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# The Impact of Situational Teaching Method on the Problem-Solving Ability of Students Majoring in Primary Education

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## Abstract

Students majoring in Primary Education will become primary school teachers in the future. In addition to professional competence, primary school teachers must also possess pedagogical problem-solving skills to address real-life situations, thereby building positive relationships with students, parents, and colleagues, and creating a friendly learning environment. The use of the case-based teaching method can enhance pedagogical problem-solving competence among Primary Education students. The purpose of this study is to examine the impact of lecturers' implementation of case-based teaching on the pedagogical problem-solving competence of students majoring in Primary Education. The experiment was conducted by the author, who applied the case-based teaching method in the education subject for the experimental group, while another lecturer at the university taught the same course using traditional teaching methods for the control group. A total of 110 first-year Primary Education students participated in the experiment. After the experiment, the mean scores of the experimental group were higher than those of the control group, and the T-test results indicated a significant difference between the two groups. The findings suggest that the use of case-based teaching in instruction can improve the pedagogical problem-solving

**Keywords:** Situational Teaching Method, Problem-Solving Ability, Students Majoring in Primary

## 1. Introduction

### *1.1 Introduce the Problem*

From the 1920s to the 1960s, the case-based teaching method was progressively introduced and adopted across various educational domains. Instructors employed intentionally designed scenarios and dynamic learning environments to stimulate learners' interest, agency, and engagement, thereby strengthening the relevance and sustainability of higher education practices (Corcoran et al., 2004; Doran, 2011; Harland, 2014; Nabila et al., 2023;

Vasconcelos et al., 2022). Substantial evidence indicates that teachers utilizing case-based pedagogy function as learning architects and cognitive mediators who support learners' meaning-making and knowledge construction (Philip et al., 2006; Shi, 2021; Zhang, 2018). This approach fosters learning environments that authentically integrate real-world issues with curricular content, enhancing students' capacity to interpret and apply knowledge in context (Gravett et al., 2016).

The epistemological view of Comenius—who asserted that all knowledge originates from sensory perception—further undergirds the theoretical foundations of case-based instruction, as learners actively construct understanding through observation, sensory engagement, and hands-on participation (Comenius, 2006). In line with this perspective, a number of scholars argue that case-based instruction enables learners to bridge theory and practice, offering deep insights into situations that may arise in authentic educational or professional contexts (Gravett et al., 2016; Helleve et al., 2021; Strangeways & Papatraianou, 2016). The method has also gained prominence in flipped classroom models (Lundegren et al., 2021; Spicer et al., 2021; Yang et al., 2021) and STEM education, where it enhances the practical applicability of subject matter (Fisher et al., 2019). In circumstances in which face-to-face instruction is not feasible, realistic case simulations have been shown to improve students' academic performance by mirroring authentic problem situations (Mutter et al., 2020; Spicer et al., 2021).

Beyond these instructional advantages, case-based teaching enables learners to analyze complex sustainability-related issues from multiple perspectives, thereby strengthening their decision-making capacity and promoting an understanding of the real-world significance of knowledge and skills. This aligns with the theory of situated cognition, which posits that effective learning occurs within authentic, contextually relevant situations (Georgallis & Bruijn, 2022). Case-based pedagogy also supports the development of learners' awareness, values, and dispositions. Szeto (2015) contends that situational learning optimizes the learning process by encouraging active engagement and helping students recognize the meaningful purposes of education, thus reducing perceptions of schooling as punitive or rigid. Research consistently demonstrates that case-based methods enhance students' academic motivation and attitudes toward learning (Çam & Geban, 2016; Wu et al., 2023).

The effectiveness of case-based instruction has been documented across diverse disciplinary contexts worldwide. In language education, foundational and contemporary research highlights its contribution to meaningful language use and communicative competence (Huang, 2023; Pittman, 1963; Richards & Rodgers, 2014). In medical education, case-based methods have been widely implemented to enhance diagnostic reasoning, clinical decision-making, and professional competence (Duan et al., 2021; Liu et al., 2020; Maia et al., 2023; Murdock et al., 2020; Mutter et al., 2020; Waliany et al., 2019). In economics and business education, case-based learning promotes analytical reasoning, strategic thinking, and problem-solving (Doran et al., 2011; Georgallis et al., 2022; Rippin et al., 2002). Similarly, in engineering and technology education, the method strengthens students' ability to apply conceptual knowledge in realistic and technical contexts (Krammer et al., 2018; Kundra & Sureka, 2016; Zhang et al., 2023). Empirical and experimental studies consistently confirm the positive impact of case-based teaching on learning outcomes across these disciplines.

In Vietnam, the case-based teaching method has also been explored at multiple educational levels. Nguyen Linh Giang (2015) proposed strategies for applying case studies in Financial Accounting instruction. Trinh Van Bieu and Khammany Sengsy (2014) developed a procedure for designing Chemistry-related cases grounded in real-world contexts. Mai Thi Tho (2020) advocated for the integration of case-based instruction in university-level Political Theory courses. In subject-specific pedagogy, researchers have suggested frameworks for designing case-based exercises in Biology (Phan Thi Thu Hien, 2015), Literature (Tran Thi Hanh Phuong, 2017), and primary-level Science and Society (Pham Thi Anh Hong, 2022). Do Hong Cuong and colleagues investigated the process of designing case-based tasks in the teaching of Science with the aim of developing primary students' problem-solving and creative capacities (Do Hong Cuong et al., 2023).

## 1.2 Case-Based Teaching Method

The case-based teaching method is a pedagogical approach that requires teachers to employ their professional skills and creativity to illuminate the core features of instructional content. This method involves constructing concrete scenarios capable of eliciting learners' emotions and attitudes, thereby generating meaningful learning experiences (Ruo Chen Shi, 2021). According to Dang Vu Hoat and Nguyen Huu Hop, case-based teaching is a process in which teachers guide students to examine, analyze, investigate, and discuss specific situations in order to identify possible solutions, thus achieving the intended learning objectives (Dang Vu Hoat & Nguyen Huu Hop, 2015). Both perspectives emphasize the teacher's role in selecting contextually appropriate situations and facilitating learners' analytic processes to generate solution pathways.

Effective implementation of case-based teaching requires collaboration between instructors and learners (Şen Akbulut & Hill, 2020). Hemphill and colleagues (2015) proposed several key steps for the use of case-based methods, including individual reflection, group discussion, idea sharing, and metacognitive reflection on the learning process. In this article, these strategies and case-driven learning activities are integrated into a structured instructional design that aims to develop preservice teachers' problem-solving competencies, consisting of the following phases:

### Phase 1: Scenario Construction

The design of instructional cases must satisfy several essential criteria. The scenario should align with the learning objectives of the lesson and represent distilled, typical, and highly generalized events or phenomena. It may describe situations that have occurred, are occurring, or are likely to occur in real-life educational contexts and should evoke curiosity and cognitive engagement among learners (Savery & Duffy, 1996). The scenario must be realistic and require students to solve a problem that is relevant both to everyday life and to the professional domain (Doolittle & Camp, 1999). Pedagogical cases often contain tensions and conflicts inherent in educational practice—such as mismatches between instructional expectations and learners' developmental levels, between learners' needs and available educational resources, and between the goals of education and the actual competencies of learners.

### Phase 2: Guiding Students Through Case Analysis

**Step 1: Problem Presentation.** The teacher articulates the expected learning outcomes associated with the case. This step is designed to stimulate student interest and focus. To achieve this, teachers may employ short games, multimedia, images, narratives, or situational prompts related to the topic.

#### Step 2: Case Exploration.

Students investigate relevant information about the case, including its temporal and spatial context, related viewpoints, and underlying dynamics. Through this process, learners engage in imaginative exploration and construct their own interpretations of the situation (Doolittle & Camp, 1999).

#### Step 3: Case Processing.

Teachers facilitate students' efforts to examine alternative solutions proposed by others and engage in collaborative discussion, thereby extending the depth of their learning (Blackmon et al., 2007). Students then produce a reflective response that synthesizes new insights and potential solutions derived from their initial analysis and subsequent discussion (Şen Akbulut & Hill, 2020).

### Phase 3: Evaluation

Teachers collect students' feedback through structured and meaningful reflection. Based on students' reasoning and proposed solutions, instructors formulate pedagogical judgments and clarify theoretical principles, thereby enhancing learners' understanding of appropriate approaches to solving pedagogical problems (Sadler, 2014). Real-World Pedagogical Problem-Solving Competence of Primary Education Majors.

Primary school teachers are responsible not only for delivering academic content but also for addressing a wide array of practical challenges in the educational process (Phan Thi Hong Vinh et al., 2018). These challenges include:

Classroom management: maintaining discipline, responding to disruptive behaviors, and creating a positive, inclusive learning environment. Teachers must implement strategies that ensure order while encouraging creativity and learner autonomy.

Communication and collaboration with parents: resolving conflicts and guiding families in supporting their children's learning and development.

Moral and life-skills education: helping students develop positive habits, appropriate behavior, and essential social competencies.

## 2. Method

This study employed an experimental design, one of the quantitative research approaches commonly used in scientific inquiry. According to Creswell and Creswell (2018), experimental methods are designed to systematically examine changes in one or more variables in order to assess the effects of specific interventions on predetermined outcomes. The experiment in this study was conducted with two groups: an experimental group and a control group. The participants were first-year students majoring in Primary Education at Thu Dau Mot University, Ho Chi Minh City. The experimental group consisted of 56 students who were instructed using the case-based teaching method in the Educational Psychology course, while the control group included 54 students who were taught using traditional instructional methods.

Both groups completed a pre-test prior to the intervention. Results of an independent samples t-test indicated no statistically significant difference between the two groups, with  $p = 0.064 > 0.05$ . The mean scores of the control group ( $M = 2.86$ ) and the experimental group ( $M = 2.73$ ) suggest that the two groups were equivalent in their pedagogical problem-solving competence before the experiment.

The evaluation of students' pedagogical problem-solving competence was analyzed using SPSS. Descriptive statistics were used to compare mean scores obtained after the post-test, including the mean values corresponding to each level of pedagogical problem-solving competence. Standard deviations (SD) were examined to determine the degree of score dispersion within each group. Furthermore, independent samples t-tests were employed to examine whether the differences in mean scores between the two groups (before and after the intervention) were statistically significant.

## 3. Results

A total of 110 students participated in the experiment, including 56 students in the experimental group and 54 in the control group. All students took part in the instructional activities following the same curriculum. Within this program, students in the experimental group were taught the content of the Educational Studies module using the case-based teaching method.

The assessment consisted of a 30-item Likert-scale questionnaire (5-point scale), divided into three subscales corresponding to three components of pedagogical problem-solving competence. The reliability coefficient for the entire scale was satisfactory, with a Cronbach's alpha of 0.79. In addition, the assessment package included three typical pedagogical scenarios designed to evaluate competence in classroom management, communication with parents, and the ability to foster moral and life skills education (see Table 1).

Table 1: Variables and Measurement Indicators

Variable Group	Specific Variable	Behavioral Indicators
X1	Classroom management competence	Organizing learning activities effectively
		Addressing disciplinary incidents
		Maintaining positive discipline and fostering student cooperation (Marzano et al., 2003; Gage et al., 2018)
X2	Parent-teacher interaction competence	Communication, listening, and negotiation skills
		Responding appropriately to negative parental feedback

		Establishing sustainable collaboration channels with families (Epstein, 2001; Hoover-Dempsey & Sandler, 2005)
X3	Life skills and moral education competence	Integrating life skills into instructional processes Organizing experiential learning and value-based discussions Responding appropriately to students' moral dilemmas (CASEL, 2020; UNESCO, 2016)
Y	Pedagogical problem-solving competence	Composite competence score Development of practical competence following the intervention (Darling-Hammond et al., 2017)

### 3.1 Analysis and comparison of the results of students' pedagogical problem solving achieved after the experiment

Table 2 presents the descriptive statistics for the three components of pedagogical problem-solving competence assessed in the study, including classroom management competence (X1), parent–teacher collaboration competence (X2), and moral education competence (X3), across the two groups: the control group (DC) and the experimental group (TN).

Table 2: Descriptive statistics of results between the two groups

Variable	Group	N	Min	Max	Mean	SD
X1	The control group	54	6.20	8.70	7.6130	0.3757
	The experimental group	56	7.50	9.50	8.3304	0.5821
X2	The control group	54	6.70	9.40	7.6019	0.4187
	The experimental group	56	8.00	9.00	8.5536	0.3341
X3	The control group	54	7.30	9.50	8.1611	0.6272
	The experimental group	56	7.80	9.00	8.5571	0.3510

The descriptive statistics indicate that the experimental group achieved higher mean scores than the control group across all three assessed pedagogical problem-solving competencies. Specifically:

**Classroom Management Competence (X1)** The experimental group obtained a mean score of 8.33, compared with 7.61 in the control group, yielding a difference of 0.72 points. This result suggests a positive effect of the intervention, as the experimental group demonstrated noticeably improved abilities in organizing, directing, and maintaining classroom discipline.

**Competence in Collaborating with Parents (X2):** The experimental group achieved a mean of 8.55, higher than the control group's mean of 7.60, with a difference of 0.95 points—the largest among the three competencies. This substantial gap indicates that the experimental program significantly enhanced students' communication, cooperation, and school–family partnership skills, which are crucial components of contemporary primary education.

**Competence in Moral Education for Students (X3):** The experimental group recorded a mean of 8.56, compared with 8.16 in the control group, reflecting a difference of 0.40 points. Although this difference is smaller than the other two competencies, it still demonstrates a positive trend, suggesting that the experimental model contributed to improving students' abilities in value education and moral formation.

Overall, the comparison of post-intervention outcomes shows that the experimental program had a clear positive impact, contributing to the development of pedagogical problem-solving competencies among primary education students.

Figure 1 below illustrates the differences in mean scores between the experimental and control groups across the three assessed competencies (Figure 1).

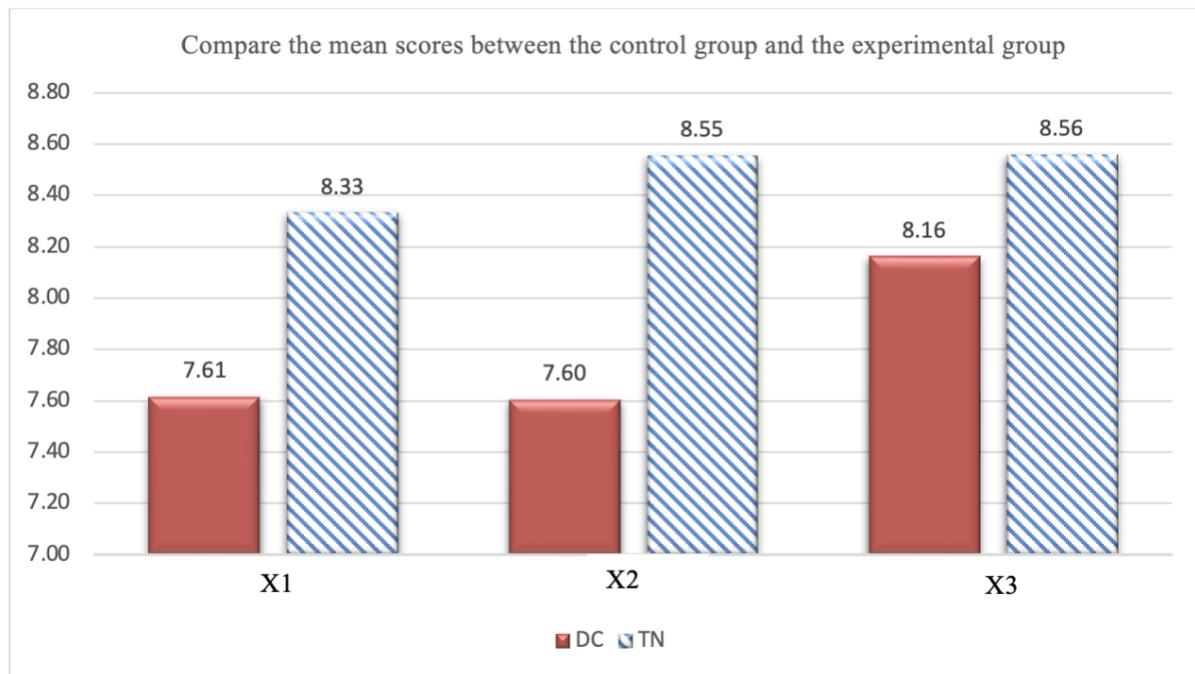


Chart 1: Comparison of average scores between the control group and the experimental group

The results reveal that across all three variables, the experimental group consistently achieved significantly higher mean scores compared to the control group. Notably, the most pronounced difference was observed in the competence related to collaborating with parents (NLPHPH), highlighting the strong effectiveness of the experimental program in enhancing teachers' educational communication and cooperation skills.

### 3.2 Test results of the difference in pedagogical problem-solving ability between the two groups after the experiment

To determine the differences in pedagogical problem-solving competencies between the two study groups, the authors employed an independent samples t-test for three variables: classroom management competence (NLQLLH), competence in collaborating with parents (NLPHPH), and competence in educating students' moral values (NLGDDĐ).

Table 3: Test results of the difference in pedagogical problem-solving ability between the two groups

Variable	F (Levene)	Sig. Levene	t	df	Sig. (2-tailed)	Mean Difference	Statistical conclusions
X1	16.366	0.000	-6.922	92.638	0.000	-0.638	Meaningful difference
X2	2.773	0.099	-8.672	108	0.000	-0.818	Meaningful difference
X3	20.887	0.000	-4.066	82.592	0.000	-0.396	Meaningful difference

Table 3 summarizes the results of the independent samples t-test. For classroom management competence (NLQLLH), the analysis reveals a statistically significant difference between groups. Levene's test shows  $F = 16.366$ ,  $p < .001$ , indicating heterogeneity of variances; therefore, the results are interpreted under the assumption of unequal variances. The t-test yields  $t(92.64) = -6.92$ ,  $p < .001$ , with a mean difference of  $-0.64$  and a 95% confidence interval ranging from  $-0.82$  to  $-0.45$ . These findings indicate that the second group exhibited superior classroom management competence. From a pedagogical perspective, this competence includes the ability to structure learning activities, maintain positive discipline, and cultivate a supportive classroom environment. Differences between the two groups may be attributable to variations in professional experience, teaching approaches, or engagement in professional development.

For competence in collaborating with parents (NLPHPH), Levene's test shows  $F = 2.77$ ,  $p = .099$ , supporting the assumption of equal variances. The t-test result  $t(108) = -8.67$ ,  $p < .001$  indicates a highly significant difference between the groups. The mean difference is  $-0.82$ , with the 95% confidence interval ranging from  $-1.01$  to  $-0.63$ , confirming a substantial and practically meaningful effect. These results suggest that the second group demonstrated more effective school–family collaboration skills, including communication, negotiation, and shared decision-making—competencies increasingly emphasized in contemporary educational reforms.

For competence in moral education (NLGDĐĐ), Levene's test indicates unequal variances ( $F = 20.89$ ,  $p < .001$ ). The unequal-variance t-test reports  $t(82.59) = -4.07$ ,  $p < .001$ , with a mean difference of  $-0.40$  and a 95% confidence interval of  $-0.59$  to  $-0.20$ . This confirms that the second group performed significantly better in moral education competence. The observed difference may derive from disparities in pedagogical reasoning, instructional experience, or approaches to values education. In the current educational context, moral education is considered a core professional capacity that directly influences students' character development and social behaviors.

A key methodological issue when comparing the present study with prior research concerns the use of case-based instruction. Previous studies have primarily applied case-based methods to improve teaching skills (Tambak et al., 2024) or enhance assessment competence in pre-service teachers (Austin & Packard, 2009; Kenneth et al., 2021). Case-based pedagogy has also been shown to support rapid and context-sensitive decision-making in unexpected classroom situations (Ulvik et al., 2020). These findings highlight the need for further studies to refine the design of pedagogical cases so that they better reflect the authentic problem-solving demands faced by primary education pre-service teachers.

#### 4. Conclusion

The experimental results indicate that, across all three variables, the experimental group achieved significantly higher mean scores than the control group. These differences reached statistical significance, confirming the positive impact of the situational teaching intervention on the pedagogical problem-solving competence of primary education students. Notably, the most substantial improvement was observed in the competence related to collaboration with parents, highlighting the remarkable effectiveness of the experimental program in developing teachers' educational communication and cooperation skills. Therefore, it can be affirmed that the implementation of the situational teaching program is a feasible and highly applicable measure in the training of primary school teachers at Thu Dau Mot University in particular, and in teacher-training institutions in general. The study contributes practical evidence to support the innovation of instructional methods in pedagogical professional modules, aiming toward the comprehensive development of professional competencies for Primary Education students in the context of ongoing educational reform.

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