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Promoting Critical Thinking and Problem-Solving Skills: An Introspection from the Perspective of Cadet College Classrooms

Research Paper

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Abstract

Critical thinking and problem-solving skills can play a vital role in preparing cadets of the cadet colleges to meet up the demands of the 21st-century professional arena. To make them competent to work anywhere in the world in any situation and to ensure the best career for every cadet, critical thinking and problem-solving skills can help a lot. These skills enable someone to be confident and well prepared before the unseen difficulties of the future. For ensuring maximum success of the cadets, critical thinking and problem-solving skills can be acquired through the activities related to classroom, leadership, creativity, collaboration, and communication among the cadets and faculty members. The present study aims at analyzing critical thinking and problem-solving skills, evaluating the qualities required in the 21st century, and teaching those skills to the cadets considering the realities of cadet college classrooms in general, and providing guidelines to make the teaching-learning process of the cadet colleges more effective in specific.

Keywords: Critical thinking, problem-solving, collaboration, communication, leadership, creativity, classroom culture

1. Introduction

The terms "critical thinking" and "problem-solving" have become buzz words in the arena of teaching and learning. These are the prerequisites to continue the legacy of success in this competitive world. To build competent future generation and digital global citizens, these are a must. If someone wants to make the best place for oneself, he or she must prove his or her competencies and qualities. There is no alternative to acquiring qualities. Again, the very purpose of cadet colleges is to produce competent future professionals with leadership skills, who will serve the nation. For the fulfillment of the purposes of cadet colleges, the very concept of critical thinking and problem-solving can be appropriate.

The everyday world is full of social, financial, political, religious, educational, and such problems, which are getting more and more complex. Again, there are several isms and theories in society. It is very difficult for someone to determine the appropriate one for an individual. Besides, the growth of the internet and information technologies are available around us,

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covering both the "good" and "bad" ones. There is an abundance of "false news" floating around the internet. Moreover, higher education is failing to meet up society's requirements for qualified citizens. It is worth mentioning that institutional education should equip the learners with the skills of dealing with the above-mentioned problems in the fast-dynamic world of an unknown future. To meet up the new situations and challenges, the tools which can perfectly provide the cadets, the expected future leaders of the society, the necessary skills to solve problems regardless of their nature are "critical thinking" and "problem-solving".

How to teach skills related to critical thinking and problem-solving to the cadets through classroom activities was one of the basic objectives of this study. In other words, we need to equip the cadets with the skills for becoming future problem-solvers and critical thinkers. The learners of the 21st century is needed to join a workforce that requires them to ask questions, solve problems, and think critically. Many of today's jobs require workers to think outside the box and solve problems from different perspectives. If the cadets do not foster such essential skills at the early stage of their life, it would be difficult for them to cope up in the practical context. So, the acquisition of appropriate skills and the development of mental abilities and competencies by the cadets are the prime concerns of the study. To be more specific, suggesting some recommendations for bringing modification in the classroom activities considering the classroom culture of cadet colleges and the demands of the 21st century is the prime objective of the study. Therefore, the study covers the answers to the following research questions:

a. What are critical thinking and problem-solving skills?
b. What is the actual classroom culture of cadet colleges?
c. What are the relationships between the aims of cadet colleges and skills related to critical thinking and problem-solving?
d. How can these skills be developed among the cadets through classroom activities?
e. What can be the appropriate classroom procedure for teaching those skills to the cadets?

2. Critical Thinking and Problem-Solving

Foundation for critical thinking (2009) has defined it as: "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". It is the independent way of thinking and judging a matter or problem from a personal point of view to arrive at the best possible solution. It is not about the accumulation of facts and information rather it is about being an active learner who will continue to learn in that way forever. Following this process, a thinker becomes able to analyze, assess, or reconstruct his or her concepts and level of understanding. Without being biased, s/he can solve problems systematically rather than by intuition or instinct.

It is different from the traditional way of thinking which involves prejudices, over-generalization, common fallacies, self-deception, rigidity, narrowness, mistakes in reasoning, human irrationality, biases, distortions, social taboos, etc. Critical thinkers rigorously question ideas and assumptions rather than accepting at face value. To understand the logical connection between ideas, critical thinkers go through several sources and determine what to believe and what not to believe. It also attempts to determine both merits and demerits of a subject matter for finding out the truth. Through this self-guided, self-disciplined, self-directed, self-monitored, and self-corrective process of thinking, people get factual information. Learners come out from egocentrism and form the habit of tolerance to accept other's opinions and values. This ability is valued much both in personal and professional lives by most employers. People who can think

clearly and rationally contribute to the improvement of the world in whatever ways they can and contribute to society.

Problem-solving denotes the act of performing or systematically completing a task, rationally and logically. The skill of solving problems is needed within the curriculum to prepare young learners for the future. The development of this quality through classroom procedure and activity enables young learners to tackle the complex situations of real life. The more the learners focus on the ability to devise effective solutions to real-world problems, the more successful they are. Furthermore, problem-solvers are initiative takers and enjoy risks and challenges.

3. Literature Review

American Sociologist William. G. Sumner began the movement of critical thinking in education in the early 20th century. While conceptualizing critical thinking, Sumner (1906) emphasizes the importance of deliberate training of thinking and thought it to be the goal of all education. Sumner (1906) puts special importance to teachers of any subject in cultivating well developed critical individuals. According to him, this can be done by insisting on accuracy, controlling rationally all processes, and keeping everything open to unlimited verification and revision (pp. 632–633). The critical thinkers believe in the Socratic principle, "The unexamined life is not worth living", because of their belief that many unexamined lives together result in something dangerous (Paul & Elder, 2008).

Hirose (1992) opines that youth now-a-days lack the basic skills to function effectively at the time of entering into the workforce (p. 1). Hirose (1992) furthermore explains that entry-level employees lack the reasoning and critical thinking abilities which are needed to process and refine information (p. 1). That is, he emphasizes the need to promote critical thinking in teaching-learning practices for students to be prepared to function effectively in today's job market.

According to Masduqi (2011), critical thinking skills play significant roles both in learners' academic achievements and in their dynamic life of workforce after graduation (p. 186). Scriven and Paul (1987) posit that critical thinking is based on universal intellectual values of clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness (n. p.). In a similar study, Halpern (1999) draws attention that critical thinking is mainly purposeful and goal-directed. It involves solving problems, formulating inferences, calculating likelihoods, and making decisions" (p. 70).

Educational reformer John Dewey (1916) connects the concepts of critical thinking and problem-solving. He rightly suggests that critical thinking is activated while solving problems. Dewey (1916), who roots critical thinking in problem-solving, states that "Only by wrestling with conditions of the problem at first hand, seeking and finding his way out, does the student think" (p. 188). Thus, problem-solving is a constituent of critical thinking.

4. Methods

To conduct the study, the researcher has followed a complete observation method. The information is sought by the way of investigator's own direct observation without asking from the respondents. Besides, classrooms of a cadet college were taken as the sample to represent the general scenario of all the cadet colleges in Bangladesh.

5. Introspective Viewpoints

To develop the concepts of critical thinking and problem-solving skills among the cadets, the following issues were found to be imperative.

5.1. Learning Theories and Critical Thinking and Problem-Solving Skills

Both cognitive psychology and socio-cultural structure contribute much to develop the critical thinking and problem-solving skills of the learners. According to the developmental psychologist Piaget (1951), a learner's skill or intelligence is the product of his environment and his mental structure. Piaget (1951) argues that egocentrism and socio-centrism are the direct antitheses of fair-minded or open-minded disposition which is desired by the critical theorists. Again, according to the Socio-cultural theory of Vygotsky (1978), all learning happens in collaboration with others as a result of interaction with them. That means points of other arguments formulate the thought-provoking skills of the learners. Thus, both the cognitive power of a young and socio-cultural environment in which a learner resides are essential to developing critical thinking and problem-solving skills.

5.2. Aims of Cadet Colleges

According to Standing Operating Procedure-SOP (2009), the basic aim of cadet colleges is "to educate and train young cadets as future leaders, promising professionals, and civil/ military officers endowed with knowledge, high standard of morality, sense of responsibility and spirit of patriotism". To put it in another way, to make the cadets fit as future professionals are the main objective of cadet colleges. In addition to this, it is expected that cadet colleges will make a cadet self-dependent and complete individual.

5.3. Classrooms Culture of Cadet Colleges

Classroom culture refers to everything related to the classroom. It includes interaction between teachers and learners, the psychological state of the people involved, and the physical setting of the classroom. In the cadet colleges, a class is conducted with a limited number of students. Class size, seating arrangement, and equipment, all are favorable for running any kind of activity. Again, almost all classrooms are equipped with modern instruments. There are ample scopes to utilize various systems of class-taking as lecture method, pair work, group work, use of a multimedia projector and whiteboard.

5.4. 21st Century Skills

Every age demands some basic requirements from the people of that age. This 21st century is guided by some core skills which are the driving forces of the contemporary world. The Kamehameha Schools report 'An Overview of 21st-Century Skills' states that "More than technological expertise, 21st-century skills refer to content knowledge, literacies, and proficiencies that prepare individuals to meet the challenges and opportunities of today's world". Similarly, the Metiri Group (2003) in its white paper 'Twenty-First Century Skills' said "The driving force for the 21st century is the intellectual capital of citizens".

Along with the academic certificates, a competitor, in today's world of modern technologies, needs to have life-skills, as well as, basic skills. The concept of critical thinking and problem-solving are interconnected with some other skills. All these skills together make a cosmopolitan of the 21st century successful in career, and also in real-life.

Relating to the problem-solving and critical thinking skills, the other interconnected factors are can be listed as follows:

Collaboration: Working together with others;
Communication: Connecting with others;
Flexibility: Deviating from rigid plans to accept others' opinions;
Leadership: Guiding a team to accomplish the goal;
Creativity: Starting something new on one's own;
Connecting Classroom: Focusing on building global awareness and cross-cultural learning.

5.5. Relationship between Aims of Cadet Colleges and 21st Century Skills

There are great similarities between the aims of cadet colleges and 21stcentury skills. During the entrance of cadets in class seven, a cadet is thought to be a piece of clay. It is given a definite shape within the six years of tenure. Thus, a cadet is brought up in such a way that enables him/her to work in any situation logically and rationally. Working with other cadets s/he develops the skills of collaboration and communication. In other words, s/he is expected to be a promising professional with leadership skills, which reflects the same demand of the 21st century, i.e., a person/professional needs to be collaborative, communicative, and flexible.

5.6. Critical Thinking and Problem-Solving through Classroom Culture

In the post method era, Kumaravadivelu (2009) suggested that the teaching-learning process becomes successful when it is sensitive to "a particular group of teachers teaching a particular group of learners pursuing a particular set of goals within a particular institutional context embedded in a particular socio-cultural milieu" (p. 538). That is, the teaching-learning process should be selected taking into consideration the teachers, the learners, and other factors of a particular context. Through a proper classroom-analysis, proper education can be provided. Based on the contextual realities of the classrooms of cadet colleges, critical thinking and problem-solving can be integrated. Again, integrating critical thinking and problem-solving with the classroom culture is a gradual process. We can bring changes in the process of conducting classes as the number of cadets are limited in a classroom. first, both the teachers and cadets need to bring a psychological adaptation to the probable changes in the interactional pattern among teachers and learners. Instead of conceptualizing information and receiving data from the content, cadets must develop a deep understanding of the process of learning. The skills of problem-solving and critical thinking can be integrated with the classroom culture of cadet colleges by developing a good communication system in the classroom, the risk-taking ability of cadets, the process of internalization and application of ideas, the assessment of personal strengths and weaknesses, the ability to master key concepts underlying a subject, and the practice of asking thoughtful questions to the teacher and classmates.

5.7. Teaching Critical Thinking and Problem-Solving Skills in Cadet Colleges

In the context of cadet colleges, some specific strategies can be followed for teaching critical thinking and problem-solving skills to cadets for developing them as critical thinkers and better problem-solvers of the future. In the cadet college classrooms, topics of different subjects are taught following different strategies. These strategies are rightly acquired in the classroom if the cadets turn out to be able to:

Find out the logical connections between ideas during the discussion of a particular topic;
Detect inconsistencies and common mistakes in reasoning;
Raise vital questions about a particular topic;
Form the ability of decision making;
Think about a topic or issue objectively and critically;
Notice implications of a statement or argument;
Gather information from different sources;
Recognize any weaknesses or negative points in the planning for problem-solving.

6. Recommendations

For the development of critical thinking and problem-solving skills along with the other interconnected factors, the class-time needs to be utilized in the best possible way so that cadets can acquire maximum benefit from the classroom, which is possible in the context of the cadet college classrooms. Accordingly, the present study recommends the following:

a. The practice of participatory class leaving traditional lecture-based methods needs to be ensured where the cadets will not be a mere recipient of information rather be the active learners, suggesting the diversion of concentration from the teacher-centered class to a student-centered one.
b. Involving the cadets more in group work, pair work, and classroom discussions, where they will get enough scope for developing their collaboration and communication with the other cadets as well as with the faculty members.
c. Classes should commence with an open-ended question that demands genuine inquiry, analysis, and assessment for concluding regardless of outside/guided influence.
d. Relating the subject matter with the practical life of surroundings can also be taken into consideration; brainstorming should be encouraged aiming at reversing things for analyzing, comparing, contrasting, and synthesizing information before acceptance.
e. Some topic related problems can be placed before the cadets for solving the problem individually, while others will observe, and in the end, the whole class altogether will discuss the strategies of solving the specific problem.
f. Cadets can be involved in creative writing to develop creative thinking.
g. Role-playing of becoming someone else in the real life for exercising critical thinking can also be effective for the cadets in this regard.
h. Concepts of presentation and quiz type activities can be utilized in the classroom. These activities will increase their confidence and power of understanding.
i. Using a multimedia projector, especially in the science classes, can be a good tool to show multilayers of the related topic instead of using it only for presenting data and information, where a teacher can display some topic-related advanced level audio and video clips to enhance the cadets' foresight.
j. Recapitulating the main concepts of a topic in the last two minutes of a class can be effective to involve the cadets critically with the academic topic.
k. Following the process of "connecting classroom", aiming at the cadets' global awareness and cross-cultural learning, the faculty members need to provide some food for thought at the end of any topic-based classroom discussion.
l. Furthermore, the teachers need to be well-trained. In this regard, the concerned authority should take necessary steps.

7. Conclusion

For promoting critical thinking and problem-solving skills among the cadets no drastic change is needed to bring in the classroom practices of the cadet colleges. Teachers will teach the same topics and complete the same syllabus as usual; just the system of conducting classes needs to be reformed; they will teach as well as supervise the teaching-learning process that involves cadets vigorously. Here, the teachers are to shoulder a great responsibility; they need to take preparation for the topics to be covered in the class and do their homework for selecting any of the procedures for conducting the class on a particular topic. And thus, by bringing modifications in the classroom procedure, critical thinking and problem-solving skills can be developed among the cadets for making them the cosmopolitans of the 21st century.

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