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PROBLEM-BASED LEARNING AS A MEANS OF DEVELOPING LOGICAL THINKING IN PEDAGOGY STUDENTS

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ABSTRACT: Problem-Based Learning (PBL) is a student-centered teaching approach that fosters critical and logical thinking through engagement with real-world problems. This article explores the use of PBL in the education of pedagogy students, emphasizing its effectiveness in cultivating logical reasoning, decision-making, and problem-solving skills. Drawing on the works of Barrows and Tamblyn, Jonassen, and Dewey, the article discusses the theoretical underpinnings and practical applications of PBL in pedagogy programs. It examines how collaborative activities, real-world scenarios, and technology integration enhance logical thinking. The article also addresses challenges, including resource constraints and assessment complexities, offering recommendations for successful implementation. By adopting PBL, teacher training programs can prepare future educators to think critically and adapt to the dynamic demands of modern education.

KEYWORDS: Problem-Based Learning, logical thinking, pedagogy students, teacher education, critical reasoning, student-centered learning, collaborative learning.

INTRODUCTION

Logical thinking is a critical competency for pedagogy students, enabling them to analyze educational challenges, design effective teaching strategies, and make sound decisions. Problem-Based Learning (PBL) is an innovative teaching approach that promotes these skills by engaging students in solving real-world problems. This article explores how PBL serves as a powerful tool for developing logical thinking in pedagogy students, highlighting its theoretical foundations, practical benefits, and implementation strategies.

Theoretical Foundations of PBL. Problem-Based Learning is rooted in constructivist theories of learning, which emphasize active engagement and the construction of knowledge through experience.

John Dewey emphasized the importance of experiential learning, arguing that students learn best when they are actively engaged in solving meaningful problems. Barrows and Tamblyn PBL was formalized as an instructional method for medical education, but its principles have since been applied across disciplines. Barrows described PBL as a process that fosters critical thinking by requiring students to define problems, gather information, and evaluate solutions. Jonassen Jonassen emphasized the role of technology in creating authentic problem-solving environments, which are central to the PBL process.

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How PBL Develops Logical Thinking

Encouraging Critical Analysis. PBL requires students to analyze complex problems, identify key issues, and develop logical strategies for resolution. This process enhances their ability to evaluate information critically and draw reasoned conclusions. Example: In a PBL activity, pedagogy students might be tasked with designing an inclusive lesson plan for a diverse classroom. They must analyze student needs, curriculum requirements, and available resources, applying logical reasoning to develop an effective plan.

Promoting Collaborative Learning. Collaboration is a key component of PBL, as students work in teams to solve problems. Vygotsky's theory of social constructivism highlights the role of dialogue and interaction in fostering logical thinking. Example: Pedagogy students participating in a PBL activity may engage in group discussions to critique each other's ideas, build consensus, and develop well-reasoned solutions.

Applying Real-World Contexts. PBL immerses students in authentic scenarios, bridging the gap between theory and practice. Real-world contexts enhance logical reasoning by requiring students to apply theoretical knowledge to practical situations. Example: Students might explore how to address behavioral challenges in a classroom setting, using logical frameworks to propose evidence-based interventions.

Integrating Technology. Digital tools play a vital role in PBL by providing access to information and facilitating problem-solving. Tools like simulations, online collaboration platforms, and data analysis software enhance the logical reasoning process. Example: Using simulation software, pedagogy students can experiment with classroom management strategies and observe the logical outcomes of their decisions.

Implementation Strategies for PBL in Pedagogy

1. Designing Effective Problems. Problems should be open-ended, relevant, and aligned with learning objectives. They should challenge students to think critically and apply their knowledge. Example: A PBL problem might involve designing a curriculum for a hypothetical school with limited resources, requiring students to prioritize and make logical trade-offs.

2. Facilitating Student-Centered Learning. Instructors act as facilitators, guiding students through the problem-solving process rather than providing direct instruction. Example: Facilitators can encourage students to ask questions, consider alternative perspectives, and reflect on their reasoning processes.

3. Incorporating Assessment. Assessment in PBL should evaluate both the process and the outcome of problem-solving. Rubrics can be used to assess logical reasoning, collaboration, and creativity. Example: A rubric for assessing PBL activities might include criteria such as the clarity of arguments, coherence of solutions, and the use of evidence.

Challenges in Implementing PBL

1. Resource Constraints. PBL can be resource-intensive, requiring time, materials, and access to digital tools. Institutions may face challenges in providing the necessary infrastructure. Solutions: Use open-access resources and digital platforms. Start with small-scale PBL activities that require minimal resources.

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2. Assessment Complexity. Measuring logical thinking in PBL can be challenging due to its subjective and multidimensional nature. Solutions: Develop clear rubrics and criteria for assessment. Incorporate peer and self-assessment to provide diverse perspectives.
3. Student Resistance. Students accustomed to traditional teaching methods may initially struggle with the self-directed nature of PBL. Solutions: Provide clear instructions and scaffolding. Gradually increase the complexity of PBL activities to build confidence.

CONCLUSION

Problem-Based Learning is a powerful means of developing logical thinking in pedagogy students. By engaging in collaborative, real-world problem-solving activities, students enhance their ability to analyze, evaluate, and synthesize information. While challenges such as resource constraints and assessment complexities exist, thoughtful implementation strategies can maximize the benefits of PBL. As future educators, pedagogy students must be equipped with strong logical reasoning skills to navigate the dynamic demands of modern classrooms. By integrating PBL into teacher training programs, institutions can prepare educators who are not only critical thinkers but also effective problem-solvers and lifelong learners.

REFERENCES

1. Kolmos A., De Graaff E., Du X. Diversity of PBL–PBL learning principles and models //Research on PBL practice in engineering education. – Brill, 2009. – С. 9-21.
2. Strobel J., Van Barneveld A. When is PBL more effective? A meta-synthesis of meta-analyses comparing PBL to conventional classrooms //Interdisciplinary journal of problem-based learning. – 2009. – Т. 3. – №. 1. – С. 44-58.
3. Dahlgren M. A., Castensson R., Dahlgren L. O. PBL from the teachers' perspective //Higher Education. – 1998. – Т. 36. – №. 4. – С. 437-447.
4. Prince K. J. A. H. et al. General competencies of problem-based learning (PBL) and non-PBL graduates //Medical education. – 2005. – Т. 39. – №. 4. – С. 394-401.
5. Wells S., Warelow P., Jackson K. Problem based learning (PBL): A conundrum //Contemporary Nurse. – 2009. – Т. 33. – №. 2. – С. 191-201.