

## Student Teachers' Perspectives on Teaching Critical Thinking in Elementary Classrooms

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*Critical thinking skills are necessary to develop reflective, autonomous learners who can analyze, interpret, and evaluate information. The present study aimed to explore the emerging perceptions of the student teachers regarding the instructional strategies they use to foster critical thinking in the classroom while performing their teaching practice in the public sector university of Sialkot. A qualitative phenomenological research design was used to bring out the lived experiences of the participants. Ten future teachers who had taken part in teaching practice were selected by using purposive sampling, and data were collected by semi-structured interviews, which were guided by the previous literature. Audio recordings of the interviews, with participants' consent, were used to analyze data through the six-phase model of Braun & Clarke (2020) to provide a rich description of the themes. The main theme of "Instructional Strategies and Classroom Practices for Promoting Critical Thinking" was broken down into four sub-themes: questioning techniques and open-ended tasks, collaborative and group-based learning, activity-based/hands-on learning, and memorable student responses/ unexpected critical insights. Results indicate that student teachers prefer open-ended questions, think-pair-share, group activities, and real-life/activity-based tasks to be used for critical thinking, while many elementary students find these difficult at the beginning, using extended justification of their answers to open-ended questions. Participants also talked of being pleasantly surprised by students' unexpected criticism as proof of the possibility of HOTS when pedagogy is properly scaffolded. The study concludes that, although prospective teachers expressed positive attitudes towards critical thinking in the classroom, they need more systematic preparation and support in the school environment in order to be able to manage participative classrooms and continue to maintain critical thinking-oriented practices.*

## **Introduction**

Critical thinking is defined in many ways, such as the skill to think in a deep, independent, clear, and logical manner to make a reasonable judgment and pursue new ideas (Cottrell, 2011). It allows elementary students to get rid of that memorization and to ask questions, find evidence, and build their own interpretations, and provides a foundation for being lifelong learners. So, critical thinking has been famously defined as “the art of thinking about your thinking in order to improve your thinking,” as it is a metacognitive and self-regulatory process. Thus, critical thinking is thinking under conscious control and direction, which assures purposeful, fair-minded, and decision-oriented thinking.

The middle childhood period is a critical time for developing critical thinking, as it is necessary for later children's learning. Research shows that when elementary-age children are given opportunities to ask and answer questions, perform higher-order thinking tasks, and share their ideas with others, they can engage in higher-order thinking. According to Yuan et al (2022), critical thinking at this level will help problem-solving and independent learning, and Kanmaz (2022) emphasizes the importance of elementary teachers' approaches and practices in forming higher-order thinking in students. But numerous teachers find the ideal of “critical thinking” difficult to decipher and difficult to apply to the curriculum and assessment boundaries. Today's digitally mediated societies make critical thinking a central 21st century skill that students need to deal with the 'information overload' and complex settings in which they live.

Based on what Dwyer et al. (2014) describe as a critical thinking framework that incorporates abilities in analysis, evaluation, and inference designed to solve dynamic problems instead of simply recalling, critical thinking is outlined as a multi-faceted construct involving these skills. Critical thinking also includes value-laden judgements and beliefs and the will to do so, emphasises Al-Zou'bi (2021), pointing out that critical thinking is not all about cognition, but an altogether disposition too. Lack of development in critical thinking skills early in life can have implications for real-life problem solving, making decisions based on evidence, and functioning in a democratic society. Despite being driven increasingly towards higher-order thinking by policies and curriculum declarations, classrooms—particularly under such circumstances as in Pakistan—are often dominated by rote learning, textbook recitation, and examination-focused teacher activity.

Elementary teachers often cite several barriers, including insufficient training, lack of resources, the size of their classrooms, and strict requirements for covering the curriculum in the classroom, which interfere with their opportunities to create and support activities that promote critical thinking. Although some studies of the questioning strategies, distance learning programmes, and teacher beliefs about critical thinking have been conducted in Pakistan, there is relatively little research that has focused on the views of student teachers during their practice. This study, therefore, concentrates on the experiences, strategies, and perceived challenges of prospective teachers in developing, fostering, and supporting critical thinking in elementary schools, with a view to further giving insights that would aid teacher education programmes and school-based mentoring.

### 1.1 Research Objective

1. To examine the instructional strategies and classroom practices used by student teachers to promote critical thinking among elementary school students.

### 1.2 Research Question

1. What teaching strategies and classroom practices do student teachers use to foster critical thinking among elementary school students?

## 2. Literature Review

There has been widespread recognition of the importance of critical thinking as a 21<sup>st</sup> century skill, as it is said to be highly influenced by technological, informational, economic, and social changes, which require more than the reproduction of knowledge. Dwyer et al. (2014) suggest that critical thinking involves four stages: interpretation, analysis, evaluation, and inference/ explanation, which all are required when solving problems of a complex and new nature. Similarly, Tran and Van Pham (2024) state that students need to learn to think, not what to think, and that critical thinking is the basis for good decision-making both in the workplace and in their personal lives. From this perspective, critical thinking is not a supplemental way to enrich student learning, but a valued educational outcome that supports student success in school, the workplace, and as citizens. Critical thinking has been emphasized in recent literature (Jamil et al., 2024; Jamil et al., 2025; Naseer et al., 2022)

In education theories, there is a close connection between critical thinking and learner-centered and constructivist thinking approaches. Dewey's philosophy of learning in society views the classroom as a problem-solving community where students learn to solve problems through inquiring, reflecting, and "learning by doing." Deweyan learner-centred approaches involve teachers' facilitation of environments for learners to engage in active construction of knowledge, manipulative activities and collaborative problem solving in the real world, says Emir (2021), Tu and Zhu's (2023) recent research refines the concept of 'learning by doing' as a social theory and restricts the scope of authentic activities to tasks, which strongly supports the use of authentic activities as means to develop critical and creative thinking. This tradition entails a critical approach to thinking where students are expected to question, challenge, and contrast ideas as they try them out and as they actively participate in the process of meaning-making, instead of passively taking in information.

Considerable research has been done on critical thinking pedagogy, ranging from the provision of general critical thinking skills training, content immersion, infusion, and content-plus-critical thinking approaches. Bloom's taxonomy is widely used as a tool to develop learning activities that help students move from lower-order processes (remembering and understanding) to higher-order processes (analysing, evaluating, and creating). The importance of engaging students in deeper reasoning through active learning, problem-based learning, and structured debate was discussed in the studies of Chang et al. (2015) and Rossi et al. (2020), respectively, and cooperative and collaborative techniques were discussed in the study of Mohammadi et al. All these methods focus on involving students, on open-ended tasks, and on explaining, which is a key aspect of critical thinking.

Emerging research in the Pakistani context indicates that there are both possibilities and problems in developing critical thinking. However, Rashid et al (2016) and Buzdar and Ali (2013) illustrate how questioning and distance education programmes may aid critical thinking of the elementary student and the teacher, respectively. Daud and Husin (2004) and Huber and Kuncel (2016), however, point out that these teachers may not have received explicit instruction on teaching critical thinking, and they may feel they have to focus on content and test preparation rather than on exploration and dialogue. In the higher education context, Calma and Davies (2021) see a need for critical thinking to be intentionally integrated within curricula, assessment and pedagogy if it is to transcend policy jargon. From this research, together, it is evident that such aspirations for critical thinking in relation to classroom practice depend on the preparation of the teacher and support within the institutions where they work; it is also important to see how the student teachers themselves try to enact critical thinking in their practicum.

### **3. Research Methodology**

The qualitative phenomenological research design (Alhazmi & Kaufmann, 2022) was used in this study to understand student teachers' experiences in teaching critical thinking in elementary schools. Using purposive sampling (Patton, 2015), the researchers chose 10 prospective teachers who had carried out teaching practices in elementary schools where they had tried to develop students' learning towards higher-order thinking skills. The collection of data was done by conducting semi-structured interviews with participants based on literature regarding critical thinking and thinking at a higher level, with inputs to enable them to describe their strategies, classroom interactions, and perceived difficulties in depth. The interviews were about 25–30 minutes each, with written informed consent, and explored the questioning practices, collaborative activities, activity-based learning, and critical student responses. The data were analyzed using reflexive thematic analysis (Braun & Clarke, 2022) with careful consideration of the researchers' assumptions and positionalities by referring also to stage 1 of familiarisation and reflexivity; coding, theme development, theme review, defining and naming of the themes, and reporting. All ethical rules, in particular the principle of voluntary participation, confidentiality, and dignity and well-being of the participants, were rigorously followed.

### **4. Findings of the Study**

The following were the theme and sub-themes derived from the data collected from prospective teachers.

#### **4.1 Theme: Instructional Strategies and Classroom Practices for Promoting Critical Thinking**

This theme focuses on participants' practice of pedagogical dimensions through their classroom experiences, observed responses, and strategies. They used active strategies instead of lecturing. Mainly focused on four main strategies, ranging from questioning-based learning to think-pair-share, activity-based learning, and real-world experiences. Open-ended questions, think-pair-share, activity-based learning, and real-world experiences.

#### 4.1.1 Sub-theme 1: Questioning Techniques and Open-Ended Tasks

Almost every participant said that asking questions of students is the main method for developing critical thinking. The participant said that they use open-ended questions to break down large amounts of information and allow students to think beyond their bookish knowledge. Many students notice that asking questions like “how” and “why” engages students more effectively than “what”. Participants also said that probing questions about the data that students already know played an important role in the practice of critical thinking.

Participant 1 narrated her perspective in the following words:

*I used group discussions, real-life examples, and open-ended questions for the development of the critical thinking of students. When a signal answer to a question is not acceptable, students have to think critically to answer the question in detail. According to these, open-ended questions are really important for the development of critical thinking among students.*

In the view of participant10, it is stated as follows:

*I asked students questions to examine their prior knowledge so that they would know what they knew or not. So, I gave the kids tasks which they performed in class, and this activity was performed in the best way. Beginning a lesson by checking prior knowledge sets a critical tone from the very start.*

In the view of participant 6, it is stated as follows:

Discussion method—students should engage in the discussion method. If they are reading something from a book, they should also form their own opinion. They should ask questions from different angles so that they know that if they want to engage with a lecture, it is because, after the discussion, they will be required to contribute their own perspective, not just reproduce the teacher's words.

#### 4.1.1 Sub-theme 2: Collaborative and Group-Based Learning

For promoting critical thinking skills, the majority of participants agreed that the most effective strategies are collaborative learning and group discussions for thinking deeply. Most of the teachers also describe a specific method known as Think-Pair-Share, which they have learned in the coursework of their BS in Education; they reported more positive outcomes in terms of idea generation and engagement than normal lectures.

Participant 8 narrated her perspective in the following words:

*I used Think-Pair-Share and discussion strategies. I also used one other activity, like peer grouping, where I grouped different students who shared knowledge and those who learnt the concepts taught to others, and then this classroom community becomes a genuine learning community.*

In the view of participant 2, it is stated as follows:

*Small projects and group discussions are the best strategies, I think. Students think more deeply when an assignment is given to them. When students sit together and the teacher*

*guides them, they communicate with each other, and new ideas are formed because they talk freely with the teacher.*

Participant 5 narrated her perspective in the following words:

*I used the group method, open-ended questions, and the discussion method. It was a very good experience when students participated in the classrooms and answered the questions actively. In my teaching practice, when I give tasks to the students in groups, they all work freely and independently. They participate in activities and face all the challenges in a constructive way.*

#### **4.1.3 Sub-theme 3: Activity-Based and Hands-On Learning**

The participants observed that students engaged in learning more excitedly when they were involved in investigative, physical, and creative tasks. Many participants describe using hands-on experiences in science experiments, problem-solving in mathematics, and creative writing in Urdu and English. In the view of participant 3, it is stated as follows:

*Among teaching strategies, I used activity-based learning and hands-on experiments. After that, I also facilitated discussions between students and teachers so that if they found something difficult, they could ask questions. Whatever questions came to their minds about a topic or subject, I encouraged them to ask, and we explored the answers together rather than me simply telling them the answer.*

Participant 5 narrated her perspective in the following words:

*To enhance critical thinking, I used the school bell to make the students think out of the box about how sound waves are produced. I rang the bell inside the class, and the students felt a wave of sound. Apart from the textbook explanation, I used real, physical stimuli so that children could experience the concept sensorially before being asked to reason about it.*

In the view of participant 7, it is stated as follows:

*I gave my students a free hand to write anything on a technology topic. They could write about its uses, advantages, disadvantages, the different age groups who use it, and everything related. I allow them to think freely and write down. Some students write their thoughts freely, and some of them were questioning me about their grammar mistakes.*

#### **4.1.4 Sub-theme 4: Memorable Student Responses and Unexpected Critical Insights**

A significant aspect of participants' responses was that sometimes students surprised the teachers by asking some deep and unexpected questions. They also helped teachers in their professional growth. Also helps to know that young students don't even think critically about any aspect. In the view of participant 1, it is stated as follows:

*One day, a student asked me what would happen if all the factories closed down and what would happen to people's jobs. That was a surprising question as students were thinking at the economic and social level. I asked students about more economic questions, and students responded to me critically, which was quite surprising and unexpected for me.*

Participant 2 narrated her perspective in the following words:

*One day, when I was teaching a topic about electricity and technology, one student surprised me by telling me that we could save electricity by using solar systems, and we could have lower electricity bills. This shows that if students critically engage in the classroom, they ask questions beyond teachers' expectations.*

In the view of participant 10, it is stated as follows:

*For the first two days, I used this method to train students to think on their own. On the third day, students started asking me questions, which helped me know that my methodology (critical thinking) was effective for them. This improvement occurred so quickly, beyond my expectations.*

## 4.2 Discussion

Based on the results of this research, it can be concluded that the student teachers have clear and relatively sophisticated concepts of CT, and they do make a real effort to develop their students' critical thinking ability through questioning, collaborative activity, and activity-based tasks. They tend to rely heavily on open-ended questions, think-pair-share and group work, which resonates with previous research on structured questioning and group work to promote a deeper level of reasoning and higher-order thinking (Akpur, 2020; McTighe & Lyman, 1988). Likewise, their use of hands-on experiments, real-life examples, and free writing corresponds to the approaches of problem-based and activity-based learning that employ authentic and ill-structured problems as conducive tools in developing critical thinking skills (Pamuji & Mahfud, 2025; Chang et al., 2015). Moreover, memorable and unexpected responses by students to the provided prompts (such as economic factors and the closing of factories and creative ideas related to solar energy), provide support for the idea that even young learners can engage critically with complex issues when pedagogy is designed to elicit questioning, explanation, and application (Lombardi, 2023; Paul & Elder, 2006; McTighe & Brown, 2021). Students' initial struggle with open-ended questions and the need to adjust strategies when planned activities failed to be effective were also reflected in the participants' experiences, highlighting the need for reflective/practice and ongoing professional learning to support critical thinking pedagogy (Cervero, 2001; Darling-Hammond, 2007; Huber & Kuncel, 2016).

## 5. Conclusion

The result of the study is that the attitudes of future teachers on critical thinking are positive, and they can apply various ways, such as communicating with open questions, cooperative learning, and learning through activities, for elementary students to encourage critical thinking. The experiences indicate that, even in exam-obsessed systems with limited resources, pockets of opportunities for critical thinking can be created, particularly when teachers actively attempt to link their lessons to real life, seek questions from learners, and accept any alternative conceptions presented. However, the problems reported during critical thinking activities - students' reluctance to respond to open-ended questions, difficulties in organizing active learning in groups, invalid or inadequate lesson plans, etc. reveal that the critical thinking learning mode is not easy for students and requires an active role for teachers.

Greater systematic support for critical thinking from teacher education programmes, mentor teachers, and school leaders is therefore needed, and curriculum and assessment together with pedagogy should support critical thinking, rather than focusing on only content.

### 5.1 Recommendations

1. It is recommended that teacher education programs expand and strengthen the aspects of critical thinking embedded in their curricula by explicitly incorporating the use of micro-teaching, lesson study, and video-based reflections.
2. To help teacher trainees experience the different critical thinking pedagogies, problems, questions, and investigations need to be used and demonstrated by both teacher educators and mentor teachers.
3. The schools with the student teachers should be equipped to accommodate participatory classrooms with flexible seating, small class size, and clear guidelines that treat student questions and discussions as elements in the learning process, rather than characteristic disruptions.
4. Mechanisms that support systematic reflection should be part of practicum requirements, such as reflective journals, debriefs after lessons, and peer observation cycles to help student teachers get into the practice of continually adjusting what they do based upon students' critical engagement.
5. To ensure coherence in implementing CT in schools, the collaboration area between the universities and schools should be boosted in developing joint professional development programs for in-service and pre-service teachers on CT pedagogy.

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