

# A COMPARATIVE STUDY OF TEACHING STRATEGIES AND THEIR INFLUENCE ON THE DEVELOPMENT OF PROBLEM-SOLVING SKILLS IN PRIMARY SCHOOL STUDENTS

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## Abstract

*The present study examined the comparative influence of different teaching strategies on the development of problem-solving skills among primary school students. A comparative and quantitative research design was adopted for the study. A total sample of 120 primary school students was selected and equally divided into three groups exposed to traditional teaching, activity-based learning, and collaborative learning. Data were collected using a structured problem-solving skills assessment tool and analysed through frequency and percentage. The findings revealed that collaborative learning was the most effective strategy, with 60.0% of students demonstrating a high level of problem-solving skills, followed by activity-based learning with 50.0%. In contrast, only 25.0% of students exposed to traditional teaching demonstrated a high level of problem-solving ability. The study concluded that student-centred, interactive, and participatory teaching strategies are more effective than traditional instructional methods in improving students' ability to identify problems, analyse situations, develop solutions, and make appropriate decisions.*

**Keywords:** Teaching strategies; Problem-solving skills; Primary school students; Activity-based learning; Collaborative learning; Traditional teaching.

## 1. INTRODUCTION

Education plays a vital role in the intellectual, social, and emotional development of children. At the primary school level, students develop basic cognitive abilities that influence their future learning and academic performance. Therefore, effective teaching strategies are essential for creating meaningful learning experiences and developing important skills beyond the memorization of information.

Problem-solving is one of the most important cognitive skills that primary school students need to develop. It enables learners to identify problems, understand different situations, analyse information, generate possible solutions, and select appropriate ways to address challenges. Strong problem-solving abilities also encourage independent thinking, creativity, logical reasoning, decision-making, and the practical application of knowledge.

Teaching strategies play an important role in shaping students' problem-solving abilities. Traditional teacher-centred teaching generally focuses on explanation, direct instruction, and reproduction of information. Although this approach can be useful for providing basic knowledge, it may provide limited opportunities for students to actively explore problems and develop their own solutions. In contrast, activity-based learning provides students with opportunities to learn through practical activities, problem-based tasks, experimentation, and direct participation.

Collaborative learning is another student-centred approach that encourages learners to work in groups, exchange ideas, discuss possible solutions, and learn from one another. Such interaction can help students consider different perspectives and develop communication, reasoning, and decision-making abilities. Comparing these approaches can therefore provide useful insights into which teaching strategies are more effective in developing problem-solving skills among young learners.

The present study, “A Comparative Study of Teaching Strategies and Their Influence on the Development of Problem-Solving Skills in Primary School Students,” focuses on comparing traditional teaching, activity-based learning, and collaborative learning. The study aims to examine differences in students' problem-solving performance under these teaching approaches and identify strategies that may better support active and effective learning. The findings may be useful for teachers, schools, and educational planners in selecting classroom practices that promote students' cognitive development and problem-solving abilities.

## 2. LITERATURE REVIEW

Harianto et al. (2024) conducted a comparative study on the effectiveness of problem-based learning and traditional teaching methods in enhancing critical thinking skills among primary school students. The study highlighted that problem-based learning provides students with opportunities to engage actively with real-world and challenging problems, encouraging them to analyse information, evaluate possible solutions, and develop logical conclusions. In comparison with traditional teacher-centred approaches, problem-based learning was found to provide a more active and intellectually stimulating learning environment. The study emphasized that integrating problem-based learning into primary education can strengthen students' critical thinking abilities and encourage greater participation in the learning process. The findings support the use of problem-oriented instructional approaches for developing higher-order cognitive skills among young learners.

Supriatna et al. (2019) investigated the effect of learning methods and self-regulation on the problem-solving ability of elementary school students in mathematics. The study recognized that mathematical problem-solving is influenced not only by the instructional methods used by teachers but also by students' ability to regulate and manage their own learning. The findings indicated that appropriate learning methods can contribute to the development of students' mathematical problem-solving abilities. In addition, self-regulation was identified as an important factor because students who are able to plan, monitor, and evaluate their learning processes are better prepared to deal with complex mathematical problems. The study therefore emphasized the need to combine effective instructional strategies with opportunities for students to develop independent learning and self-regulatory skills.

Acquandoh et al. (2022) examined the effects of teaching students through problem-solving on their academic performance in problem-solving. The study emphasized the importance of involving students directly in the process of identifying, analysing, and solving problems rather than relying primarily on passive reception of information. The findings indicated that problem-solving-based teaching can improve students' academic performance by encouraging active participation, reasoning, and application of previously acquired knowledge. The study further suggested that regular exposure to problem-solving activities can help learners develop confidence and greater competence in dealing with academic challenges. Thus, the research provides empirical support for the use of problem-solving as an effective learner-centred teaching approach.

Molnár and Csapó (2018) investigated the efficacy and development of students' problem-solving strategies during compulsory schooling using logfile analyses. Their research focused on how students develop and apply different strategies while working on problem-solving tasks. The study provided evidence that problem-solving competence develops progressively through schooling and that students' approaches to solving problems can be examined through their patterns of interaction and performance. The findings highlighted the importance of understanding not only

whether students reach correct solutions but also how they approach and manage problem-solving processes. The study consequently emphasized the value of systematic problem-solving activities and appropriate assessment methods for supporting the development of students' problem-solving strategies throughout compulsory education.

### **3. RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter describes the methodology adopted to examine and compare different teaching strategies and their influence on the development of problem-solving skills among primary school students. The methodology was designed to systematically assess how various instructional approaches affected students' ability to identify problems, analyse situations, develop solutions, and make appropriate decisions.

#### **3.2 Research Design**

The study adopted a comparative and quantitative research design. Different teaching strategies, such as traditional lecture-based teaching, activity-based learning, and collaborative learning, were compared to determine their relative effectiveness in improving students' problem-solving skills.

#### **3.3 Study Population**

The population of the study consisted of primary school students studying in selected schools. Students from different primary classes were considered to obtain a broader understanding of the influence of teaching strategies on problem-solving ability.

#### **3.4 Sample and Sampling Technique**

A sample of 120 primary school students was selected for the study. The students were divided into different groups according to the teaching strategy used. A stratified random sampling technique was adopted to ensure appropriate representation of students from different classes and backgrounds.

#### **3.5 Teaching Strategies Considered**

The study compared three major teaching strategies: traditional teaching, activity-based learning, and collaborative learning. Traditional teaching focused mainly on teacher instruction, while activity-based learning involved practical tasks and problem-based activities. Collaborative learning encouraged students to work together, discuss ideas, and solve problems collectively.

#### **3.6 Research Instrument**

A structured problem-solving skills assessment tool and questionnaire were used for data collection. The instrument measured important dimensions such as problem identification, logical reasoning, creativity in finding solutions, decision-making, and application of knowledge.

#### **3.7 Data Collection Procedure**

Data were collected from the selected students after the implementation or observation of different teaching strategies. Students' responses and performance on problem-solving tasks were recorded systematically. Necessary permission was obtained from the concerned schools before conducting the study.

### 3.8 Variables of the Study

The independent variable of the study was the teaching strategy used in the classroom. The dependent variable was the level of problem-solving skills demonstrated by primary school students.

### 3.9 Data Analysis

The collected data were analysed using frequency, percentage, mean scores, and comparative analysis. Tables were prepared to present the distribution of students and differences in problem-solving skills across the various teaching strategies.

### 3.10 Ethical Considerations

Ethical principles were maintained throughout the study. Permission was obtained from the concerned school authorities, and the confidentiality of students' information was protected. The collected data were used only for academic and research purposes.

## 4. RESULTS AND DISCUSSION

### 4.1 Introduction

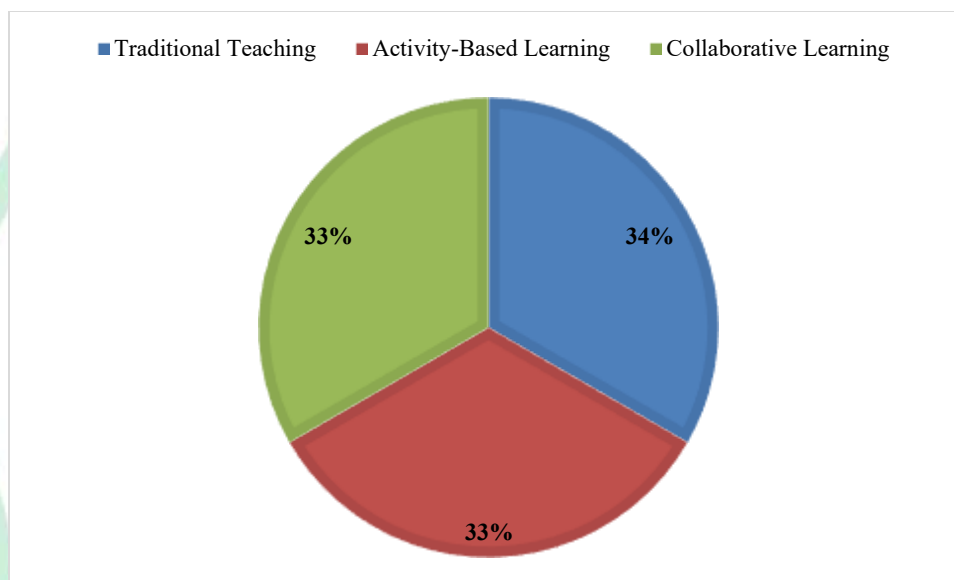
This section presents the results of the study on the comparative influence of different teaching strategies on the development of problem-solving skills among primary school students. The data collected from 120 students were analysed using frequency and percentage. The findings compare the problem-solving performance of students exposed to traditional teaching, activity-based learning, and collaborative learning.

### 4.2 Distribution of Students According to Teaching Strategies

The selected students were divided equally into three groups based on the teaching strategies used. Each group consisted of 40 students. The distribution is presented in Table 4.1.

**Table 4.1: Distribution of Students According to Teaching Strategy**

| Teaching Strategy       | Frequency (n) | Percentage (%) |
|-------------------------|---------------|----------------|
| Traditional Teaching    | 40            | 33.3           |
| Activity-Based Learning | 40            | 33.3           |
| Collaborative Learning  | 40            | 33.3           |
| <b>Total</b>            | <b>120</b>    | <b>100.0</b>   |



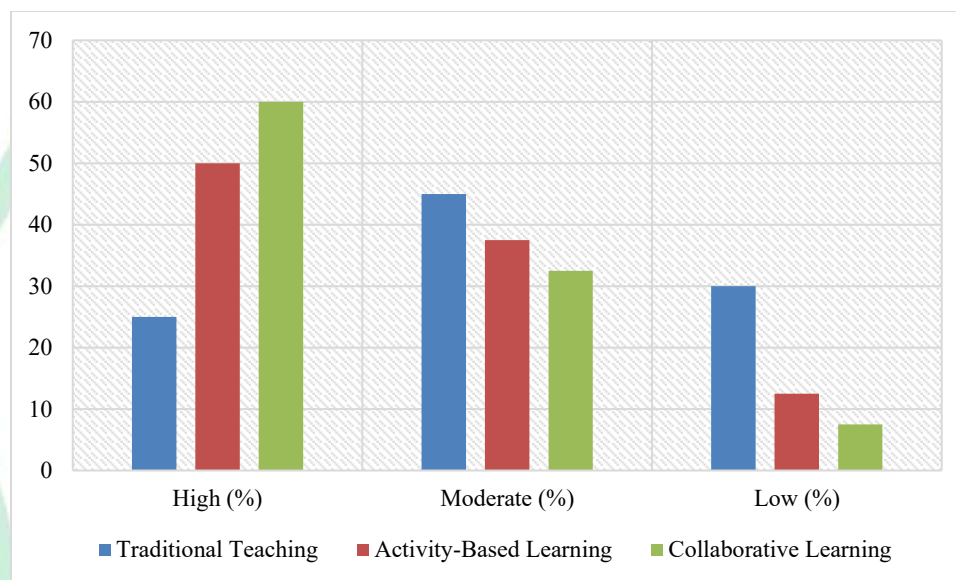
The table shows that an equal number of students participated under each teaching strategy. This equal distribution helped provide a balanced comparison of the effectiveness of the three instructional approaches.

#### 4.3 Comparison of Problem-Solving Skill Levels

Students' problem-solving skills were classified into high, moderate, and low levels based on their performance in the assessment. The comparative results are presented in Table 4.2.

**Table 4.2: Problem-Solving Skill Levels According to Teaching Strategy**

| Teaching Strategy       | High (%) | Moderate (%) | Low (%) |
|-------------------------|----------|--------------|---------|
| Traditional Teaching    | 25.0     | 45.0         | 30.0    |
| Activity-Based Learning | 50.0     | 37.5         | 12.5    |
| Collaborative Learning  | 60.0     | 32.5         | 7.5     |



The findings indicate clear differences in students' problem-solving skills across the three teaching strategies. Under traditional teaching, only 25.0% of students demonstrated a high level of problem-solving skills, while 30.0% remained at a low level. In comparison, activity-based learning showed better results, with 50.0% of students achieving a high level and only 12.5% showing low problem-solving ability.

Collaborative learning produced the most favorable results, as 60.0% of students demonstrated a high level of problem-solving skills and only 7.5% were placed in the low category. This suggests that interaction, discussion, group activities, and shared decision-making may provide greater opportunities for students to develop effective problem-solving abilities.

#### 4.4 Overall Discussion of Findings

The results suggest that teaching strategies have an important influence on the development of problem-solving skills among primary school students. Traditional teaching was comparatively less effective because students had fewer opportunities for active participation and independent exploration. Activity-based learning showed improved outcomes by engaging students in practical tasks and encouraging them to apply their knowledge.

Collaborative learning emerged as the most effective strategy among the three approaches. Students working together were able to exchange ideas, analyse problems from different perspectives, and develop possible solutions. Therefore, the findings indicate that active and student-centred teaching strategies, particularly collaborative and activity-based approaches, can contribute significantly to the development of problem-solving skills among primary school students.

### 5. CONCLUSION

The study concluded that teaching strategies had a significant influence on the development of problem-solving skills among primary school students. The comparative findings showed that traditional teaching was less effective in promoting higher levels of problem-solving ability, whereas activity-based learning produced better outcomes by encouraging active participation and practical application of knowledge. Collaborative learning was found to be the most effective strategy, with the highest proportion of students demonstrating strong problem-solving skills. The findings therefore suggest that student-centred, interactive, and participatory teaching approaches can play an

important role in enhancing students' ability to analyse problems, generate solutions, make decisions, and apply their learning effectively.

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