USING PROBLEM-BASED SITUATIONS IN TEACHING FOR ELEMENTARY SCHOOL STUDENTS: A STUDY ON THE VIETNAMESE CURRICULUM

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Abstract:

Resolving issues in problem-based situations requires creativity and flexible thinking. Teaching through such scenarios not only creates engaging learning environments but also fosters holistic student development by promoting critical thinking, creativity, and social skills. Elementary school students are rapidly growing physically and mentally. Educating them on problem-solving at this stage establishes a strong foundation for future success. Implementing problem-based scenarios in teaching helps students learn to handle challenging situations, building confidence and creativity. By using such scenarios, students can connect the knowledge they acquire with real-life experiences, enhancing their understanding of its importance and application. This article explores theoretical principles for integrating problem-based scenarios in education, proposes a methodology, and presents various types of problem-based scenarios in elementary school instruction to enhance teaching effectiveness.

Keywords: situation, problem, elementary school students, capabilities, teaching

1. Introduction

Education in the 21st century focuses on developing capabilities, not just transmitting knowledge, but also fostering confidence, creativity, and problem-solving skills in students. The concept of a problem varies across different aspects of life, representing

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conflicts in perception shown through questions, issues, or tasks that individuals struggle to resolve, leading to challenges and obstacles. Problems possess several key characteristics:

- Problems are not merely specific issues to be solved; they also involve elements like ambiguity, complexity, and multidimensionality. They can encompass various aspects and factors that individuals must take into account.
- Problems entail the presence of the unknown and the necessity to uncover it: This is a crucial aspect; problems often involve uncertainties and the requirement for exploration. Individuals must pinpoint and clearly define unclear elements and objectives to tackle the problem effectively.

Individuals must have specific skills to independently solve problems through investigation: to address a problem, individuals must employ abilities such as logical reasoning, analytical skills, creativity, and problem-solving capabilities. Conducting research and relying on oneself to devise viable solutions are vital in the problem-solving process.

Problem-based scenarios highlight conflicts within a particular context and serve as a motivator for individuals to act to ensure their progress and development. In education, problem-based scenarios are frequently linked to real-life situations, prompting learners to seek information to resolve learning tasks.

Problem-based scenarios exhibit the following fundamental characteristics: Involve conflicts and challenges: Problem-based scenarios often arise from clashes among different factors or conflicting values and behaviors during activities. This frequently leads to challenges, demanding focus, effort, and innovative solutions from individuals to surmount the situation.

Often expressed in the form of questions, problems as PBL often involve finding solutions to complex and conflicting situations. Need to be solved by seeking new knowledge and new action methods: To solve a problem-based situation, the subject needs to access and grasp new knowledge, as well as develop new action methods. Faced with a problem-based situation, the subject needs to access new knowledge to better understand the situation. This may involve consulting sources of information, documents, or seeking opinions from experts. In this way, they can enhance their knowledge and assess the situation more accurately. After understanding the situation, the subject needs to develop new action methods to solve the situation. This may involve using new knowledge to develop specific and effective action plans.

Focus on the process of activities: Focusing on the process of activities helps learners identify the causes of the problem and handle it more effectively. Learners have the opportunity to analyze and understand the causes of the problem better. Instead of just focusing on the final outcome, they delve into the process to identify the factors causing conflicts or difficulties. Additionally, during the activities, they may discover hidden issues or risks that they may have overlooked if they only focused on the result. Thus, PBL helps learners focus on the process of activities to help them identify and

handle the problem more effectively by understanding the causes and mechanisms of its operation, thereby creating opportunities for continuous improvement [6], [7].

The necessity of awareness and problem-solving to find new knowledge: Subjects need to recognize and understand the situation to solve the problem effectively and sustainably. While trying to solve the situation, the subject must receive and apply new knowledge as well as take new actions to overcome difficulties and conflicts.

Teaching based on problem-based situations often encourages learners to develop critical thinking skills, high-level specialized capabilities, problem-solving abilities, knowledge development, effective teamwork skills, self-assessment, and adaptability to change. Problem-based teaching helps students get closer to reality and apply flexible approaches to solving practical problems. Problem-based situations play a crucial role in shaping and developing students' cognitive abilities by activating existing knowledge, developing existing knowledge through collaborative discussions, restructuring knowledge to fit the presented problem, building a suitable knowledge network, promoting learning in real-life contexts, fostering curiosity, and a desire to learn about the problem.

In education, problem-based situations are states or situations created by teachers to stimulate students' learning processes. These situations contain conflicts and difficulties designed to stimulate students' cognitive and problem-solving needs to explore and discover new knowledge, and new action methods. Problem-based situations in teaching require students to apply knowledge, skills, and creativity to find solutions or suitable approaches. This often encourages students to think deeply, analyze, evaluate, and think logically to find effective solutions. In elementary education, problem-based situations can stimulate students' imagination and imagery. It helps them create mental images and imagine solutions, fostering flexible and creative thinking. It encourages students to think, search for unique solutions, and explore different aspects of the problem. It helps students understand the real world and develop critical thinking skills in evaluating, analyzing, and making decisions.

2. Research Questions

The purpose of the paper is to analyze the process of designing problem-based situations and some strategies for utilizing problem-based situations in elementary education in Vietnam. What steps can be taken to design problem-based situations? How can problem-based situations be effectively used in elementary education in Vietnam?

3. Research Content

3.1. Designing Problem-based Situations in Elementary Education
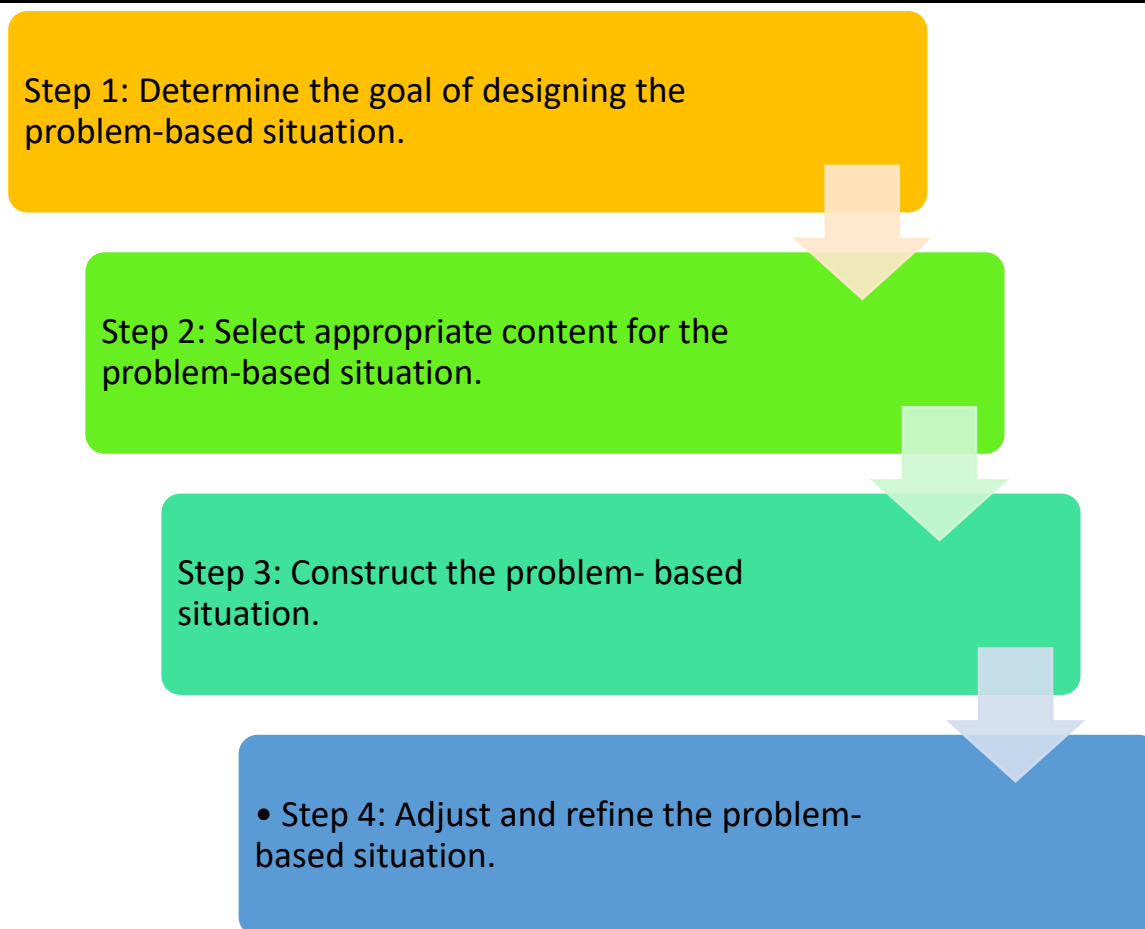To design problem-based situations in elementary education, we can follow the following steps:

Step 1: Determine the goal of designing the
problem-based situation.

Step 2: Select appropriate content for the
problem-based situation.

Step 3: Construct the problem- based
situation.

• Step 4: Adjust and refine the problem-
based situation.

Diagram 1: Design Process of Problem-based Situations in Elementary Education

Step 1: Determine the goal of designing the problem-based situation towards developing students' competencies.
- Consider the program requirements and lesson content.
- Identify the requirements that can be achieved through designing the situation.
- Set goals for the development of competencies that students need to achieve through the situation.

Step 2: Select appropriate content for the problem-based situation.
- Choose content related to daily life, social issues, or natural phenomena around students.
- Ensure the content is suitable for the age and level of the students.

Step 3: Construct the problem-based situation.
- Create a situation that requires students to apply critical thinking to analyze, infer, and make arguments.
- The situation should be open-ended and encourage students to research information, collect data, and propose evidence-based solutions.

Step 4: Adjust and refine the problem-based situation.
- Review and adjust the situation to ensure it accurately reflects the goals and requirements.
- Ensure that the situation is presented clearly and engagingly for students.

Example:
When teaching Ethics content for 4th grade: Establishing friendships with the following learning objectives: "Understanding why it is necessary to establish and maintain friendships; Recognizing simple ways to establish and maintain friendships; Having good relationships with friends at school and in the neighborhood, community" [15].

Step 1: Determine the goal of designing the problematic situation: Students understand why it is necessary to establish and maintain friendships and recognize simple ways to do so.

Step 2: Select appropriate content for the problematic situation: Students need to understand the significance of friendships at school in the neighborhood, and community.

Step 3: Construct the problematic situation as follows: In an Ethics class, the teacher asks students to discuss an issue: "Why do we need friends?" While other students are happily sharing their thoughts, Lan remains silent. When Hoa invites Lan to share her opinion, Lan responds by saying, "I don't need friends, I can still live well without them."

Step 4: Adjust and refine the problematic situation:
- Review and adjust the situation to ensure that it is engaging and accurately reflects the educational objectives.
- Ensure that students have the opportunity to discuss and share their opinions on the situation.

3.2. Process of using problematic situations in elementary school teaching
To organize teaching activities for elementary school students using problematic situations, teachers can follow the steps in the following diagram:
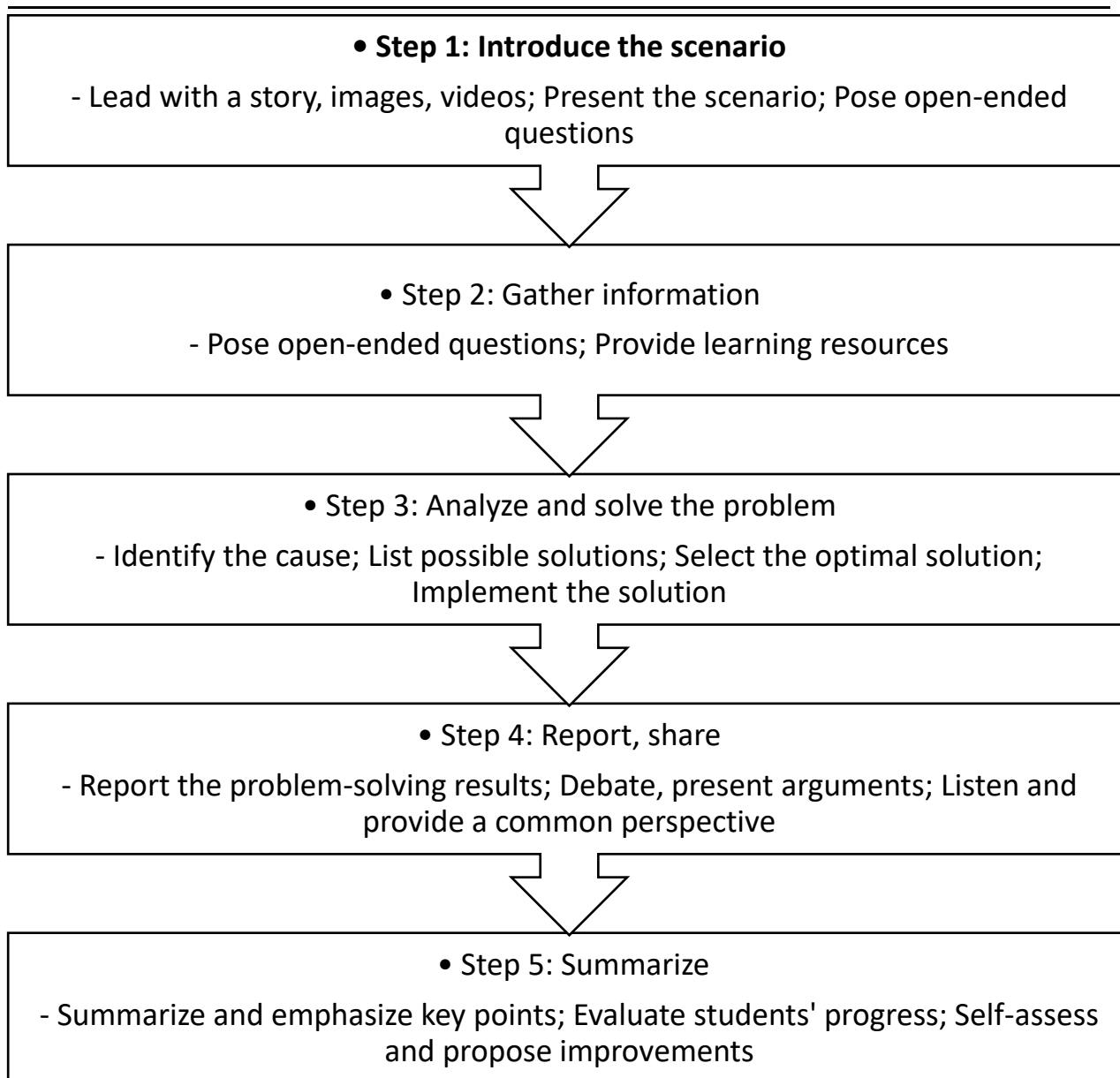

• Step 1: Introduce the scenario

- Lead with a story, images, videos; Present the scenario; Pose open-ended questions

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• Step 2: Gather information

- Pose open-ended questions; Provide learning resources

• Step 3: Analyze and solve the problem

- Identify the cause; List possible solutions; Select the optimal solution; Implement the solution

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• Step 4: Report, share

- Report the problem-solving results; Debate, present arguments; Listen and provide a common perspective

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• Step 5: Summarize

- Summarize and emphasize key points; Evaluate students' progress; Self-assess and propose improvements

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Diagram 3.2: Process of organizing teaching for elementary
school students based on problematic situatations

Step 1: Introduce a problematic situation related to the lesson.

This step not only helps students understand the issue but also sparks curiosity and active participation in the learning process. The significance of this is to create a space for discussion and reflection, helping students apply knowledge to real-life situations and develop problem-solving skills as well as social skills. Teachers should proceed by using means such as stories, images, or videos to illustrate the situation, making it vivid and relatable to students. Subsequently, teachers should clearly present the specific situation and pose open-ended questions to stimulate students' curiosity and exploration. This will encourage active student engagement in the learning process and provide them with opportunities to express their viewpoints and opinions.

Step 2: Organize students to gather information related to the lesson.

Information gathering plays a crucial role in helping students better understand the problematic situatation and develop analytical and evaluative skills to find solutions. The significance of this step is to provide students access to information, data, and diverse perspectives, enabling them to form their own opinions and propose appropriate solutions. To carry out this step, teachers need to pose open-ended questions and provide relevant learning materials related to the lesson for students if necessary. Teachers can guide students to seek information from reliable sources such as books, articles, websites, or even through conversations with experienced individuals. The information-gathering process should also facilitate student discussions and exchange of viewpoints, encouraging interaction and learning from diverse perspectives.

Step 3: Analyze and solve the problem related to the lesson.

This is a crucial stage that helps students gain a deeper understanding of the problematic situation and develop reasoning, analysis, and decision-making skills. The significance of this step is to provide students with the opportunity to apply learned knowledge to practical situations and develop problem-solving skills. The implementation of this step includes the following activities:

- Organize students to identify the cause: Guide students to determine the cause of the problem in the lesson's situation. This may require students to infer from the gathered information and identify factors influencing the application of knowledge and skills in the lesson.
- List possible solutions: Encourage students to propose various ideas and solutions to solve the problem. Additionally, teachers should guide students to consider the consequences and feasibility of each solution.
- Select the optimal solution: Support students in evaluating and comparing solutions to choose the most optimal approach based on criteria such as feasibility, effectiveness, and alignment with the lesson's requirements.
- Implement the solution: Encourage students to take specific actions to implement the chosen solution and monitor the outcomes of those actions.

Step 4: Report, and share about solving the problematic situation in the lesson.

Reporting and sharing about solving the problematic situation is an essential part of the learning process, helping students gain a better understanding of the problem-solving process and learn from their peers' experiences. The significance of this step is to provide students with the opportunity to present and share their viewpoints, as well as learn from different perspectives of their peers; Debate, present arguments; Listen, and provide a common perspective.

Step 5: Summarize the resolution of the problematic situation in the lesson.

Summarizing the resolution of the problematic situation plays a crucial role in the learning process, helping students draw experiences, learn from the problem-solving

process, and evaluate the results achieved. This step provides students with the opportunity to self-assess and evaluate their learning process, enabling them to identify and improve necessary aspects. Additionally, in this step, students have the opportunity to reinforce knowledge and skills learned by synthesizing and applying them to specific situations.

Example:

When teaching the lesson "Respecting others' property" to 4th-grade students, the teacher can use a problematic situation for practice, training ethical behavior by presenting the following situation: "Dung's pen broke while writing, he looked at Hoa's open pencil case, took one without asking Hoa's opinion. What do you think about Dung's action? Why?".

Using problematic situations for practice and training ethical behavior in the lesson above, the teacher can follow these steps:

Step 1: Analyze the situation: This situation involves Dung taking a pen from Hoa's pencil case without asking for Hoa's opinion.

Step 2: Gather information: Students need to understand Dung's actions and their impact on Hoa. Students also need to consider feasible solutions for this situation.

Step 3: Analyze and evaluate: Students need to analyze Dung's actions from an ethical perspective. Dung's actions can be examined to see if they reflect respect and sharing. Students also need to evaluate the impact of those actions on relationships with friends.

Step 4: Propose solutions: Students need to suggest feasible solutions to resolve this situation ethically. Solutions may include Dung apologizing to Hoa and offering to use her pen or asking for Hoa's opinion before taking the pen.

Step 5: Implement the solution: After proposing a solution, students need to apply that solution to a real-life situation. In this case, Dung can continue writing with his pen or apologize and return the pen to Hoa.

Step 6: Evaluate the results: Students need to evaluate the results of resolving this situation. Did Dung's actions create satisfaction and harmony with friends? Students also need to self-assess whether they applied the ethical behavior standards learned in the problem-solving process.

4. Conclusion

In this paper, we have delved into analyzing the process of designing problematic situations and using them in teaching at the elementary level in Vietnam. Through analysis, we have identified several crucial steps in the process of designing problematic situations. First, it is crucial to establish clear learning goals and precisely pinpoint the problem that requires attention. Next is to create a situation or a realistic and context-appropriate simulation that aligns with the educational context. Subsequently, we need to ensure that the designed situation reflects the complexity and multidimensionality of reality, providing students with opportunities to develop problem-solving skills and

critical thinking. Additionally, to use effectively problematic situations in elementary education, teachers need to create conditions for active student participation in the learning process. This way, students have the chance to practice problem-solving skills, interact with each other, and learn from their own and others' experiences. At the same time, teachers should act as guides and facilitators in this process, ensuring that the learning environment is conducive to encouraging the active participation and learning of all students.

Conflict of Interest Statement

We confirm that there are no conflicts of interest in this study. All data and results are presented accurately and honestly, without manipulation or distortion of information. This study was conducted for academic purposes without commercial purposes or personal gain.

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Dr. Hang Nguyen Thi Thu is a lecturer at Thai Nguyen University of Education in Vietnam. She obtained her PhD in Educational Theory and History from the Vietnam Institute of Educational Sciences in 2013. Dr. Hang is an author of textbooks for primary school students in Vietnam. Her primary research focuses on integrated teaching, STEM education for primary school students, and teacher training.

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References

[1]   K. M. Edens, "Preparing Problem Solvers for the 21st Century through Problem-Based Learning," *College Teaching*, vol. 48, no. 2, pp. 55–60, Apr. 2000, doi: 10.1080/87567550009595813.

[2]   Lecne I.Ia., *Problem-Based Learning*. Education Publishing House, 1977.

[3]   V.A. Crunchetxk, *The Foundations of Educational Psychology*. Education Publishing House, 1981.

[4]   M. Carvalho, S. Martins, M. J. Castro, E. Santos, and A. B. S. de Carvalho, "Informational Heritage and the Relation Between Information Science Museology: Information Professional Performance Projects," 2023, pp. 533–540. doi: 10.1007/978-981-99-0337-5_44.

[5]   S. Talja and J. M. Nyce, "The problem with problematic situations: Differences between practices, tasks, and situations as units of analysis," *Libr Inf Sci Res*, vol. 37, no. 1, pp. 61–67, Jan. 2015, doi: 10.1016/j.lisr.2014.06.005.

[6]   D. Margetson, "Current educational reform and the significance of problem-based learning," *Studies in Higher Education*, vol. 19, no. 1, pp. 5–19, Jan. 1994, doi: 10.1080/03075079412331382103.

[7]   V. L. G. G. J. N. G. R. Patel, "Effects of conventional and problem-based medical curricula on problem solving" *Academic Medicine*, vol. 60, no. 1, pp. 380–389, Jul. 1991.

[8]   D. E. Allen, R. S. Donham, and S. A. Bernhardt, "Problem-based learning," *New Directions for Teaching and Learning*, vol. 2011, no. 128, pp. 21–29, Dec. 2011, doi: 10.1002/tl.465.

[9]   H. B. White, "Dan Tries Problem-Based Learning: A Case Study," *To Improve the Academy*, vol. 15, no. 1, pp. 75–91, Jun. 1996, doi: 10.1002/j.2334-4822.1996.tb00303.x.

[10]   S. Edwards and M. Hammer, "Problem-based Learning in Early Childhood and Primary Pre-Service Teacher Education: Identifying the Issues and Examining the Benefits," *Australian Journal of Teacher Education*, vol. 32, no. 2, May 2007, doi: 10.14221/ajte.2007v32n2.3.

[11]   P., & H. I. Anderson, "Problem-based learning and the development of team skills in aviation studies," *Reflections on Problem-Based Learning*, pp. 319-345., 1994.

[12]   Schmidt H. G., "Foundations of problem-based learning: some explanatory notes," *Med Educ*, vol. 27, no. 5, pp. 422–432, Sep. 1993, doi: 10.1111/j.1365-2923.1993.tb00296.x.

[13]   Dr. N. Thi Thu Hang, B. T. Thanh Huyen, and T. Huyen, "Developing Scientific Competence for Primary School Students through Experiential Learning," *International Journal of Education and Social Science Research*, vol. 06, no. 03, pp. 01–09, 2023, doi: 10.37500/ijessr.2023.6301.

[14]   J. Burnham, D. Alvis Palma, and L. Whitehouse, "Learning as a context for differences and differences as a context for learning," *J Fam Ther*, vol. 30, no. 4, pp. 529–542, Nov. 2008, doi: 10.1111/j.1467-6427.2008.00436.x.

[15]   Ministry of Education and Training, "The General Education Program," 2018.