

Reflective Practices and Their Effect on the Critical Thinking of Prospective Teachers

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Abstract: The aim of the present study was to investigate the reflective practices and their effect on the critical thinking of prospective teachers. The study was experimental in nature, and a single-subject research design was used to conduct the experiment. The researcher used an A-B-A withdrawal design of single-subject research designs to examine the effect of the independent variable on the dependent variable. Participants of the study were comprised of all BS (Hons) students from the Department of Education, University of Lahore. The sample of the study comprised 2nd-semester students of BS (Hons). The University of Lahore, through the purposive sampling technique. There are 08 students in BS (Hons), and they all participate in this experimental study. The instructions were implemented in the classroom, and at the end of each week, the researcher administered a test based on the content covered over the past two weeks. Performance tests were developed to measure students' higher-order thinking skills. A one-way repeated measures ANOVA was used to determine the significant difference among the collected data before, during and after treatment, with illustration of visual analysis. Findings of the study revealed a significant effect of reflective practices on critical thinking among prospective teachers during the treatment and withdrawal phase. It is recommended to integrate reflective practice tasks into practicum evaluations, such as teaching journals, critical incident reports, and post-lesson reflections, to help prospective teachers regularly assess and improve their methods.

Key Words: Critical Thinking, Reflective Practices, Prospective Teachers

Introduction

This study is to investigate reflective practices and their effect on the critical thinking of prospective teachers. Although research suggests a link between reflection and critical thinking, there is limited empirical evidence on this subject. Therefore, this study aims to investigate whether the integration of reflective practices enhances specific domains of critical thinking and simultaneously impacts students' levels of reflective thinking. The progressive education movement has long recognised critical thinking skills as a fundamental instructional objective (Pauzi, 2024).

Atherton (2018) proposes that self-reflective teachers invigorate the classroom, making it captivating, stimulating, and motivational for prospective teachers. Utilising reflective teaching practices, particularly in higher education, proves beneficial as it enables instructors to leverage their perspectives and experiences in evaluating their teaching progress. Through self-examination and critical analysis of their teaching methods, educators foster an open-minded approach to incorporating feedback from others.

Dewey introduced "reflective practices" in 1933 as a means to foster continuous learning through active reflection on experiences and actions (Fisher, 2011). Indeed, as per Dewey (1938) and Grant and Zeichner (1984), reflection is characterised as a deliberate and ongoing process in which individuals actively seek to examine and derive meaning from their practice and experiences, aiming to render them more meaningful and influential. John Moon asserts that reflection serves as a cognitive process aimed at achieving specific goals or desired outcomes. It is employed to enhance

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comprehension of complex or ambiguous concepts, primarily through the re-evaluation of existing knowledge, understanding, and potentially, emotions (Moon, [2005](#)).

Reflection is commonly defined as thoughtful consideration of past experiences (Schön, [1983](#)). In learning involves revisiting and evaluating experiences to gain new understanding (Boud et al., [1985](#)). This ongoing process, known as reflective practice, helps students make informed decisions. When integrated into classroom settings, reflection has been shown to enhance learning (Amulya, [2003](#)), foster higher-order thinking, improve academic achievement and strengthen critical thinking skills.

Eryaman ([2007](#)) posits that "Reflection" should be understood as a common term denoting straightforward contemplation or consideration of a subject. However, Boulton and Hramiak ([2012](#)) emphasise that reflection involves recalling, analysing, and evaluating experiences, often with broader objectives than initially intended. The contemporary approach to teacher training predominantly emphasises reflective practice, wherein educators assess themselves prior to each class session, seek feedback from colleagues and students, and embrace criticism as constructive input to enhance classroom instruction effectiveness.

Reflective teaching practices offer aspiring teachers the advantage of evaluating their academic challenges, teaching methodologies, and subject matter delivery within the classroom (Rarieya, [2005](#)). The overarching objective of any Teacher Education Program is to bridge the gap between theoretical knowledge and practical application. While traditional teaching focused on basic lesson organisation and delivery skills, modern educational environments demand multifaceted approaches tailored to diverse learning needs and objectives (Zahid & Khanam, [2019](#)).

Reflective teachers adapt their methods to optimise student learning, accommodating various learning styles and contributing to a dynamic teaching and learning process (Drago & Wagner, [2004](#)). In 1987, Lipman emphasised the role of critical thinking skills in responsible thinking, highlighting criteria dependency, self-correction, and contextual sensitivity (Lipman, [1987](#)). Facione ([1990](#)) identified critical thinking skills as a cognitive process involving essential abilities such as interpretation, analysis, evaluation, inference, explanation, and self-regulation (Facione, [1990](#)).

Critical thinking is commonly described as purposeful, logical, and reflective thinking that supports effective problem-solving and decision-making (Halpern, [2002](#); Ennis, [2011](#)). It involves analysing information, drawing reasoned conclusions, and applying intellectual standards to improve the quality of one's thinking (Cottrell, [2017](#)). According to Ennis ([2011](#)), it also includes deciding what to believe or do based on sound reasoning. Thayer-Bacon ([1998](#)) emphasised that critical thinking serves as a practical tool for addressing both contextual and abstract problems. Collectively, these definitions highlight critical thinking as a key cognitive skill essential for academic and professional success.

According to Van Damme et al. ([2023](#)), critical thinking skills can be assessed through five key dimensions: analytical, inferential, evaluative, inductive, and deductive reasoning skills. These dimensions can be cultivated in prospective teachers by consistently engaging them in Higher Order Thinking Skills (HOTS) through purposeful questioning and responsive dialogue. Supporting this, Bogdanovich ([2014](#)) emphasised that higher-order problem-solving tasks require students to apply, analyse, synthesise, and evaluate information rather than merely recall facts, thereby actively promoting the development of critical thinking abilities.

Aliakbari and Sadeghdaghighi ([2013](#)) emphasised the importance of critical thinking skills in everyday life, while Yasir & Alnoori highlighted its significant impact on learning and career success (Aliakbari & Sadeghdaghighi, [2013](#); Yasir & Alnoori, [2020](#)). Critical thinking skills were characterised as an intellectual process guiding informed decision-making and purposeful actions, emphasising systematic and deliberate cognitive engagement with information (Gheith & Aljaberi, [2018](#)).

In 2017, Orujlu and Hemmati likened critical thinking skills to conceptual devices connecting intellectual abilities for sound decision-making, while Paul and Elder elaborated on its functions, including questioning, purpose, information, concept, assumptions, points of view, interpretation, inference, and implication (Orujlu & Hemmati, [2017](#); Paul & Elder, [2019](#)). Akpur highlighted critical thinking skills as an active, organised mental process aimed at understanding oneself and

the surrounding world through conscious thinking processes, considering others' opinions, and practising learning. In recent years, the importance of critical thinking skills in education has been underscored, with teachers playing a pivotal role in cultivating students' critical thinking skills and reflective practices within authentic classroom settings.

Reflective Practice

Reflective practice is widely recognised as a means of achieving professional growth by critically examining one's own teaching experiences. In this study, it is explored as a developmental tool for prospective teachers to harness the experiential knowledge they have gained over time. While a detailed analysis of reflective practice is presented later in the study, this section offers a brief overview. Reflective practice has long been considered a foundational element of effective teaching and teacher education, particularly in Western contexts (Farrell, 2001; Grushka et al., 2005; Lee, 2007; Rarieya, 2005). Its benefits include increased self-awareness, the cultivation of teacher autonomy (Bailey et al., 2001; Gebhard, 1996; Rodgers, 2002), and the support of sustained professional development (Johnson, 1999). At its core, the purpose of reflection is to help teachers identify what they already know and what they still need to learn.

According to John Dewey, reflective practice is an active and deliberate thinking process that leads to well-reasoned conclusions. It involves an individual's ability to select and apply their knowledge to solve problems effectively. Dewey outlines the reflective thought process as comprising the following steps: (1) recognizing and identifying a problem; (2) defining and formulating the problem; (3) generating alternative solutions; (4) evaluating possible solutions and predicting their consequences; and (5) implementing the chosen solution and using the outcomes to inform conclusions (Harrison & Lee, 2011; Sanopao, 2016).

This study aims to address a significant gap in existing research by providing prospective teachers with opportunities to enhance both their critical thinking and reflective skills. While international research has demonstrated the positive impact of reflective practices on the development of these skills through experimental and mixed-method studies, there remains a notable lack of such research within the Pakistani context.

In Pakistan, studies on reflective practices are limited, especially those that empirically explore their effect on thinking skills through real-life teaching experiences. Although some literature highlights the role of reflection in professional development, few studies focus specifically on the development of critical and reflective thinking skills. Therefore, this study seeks to contribute to the field by examining the impact of reflective practices on the cognitive development of prospective teachers within the context of classroom teaching in Pakistan.

This study aimed to explore the impact of reflective practices on the development of critical thinking skills among prospective teachers. The intervention spanned a 16-week period, during which participants were guided to progress from basic levels of reflection, such as habitual action, to more advanced stages involving critical analysis and evaluation. An ABA research design was employed, utilising a non-randomised control group with a pre-test/post-test format to compare outcomes across different phases of the intervention. The findings of this study are expected to provide empirical support for integrating reflective practices into critical thinking curricula, particularly in teacher education programs.

Statement of the Problem

The Reflective Practice Program, launched by HEC in 2010, aims to enhance teacher education by incorporating reflective practices into university curricula. These practices are vital for developing critical thinking skills among prospective teachers. (Machost et al., 2023) However, there is limited evidence on how effectively student teachers apply reflective thinking in their training. In Pakistan, challenges such as a focus on rote learning and teachers' limited ability to promote reflective and critical thinking hinder cognitive skill development. Reflective practices involve self-evaluation, problem-solving, and critical analysis, all of which are essential for academic and professional success. (Machost et al., 2023). This study investigates the effect of reflective practices on the critical thinking abilities of prospective teachers, highlighting the need for skill-based teaching in higher education.

Research Hypotheses

The following were the hypotheses of the study.

H₀₁: There is no significant effect of reflective practices on the critical thinking of prospective teachers during the baseline period

H₀₂: There is no significant effect of reflective practices on the critical thinking of prospective teachers during the treatment phase

H₀₃: There is no significant effect of reflective practices on the critical thinking of prospective teachers during the withdrawal phase

Research Objectives

The following was the objective of the study.

1. To examine the significant effect of reflective practices on the critical thinking of prospective teachers during the baseline, treatment, and withdrawal phases at the undergraduate level

Methodology

The aim of the present study was to investigate the reflective practices and their effect on the critical thinking of prospective teachers. The research paradigm and philosophy for the study are based on positivism. The study was experimental in nature, and a single-subject research design was used to conduct the experiment. Researchers used an A-B-A withdrawal design of single-subject research designs, which is an adaptation of the basic time series design, that seems to be most appropriate to examine the effect of the independent variable on the dependent variable. In the first phase, students' performance was measured without any intervention. In the second phase, the reflective practice treatment was introduced, and performance was again assessed. In the third phase, the treatment was withdrawn to re-establish baseline conditions, and students' performance was measured once more. The A-B-A design helps confirm whether changes in the dependent variable are truly a result of the treatment by comparing performance before, during, and after the intervention. Participants of the study were comprised of all BS (Hons) students from the Department of Education, University of Lahore. The sample of the study comprised 2nd-semester students of the BS (Hons). The University of Lahore, through the purposive sampling technique. There are 08 students in BS (Hons), and they all participate in this experimental study. The reason to select this semester is that the subject of critical thinking skills and reflective practices is being offered this semester. It fulfils the purpose of A-B-A design; the researcher conducts baseline observations in the first two weeks of 2nd semester before treatment to create a baseline, and also conducts observations in the two semesters after treatment. The selected content was taught over 90-minute sessions, held twice a week in the classroom. At the end of each week, the researcher administered a test based on the content covered during the preceding two weeks. Performance tests were developed to measure students' higher-order thinking skills. A paired samples t-test and one-way repeated measures ANOVA were used to determine the significant difference among the collected data before, during and after treatment, with illustration of visual analysis.

Intervention

The intervention was implemented by teaching the "Reflective Practice and Critical Thinking" course to B.Ed. (Hons.) second-semester students over 16 weeks. Each week included two 1.5-hour sessions using active and student-centred strategies. The primary aim was to enhance prospective teachers' critical and reflective thinking skills through real-life applications.

Each lesson began with a pretest or prior knowledge assessment, followed by interactive teaching methods such as the Jigsaw Method, Think-Pair-Share, Socratic Seminars, case studies, and collaborative problem-solving. Key topics included critical and analytical thinking, questioning techniques, problem-solving strategies, creativity, reflective writing, inductive reasoning, and experiential learning models like Kolb's and Gibbs's.

Students engaged in debates, journal writing, mind-mapping, structured reflections, and real-world analysis to deepen understanding. Activities were designed to promote self-awareness, logical reasoning, evidence-based thinking, and collaborative learning. Assignments included summarising lessons, evaluating media content, and writing reflective essays using structured models.

The intervention emphasised practical engagement, peer collaboration, and self-assessment to foster higher-order thinking. Each session ended with a recap and targeted homework. Overall, the intervention aimed to strengthen students' ability to think critically and reflectively in both academic and professional contexts.

Results

Ho1: There is no significant effect of reflective practices on the critical thinking of prospective teachers during the baseline period.

Table 1

Mauchly's Test of Sphericity of Reflective Practices on Critical Thinking of Prospective Teachers during Baseline Period

Within Subject Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser (Epsilon ⁹)
Baseline Period	.811	1.253	9	.534	.841

Mauchly's Test of Sphericity was conducted to assess whether the assumption of sphericity was met for the repeated measures ANOVA. The test result was insignificant ($W = 0.811$, $\chi^2 = 1.253$, $df = 2$, $p = .534$), indicating that the assumption was not violated and the variances of the differences between repeated measures were equal.

Table 2

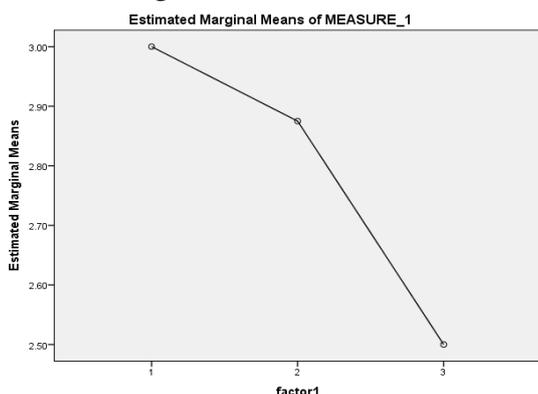
The Effect of reflective practices on the critical thinking of prospective teachers during the baseline period across the Three Steps of Intervention

Measures	Baseline Period		
	N	Mean	SD
Test 1	08	3.00	.755
Test 2	08	2.87	.991
Test 3	08	2.50	.755
F		179.560	
Df		9	
Sig.		.534	
Partial Eta squared		.962	

The results presented in Table 2 indicate that the effect of reflective practices on prospective teachers' critical thinking was statistically insignificant at $F (179.560, p = .962)$. Since the p-value is greater than the significance level of .05, the null hypothesis ($H02$), stating that "there is no significant effect of reflective practices on prospective teachers' critical thinking during the baseline period," is accepted. Therefore, it is concluded that reflective practices had no significant impact on the critical thinking of prospective teachers during the baseline period.

Figure 1

Estimated Marginal Means of Measure



Ho2: There is no significant effect of reflective practices on the critical thinking of prospective teachers during the treatment phase



Table 3

Mauchly's Test of Sphericity: Significant Effect of Reflective Practices on Critical Thinking of Prospective Teachers during Treatment Phase

Within Subject Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser (Epsilon ^b)
Treatment Phase	.172	9.528	7	.000	.68

The test result showed Mauchly's Test of Sphericity at ($W = 0.172$, $\chi^2 = 9.528$, $df = 9$), with a significance value of $p < .000$. Since the p-value is less than the critical level of .05, the assumption of sphericity was not violated, indicating that the variances of the differences are approximately equal. The data still reasonably meet the assumptions for conducting repeated measures ANOVA.

Table 4

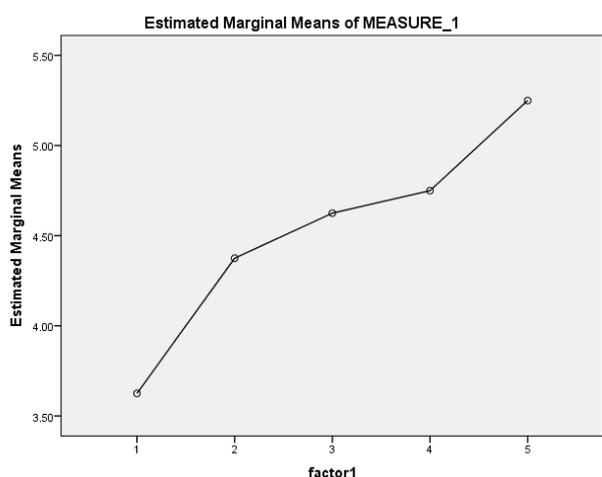
The Effect of reflective practices on the critical thinking of prospective teachers during the treatment phase across the Five Steps of Intervention

Measures	Treatment Phase		
	N	Mean	SD
Test 1	08	3.62	.517
Test 2	08	4.37	.916
Test 3	08	4.62	.744
Test 4	08	4.75	1.03
Test 5	08	5.25	1.03
F		653.353	
Df		7	
Sig.		.000	
Partial Eta squared		.989	

The results presented in Table 5 show that the effect of reflective practices on prospective teachers' critical thinking was statistically significant, $F(653.353, p \leq .000)$. Since the p-value is less than the significance value of .05, the hypothesis H_{02} , which states that "there is a significant effect of reflective practices on prospective teachers' critical thinking during the treatment period," is rejected. Therefore, it is concluded that no significant effect of reflective practices on prospective teachers' critical thinking was found during the treatment phase.

Figure 2

Estimated Marginal Means of Measure



H₀₃: There is no significant effect of reflective practices on the critical thinking of prospective teachers during the withdrawal phase

Table 5

Mauchly's Test of Sphericity: Significant Effect of Reflective Practices on Critical Thinking of Prospective Teachers during Withdrawal Phase

Within Subject Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser (Epsilon ^b)
Baseline Period	.840	1.046	7	.000	.862

The test result showed Mauchly's Test of Sphericity at ($W = 0.840$, $\chi^2 = 1.046$, $df=7$), with a significance value of $p \leq .000$. Since the p-value is less than the standard value of .05, the assumption of sphericity is not violated, indicating that the variances of the differences are approximately equal. The Greenhouse-Geisser epsilon ($\epsilon = 0.862$) also falls within the acceptable range (0.75 to 1), supporting the validity of sphericity.

Table 6

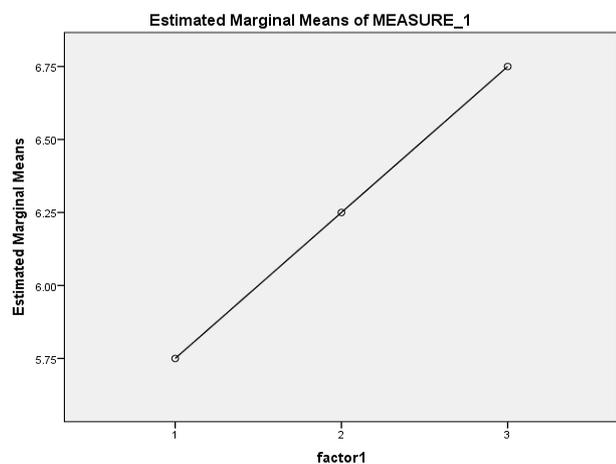
The Significant Effect of Reflective Practices on Critical Thinking of Prospective Teachers during the Withdrawal Phase across Three Steps of Intervention

Measures	Withdrawal Phase		
	N	Mean	SD
Test 1	08	5.75	.886
Test 2	08	6.25	1.83
Test 3	08	6.75	1.25
F		193.966	
Df		7	
Sig.		.000	
Partial Eta squared		.965	

The results presented in Table 6 indicate that the effect of reflective practices on prospective teachers' critical thinking was not statistically significant, $F(193.966, p \leq .000)$. Since the p-value is less than the significance level of .05, the hypothesis H_{03} , which states that "there is a significant effect of reflective practices on prospective teachers' critical thinking during the withdrawal period," is rejected. Therefore, it is concluded that a significant effect of reflective practices on prospective teachers' critical thinking was observed during the withdrawal phase.

Figure 3

Estimated Marginal Means of Measure



Discussion

The present study emphasises that prospective teachers' commitment to systematically evaluating their own teaching through reflective practices is essential for their professional development during the practicum phase. Findings of this

study are consistent with both national and international research. For instance, Karsenti and Collin (2011) found that peer interaction significantly contributes to the professional development of student teachers. Similarly it was observed that at the initial stages of practicum, student teachers predominantly used teacher-centred methods, were preoccupied with their performance, and often felt anxious. However, reflective practices enabled them to shift toward student-centred teaching, recognise improvements in student learning outcomes, and refine their content delivery and strategy selection. They also became more organised and accepted greater responsibility for student learning.

The current study further identified a strong association between reflective practices and the ability to sustain classroom momentum. Both teacher educators and prospective teachers indicated that they engaged in various forms of reflection, including reflection-in-action, reflection-on-action, peer collaboration, and feedback from students. They collectively affirmed that these reflective approaches significantly supported their professional growth and instructional improvement. Contrasting findings were reported by Bughio (2013), who noted that many teachers lacked motivation to engage in reflective practices and often did not involve students in group activities or leadership roles, resulting in reduced student confidence.

Hajira and Shamsa (2012) emphasised that reflective practices enhanced instructional management, a notion supported by this study. Derya (2008) and Tice (2011) identified audio and video recordings as preferred reflective tools, yet quantitative data from the present study showed only 30% of prospective teachers occasionally recorded their lessons. Qualitative findings revealed that recording equipment was available in merely 3% of classrooms, and only a small proportion of teachers reviewed their recordings afterwards.

Dixie (2009) reported that reflection-in-action often occurred during unexpected or challenging classroom situations. Consistent with this, the current study found that teachers frequently reflected when students displayed disruptive behaviour. According to Ghaye (2010), reflective practice leads to a deeper understanding of teaching, greater professional awareness, and enhanced planning skills. However, he also noted that teachers often forget key details, which may lead to flawed reflection. In this study, most participants viewed reflective practice as a form of self-critique aimed at improvement.

Hajira and Shamsa (2012) also noted that university teachers actively sought feedback from peers, fostered positive student-teacher relationships, and provided support both during and after class, findings echoed by the present study. Larrivee and Cooper (2006) emphasised that self-reflection helped teachers reduce bias, better understand their reactions, and identify personal beliefs affecting classroom behaviour. This study similarly found that reflective practice helped educators recognise professional shortcomings and refine their practices. Finally, Bughio (2013) reported that large class sizes hindered effective feedback collection, with students sitting at the back receiving less attention and teachers struggling to learn all names and issues not strongly supported in this study, possibly due to differing institutional contexts.

Recommendations

1. Encourage prospective teachers to build strong professional networks by collaborating with peers, senior teachers, and mentors. This will help them learn from others' experiences and gain diverse perspectives.
2. Assign group-based reflective projects where student teachers observe and critique one another's teaching strategies in a supportive, structured environment.
3. Offer online platforms or forums where trainee teachers can document and share their reflections, experiences, and feedback with mentors and peers for continuous professional dialogue.
4. Involve curriculum planners in embedding reflective activities into B. Ed coursework, ensuring that the importance and application of reflection are emphasised in both theory and practice.
5. Schedule periodic reflection meetings between practicum supervisors and student teachers to discuss growth areas, classroom challenges, and professional goals.
6. Encourage the use of digital journals, voice notes, or apps for daily micro-reflections to make reflective practice a regular and accessible habit.

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