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ThinkingWisely, Acting Widely: Enhancing Critical Thinking Skills in Students

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Abstract

The paper aims to review existing research on critical thinking and develop targeted activities and exercises to enhance these skills in students. By synthesizing findings from multiple studies, the paper identifies common themes and effective practices in teaching critical thinking. Additionally, it explores the challenges and barriers faced by educators. Building upon this review, the paper proposes a set of practical activities and exercises specifically designed to enhance critical thinking abilities in students. These activities are crafted to be engaging and adaptable to different educational settings. The proposed exercises aim to stimulate analytical thinking, problem-solving, and reflective judgment among students. The paper concludes with practical recommendations for educators and educational institutions to implement these strategies, ultimately aiming to foster a generation of critical thinkers capable of navigating complex issues.

Key words: critical thinking, skills, activities, exercises.

Introduction

Critical thinking skill is essential in the 21th century. In the era of modern digital technologies, long gone are the days when only memorizing information was the main goal of learning and teaching. The storage of infinite information is now entrusted to various devices, while information processing, its correct analysis and turning it into useful products should be the prerogative of the present and future generations. Above all, critical thinking is crucial due to a lot of false information around us that we have to detect and should be able to distinguish truth from falsehood, good from evil, right from wrong.

“Critical thinkers must recognize problems, collect information that will enable them to address the problems logically, weigh the issues against beliefs, and make accurate decisions” (Nappi, 2017, p. 31).

Critical thinking is achieved by means of Socratic questions that were initially used “to reflect and think critically about the subject and eventually come to a new understanding…” (Tienken et al., 2009, p.39). The questions help students create, analyze, evaluate, imitate, recall or apply knowledge and information learned in the classroom.

Teachers should think and act strategically, giving the opportunity to students to make predictions, relate previously learned information to new situations, make students develop and ask questions of

themselves and others, let students explain how they attempted to solve problems independently (Nappi, 2017). Higher order questions aren't easy to formulate, and a lot of teachers choose to ask lower order questions, but posing the first ones is achieved through careful planning.

The study (Mahanal et al., 2019, p. 417) investigated the effect of RICOSRE learning model (**R**eading, **I**dentifying a problem, **CO**nstructing the solution, **S**olving the problem, **R**eviewing the solution, and **E**xtending the solution). The participants of the study were pupils of two schools of different academic abilities (high and low). The research proved RICOSRE to be effective, especially among high ability students, and it also showed that there is a difference between critical thinking of high and low ability pupils.

Insights from the previous research

Teaching critical thinking is a serious matter and methods and approaches of its teaching vary a lot. The most effective approach, according to a team of researchers (Abrami, et al., 2008), was mixed approach – a combination of a general approach and either infusion and immersion. General approach in their meta analysis study of numerous studies refers to critical thinking that is being taught separately from subject area content, whereas in infusion method critical thinking is combined with subject area content, and immersion approach – which means that instructions in the subject are thought-provoking. In another study (Rimiene, 2002) a program was developed that proved to be successful and the learning methods were based on cooperative learning. The study utilized the methods of active learning, such as brainstorming, problem solving, reflexive writing, purposeful research, debates and etc.

Five-step model of developing critical thinking skills in students is suggested by the researchers (Yusuf & Adeoye, 2012). The first step for the teacher is to determine learning objectives, which corresponds to the levels of Bloom's Taxonomy. The next step is to teach through questioning, because they stimulate a thinking process greatly. According to the researchers, teachers should use convergent and divergent questions, as well as Socratic questions. Also "questions can be asked to investigate assumptions, viewpoints, consequences and evidence" (Yusuf & Adeoye, 2012, p. 317). Then the step of allow practice follows, where teachers need to include some kind of experiential learning. Experience might include doing, observing and simulating. The last two steps are review & refine, and the final one is providing feedback.

Involving students in analyzing issues critically proved to be successful in developing effective critical thinking skills (Gadzella, et al., 1996). Students were given instructions in critical thinking skills and analyzed critical thinking examples. There was significant improvement in two subtests (interpretation and evaluation of arguments) and overall in critical thinking.

The effect of different learning models was one of the purposes of the study (Fitriani et al., 2020). The research used PBL (problem-based learning), POE (predict, observe, explain), a mixed PBLPOE (problem-based learning & predict, observe, explain), and also a conventional method. The highest post-test score was observed in PBLPOE classroom (83.19), followed by PBL (77.83), POE (73.18) and conventional (48.27). According to the researchers "there was a significant difference found between PBLPOE and POE in improving students' critical thinking skills. It was evident that PBLPOE steps contributed a lot to the development of the students' critical thinking skills through the process of analyzing phenomena, doing deduction and induction with various sources of information such as from the internet, books, or modules, and making wise decisions" (Fitriani et al., 2020, p. 100). In fact, "POE can overcome PBL's weaknesses and vice versa" (p. 92), therefore, the mix of those two methods is more effective.

Researching Socratic questions was one of the purposes of the study (Tienken at al., 2009, p. 43). The researchers highly advocate using questioning techniques by teachers and indicate that the lower order questions, in other words, reproductive questions proved to be less effective than productive, or higher level questions in developing critical thinking skills. The study also showed that reproductive questinos are more frequently asked than productive questions.

There is also an open question whether teaching critical thinking skills should be included in subject teaching or be taught as a separate course. According to the researcher (Adeyemi, 2012), critical thinking should be introduced as a separate subject or course. Some studies, however, mentioned above, were conducted within the subject teaching and researchers give recommendations how to improve subject teaching and critical thinking skills at the same time.

Obstacles and challenges

Critical thinking skill isn't easy to achieve because it requires higher order thinking. It takes months and years' of work, lots of reading, evaluating, analyzing, self-commitment, self-observation and many more. The good thing here is that it is achievable. There are some obstacles and challenges, and even problems that apprear on the way, and they need to be tackled.

Researching obstacles and problems in developing students' critical thinking skills was one of the aim of the study by (Amin & Adiansyah, 2018) conducted at four universities in Indonesia among lecturers and students. Tracking the findings of the research it crucial because there are many valuable insights into the topic, as it outlined several issues from both lecturers' and students' perspectives.

According to the research (Amin & Adiansyah, 2018, p. 5), top five problems faced by students are as follows: study for high grades and graduation only (74.20%), lack of ability to direct the focus of

the question (72.54%), lack of motivation and enthusiasm to review materials/concepts outside the classroom (72.12%), lack of interest in reading learning materials (71.10%), lack of ability to provide good arguments (70.68%).

Descriptive analysis of the study (Amin & Adiansyah, 2018, p 5-6) also show the obstacles from lecturers' aspects: using unvaried learning models/strategies (71.70%), not involving students in self-constructing materials (69.62%), dominate the classroom with lectures and students' presentation tasks (69,20%), not promoting inquiry and experimental activities in the classroom (68.37%), students are not active in the classroom (66.52%), not asking questions that can promote students' critical thinking skills (66.52%). As the researchers suggest "Students' critical thinking skills can be improved by providing them with problem-solving, analyzing, evaluation, and self-regulation training" (Amin & Adiansyah, 2018, p. 4).

Bloom's Taxonomy in focus

Decades passed but Benjamin S. Bloom's work is still considered the most valuable work in achieving learning objectives. After the hard work with educational psychologists he suggested a pyramid that is now called Bloom's Taxonomy which is a hierarchical model. In order to move to the next level, the previous one has to be attained. In this section of our paper, we are going to review it to propose the activities in the discussion section based on the Pyramid.

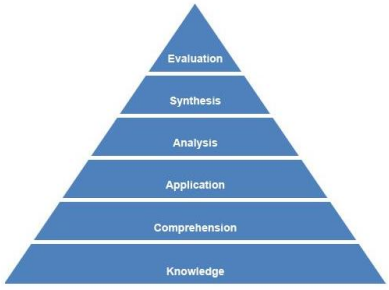

Figure 1. Bloom's taxonomy

The first step in the pyramid is knowledge, that is the very basics necessary to move to the second level. Knowledge of terminologies, specific facts, ways and means to deal with the specifics, trends and sequences, classifications and categories, theories and structures. Without recalling and recognizing information, it is absolutely impossible to succeed in the upper levels of hierarchy.

The next step is comprehension which occurs when a learner is able to understand statements, such as metaphors, symbolism, exaggeration, irony; to interpret information, to being able to translate materials from one form into another, to explain, summarize, paraphrase and describe information.

The third step is application - students use data, materials and knowledge to solve a problem or apply learned rules, theories and principles in different situations.

The last three steps are considered to be higher order thinking abilities, among which analysis comes the first. Under Analysis a learner is able to decompose materials into constituent parts, compare and contrast, categorize, notice cause and effect, as well as see the connection between the component parts.

Then comes synthesis - "putting together of elements and parts so as to form a whole" (Bloom, 1959, p. 206). Also, a learner is able to produce a new creative or original product, plan new research, propose a hypothesis or new innovative ways to solve a problem.

The last one that stands at the top of the pyramid is evaluation – "quantitative and qualitative judgements about the extent to which material and method satisfy criteria" (Bloom, 1959, p. 207). Also, students can draw conclusions on certain criteria and justify their position with supporting argumentation.

Discussion

In the section, we will draw conclusions from previous researches and establish an efficient teaching model considering effective and ineffective practices.

Using unvaried methods in the classroom and also dominating teaching sessions with lectures and students' presentation tasks were considered ineffective in the study (Amin & Adiansyah, 2018), so utilizing various methods and strategies, as well as a wide range of activities is one of the key factors in succeeding in developing students' critical thinking skills. Suggesting new approaches and more interactive and interesting activities other than lectures and presentation tasks, seems the ones that the students favour. Using variety of activities and utilizing cooperative learning is also recommended as they were proved to be successful (Rimiene, 2002). Separately PBL (Problem-based learning) and POE (predict, observe, explain) were less efficient than mixed learning PBLPOE (Problem-based learning + predict, observe, explain), therefore, the first two methods should be combined to teach in general.

Teaching through questions is advocated by many researchers (Yusuf & Adeoye, 2012); (Tienken at al., 2009); (Nappi, 2017). As we saw from above mentioned study (Tienken at al., 2009), using higher order questions proved to be more effective, so teachers should devise their lesson plans utilizing questions that correspond to the three upper stages of Bloom's Taxonomy. Instead of asking questions that aim at recalling information, teachers should ask the ones that foster analysis, synthesis and evaluation in students.

As involving students in analyzing problems and issues critically increased learners' critical thinking skills (Gadzella, et al., 1996), giving real life puzzles and problems, and also cases in detective stories to be solved, is going to suit our purpose in achieving higher standard of critical thinking.

Obstacles and challenges that the study researched (Amin & Adiansyah, 2018) also indicate that relatively low critical thinking and involvement in the lesson stems from students' lack of motivation and less enthusiasm of reading material. This shows how important it is to select proper reading materials or enrich the fixed curriculum with interesting extra materials, as well as connecting the reading with students' personal experience and foster their intrinsic motivation.

Practical recommendations

In the section, practical recommendations and models of activities/tasks are suggested considering Broom's taxonomy. As it was discussed, the last three steps contribute much more to the development of critical thinking skills, but it was also mentioned that the lower step is to be covered to move smoothly to the upper level.

Knowledge: in the category, tasks of a time line exercise is important to recall the sequence of the story events. Also, making a classification and categorization into the tables according to the given facts is useful, as this kind of task makes students return to the text and check the facts of the story. A kind of exercise, where the first parts of the sentences are given and students have to complete them with story information, aims at recalling the factual information.

Comprehension: explanation of a story event or describing a character's appearance and personality can be used as a comprehension activity in class. Summarizing is also suggested here, as students try to be succinct and give the main details. Besides, giving a saying and ask students to paraphrase (e.g. "an eye for an eye makes the whole world blind") will make them think differently.

Application: teaching a rule and ask students to find similar trends in different stories/cases/situations falls into this category.

The last three steps are absolutely essential to practice in the classroom and give students a reason to think. The steps make them think and then rethink, check and recheck a draft version of their thought. Trying to find similar and different trends, analyzing and evaluating the answers and compare with the given data/information is a characteristics of higher order thinking.

Analysis: asking students to decompose a text into several episodes, also, to compare and contrast two events or characters, finding a cause of a story event and then follow what its effect is, are example tasks of the category. Even finding the similar theme of the covered materials and compare and contrast those two ones will find students though-provoking and interesting. Reading a book and then watching

a movie made about the book, then compare and contract the two works of art with each other, is also both very appealing and beneficial for students.

Synthesis – planning the detailed ways/means of solving a problem falls into this category. So finding a solution to a story or a real life problem and writing the detailed plans to tackle them can be used while teaching thinking critically. Also, finding a different story ending will foster learners' creativity.

Evaluation – students might find several possible solutions to solve a problem and then choose the best one, justify the reason for their choice and give the reasons for rejected ones. Students will find themselves think reasonably and logically.

Conclusion

The paper emphasizes the importance of critical thinking skills, reviews the existing research on the topic, highlights the methods and strategies to be used by teachers and suggests some activities, tasks and exercises to help the skill develop in students. The article provides practical recommendations to utilize by teachers to make the class more motivated and immersed in the studying and working process. A further qualitative study should be beneficial to observe and track the process of gradual development of critical thinking skill and pace at which different students turn into critical thinkers. It will enable scholars to give detailed instructions in the topic and accelerate the process significantly.

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ნინო ბალუაშვილი
იაკობ გოგებაშვილის სახელობის თელავის სახელმწიფო უნივერსიტეტი

გონივრულად აზროვნება და მოქმედება ჩარჩოების გარეშე: მოსწავლეებში კრიტიკული აზროვნების უნარის გაძლიერება

აბსტრაქტი

ნაშრომი მიზნად ისახავს განიხილოს კრიტიკული აზროვნების შესახებ არსებული კვლევები, ასევე შეიმუშაოს მიზნობრივი აქტივობები და სავარჯიშოები მოსწავლეებში აღნიშნული უნარის გასაძლიერებლად. მრავალი კვლევის შედეგების გაანალიზებით, ნაშრომი შეეცდება იპოვოს საერთო თემები და ეფექტური პრაქტიკა კრიტიკული აზროვნების სწავლებაში. გარდა ამისა, ის იკვლევს გამოწვევებსა და ბარიერებს, რომლებსაც აწყდებიან მასწავლებლები. ამ მიმოხილვის საფუძველზე, ნაშრომი გვთავაზობს პრაქტიკული და საინტერესო აქტივობებისა და სავარჯიშოების ერთობლიობას, რომელიც სპეციალურად შექმნილია სტუდენტების კრიტიკული აზროვნების უნარის გასაძლიერებლად და რომლის ადაპტირებაც მარტივად შესაძლებელია სხვადასხვა საგანმანათლებლო გარემოში. შემოთავაზებული აქტივობები მიზნად ისახავს მოსწავლეებში ანალიტიკური აზროვნების, პრობლემის გადაჭრისა და რეფლექსიური განსჯის სტიმულირებას. ნაშრომის დასასრულს შემოთავაზებულია პრაქტიკული რეკომენდაციები პედაგოგებისთვის და საგანმანათლებლო დაწესებულებებში მომუშავე პერსონალისთვის, რაც საბოლოო ჯამში, მიზნად ისახავს კრიტიკულად მოაზროვნე თაობის ჩამოყალიბებას, რომელსაც შეუძლია დაძლიოს და თავი გაართვას რთულ საკითხებს.

საკვანძო სიტყვები: კრიტიკული აზროვნება, უნარები, აქტივობები, სავარჯიშოები.