that is vital in becoming well-educated person. Based on table 2, the average score was 73 (grade B+ based on university grading scale). The score ranges from 65.2 to 80.5 or a grade point equivalent of B to A.

On cognitive thinking, the students were able to remember and define the concepts and principles learned in class, understand, apply, analyze, identify opportunities, identify threats, identify resources needed, analyze product's good features to become competitive, evaluate product's bad features, evaluate product's value creation power, and create new idea for the product to be competitive. Classroom observation revealed that students were actively engaged or followed through the thinking process, and were able to answer questions logically and intelligently. Findings in this study were unanimous to Gardiner's study where students' attentiveness in classroom results to improve understanding, retention, application, analysis and evaluation skills.

Similarly, this survey proves that critical thinking enables the students to assess the appropriateness of their own reasoning, train them to analyze and evaluate situations as well their own beliefs prior to answering or making decision. Fostering critical thinking in classroom mirrors the seriousness of the faculty and the university as a whole towards teaching and learning effectiveness that would ultimately enable the students to build intellectual acuity as well as confidence not only in classrooms but also in real life to becoming well-educated persons in the society. This study is not free from limitations as it takes into account a sample class and course. Thus, this case study may not represent the entire students of the faculty. Generalization of outcome may be to some extent differs from the rest of the courses' outcomes.

Fostering disciplined-based critical thinking culture in university classroom brings about rewarding academic excellence among students that would be mutually beneficial in the real world perspectives. However, this culture can bring sounder fundamentals when adopted in the early stage of education i.e. elementary and secondary levels.

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