

The Impact of Problem Based Learning on Learning Outcomes in Nursing Students



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ABSTRACT: This study aims to determine the impact of problem-based learning on nursing student learning outcomes. The research method used is quasi-experimental by comparing the two groups, namely the group treated with problem-based learning and conventional learning. The research subjects were 7th semester nursing students, totaling 68 students who were divided into two groups, experiment with problem-based learning and control with conventional learning. Analysis of the data in this study by comparing learning outcomes in the two groups, experimental and control. The results of data analysis showed that students who were treated with problem-based learning obtained better learning outcomes compared to the control group or conventional learning. This research can be concluded that there is an impact of problem-based learning on nursing student learning outcomes.

KEYWORDS: Problem-based learning, Learning outcomes, Nursing, Critical thinking, Collaboration

I. INTRODUCTION

Learning outcomes are the most highlighted thing in learning, because learning outcomes are the goals or achievements of learning. Education and learning process are two things that cannot be separated because the goals of education can be achieved with a good learning process. So, learning can be interpreted as a situation or situation that can be planned in order to achieve the expected educational goals.

Learning outcomes are abilities possessed both in terms of knowledge (cognitive), attitudes (affective), and skills (psychomotor), all of which are obtained through teaching and learning process (Mappeasse, 2009). Learning outcomes are one of the indicators of the success of students in achieving the desired goals because each learning will undoubtedly shape learning outcomes (Sutrisno and Siswanto, 2016). Learning outcomes are focused on cognitive aspects which are influenced by the results of the pretest and posttest scores. Assessment of cognitive aspects of learning outcomes is an evaluation carried out by educators to measure the level of achievement or dominance of students in knowledge aspect which includes knowledge, understanding, application, analysis, evaluation, and creation.

Learning model is one of the important factors that have components and virtues to be considered so that a learning model can be implemented properly. These components include models and implementations (Hanum, 2013). One example of a learning model that can create a better learning process is using Problem Based Learning (PBL) (Liu et al., 2019), (Park and Choi, 2015), (Kek and Huijser, 2011). The Problem Based Learning (PBL) learning model is an example of active learning that can support creativity to share knowledge, improve independent learning skills, teamwork, problem solving skills and critical thinking skills (Hsu et al., 2016), (Lin et al. . , 2010).

Permatasari et al. (2019) suggested that PBL can be a way of learning that is more innovative, fun and challenging for students to form their own knowledge using problem solving as in real life. Each example of learning that is used to support and assist the learning process certainly has a very important impact on increasing the ability of each student (Faqiroh, 2020). Problem Based Learning is based on the results of Barrow and Tamblyn's research which was first implemented in a medical school at MC Master University in Canada in the 1960s. Problem Based Learning is an example of learning that uses concrete global problems as a context for students to learn about critical thinking and problem-solving skills, as well as to acquire essential knowledge and concepts based on course material or subject matter (Terry, Barret, 2005). PBL model can be interpreted as a series of learning activities that emphasize the process of solving problems faced scientifically.

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One other way that educators can do is empower students learning process by applying PBL learning model. PBL learning model is a fundamental example of constructivist understanding that accommodates the involvement of students in learning process and problem solving. Problem-based learning is a learning approach that presents a problem designed in a relevant context using the material to be studied to encourage students to gain knowledge and understanding of concepts (Malmia et al., 2019). Through PBL learning model, students get news and know the subject matter. Students can learn how to argue about solving problems at hand. Learners also learn to work individually and collaborate using groups on problem solving. Through PBL, students can discuss relevant problems professionally in small groups. The problem is discussed first before preparations have been made to initiate the students' initial knowledge (Dolmans et al., 2016).

In problem-based learning (PBL), students look for problems in learning to understand, structured problems and look for feasible solutions (Hmelo-Silver, 2004). Initially developed to improve problem solving and independent learning of students in medicine (Barrows and Tamblyn, 1980), PBL has expanded to various levels of education (K-12, undergraduate, and postgraduate) and various disciplines, ranging from language-based art to biology (Barrows and Tamblyn; 1998). The increase in the use of PBL is largely due to concrete evidence stating that PBL can improve deep content learning (Hmelo-Silver) and students' independent learning and problem-solving abilities.

II. METHODS

The research method used is quasi-experimental by comparing two groups, namely experimental and control. The experimental group is treated with problem-based learning, and the control group is treated with conventional learning or what is usually done by lecturers. The subjects of this study were nursing students in the 7th semester, totaling 68 students which were divided into two, namely 34 students in the experimental group and 34 in the control group. The data analysis technique used was to compare the learning outcomes of the two groups after the experimental activities.

III. RESULT AND DISCUSSION

The results of the study in table 1 show that the average of the experimental group (73.24) is better than the control group (61.91). The learning outcomes of nursing students taught by problem-based learning are better than those taught by conventional learning. Table 2, the t-test for Equality of Means shows a significance of 0.004 (<0.05) it can be concluded that there is a positive impact of problem-based learning on nursing student learning outcomes. Problem-based learning based on research by Malmia, et al. (2019) showed an increase in student learning outcomes. Learning using problem-based learning makes students more interested by responding positively and happily (Kawuri, Ishafit, & Fiyanto, 2019). The impact of problem-based learning on student understanding learning outcomes is because the learning emphasizes students and problem solving authentically or relevant to all knowledge from existing or owned sources (Timor, Ambiyar, Dakhi, Verawadina, & Zagoto, 2021).

Table 1. Group Statistics

| | Learning Outcomes | |
|-----------------|-------------------|---------|
| | Group | |
| | Experiment | Control |
| N | 34 | 34 |
| Mean | 73.24 | 61.91 |
| Std. Deviation | 15.901 | 15.571 |
| Std. Error Mean | 2.727 | 2.670 |

Problem-based learning in the process requires students to be active in extracting information from various sources and is impactful in facilitating argumentative skills so that students find concepts (Pratiwi, Cari, Aminah, & Affandy, 2019). With problem-based learning, nursing students actively build and reconstruct their knowledge by connecting concepts with the real world (Compton, Olirus Owilli, E. Norlin, & Murdoch, 2020). Students in teams during problem-based learning have the ability to manage related learning resources in building their understanding of the material being studied (Ghani, Rahim, Yusoff, & Hadie, 2021). Savery (2019) states that experience in problem solving, students gain new knowledge, adapt previous learning and build skills, and in implementation discuss the seven main design elements, namely a) challenging problems or questions, (b) continuous investigation, (c) authenticity, (d) student voice and choice, (e) reflection, (f) criticism and revision, and (g) public product. The choice of problem quality affects the group's function in problem-based learning which will have an impact on the length of time an individual learns leading to an increase in learning achievement (Yewa & KarenGohb, 2016).

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Table 2. Independent Samples Test for Problem-based Learning on Learning Outcomes

| | | Learning Outcomes | | |
|---|---|-------------------------|-----------------------------|--------|
| | | Equal variances assumed | Equal variances not assumed | |
| Levene's Test for Equality of Variances | F | .004 | | |
| | Sig. | .950 | | |
| t-test for Equality of Means | T | 2.967 | 2.967 | |
| | Df | 66 | 65.971 | |
| | Sig. (2-tailed) | .004 | .004 | |
| | Mean Difference | 11.324 | 11.324 | |
| | Std. Error Difference | 3.817 | 3.817 | |
| | 95% Confidence Interval of the Difference | Lower | 3.703 | 3.703 |
| | | Upper | 18.944 | 18.944 |

Problem-based learning encourages students to be better able to self-regulate, maintain activities, cognition, motivation and emotions to achieve goals (Wosinski, et al., 2017). The process of working in groups, developing students' clinical skills through collaborative sharing, comparing and debating. In small group work, students act more positively because the structure coincides with the tutorial process by helping students learn how to study in groups and learn how to anticipate, prevent, overcome, and deal with the difficulties they will face (Newman, 2005). Lecturers take on the role of facilitator helping groups build understanding and link concepts by providing information, directing exploration, strengthening understanding of difficult concepts, and introducing resources. In addition, the facilitator asks for a reflection on the group process and group results (Seibert, 2021). Problem-based learning helps students learn by discussing their knowledge and information in social groups by solving problems using higher-order thinking skills that result in positive developments in academic achievement (Inel & Balim, 2010).

IV. CONCLUSION

Problem-based learning in its application to nursing students has an impact on learning outcomes. In the application of problem-based learning, students are better able to regulate themselves, maintain activities, cognition, motivation and emotions to achieve goals. Students with this learning are able to manage learning resources to build their understanding of the material being studied. Interaction during the learning process in problem-based learning can improve the communication and social skills of nursing students which will benefit nursing practice.

REFERENCES

- 1) Albanese, M. A., & Mitchell, S. (1993). Problem-based learning: A review of literature on its outcomes and implementation issues. *Academic Medicine*, 68, 52–81.
- 2) Barret, Terry. (2005). Understanding Problem Based Learning. [online]. Tersedia: <http://> [22-03-2007].
- 3) Bloom, Benjamin S., etc. 1956. *Taxonomy of Educational Objectives : The Classification of*
- 4) Dolmans, D. H. J. M., Loyens, S. M. M., Marcq, H., dan Gijbels, D. (2016). Deep and surface learning in problem-based learning: a review of the literature. *Advances in Health Sciences Education*, 21(5), 1087–1112. <https://doi.org/10.1007/s10459-015-9645-6>
- 5) *Educational Goals, Handbook I Cognitive Domain*. New York : Longmans, Green and Co. Excel. San Francisco : Jossey-Bass Publishers.
- 6) Facilitator. In A. Walker, H. Leary, C. Hmelo-Silver, & P. A. Ertmer (Eds.), *Essential Readings in Problem-Based Learning: Exploring and Extending the Legacy of Howard S. Barrows*. Indiana: Purdue University Press
- 7) Facilitator. *Interdisciplinary Journal of Problem-Based Learning*, 1(1). <https://doi.org/10.7771/1541-5015.1004>
- 8) Faqiroh, B. Z. (2020). Problem-Based Learning Model for Junior High School in Indonesia (2010-2019). *IJCETS* 8 (1) (2020): 42-48.
- 9) Ghani, A. S., Rahim, A. F., Yusoff, M. S., & Hadie, S. N. (2021). Impactive Learning Behavior in Problem-Based Learning: a Scoping Review. *Medical Science Educator*, 1199–1211.
- 10) Gibbons, M. (2002). *The Self-Directed Learning Handbook: Challenging Adolescent Student to*

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- 11) H.J. Yewa, E., & KarenGohb. (2016). Problem-Based Learning: An Overview of its Process and Impact on Learning. *Health Professions Education*, 75-79.
- 12) Hanum, N. S. (2013). Keefektifan E-Learning Sebagai Media Pembelajaran (Studi Evaluasi Model Pembelajaran E-Learning Smk Telkom Sandhy Putra Purwokerto). *Jurnal Pendidikan Vokasi*, 3(1), 90–102. <https://doi.org/10.21831/jpv.v3i1.1584>
- 13) Hanum, N. S. (2013). Keefektifan E-Learning Sebagai Media Pembelajaran (Studi Evaluasi Model Pembelajaran E-Learning Smk Telkom Sandhy Putra Purwokerto). *Jurnal Pendidikan Vokasi*, 3(1), 90–102. <https://doi.org/10.21831/jpv.v3i1.1584>
- 14) Hmelo-Silver, C. E., & Barrows, H. S. (2006). Goals and Strategies of a Problem-based Learning
- 15) Hmelo-Silver, C. E., & Barrows, H. S. (2015). Goals and Strategies of a Problem-based Learning
- 16) Hsu, C., Yen, S., dan Lai, W. (2016). The Impact Of Problem-Based Learning On Learning Outcomes Of Accounting Students. *Asian Journal Of Finance dan Accounting*, 8(2), 135. <https://doi.org/10.5296/Ajfa.V8i2.9917>
- 17) Inel, D., & Balim, A. G. (2010). The impacts of using problem-based learning in science and technology teaching upon students' academic achievement and levels of structuring concepts. *Asia-Pacific Forum on Science Learning and Teaching*, 1-23.
- 18) Kawuri, M. Y., Ishafit, & Fayanto, S. (2019). Efforts To Improve The Learning Activity And Learning Outcomes of Physics Students With Using A Problem-Based Learning Model. *IJIS Edu : Indonesian J. Integr. Sci. Education*, 1(2), 105-114.
- 19) Kek, M. Y. C. A., dan Huijser, H. (2011). The Power Of Problem-Based Learning In Developing Critical Thinking Skills: Preparing Students For Tomorrow's Digital Futures In Today's Classrooms. *Higher Education Research dan Development*, 30(3), 329–341. <https://doi.org/10.1080/07294360.2010.501074>
- 20) Lin, C.-F., Lu, M.-S., Chung, C.-C., dan Yang, C.-M. (2010). A Comparison Of Problem-Based Learning And Conventional Teaching In Nursing Ethics Education. *Nursing Ethics*, 17(3), 373–382. <https://doi.org/10.1177/0969733009355380>
- 21) Liu, L., Du, X., Zhang, Z., dan Zhou, J. (2019). Impact Of Problem-Based Learning In Pharmacology Education: A Meta-Analysis. *Studies In Educational Evaluation*, 60, 43–58. <https://doi.org/10.1016/j.stueduc.2018.11.004>
- 22) M. Compton, R., OlirusOwilli, A., E.Norlin, E., & Murdoch, N. L. (2020). Does problem-based learning in Nursing Education Empower Learning? *Nurse Education in Practice*, 1-3.
- 23) Malmia, W., Makatita, S. H., Lisaholit, S., Azwan, A., Magfirah, I., Tinggapi, H., dan Umanailo, M. C. B. (2019). Problem-based learning as an effort to improve student learning outcomes. *International Journal of Scientific and Technology Research*, 8(9), 1140–1143. <https://doi.org/10.5281/zenodo.3457426>
- 24) Malmia, W., Makatita, S. H., Lisaholit, S., Azwan, A., Magfirah, I., Tinggapi, H., & Umanailo, M. C. (2019). Problem-Based Learning As An Effort To Improve Student Learning Outcomes. *TERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH*, 8(9), 1140-1143.
- 25) Mapeasse, M. Y. (2009). Pengaruh cara dan motivasi belajar terhadap hasil belajar programmable logic controller (PLC) peserta didik kelas III jurusan listrik SMK negeri 5 Makassar. *Jurnal Medtek*, 1(2), 1-6.
- 26) Newman, M. J. (2005). Problem Based Learning: An Introduction and Overview of the Key Features of the Approach . *Journal of Veterinary Medical Education*, 12-20.
- 27) Park, S., dan Choi, S. (2015). Impacts Of Problem-Based Learning On The Learning Atti-Tudes, Critical Thinking Disposition And Problem-Solving Skills Of Nursing Students: Infant Care. 192–196. <https://doi.org/10.14257/Astl.2015.103.41>
- 28) Permatasari, B. D., Gunarhadi & Riyadi (2019). The influence of problem-based learning towards social science learning outcomes viewed from learning interest. *International Journal of Evaluation and Research in Education (IJERE)* Vol. 8, No. 1, March 2019, pp. 39~46 ISSN: 2252-8822, DOI: 10.11591/ijere.v8.i1.pp39-46.
- 29) Pratiwi, S. N., Cari, C., Aminah, N. S., & Affandy, H. (2019). Problem-Based Learning with Argumentation Skills to Improve Students' Concept Understanding. *Journal of Physics*, 1-8.
- 30) Savery, J. R. (2019). Comparative Pedagogical Models of Problem-Based Learning. In M. Moallem, W. Hung, & N. Dabbagh, *The Wiley Handbook of Problem-Based Learning* (pp. 81–104). New Jersey: Wiley-Blackwell.
- 31) Seibert, S. A. (2021). Problem-based learning: A strategy to foster generation Z's critical thinking and perseverance. *Teach Learn Nurs*, 85–88.
- 32) Sutrisno, V. L. P., dan B. T. Peserta didiknto. 2016. Faktor-Faktor yang Mempengaruhi Hasil Belajar Peserta didik pada Pembelajaran Praktik Kelistrikan Otomotif SMK di Kota Yogyakarta. *Jurnal Pendidikan Vokasi*. 6(1): 111-120.

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- 33) Timor, A. R., Ambiyar, Dakhi, O., Verawadina, U., & Zagoto, M. M. (2021). Impactiveness of problem-based model learning on learning outcomes and student learning motivation in basic electronic subjects. *INTERNATIONAL JOURNAL OF MULTI SCIENCE*, 1(10), 1-8.
- 34) Wosinski, J., Belcher, A. E., Dürrenberger, Y., Allin, A.-C., Stormacq, C., & Gerson, L. (2017). Facilitating problem-based learning among undergraduate nursing students: A qualitative systematic review. *Nurse Education Today*, 67-74



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