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Exploring Teaching Strategies to Encourage Critical Thinking in Students

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Abstract

This study aimed to determine the role of modern teaching strategies or methods used by teachers of existing times to deepen critical thinking among students by using different means and resources in the classroom and outside the classroom as well, resulting in shaping up their thoughts by giving them directions and scaffolding them through teaching strategies to conceptualize knowledge by analysing it critically. However, in recent years it has been seen that teachers and educationists in Pakistan are using various modern practices to design their lesson plans to incorporate critical thinking in students and boost their mental skills for superior growth and development. This study is intended to determine contemporary teaching techniques to provide understanding to students of the 21st century to heighten their reasoning capabilities. The data was collected through interviews from primary school teachers, working in different schools and teaching different subjects. Interviews were conducted as open-ended questions from 6 experienced teachers to inquire about the strategies the teachers opt for in their classrooms fostering critical thinking. This study suggests that modern teaching practices, methods and strategies are linked to regulate critical thinking skills in students which amplifies their overall academic and educational performance.

Keywords

Critical thinking
 Problem-solving approach
 Reasoning and logic
 Reflective practices
 Teaching strategies

INTRODUCTION

Incorporating modern teaching methods can aid students in expanding their critical thinking skills. According to Zubeidah (2018), better and higher-quality education prepares students with higher-order thinking. It permits students to create a skill to develop beliefs and ideas and gives them a problem-solving approach in the process of learning (Troxell Castleberry & Evers, 2010). It has been noticed that during recent times teachers are using different Strategies and practices along with activities in the classroom, encouraging students to become independent learners, and giving them autonomy using various materials to support their learning. According to Susanti (2024), teachers should develop learning activities for students to challenge them to analyse, evaluate, and create solutions to problems. This is done using probing questions to encourage discussions in the classroom and reasoning to let them independently formulate opinions and defend their ideas.

The concept of critical thinking is not something new; this concept is a centuries-old technique to ascertain the truth of any matter. Many educationists and psychologists use this term for individuals to actively participate in the process of learning by reflecting and exploring. Critical thinking is all about discovering perceptions and constructing concepts in an analytical and concrete form. The idea is to provide effective education to all children through which they would create new knowledge and explore new concepts. According to Cáceres et al., (2020), the most imperative activities that students need are to inquire, analyse, and create new ideas and thoughts. And to make sure that all students get attention in the process of teaching where the teacher becomes a facilitator and enabler for students so that they can synthesize their creative thoughts and imagination through interpreting existing knowledge and information. Usually in a classroom, teachers use questions that cater to lower-order thinking in students and very few teachers work on higher-order thinking skills in students. The purpose of the study is to explore modern teaching methods that encourage critical thinking in students to enhance the quality of education and improve student learning outcomes.

Objectives

- To explore modern teaching methods that promote critical thinking in students.

- To develop reflective practices in students through advanced teaching methods.

Research Questions

- How can modern teaching methods promote critical thinking in students?
- How can reflective practices be developed in students through advanced teaching methods?

LITERATURE REVIEW

Critical Thinking

Critical thinking skills include all kinds of knowledge that students construct, for example, collaboration and engagement with peers. Reflection by thinking deeply involves questioning and curiosity of the learner which is the foremost characteristic to construct new knowledge based on prior knowledge. Critical thinking first appeared in the mid-20th century to determine the evidence supporting the beliefs of people. Abed et al., (2015) described critical thinking skills as an ability which is superior as it plays an imperative role in different facets of life. Critical thinking skills are defined as the combination of abilities and qualities of an individual to determine the ability of a person to ask questions or to think critically, to be aware of knowledge and to possess the urge to question. Critical thinking skills are one of the 21st-century skills which are deemed necessary for students to learn and promote analysis evaluation and application of new ideas. According to Johnson (2007), the main point of critical thinking is to assess and delve into how we can use logic and evidence rather than mere deliberation.

Teachers encourage critical thinking in the classroom settings for students to participate more, using a student-centred approach. According to Bustami and Corebima (2017), Creative learning might shift the pattern from teaching to the process of learning, and change the teacher-centered approach to a student-centered approach. Critical thinking skills help students to make decisions effectively regarding their education and practical lives. For acquiring experiences and expertise in interest they need to develop and apply those ideas into the practical world. Teachers' instructions based on techniques which encourage critical thinking is a deliberate effort for students to promote their practice of thinking. According to Ali and Awan (2021), previous studies suggest that to promote critical thinking skills, the constructivist approach can be adopted through modern teaching practices. Teachers design different assignments and projects based on the cognitive development of students by involving different theories for practical use. For developing classroom instructions, proper mind mapping is needed to direct the belief structure which influences their ability to think rationally and to ignore ideas which students find contradictory to their context.

Teaching Methods and Strategies

Teaching methods and strategies are those instructional procedures that teachers use in the process of teaching. Previously, the methods that teachers used in the classroom were not as effective as they are today. According to Muhlisin et al., (2016), the learning models being used in classrooms that were in practice to enhance critical thinking in students are not as much of use to develop those skills in students. Teachers and educators use different instructional tools and resources to communicate knowledge to students. Teaching methods are the frameworks or guidelines for teachers to proceed in the process of learning. Modern teaching pedagogies are not only limited to classrooms but can also be done outside classroom settings. Teaching pedagogies that work in both directions that is formal learning and informal learning, sparks curiosity in students to explore and discover new knowledge. Enriching students learning through real-life experiences is one of the modern teaching strategies. Modern teaching methods may involve questions asked in the classroom and finding their answers by visiting museums or field trips to spark interest in students to think out of the box and then bringing back the collected information to share with the whole class. This is to augment learning to deepen the understanding of students. Spark discussion by encouraging open-ended questions and arranging debates in the classroom to construct explanations about reasoning. Teachers must use collaborative tasks and activities which will boost the critical thinking skills of students. According to Eliasa (2014) and Laberge (2013), students should work

in teams with integrative skills which helps them to think critically and understand their thoughts and ideas in an innovative and resourceful manner. Teachers create scenarios and situations in the classroom for students to practice collaboration and teamwork to develop integrative skills in students which create an innovative spirit to generate new knowledge from the experiences of other students, make them enthusiastic to learn, increase productivity and problem-solving by motivating one another in a team or group.

According to Jong et al., (2021) and Arifin and Baginda (2018), inquiry-based learning promotes critical thinking skills in students because this type of strategy provides relatively less time for students to get into the scientific process. Creative tasks with inquiry and collaboration give birth to practical intellectual behaviour in students. When they work in collaboration and teamwork in the classroom, they find out ways for the practical application of solutions in different situations or scenarios outside that classroom or the real world. Nowadays teachers are using different strategies like brainstorming, whole class, group or independent assignments and projects, graphics and games, logical puzzles, reflective journals or learning journals, inquiry-based learning and comprehensive tasks in the classroom and for homework to generate new knowledge from students. Critical thinking is the higher-order thinking skill for which teachers mostly use Bloom's taxonomy as a questioning technique for enhancing the mental activity of students in the classroom, which they can relate to real-world problems and practices (Zaidi et al., 2018). Critical thinking is a systematic approach and for that systematic approach teachers use a systematic way to teach those skills to students. The idea of asking questions and then reflecting on those questions is to identify and determine the use of certain notions or to find out the reasons for certain metaphors (Tienken et al., 2009). The strategies teachers use in the classroom help students to make opinions of their own about their learning to arrive at a certain point of decision about their learning. Strategies are designed in such a way that students understand an idea from its simplicity to the most complex level. The main idea of teaching critical thinking skills to students is to make an intellectual mindset to meet with the pace of technological advancement and the modern world. Part of it is for Teachers to provide unplanned and incidental learning for students to learn contingency in real life to stay abreast with evolving circumstances and interpret knowledge through experiential learning.

Teachers are inculcating robotic, tech reasoning and computing skills into specialized equipment (Khasawneh, 2024). Other than the creation of knowledge teachers are also focusing on the application of knowledge that they impart to students for that purpose, they inculcate methods for the application of knowledge. The use of these strategies helps to develop critical thinking habits in students which increases their intellectual curiosity beyond their classroom. To test their assumptions and assess them in the light of contrasting opinions and available authentications or facts. Teachers help students to draw their conclusions and make opinions without any biases as well as identify the credibility of the sources from where they educate themselves. Teachers facilitate students to connect the ideas of underlying concepts (Metzger, 2007). To generate interesting responses from students, teachers integrate questions which are more challenging to explore and discover new ideas. To express themselves coherently, students use the habits of critical thinking skills that they acquired through consistent classroom teaching strategies.

Theoretical Framework

Constructivism Theory

Famous psychologists like Jean Piaget and Lev Vygotsky proposed this concept. Constructivism is the theory which is referred to as a learning approach where learners construct their learning through their own real-life experiences, self-exploration and reflection. Prior knowledge helps to construct new knowledge. According to Gul (2016), philosophers and scholars like Dewey (1916) and Piaget (1973) had dissimilar opinions and viewpoints on the approach of constructivism while they had different views about ontology and epistemology.

Socratic Approach

Socratic approach is one of the methods founded by Socrates, which is also known as Socratic debate

or Elenchus or Eclectic technique. According to Magrini (2018), the reason why Socrates tried to validate a justly relational concept of education is that knowledge is linked with the capability to engage and participate with others in the mutual conversation of giving and taking of symbols within the process of dialectic question, reaction and confutation.

Bloom's Taxonomy

Bloom's taxonomy is a model proposed by Benjamin Blooms in 1956 (as cited by Forehand, 2010), later a revised version was introduced in 2001. According to Kennedy (2006) and Abduljabbar and Omar (2015) bloom's taxonomy includes three main domains, affective, psychomotor and cognitive domains. The cognitive domain covers diverse thinking abilities that start from the most upfront to a composite manner. This model is hierarchical in nature which develops or builds critical thinking skills in students from lower-order thinking skills to higher-order thinking skills of the subject, according to the complexity of the subject matter.

METHODOLOGY

This study was qualitative, explanatory and phenomenological in nature. It is non-experimental and descriptive based on findings. This study is descriptive in nature, as it involves the experiences of participants of the study related to the classroom procedures and practices that encourage critical thinking skills of students. The data collection method was made smooth and unfussy, by sending open-ended interview questions through online sources and getting responses through online meetings or email. Teachers were given two options, to either send their responses through email or an online meeting, whatever was suitable for their convenience. Teachers shared how students respond to the strategies they apply in their classrooms concerning critical thinking and reflective practices.

Instrumentation

To depend on the credibility, the semi-structured interviews were collected from practising teachers of different primary grades, working in different schools of Karachi, who shared their experiences of teaching students with modern and advanced practices, methods and techniques in the classroom. The instrument used while conducting this research was a semi-structured interview guide and open-ended questions (as discussed by Creswell & Poth, 2016) were asked from teachers. Initially, consent of the teachers was taken and then an appointment was taken through email or WhatsApp to schedule an online meeting to conduct an interview later. An open-ended question document was sent before conducting the interview, so teachers could prepare themselves and save time. The primary thing in the interview session that can be done by the researcher is to keep things in mind which, as suggested by Smith et al., (2021) is to establish an understanding with the participant of the interview first, which is the most important feature. This is to make them comfortable with you, inform them of the requirements of the interview and create a sense of trust for them.

Procedure for Data Collection

This study was conducted to take descriptive responses about classroom practices and teaching methods from teachers and educationists to find out the techniques to elevate reflective practices in students. Interviews consisted of descriptive response questions and open-ended questions. The population targeted practising educationists and teachers of district south Karachi having at least 3 years of teaching experience which consisted mostly of teachers of primary grades and having a familiarity, understanding and expertise of teaching and its procedures for students of these grades. Six practising and experienced teachers of primary grades, having an experience of a minimum of 3 years took part in this survey. Data was analysed through thematic analysis by reviewing the responses taken from interviews through email or online sources.

Rigour/ Validity and Reliability

As qualitative studies are not generalized but unique in terms of questions; therefore, we checked

the trustworthiness and credibility of the responses by understanding and analysing the responses repetitively for a considerate approach by avoiding any bias or any potential vagueness.

RESULTS & FINDINGS

Presentation of Qualitative Data

A participant shared that even at a younger age, children should be encouraged to think on their own; even if they make a mistake, and it is a step ahead in the learning curve. Critical thinking is important for a few reasons. It develops analytical reasoning in children, helps them think out of the box, encourages them to think laterally and makes them question things that others take for granted. When properly guided by an instructor, students can exhibit tremendous potential in learning things that are sometimes even way beyond the curriculum. The teacher participant pointed out that a 'guided inquiry' is a very effective way to develop critical thinking in students. For instance, in schools, the science teacher orders a lot of things related to robotics for students, who initially didn't know an iota about them. However, the teacher taught them a few basics and encouraged them to experiment with them on their own. Within a very short time, the students manoeuvre robots using computer software themselves. A similar, larger experiment was done at a branch of our organization and the students there won an international competition for robotics at an international level. Similarly, a pedagogical approach can produce results in other subjects as well, for instance, to encourage students to write articles and give them extra marks for the effort they put in. Furthermore, teachers enjoy holding impromptu debate competitions between student groups which increases both their critical thinking capacity and public speaking skills. Some assessment methods as far as the curriculum is concerned are quite traditional, however where teachers use formative assessments throughout the year, sometimes done by external examiners. Critical thinking sessions with students are enjoyable even from a teacher's perspective.

One of the interview participants responded that when we inculcate strategies to enhance critical thinking in students it was found that some started researching the grandeur and glory of the Ottoman Empire, some started reading Shakespeare, and some got hold of classical Urdu literature, none of which was part of the curriculum. They were the product of their very engaging class discussions, where the teacher tried to impart a sense of social responsibility, civic duty and broad-mindedness in students. After 5 years, many of those students continue to pursue various literary interests, write poetry and contribute to literary magazines in ways teachers could never have imagined then. One of the teacher participants shared a perspective that teaching English through listening exercises is an effective way to make students listen to stories and comprehend them before the teacher spells them out himself. The teacher assists students with the meanings of difficult words and helps them make sentences of those words to improve their vocabulary. Teachers utilize audio-visual content available online in the form of short lectures or cartoons to cater to differentiated instruction as best as the teacher can. Students write summaries of the stories to hone their analytical and writing skills. Teachers engage students with critical thinking sessions by asking individual students to try to imagine themselves in the shoes of the characters in the stories they listen to and how they would react to the events happening to them.

Key Themes

Various themes were extracted from the analysis of the data collected from interviews. Mainly, governing themes comprised (a) Teaching based on student's mindset and learning style, (b) Encouraging collaborative and experiential learning, (c) Critical thinking and reflective practices creating student centred classroom (d) Critical thinking improving comprehension skills (e) Questioning method progresses critical thinking skills (f) Assessment based on self-reflection and self-evaluation and (g) Inquiry-based learning promotes critical thinking.

Teaching Based on Student's Mindset and Different Learning Styles

Each of the participants interviewed was an advocate of designing lessons catering to the needs of

the learner which included planning classroom lessons with introductory activities so that the students become observant and take active participation in the process of learning. This included designing lessons in a coherent structure that connects the learner's prior knowledge with new knowledge using Bloom's Taxonomy. Start the lesson by sharing a SMART learning objective that is measurable and time-specific. One participant quoted,

Catering differentiated learners by using different active learning strategies and activities to achieve the assessment criteria which teachers make clear and share at the start of lesson.

A different perceived share of one of the participants was to keep things in mind while designing a lesson for enhancing critical thinking in students to make lesson objectives and student learning outcomes as outlined by the curriculum, whether it was knowing the concepts being taught, reviewed and revised or learnt by incorporating bloom's taxonomy. These were activities that tended to grab students' attention and keep them engaged (whole class, group, and independent) and techniques to adapt these activities to a distance learning setup. Instrumental to it is differentiation- anticipating who will need it, in what ways they will need it and how we can provide it. Resources are available to the teacher but a teacher needs other than essentials, and these can be acquired from research. Student resources – students need to complete the activities a teacher assigns. There is a necessity to create the need of various tools, to meet the targets of the assignment designing new resources, ensuring activity instructions on every student sheet are clear and concise and assessments/exit tickets. Opting for an apt instructional method or strategy emanates with plenty of decisions, the activities interview participants shared vary according to the objectives of the lesson. Activities can include but are not limited to videos or PowerPoints (lecture cum discussion methods), reading comprehension passages, quizzes, online programs, worksheets, discussions, problem-solving and critical questions, group projects, research, guided inquiries, games, graphic organizers like KWL charts, learning journals and logic puzzles.

Encourage Collaboration and Experiential Learning

According to a respondent,

Some modern teaching methods used by interview participants in their classroom are group work, jigsaw, learning through stations, hot seat, and game-based learning and many such other activities which encourage collaboration and experiential learning involve hands-on activities.

One of the observed ideas of participants about lessons is according to the mixed ability group of learners that they teach and are with digital inclusion, using modern teaching strategies and methodologies like: Brainstorming, Thinking, pair share, Entry exit slips, Gallery Walk, KWL chart, Three-period lesson, Think time, Open/closed-ended questioning, One minute/ concept paper, Peer observations, Group work/ collaboration and creative writing and critical thinking. These are some strategies which an interviewer shared because children can think or write on their own, whatever they want. Also, it depends on the topic and objective of the lesson.

Critical Thinking and Reflective Practices Create Student-Centered Classroom

A respondent shared a perspective that critical thinking and reflective practice can create a student-centered classroom. All the participants advocated the idea of promoting critical thinking. Inculcating critical thinking through modern teaching strategies is imperative. Some strategies discussed were a genius hour strategy, a hot seat and a Socratic seminar. One of the participants shared that endorsing critical thinking in the classroom is an important tool for the students of the 21st century and without this, the students cannot excel. We use different strategies to integrate this skill into our teaching practice for instance we ask different questions from students and give them time to think over it and if they are failing to do so other students are asked to think about possible answers or solutions if it's a problem. Another perspective was recognized as some of the examples mentioned above are targeted at taking student thinking beyond the classroom into society, through immersive real-world-like experiences. Stressing on the application of the concepts once acquired by students is the key. Including all students in discussions

and teaching them to make valuable contributions by adding on with their thoughts and knowledge, is an essential strategy to use. Teaching journals and graphic organizers like KWL charts, mind maps etc. help students project their knowledge before, during and after lessons displaying their progression is one of the ways. When asked about promoting critical thinking in the classroom the participants responded with almost a similar idea respectively that promoting critical thinking in children can make them think and come up with something new and creative. In this era, where the answers to the questions are at your fingertips and just a click away. Children are so occupied with gadgets so the teacher must make them think critically and deeply.

Critical Thinking Improves Comprehension Skills

Another viewpoint from the participant was teachers should promote critical thinking because it improves comprehension skills. It is very important for students as it helps them to think out of the box and to be creative. According to respondents, Critical thinking plays an important part in the learning process. It endorses the learner's ability to think, brainstorm, and build new knowledge on their previous knowledge. Critical thinking can remodel the way of thinking, it can recreate a learner's thinking ability to assess or evaluate his learning. Critical thinking is a core 21st-century skill which helps in inculcating it in students from an early age will ensure their ability to apply these skills to all facets and aspects of their lives.

Questioning Method Progresses Critical Thinking Skills

According to one participant,

There are many good activities which can be used to boost critical thinking in students but the one that a respondent shared was to use a platform to allow my students to find the answers to their questions on their own as it excites them and they also enjoy this learning process when they are asked to work in a group.

A participant shared a standpoint of using modern teaching strategies in the classroom that it is difficult to single out any one strategy that a teacher may use in the classroom to encourage critical thinking skills in students. All work cohesively develops critical thinking skills among students. One of the unique strategies is a logic puzzle that teaches students to organize data and information to help solve a problem. Brainstorming drawing or writing freely through questions are some other ways. Another is an activity which the teacher used to do in which the teacher shares a short story with children and then they can draw anything whatever they hear and they can write in their own words how they are feeling or thinking about the story. What did they like about it etc.? They can share their perspectives. After their work teacher can also share it with other students and hang it on the soft board or present their work in class. It gives them motivation and they feel appreciated.

Assessment Based on Self-Reflection and Self-Evaluation

According to participant's effective teaching strategies,

Learners have a desire for learning and they are motivated and engaged by the active learning strategies that are helpful for their self-reflection and self-evaluation both.

Teacher participants mostly determine the way students respond to teachers. Feedback from students is also taken through reflections. Learning and then assessing a student's critical thinking skills through feedback is the best example to boost critical thinking as from the feedback pupils critically think about what they have learned. The strategy that teacher participants generally shared was to assess critical thinking as review-based in which students are asked questions through many different angles to know their knowledge and it also tells how much the students have grasped the concept and which areas need more assistance. Critical thinking skills can be assessed both formative and summative. On written tests, assignments and tasks, and during class discussions, a teacher said that they try to pose questions specifically geared at testing student's critical thinking abilities through the application of knowledge

and opinion. Data results from student responses help to determine the effectiveness of the teaching strategy.

Inquiry-Based Learning Promotes Critical Thinking

An interview participant teacher shared that giving an expository essay to pupils in which they must recall the last 5 years of their life and write their strengths, weaknesses and fears and the people who helped them to overcome these things is one of the forms to inquire about their learning. Eventually, they have to think critically and answer it.

A responded shared an incident,

When once teaching students the concept of money and they were students of grade 1 so the task was not that easy. But for this purpose teachers asked students to think critically about different scenarios in life where they needed money for any reason and then gave them the task to think how they could have managed to save some of the money that they spent and what they would have done with that.

Discussion

Critical thinking skills for primary school students work to elevate their mental exercise to be able to think beyond their school year for their mental growth. According to Wong (2016), the steady practice of the activities used to enhance critical thinking skills in students assisted them in solving problems as they would question them, and critically analyse them. Staying up-to-date through strategies like the integration of advanced technology helps students to process information on a pro-efficient level. The role of a teacher in the classroom is crucial to equip students with the techniques or strategies that will help them think out of the box. Teachers may use or design various strategies that will help students to think critically, especially for young students enrolled in early years. Husna (2017) stated that the requirement to encourage critical thinking skills in students would need a systematic formation. It defines the idea of applying the skills, a vigilant lesson planning of activities to inculcate strategies or teaching methods and assessing students based on that to determine their higher-order thinking skills. The teaching methods must involve oral and written activities in the context of the teaching as well as a part of the assessment to make students practice their critical thinking skills.

CONCLUSION

Based on the results of the study using teaching strategies that enhance critical thinking skills makes students think reasonably, independently and autonomously. The skills of critical concern the practice of thinking that involves cognition and thinking rationally such as analysing, logical reasoning and assessing the pedagogical methods related to communication and problem-solving. The significance of critical thinking skills for students is not limited to classrooms only. Inquiry-based learning shapes the minds of the learners for the outside world. Teachers are using different instructional strategies for students to enhance and encourage critical thinking skills in them. Critical thinking helps students to think out of their preconceived roles and provides them with self-direction. When teachers use strategies like brainstorming and inquiry-based learning or something that encourages critical thinking skills in learners, it provides them with clear thinking, democratic thinking, analysing carefully and deliberate reasoning. It is anticipated that in 2020 critical thinking skills and collaborative work will emanate into prominence in the awareness of the World Economic Forum. Collaborative learning in the classroom enhances problem-solving skills in students to think rationally to find solutions to any difficulty.

Recommendations

- The study produces foundations for future research to identify and inform new teachers about the practices and strategies that can be used in future to encourage critical thinking skills in students.
- This study helps to produce more such strategies that are discussed in this study. Teacher participants highlighted some innovative and deep-rooted strategies that they use creatively in the classroom to

use them in the process of teaching and learning.

- Future research studies can determine the ways to integrate strategies in the context of science and technological advancement to supplement the methodologies of teaching.
- This study has focused on the efforts that teachers are putting in for the cognitive development of students. This study can be used to determine the importance of discovering longstanding practices to implement in future classrooms for students.
- This study can be used to plan classroom assessments and lesson planning to inculcate effective strategies shared by teacher participants of the interview.

Competing Interest

The authors reported no potential conflict of interest.

Authors' Biography

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