

Development of Critical Thinking as an Innovative Pedagogy among Undergraduates

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ABSTRACT: *Globalization continues to shape the National and International jobs, and employer's needs are constantly changing. In the present job market employers prefer employers who have strong problem solving and critical thinking as a competence. The present curriculum which is more subject centric has to be changed to meet the expectation of the employers in the job market. Critical thinking is fountain head of informed decision and the ability to solve the problems. It also discusses the role of education and academician to innovatively apply critical thinking with their present syllabus and prepare students for a competitive global market. The paper brings out recommendation to create a base for innovation in pedagogy and their implementation at the college. To ensure derived outcomes in learning the teachers should motivate to apply critical thinking in their delivery plan. It also focuses the areas where critical thinking can be adopted. The primary purpose of this paper is to present the role of critical thinking as an innovative pedagogy to produce high quality learning outcomes in the undergraduate educational system. The study is based on literature survey and author research.*

KEYWORDS: *Development, critical thinking, Innovative pedagogy, Undergraduate.*

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I. INTRODUCTION

The value of a college education is not the learning of many facts, but also the training of the mind to a higher order skill which are essential for absorbing knowledge as well for work performance. It is an ongoing thought process that promotes, questioning, investigation and analysis. The ability to think critically is considered as one of the desirable outcomes of an undergraduate education (Facione et al, 2000). Critical thinking development in modern college students allow prospective specialists to successfully master the bases of their future profession and be prepared to live and work creatively in the 21st century. Preparing the undergraduates for the future in the key to any education

Critical Thinking: An Academic Perspective

Creative thinking involves creating something new or original. It involves the skills of flexibility, originality, fluency, elaboration, brainstorming, modification, imagery, associative thinking, attribute listing, metaphorical thinking, forced relationships. The aim of creative thinking is to stimulate curiosity and promote divergence.

While critical thinking can be thought of as more left-brain and creative thinking more right brain, they both involve “thinking”. When we talk about HOTS “higher-order thinking skills” we’re concentrate on the top three levels of Bloom’s Taxonomy: analysis, synthesis, and evaluation.

Heiman (1985) describes critical thinking as an internal dialogue, whereby a person ponders and dissects the material that is being learned. Critical thinkers internally apply the knowledge that they receive devise specific questions that need further contemplation, and brainstorm relevant examples that help illuminate the material.

Critical Thinking Across the Curriculum

Critical thinking enhances the learning process wherein the person uses exploratory and imaginative methods to understand. Meyers (1986) maintains that coursework should contain critical thinking elements across the curriculum. Critical thinking can be said as “thinking outside the box” which leaves a lasting and complex impression by merging objective material with the learner's subjective and hypothetical reasoning.

Critical thinking is a disciplined, self-directed and self-regulated thinking, which illustrates the thinking perfections, correspondent to the specific way or field of thought. Critical thinking presents in two forms. If it has been trained (disciplined) to provide for the interests of a specific individual, excluding other appropriate people or group, it is called sophistical or weak essence of critical thinking. If it has been trained (disciplined) to take into account the interests of various people or groups, it is called rightful or strong essence of critical thinking.

Modern pedagogic studies show (Stukalenkoetal, 2016) that the problem of critical thinking development in students during the education process is highly multi-aspect. Each student uses meanings, ideas, paradigms, analogies, metaphors, models, theories and explanations even for expressing the flow of their own thoughts. This they do it in order to understand, think and regulate their own thoughts. They also use meanings and concepts in order to deny, contradict, distort, create stereotypes, etc. Psychologists note that often the way of thinking might be described in such criterions as vivid, accurate, adequate, successive, deep and honest. But often thinking may also be inaccurate, undefined, inadequate, shallow, trivial and biased.

Critically reading and evaluating information are seen by some as the most important skills to developed. Thinking critically can provide broader perspectives, creative solutions, multiple pathways and scope for more self-regulation. Critical thinking can be taught where the learners engage achieves with teacher as facilitation.

Students can even develop transferable thinking skills through focused critical appraisal activities. Various tools have been proposed for teaching critical thinking skills, these include but are not limited to; written assignments, problem-based learning, analyzing case studies, work-integrated learning on placement, and the use of simulations.

Academic writing has been recognized to help learners develop critical thinking skills as the complexity of writing skills necessary increases from undergraduate to post-graduate level. Scientific writing can encourage the development of self-expression, organizational skills, and both descriptive and observational

II. METHODOLOGY

The purpose of the study is to describe and recommend critical thinking and also to uncover the benefits of critical thinking among the underprivileged.

Critical thinking at undergraduate level:

At undergraduate level, critical writing typically refers to the way in which a logical argument is developed and presented. The cognitive process of critical thinking brings to light and questions 'accepted' views and assumptions and can offer alternative perspectives. Critical thinking is a process that challenges an individual to use reflective, reasonable, rational thinking to gather, interpret and evaluate information in order to derive a judgment.

Critical thinking as an Innovative Pedagogy:

"Critical thinking is at the core of most intellectual activity that involves students in learning to recognize or develop an argument, use evidence in support of that argument, draw reasoned conclusions, and use information to solve problems. Examples of thinking skills are interpreting, analyzing, evaluating, explaining, sequencing, reasoning, comparing, questioning, inferring, hypothesizing, appraising, testing and generalizing."

III. DISCUSSION

Teaching students to be critical thinkers presumes an environment

Model of Critical Thinking Classroom:

What does a typical class period look like? - (accommodates 20-minute attention spans)

- Introductory phase
- Review previous day, homework assignments
- Bridge new material with advanced learners
- Lecture or presentation through questioning
- Small group discussions and tasks
- Period of reflection or exercises in applying new material,
- or review Reports
- Summaries/exercises/developmental/application/demonstration activities

Areas of Critical thinking:

Increasingly, learning and innovation skills are being recognized as the skills that separate learners who are prepared for increasingly complex life and work environments in the 21st century. A learning and teaching focusing on the skills of critical thinking is essential to prepare learners for their futures.

There are four key areas of critical thinking:

1. Understanding perspectives

Thinking critically is about being able to understand the differing perspectives and to accept the validity of each. The illustration of the Vase is a good example of how each of us brings our own perspective to our thinking. Some will see a vase while others will see two faces looking towards the center.

2. Evaluating evidence

Gathering and evaluating evidence is an important feature of critical thinking. Evidence is nothing but data on which we base our judgements or decisions. But learners often make two common mistakes:

a) Learners base their views or decisions on no evidence or wrong evidence led by their emotions.

(eg) The current controversy around the issue of global warming – yet evidence that supports global warming as a significant issue is irrefutable.

Learners dismiss evidence that conflicts with their pre-existing views.

3. Non-routine problems

A routine problem can be solved using methods familiar to learners by repeating previously learned methods in a step-by-step fashion. Non-routine problems are those where there is no predictable, well-rehearsed approach or pathway explicitly suggested by the problem, whether this is a routine or non-routine problem depends on the learner.

4. Looking for deep structure

Deep structure refers to a principal that goes beyond specific examples. Surface structure refers to the particulars of an example meant to illustrate deep structure.

Techniques used for Critical thinking

1. Questioning - Strategies for using questioning in the classroom
2. Problem-based learning- An active learning technique
3. Thinking aloud-Demonstrate thinking through problems and develop the process of developing ideas, solutions, etc.
4. Active listening
5. Cooperative conflict resolution
6. Concept mapping is an alternative to outlining or environment for brainstorming
7. Learning portfolios/records of progress; Develop opportunities for individuals and groups to develop documents that reflect learning progress over time (minutes/journals; blogs/media productions; speeches/presentations)
8. Classroom space accommodates interaction between small and larger groups of students as well as the teacher
9. Seize the moment/Gestalt/ah ha
Intentionally deliberate on a current controversy or issue. Help them strive to develop mutual understanding of the issues on both sides as well as the alternative processes of arriving at resolution(s)
10. Illustrate concepts with examples out of the students' own experiences to correlate concepts and applications
11. Provide feedback to the learner; considerations:
 - Were the objectives and standards understood?
 - What external events influenced behavior/outcome?
 - What will feedback contribute to the learner's self-understanding and development?
 - Is feedback based upon the results/answers/etc. or how they were developed (process)?

Critical Thinking Tools That Help Learners Remember – BENJAMIN BLOOM 1956

Critical thinking, as it pertains to teaching and learning, can be considered an open-minded process of discovery and understanding, analysis and application, synthesis and evaluation.

The following six components reflect B. S. Bloom's (et al-1956) hierarchical taxonomy or breakdown of cognitive educational objectives.

Benjamin Bloom (1956) created this taxonomy or classification system for categorizing "competencies" in educational settings, as defined by skills demonstrated by learner type or intelligence. This breakdown provides a useful, incremental framework of complexity in demonstrating mastery of a subject or topic. The verbs include the skills that demonstrate each:

The levels of this taxonomy are:

1. Remembering: Remembering is Recognizing, Listing, Describing, Identifying, Retrieving, Naming, Locating/Finding

2. Understanding: Interpreting, Exemplifying, Summarizing, Inferring, Paraphrasing, Classifying, Comparing, Explaining.
3. Applying: Implementing, Carrying Out, Using, Executing, Doing
4. Analyzing: Comparing, Organizing, Deconstructing, Attributing, Outlining, Structuring, Integrating.
5. Evaluating: Checking, Hypothesizing, Critiquing, Experimenting, Judging, Testing, Detecting, Monitoring
6. Creating: Designing, Constructing, Planning, Producing, Inventing, Devising, Making, Building.

Expertise needed by the teacher for training students to think critically:

- Have a sound knowledge base of the subject matters deeply.
- Remain open to challenge by students.
- Encourage students to look at the big picture
- Be prepared to listen to voices that originate in the classroom
- Encourage students to question and challenge existing beliefs, structures, and practices
- Avoid offering 'how to do it' approaches
- Encourage students to be sensitive to the feelings of others
- Provide opportunities for inquiry by giving students time for planning, processing, and debriefing
- Structure lessons so that students can work safely and co-operatively and develop creative forms of shared responsibility
- Encourage students to take critical action.

Responsibilities needed for students:

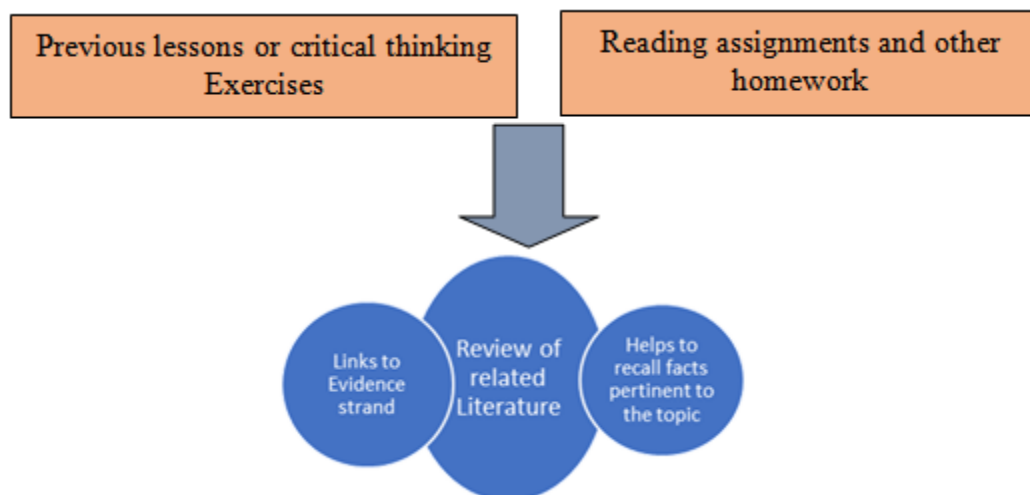
- learning to take responsibility for analyzing and evaluating information
- giving each other feedback about their analyses, evaluations, and actions
- questioning and challenging each other's assumptions in a non-threatening manner
- learning to identify any inequalities and power relationships within contexts in health education, physical education, and home economics, focusing on how these positions are sometimes reinforced through organizational structures and through certain forms of language
- reflecting on people's assumptions, beliefs, and behavior's, taking into account a range of factors
- generating alternative solutions and accepting them or critiquing them in a sensitive manner
- developing the confidence to work with others in taking critical action

Approach:

The study discusses the critical thinking as an innovative Pedagogy through a model by Benjamin Blooms. It also gives a few strategies to develop critical thinking among students.

Strategies for Developing Critical Thinking in students:

1. Begin with a question: This is the simplest opening into critical thinking.
 - Encourage brainstorming
 - Have big open discussions
2. **Create a foundation:**Learners cannot think critically if they do not have the information they need.



3. **Reconstruct a text:**This activity can be done at the end of the lecture topic if the learners have had a good understanding of the information shared by the teacher.
4. **News Analysis:**This can be always be done for that analyzing a situation by 2 groups on the positive and negative aspects. The learners can be divided into pairs or small groups to find a minimum of two current news articles that show different perspectives on the same topic or situation.
5. **Mastering Use of information:**Critical thinking is knowing when to pursue and when to discard information. Learners must learn to amass the appropriate knowledge to inform that thinking. Mastering the proper use of information is very essential if a student has to succeed in his studies and life.
6. **Utilize peer groups:**The present-day learners like environments where critical thinking skills develop through teamwork and collaboration. The learners must be made to understand that the their peers are an excellent source of information, questions, and problem-solving techniques.
7. **Try 'one sentence':**The following exercise can be practiced in your lessons: form groups of 8 to 10 learners and instruct each student to write one sentence describing a topic on a piece of paper. The student then passes the paper to the next student. The next student will add their understanding of the next step in a single sentence. This time, though, that student folds the paper down to cover the first sentence. Now only their sentence is visible, and no other. Each time they pass, learners can only see one sentence. They must keep adding the next step of their understanding. This teaches them to really hone in on a specific moment in time. They learn to critically apply their knowledge and logic to explaining themselves as clearly as possible.
8. **Role-playing:**Pair learners up and have them research an historical conflict political leader / eminent person it should involve an interaction between two famous people which leads them to decide which character they will each choose to play. They will each have opposite points of view in this interaction. The learners discuss it until they can mutually explain the other's point of view. Their final challenge will be to each suggests a compromise.
9. **Speaking with a sketch:** Visual display is a very important and most derived method in communication. The present-day learners benefit and can effectively communicate through visual display. Effectively communicating through visual means is challenging and the learners can translate their thoughts into picture which encourages critical thinking.
- 10 **Change their misconceptions:**Most of the learners have misconceptions and assumptions that hinders their learning process Critical thinking involves intensive work and concentration. When the learners start concentrating on their learning on their own, they can clear their misconceptions and assumptions.

IV. CONCLUSION

Teaching professionals should start including critical thinking skills in their lesson plan. Every subject in the syllabus offers opportunities for critical thinking. The teacher can check for understanding and create room for discussion. Demand for critical thinking skills in new graduates has risen the teachers can start building on critical thinking as a culture in their classrooms which will bring richer lessons, deeper exploration, and better lifelong learning.

Every day, we face complex issues about which we must weigh evidence and come to conclusions. These issues involve many arguments on all sides of difficult debates. But they also involve understanding those arguments and having the ability to make objections and provide rebuttals to those objections. Recently, there's been a focus on the increasing importance of critical thinking skills for future employment. A major purpose of a university education— regardless of subject matter—is to teach students how to read, understand, and respond to complex arguments. The ability to do this makes for highly employable, adaptable, and reflectively critical individuals.

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