



The Implementation of the PBL Model in High and Low Grade Elementary Schools

Cosmas Poluakan¹(✉), Deetje Katuuk¹, Norma Monigir¹, Norita Ratulangi²,
Junus Brek³, and Agustin Dwi Paramitha⁴

¹ Manado State University, Tomohon, Indonesia
cosmaspoluakan@gmail.com

² Tondano State Elementary School, Tondano, Indonesia

³ Sawangan State Elementary School, Depok, Indonesia

⁴ Sukorejo State Elementary School, Semarang, Indonesia

Abstract. Research has been carried out with the aim of comparing the effectiveness of the implementation of the Problem Based Learning (PBL) learning model in elementary schools (SD). The use of PBL is a recommended model in the Professional Teacher Education Program, especially preparing professional teacher graduates to have 21st century competencies and skills. The PBL model used uses 5 phases, namely phase 1, problem orientation; phase 2, organizing students; phase 3, group discussion; phase 4, presenting the work; phase 5, evaluate the problem solving process. The study was conducted on two groups of elementary school students who became the place for the implementation of the Field Experience Practice, namely a group of high-grade elementary school students at Sawangan State Elementary School and a group of low-grade elementary school students at Sukorejo State Elementary School. The research was conducted with an experimental two-group pretest-posttest design method. The pretest and posttest instruments were validated by content and expert validation. The results of the data analysis of the average pretest for the low class and the high class, respectively, were 61 and 64.4. The results of processing the average posttest data for low and high grades, respectively, were 89.7 and 84. Using the N-gain score formula, the following results were obtained, N-gain = 55% for the Low-Grade Elementary School group and N-gain = 73.6% for the High-Grade Elementary School group. Based on the criteria for the percentage of N-gain scores, it is concluded that the implementation of PBL in elementary schools is categorized as effective, both for low-grade elementary schools and high-grade elementary schools. From the data analysis, there is no difference in the implementation of the PBL model in the low and high grades of elementary school. The recommendation from the research results is that the PBL model can be applied at all levels of elementary school classes.

Keywords: PBL · Elementary School · Low Grade · High Grade

1 Introduction

Learning in the 21st century demands the treatment of adaptive learning models that can improve students' skills to think critically, have high creativity, be able to collaborate,

© The Author(s) 2023

R. Harold Elby Sendouw et al. (Eds.): UNICSSH 2022, ASSEHR 698, pp. 688–692, 2023.

https://doi.org/10.2991/978-2-494069-35-0_85

have fluent communication skills and have compassion. The adaptive learning models referred to are innovative learning design models such as problem-based learning models, project-based learning models, discovery learning models and cooperative learning models. Observations made on relevant stakeholders such as school supervisors, principals, and teachers at Sawangan State Elementary School, Minahasa Regency, North Sulawesi and Sukerejo State Elementary School 4, Banyuwangi Regency, East Java, found some identification of learning problems in elementary schools. Identification of the problem in question includes the learning process where students are not motivated in teaching and learning activities, this is caused because students do not get the attention of teachers in teaching and learning activities. The learning method used by the teacher is monotonous, the teacher rarely uses innovative learning models, the teacher is lazy to update and follow self-development, the teacher does not want to follow the latest features related to the world of education. For the above purposes, a study was conducted that aims to compare the effectiveness of the implementation of the Problem Based Learning (PBL) learning model in elementary schools in the low class group and the high class group. The low grade group is grade 2 elementary school and the high grade group is grade five elementary school. The use of PBL is a recommended model in the Teacher Professional Education Program 1.1. Second Level Heading (Head 2).

First, confirm that you have the correct template for your paper size. This template has been tailored for output on the A4 paper size.

In this template, the “Styles” menu should be used to format your text if needed. Highlight the text you want to designate with a certain style, and then select the appropriate name on the Style menu. The style will adjust your fonts and line spacing. Use italics for emphasis; do not underline. To insert images in Word, position the cursor at the insertion point and either use Insert | Picture | From File or copy the image to the Windows clipboard.

2 Conceptual Framework

The Organization for Economic Co-operation and Development (OECD) has launched The Future of Education and Skills 2030 project. One of the programs emphasizes important factors in the learning process in the future, including collaboration with others and building strong important foundations such as literacy and numeracy. Then with the emergence of big data in the era of digital transformation, digital literacy and data literacy are increasingly needed. Another very important co-factor is physical and mental health [1]. UNESCO in a policy brief issued in August 2020, entitled Education during Covid-19 and beyond, highlighted the readiness of teachers and support for the teaching profession. It explained that it is important for teachers and communities to ensure better preparedness and support for fair and inclusive learning, inside and outside the classroom. Technology does not guarantee better learning outcomes, but it is even more important to ensure that teachers have the assessment and pedagogical skills to cater for students at their level and to implement accelerated curricula and different learning strategies that may emerge upon returning to school. Rather than training teachers in ICT skills, digital solutions require relevant content, adequate instructional models, effective teaching practices, and a supportive learning environment [2]. From a qualitative exploratory research dissertation study on the implementation of PBL in urban

elementary schools conducted by Vehia Goo (2020) it was found that there is a need for training that provides a clear understanding of PBL implementation and professional development models that build teacher capacity over time. It was found that neither training nor strategy would have any impact if it did not have a lasting effect on teacher practice after the training was completed. Soft skills such as communication, creativity, and collaboration must be part of the model if the training is to have a lasting effect and the results of this study suggest that the model needs to take into account adaptations that are acceptable to practice [3]. The PBL model basically integrates behavioristic, cognitive and constructivism learning theories. Learning as a change in behavior (behavioristic) is very visible when students are able to find solutions to problems encountered through research activities through worksheets in the group learning phase. This is in line with the view of the cognitive-constructivist theory that through the phases of learning the PBL model, students are encouraged to learn actively through deepening the material on working on worksheets, discovering and constructing knowledge and presenting the results of discussions in the class.

3 Method and Discussion

The research was conducted using the two group pretest-post design experimental method, with the learning treatment using a problem based learning (PBL) model. The research was conducted on two groups of elementary school students, namely the group of second grade elementary school students as low class and group of fifth grade elementary school students as high class. The research was conducted at Sawangan State Elementary School, Minahasa, North Sulawesi, with a sample of 15 students, and at Sukorejo State Elementary School, Banyuwangi, East Java, with a sample of 21 students. Data collection was carried out by students of the Professional Teacher Education Program in Manado State University in 2022 by Junus Brek at SDN Sawangan and by Agustin Dwi Paramitha at SDN 4 Sukorejo. The pre-test and post-test instruments were validated by experts and tutors. The mean values of the low and high grade pretests were 61 and 64.4, respectively, and the results of the processing of the low and high grade posttests, respectively, were 89.7 and 84. The data were analyzed using the N-gain score formula, with the percentage interpretation category, less than 40% not effective, between 40% to less than 55% less effective, between 55% to less than 75% effective and from 75% to 100% very effective. The results of data processing showed N-gain = 55% for the Low Grade Elementary School group and N-gain = 73.6% for the High Grade Elementary School group. Based on the above calculations, it is concluded that the implementation of PBL in elementary schools is categorized as effective, both for low-grade elementary schools and high-grade elementary schools.

Based on the N-gain score category, there was no difference between low-grade elementary school and high-grade elementary school and in the implementation of PBL, it was considered equally effective. However, the spectrum of the N-gain score shows that the implementation of PBL for the Low Grade Elementary School group tends to be in the less effective category and the PBL implementation of the High Grade Elementary School group tends to be in the very effective category. The results of the study showing that the implementation of PBL in elementary schools was categorized as effective in

accordance with the results of research conducted by Jailani (2017) which concluded that the implementation of PBL had been more effective in comparison to the expository one in terms of improving the students' HOTS [4]. PBL is a learning model that can encourage students to have social skills by working collaboratively, as stated by Argaw (2017) that PBL is a learning model that can improve students' academic achievement and can develop social skills through being active in group discussions and including independent learning exercises through working worksheets [5]. The application of innovative learning such as Problem Based Learning (PBL), Project Based Learning (PjBL) and Discovery Learning will trigger and motivate students to be more interested and diligent in conducting research, conducting in-depth studies of material so that students enjoy doing the learning activities undertaken. Sharon Dole (2017) reports the results of her research that the application of the PBL model makes students study diligently in mastering teaching materials more deeply than just completing the simple tasks given and even asking for additional study time because of the fun in completing the tasks given by the teacher. In such conditions, students who learn have reached the stage of being able to analyze, evaluate and produce or create something. The things mentioned above are referred to by Bloom-Anderson's humanistic learning theory as the achievement of higher order thinking skills (HOTS), and this is what Vygotsky's constructivism theory also calls the achievement of self-regulation by students in the learning process, namely being able to self-regulate to construct knowledge. Needed in finding solutions to the learning problems they face.

For small tables, please place it within a column and bigger table be placed in a text frame spanning to both columns. Use the Table facility available within the MSWord. The font in the row header should be bold and you can use the style available from the style palette.

4 Conclusion

The implementation of PBL in elementary schools is a necessity. The results show that the application of the PBL model in elementary schools can make learning effective regardless of the level of low and high grade elementary schools. Because the essence of learning is the activity of organizing information, perceptual reorganization, and internal processes and learning is not merely mechanistic, it is important to prioritize the freedom and active involvement of students in learning. This can be conditioned through the implementation of PBL in elementary schools.

Acknowledgments. Thank you to the Director General of Teachers and Education Personnel.

The Ministry of Education and Culture of the Republic of Indonesia which has funded the implementation of In-Service Teacher Professional Education. Thank you to the Rector of Manado State University for entrusting researchers to work at PPG Manado State University. Thank you to fellow lecturers and tutor teacher who have assisted in the implementation of the PPG program, and especially thanks to Junus Brek and Agustin Dwi Paramitha who have become research partners in carrying out research data collection tasks in their respective schools in their capacity as In-Service PPG students.

References

1. OECD, *The Future of Education and Skills – The Future We Want*, 2028
2. UNESCO, *Policy Brief: Education during Covid-19 and beyond*, UN August 2020
3. V. Goo, *Project-based Learning Implementation in Elementary School*. Walden Disertations and Doctoral Studies, Walden University, 2020
4. J. Jailani, S. Sugiman, E. Apino, Implementing the Problem-Based Learning in Order to Improve the Students' HOTS and Characters, *Jurnal Riset Pendidikan Matematika* 4 (2), 2017, 247-259
5. S.A. Argaw, B.B. Haile, B.T.A. Ayalew. The Effect of Problem Based Learning (PBL) Instruction on Students' Motivation and Problem Solving Skills of Physics, *EURASIA Journal of Mathematics Science and Technology Education* ISSN: 1305–8223 (online) 1305–8215 (print) 2017 13(3):857–871 <https://doi.org/10.12973/eurasia.2017.00647a>
6. S. Dole, L. Bloom, K. Doss. Engaged Learning: Impact of PBL and PjBL with Elementary and Middle Grade Students, *Interdisciplinary Journal of Problem-Based Learning* Volume 11 Issue 2 Article 9, Published online: 7–11–2017

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

