DEVELOPING STUDENTS' CRITICAL THINKING SKILLS THROUGH PROBLEM BASED APPROACH

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Abstract This article explores the concept of "critical thinking" and the methodology of "Problem-Based Learning" (PBL) in the context of developing critical thinking skills in students. Attention is paid to studies by various scholars on this topic. Additionally, a research study is presented that aims to determine the effectiveness of PBL in enhancing critical thinking skills among 11th-grade students.

Keywords: Critical thinking, problem-based learning, PBL, study, 11th -grade students.

INTRODUCTION

Critical thinking is essential for students to analyze and solve problems effectively. According to Facione (1990), critical thinking is purposeful, self-regulatory judgment. Ennis (1989) defines it as reasonable, reflective thinking focused on deciding what to believe or do. In the modern educational landscape, fostering critical thinking is paramount, especially with the growing emphasis on preparing students for real-world challenges (Halpern, 1998). Problem-Based Learning (PBL) is a student-centered pedagogy in which students learn about a subject through the experience of solving an open-ended problem found in trigger material (Barrows & Tamblyn, 1980). This method encourages active learning, develops problem-solving skills, and promotes critical thinking. Savery (2006) describes PBL as a learning approach where complex real-world problems are used as the vehicle to promote student learning of concepts and principles as opposed to direct presentation of facts and concepts.

The significance of PBL in developing critical thinking skills has been supported by numerous studies (Hmelo-Silver, 2004; Dochy et al., 2003). This article investigates the

impact of PBL on developing critical thinking skills among 11th-grade students, comparing it with traditional teaching methods.

The importance of critical thinking in education cannot be overstated. It is a skill that is crucial for academic success and essential in the workforce. Critical thinking involves the ability to think clearly and rationally, understanding the logical connection between ideas (Fisher, 2011). Educational theorists have emphasized the need for teaching methods that promote critical thinking skills. Traditional methods of teaching, which often focus on rote memorization and passive learning, are increasingly being seen as inadequate for developing these essential skills (Paul & Elder, 2006).

Problem-Based Learning (PBL) has emerged as an effective pedagogical strategy for fostering critical thinking. Barrows (1986) argued that PBL helps students develop self-directed learning skills and apply their knowledge to real-world problems. Hmelo-Silver (2004) found that PBL promotes deeper understanding and retention of knowledge. Additionally, Dochy et al. (2003) conducted a meta-analysis which showed that PBL has positive effects on students' knowledge application, skills development, and attitudes toward learning.

MATERIALS AND METHODS

Aim and Hypothesis

The study hypothesized that PBL would be more effective than traditional teaching methods in developing critical thinking skills in 11th-grade students. The aim was to compare the efficacy of traditional methods and PBL in teaching critical thinking skills.

Research Design

A mixed research design was employed, incorporating both qualitative and quantitative methods. A quantitative approach was used to analyze pre- and post-test results of the students in control and experimental groups.

Participants

The study involved 30 11th grade students from the school located in Tashkent region. The students volunteered to participate and were informed of their right to withdraw at any time. The students were divided into two groups: a control group and an experimental group, each containing 15 participants. They were selected randomly.

Materials and Procedure

Both groups studied the same subject matter. The control group was taught using traditional methods, including lectures, reading assignments, and standard exercises. The experimental group was engaged in PBL activities, working on real-world problems related to the subject. The research lasted for four weeks. Emphasis was placed on collaborative problem-solving and critical thinking exercises. Each week was devoted to particular topic which made the students think critically and solve the problem.

Pre-test and Post-test

A standardized critical thinking test was administered to both groups before and after the instructional period to measure the development of critical thinking skills. The tests were identical and aimed to assess skills such as analysis, evaluation, inference, and reasoning.

RESULTS

The results from the pre- and post-tests were analyzed using the ABCDEF scale:

- **A**: 95-100%
- **B**: 85-94%
- **C**: 75-84%
- **D**: 65-74%
- **E**: 60-64%
- **F**: 0-59%

Table 1. Pre-test results

Grade	Control group (number of students	Control group (%)	Experimental group (number of students)	Experimental group(%)
A	2	13,3%	2	13,3%
B	4	26,7%	4	26,7%
C	5	33,3%	5	33,3%
D	3	20,0%	3	20,0%
E	1	6,7%	1	6,7%
F	0	0%	0	0%

Table 2. Post-test results

Grade	Control group (number of students)	Control group (%)	Experimental group (number of students)	Experimental group (%)
A	3	20,0%	6	40%
B	5	33,3%	5	33,3%
C	5	33,3%	4	26,7%
D	2	13,3%	0	0%
E	0	0%	0	0%
F	0	0%	0	0%

DISCUSSION

The results indicate that the experimental group, which used PBL, showed a more significant improvement in critical thinking skills compared to the control group. The percentage of students receiving high grades (A, B) increased more in the experimental group, suggesting that PBL is more effective in enhancing critical thinking skills. These findings align with previous research that highlights the benefits of PBL in fostering

deeper understanding and critical analysis (Hmelo-Silver, 2004; Savery, 2006). Students in the experimental group not only improved their test scores but also demonstrated enhanced problem-solving abilities and teamwork. This aligns with Barrows (1986), who noted that PBL encourages students to become self-directed learners. Furthermore, the collaborative nature of PBL likely contributed to the students' ability to engage in more profound critical thinking processes, as they had to articulate their thoughts and defend their reasoning to peers.

Additionally, the reduction in lower grades (D, E, and F) in the experimental group suggests that PBL was effective in bringing all students to a higher level of understanding and skill. This supports Dochy et al. (2003), who found that PBL can reduce the performance gap among students by promoting a more inclusive and engaging learning environment.

CONCLUSION

In conclusion, PBL appears to be a more effective method for developing critical thinking skills in 11^{th} -grade students compared to traditional teaching methods. This study contributes to the growing body of evidence supporting the use of PBL in education to enhance critical thinking, preparing students for real-world challenges and promoting lifelong learning.

The study's findings suggest that educators should consider incorporating PBL into their curricula to foster critical thinking skills. Future research could expand on this study by exploring long-term effects of PBL on critical thinking and examining its impact in different educational contexts.

REFERENCES

1. Barrows, H. S. (1986). A taxonomy of problem-based learning methods. Medical Education, 20(6), 481-486.

2. Barrows, H. S., & Tamblyn, R. M. (1980). Problem-Based Learning: An Approach to Medical Education. New York: Springer Publishing Company.

3. Dochy, F., Segers, M., Van den Bossche, P., & Gijbels, D. (2003). Effects of problem-based learning: A meta-analysis. Learning and Instruction, 13(5), 533-568.

4. Ennis, R. H. (1989). Critical thinking and subject specificity: Clarification and needed research. Educational Researcher, 18(3), 4-10.

5. Facione, P. A. (1990). Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction. Research Findings and Recommendations. American Philosophical Association.

6. Fisher, A. (2011). Critical Thinking: An Introduction. Cambridge University Press.

7. Halpern, D. F. (1998). Teaching critical thinking for transfer across domains: Dispositions, skills, and metacognitive monitoring. American Psychologist, 53(4), 449-455.

8. Hmelo-Silver, C. E. (2004). Problem-Based Learning: What and How Do Students Learn? Educational Psychology Review, 16(3), 235-266.

9. Paul, R., & Elder, L. (2006). Critical Thinking: Tools for Taking Charge of Your Learning and Your Life. Upper Saddle River, NJ: Pearson/Prentice Hall.

10. Savery, J. R. (2006). Overview of Problem-Based Learning: Definitions and Distinctions. Interdisciplinary Journal of Problem-Based Learning, 1(1), 9-20.