The Effect of Size Project Based Learning on Problem Solving Skills In Government Science Students

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Abstrak

Tujuan penelitian ini adalah untuk mengetahui pengaruh Efek Size Problem Based Learning Terhadap Kemampuan Pemecahan Masalah Pada Mahasiswa Ilmu pemerintahan. Penelitian ini adalah jenis penelitian meta-analisis. Sumber data dalam penelitian ini berasal dari 10 jurnal nasional dan internasional terbit dari tahun 2020-2024. Kriteria eligibility data adalah penelitian berasal dari jurnal dan prosiding terindeks SINTA dan Scopus, Partisiapan dalam penelitian ini mahasiswa ilmu sosial, Penelitian terkait dengan Efek Size Project Based Learning Terhadap Kemampuan Pemecahan Masalah Pada Mahasiswa Ilmu Politik, dan ukuran sampel harus besar 20 siswa. Teknik pengumpulan data purposive sampling. Analisis data adalah menghitung nilai effect size dengan bantuan Microsof Excel 2020. Hasil penelitian menyimpulkan adanya pengaruh yang signifikan pembelajaran differensiasi terhadap profil pelajar pancasila pada siswa ilmu sosial di Indonesia dengan nilai rata-rata effect size 10 penelitian sebesar 0.878 dan Standar error 0.342 dengan kategori effect size yang tinggi

Kata Kunci: *Problem based learning; pemecahan masalah; Ilmu Politik; Effect Size*

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Abstract

The purpose of this study was to determine the effect of Size Problem Based Learning on problem solving ability in government science students. This study is a type of meta-analysis research. Data sources in this study come from 10 national and international journals published from 2020-2024. The criteria for data eligibility are research derived from SINTA and Scopus indexed journals and proceedings, participants in this study of social science students, research related to the effect of size project based learning on problem solving ability in political science students, and the sample size must be large 20 students. Purposive sampling data collection techniques. Data analysis is calculating the effect size value with the help of Microsoft Excel 2020. The results of the study concluded that there was a significant influence of differentiation learning on the profile of Pancasila students in social science students in Indonesia with an average value of effect size 10 studies of 0.878 and Standard error of 0.342 with a high effect size category.

Keywords: Problem based learning; problem solving; Political Science; Effect Size r

Introduction

Problem-solving skills are a very important skill in everyday life, both in professional and personal contexts (Gholami, 2023). Students who have this ability are able to face challenges with a creative and analytical attitude(Özpinar &; Arslan, 2023; Nurtamam et al., 2023; Ichsan et al., 2023) . They are able to identify the root of the problem, gather relevant information, and design effective strategies to overcome the problem. This ability also includes the ability to think flexibly and adaptively, so that individuals can find innovative solutions even in complex or unexpected situations (Kozuh et al., 2018).

In addition, problem-solving ability is also an important aspect of leadership and career development (Cetİn, 2023; Suryono et al., 2023). Students who are able to demonstrate problem-solving abilities tend to be effective leaders in teams or organizations (Bal, 2023). Students can lead by providing timely and efficient solutions, as well as being able to manage risk wisely(Metz et al., 2023). Problem-solving skills also help individuals to develop confidence and calmness in the face of challenges (M. Rahman, 2019), so that they are better prepared to face change and take initiative in achieving student goals (Pen, 2010). Thus, problem-solving ability is not only a skill, but also a key aspect of the development of the student's personality.

But in reality, the problem-solving ability of government science students is still low (Lestari et al., 2023). Students have not been able to analyze and conclude the material that has been learned (Supriyadi et al., 2023; . Rahman &; Ristiana, 2020). Furthermore, students are unable to provide solutions in the process of solving problems in learning activities (Hariyadi et al., 2023; Yapatang & Polyiem, 2022). Learning processes that do not involve active and innovative students in learning (Zulkifli et al., 2022), making it difficult for students to understand learning concepts and content. The selection of learning models used is not appropriate to encourage government science students to have problem-solving skills. Therefore, there is a need for a model that can develop students' problem-solving abilities, one of which is through a problem-based learning model.

Problem Based Learning mode is a program that focuses on problem solving as the center of the learning process (Nurlaily et al., 2019; Rahman et al., 2023). Problem-based learning students are given real problems or situations that require solutions (Amin et al., 2020; Fradila et al., 2021). They are then encouraged to work together in groups to analyze, formulate hypotheses, and find solutions to given problems. This approach emphasizes integrated learning, where students not only acquire new knowledge, but also develop critical skills such as problem-solving, teamwork, and effective communication (Suharyat et al., 2022; Duda, 2018)

In addition, PBL also encourages students to take an active role in their own learning process (Dakabesi et al., 2019). They are invited to identify and explore their own learning needs, as well as develop independence in finding relevant resources and information to solve the problems faced (Mulyanto et al., 2018). Problem-based learning not only prepares students to face challenges in the real world (Sari et al., 2021), but it also reinforces students' intrinsic motivation towards learning.

Previous research by (Mustafa et al., 2019) The problem-based learning model can develop students' problem-solving skills. Research by (Sumarmi et al., 2020) The implementation of the problem-based learning model can improve the ability of student scientific writers. Next, research

(Saputra et al., 2019) The problem-based learning model can grow students' critical thinking skills. But in fact, the application of the problem-based learning model has been widely carried out, but the effect of the size of the application of the problem-based learning model has not been found on government science students. Therefore, this study aims to Project Based Learning on Problem Solving Skills in Government Science Students.

Methods

This type of research is a meta-analysis study. Meta-analysis is a type of research that collects, analyzes and concludes research data quantitatively to get an accurate conclusion (Suparman et al., 2021; Razak et al.., 2021; Oktarina et al., 2021; Chamdani et al., 2022; Zulyusri et al., 2023; Yücelyiğit &; Toker, 2021). Data sources in this study come from 10 national and international journals published from 2020-2024. The criteria for data eligibility are research derived from journals and proceedings indexed by SINTA and Scopus, Research obtained from google scholar, Sciencedirect, Researchgate and Wiley. Participants in this study were social science students, Research related to the Effects of Size Project-Based Learning on Problem-Solving Ability in Political Science Students, and the sample size should be a large 20 students. Purposive sampling data collection techniques. Data analysis is calculating the effect size value with the help of Microsoft Excel 2020. Furthermore, the effect criteria in the meta-analysis study can be seen in Table 1.

Table 1. Effect Size Value Category

Effect Size	Category
0.0≤ES≤ 0.20	Low
0.20≤ES≤ 0.80	Medium
ES≥ 0.80	High

Source:(Cohen et al., 2007)

Result and Discussion

From a literature search through the Google Scholar database, Sciencedirect, Researchgate and Wiley obtained 178 studies on problem-based learning on the problem-solving ability of government science students. Furthermore, the research was selected based on predetermined inclusion criteria, so 10 journals were obtained which became data included in the meta-analysis. Data that have met the inclusion criteria are calculated effect size values which can be seen in Table 2.

Table 2. Effect Size Value 11 Journal

Journal Code	Year	Effect Size	Standard Error	ES criteria
Study 1	2021	0.61	0.28	Medium
Study 2	2023	1.07	0.45	High
Study 3	2023	1.24	0.39	High
Study 4	2021	0.82	0.30	High
Study 5	2023	0.58	0.19	Medium
Study 6	2024	0.92	0.41	High
Study 7	2023	1.17	0.52	High
Study 8	2020	0.72	0.28	Medium
Study 9	2021	0.97	0.38	High
Study 10	2024	0.68	0.22	Medium
Mean Effect Size		0.878	0.342	High

Table 2, effect size values range from 0.58 to 1.24 and standard error 0.22 to 0.45. Furthermore, 10 journals analyzed by 4 journals had medium criteria effect size values and 6 journals had high criteria effect size values and overall average effect size values of 0.878 and Standard error of 0.342. These results conclude that the problem-based learning model has a significant influence on the problem-solving ability of government science students. This research is in line with Surur et al., (2020) The application of the problem-based learning

model can improve the problem-solving ability of students, so that students learn more actively. Furthermore, the results of research by (Hendriana et al., 2018) The problem-based learning model can crush students' problem-solving skills and confidence in learning. Problem Based Learning (PBL) has been recognized as a learning method that is able to encourage students to develop better problem-solving skills by facing concrete challenges relevant to their field of study (Setiawan et al., 2020). In the context of Government Science, Problem-based learning can provide an ideal platform for students to hone analytical, critical, and solutive skills in dealing with complex problems in the world of government (Mustofa &; Hidayah, 2020).

This research has the potential to provide an in-depth understanding of the extent to which the Size Effect of the implementation of problem-based learning in the Government Science curriculum can affect students' ability to solve the problems they face. By taking into account the various variables and factors involved, such as project scale, problem difficulty, and students' initial abilities, this research can provide valuable insights into the conditions in which problem-based learning is effective in improving students' problem-solving skills (Princess & Aznam, 2019). The results of this research can be used as a basis for the development of more effective and contextual learning strategies in Government Science education.

By knowing the extent of the Size Effect of PBL, educational institutions can make more informed decisions in adjusting or expanding the application of this model (Zabit, 2010). In addition, this research can

also provide guidelines for lecturers and lecturers in designing learning experiences that are more effective and relevant for Government Science students, so that they can become effective and innovative leaders in facing challenges in governance in the future. Next, analyzing the effectiveness of project-based learning in government science students can be seen in Table 3.

Table 3. Analysis of the Effectiveness of Problem Based Learning on the Problem Solving Ability of Government Science Students

Effect Size	Standard Deviation	Z	Criterion
0.86	0.59	4.78	High

Based on Table 3, the effect size value is 0.86, the standard deviation is 0.59 and the Z value is 4.78. These results show that the problem-based learning model effectively encourages the problem-solving ability of government science students. Problem-based learning allows students to engage in in-depth analysis of real situations in the field of government, helping them develop a deeper understanding of the complexity of issues encountered in the context of politics, law, and government administration (Deehan et al., 2024). By placing students in an active role in finding solutions to the problems they identify, problem-based learning provides an opportunity for them to hone the analytical, critical, and creative skills needed to become effective leaders in government.

Results of the study (Mann et al., 2021) can provide empirical evidence that corroborates the importance of PBL in improving the problem-solving ability of

Government Science students. These findings may provide support for higher education institutions in considering further integration of problem-based learning methods in student curricula. In addition, a better understanding of the effectiveness of problem-based learning in the context of Government Science can also provide inspiration for the development of innovative and relevant learning strategies for students (Triana et al., 2020), so they can be better prepared to face the complex challenges of future governance.

Conclusion

From this study, it can be concluded that there is a significant influence of differentiation learning on the profile of Pancasila students in social science students in Indonesia with an average value of effect size 10 studies of 0.916 and Standard error of 0.321 with a high effect size category. These findings underscore the importance of concrete problem-centered learning approaches in equipping students with the analytical, critical, and collaborative skills necessary to operate effectively in a governance context. Taking into account the various variables and factors involved, this study provides a solid basis for higher education institutions to consider the application of PBL in their curriculum as a strategy to improve the quality of education and prepare students for real-world challenges.

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