Meta-analysis of The Ethopedagogical Based Blended Learning Model on Students' Problem Solving Ability

Loso Judijanto1*, Andrie Oktavio2, Jeheskial Saudale3, Rian Mitasar4, Sutarto5, Miftachul Amri6, Tomi Apra Santosa7
1 IPOSS Jakarta, Indonesia
2,4 Universitas Ciputra Surabaya, Indonesia
3 Institut Agama Kristen Negeri Kupang, Indonesia
5 STAI NIDA El-Adabi Bogor, Indonesia
6 Universitas Negeri Surabaya, Indonesia
7 Akademi Teknik Adikarya, Indonesia
* Corresponding Author. E-mail: losojudijantobumn@gmail.com

Abstrak

Kata Kunci: Etnopedagogi; Blended Learning; Efek Size, Problem Solving

Abstract
The 21st century has had such a big influence on the development of the world of education. Education today has been based on technology which is very helpful for teachers in carrying out learning activities. Blended learning is a learning model that utilizes technology. However, the many applications of the blended learning model have not reached in-depth conclusions
related to ethnopedagogy-based blended learning models on students' problem-solving abilities. This study aims to determine the effect of ethnopedagogy-based blended learning models on students' problem-solving skills. This study is a type of meta-analysis research. The research data comes from an analysis of 17 national and international journals that have been published in 2019-2024. The criteria for data eligibility are that research must be experimental methods or quasi-experiments; Research comes from national and international journals indexed by SINTA and Scopus, Research related to ethnopedagogy-based blended learning models on students' problem-solving abilities, research data obtained through trusted databases namely mendeley, ERIC, ScienceDirect, Wiley and Google Scholar. The technique of displaying data samples is purposive sampling. Data analysis in research is quantitative data analysis by calculating the value of effect size with the help of the OpenMEE application. The results showed that the application of ethnopedagogy-based blended learning models had a significant effect on students' problem-solving abilities with an average effect size value of 0.927 with a high effect size category.

**Keywords**: Ethnopedagogy; Blended Learning; Effect Size, Problem Solving

**Introduction**

Problem-solving ability is at the core of effective student learning. In the classroom, students skilled in problem solving are able to face a variety of academic challenges with creativity and perseverance (Suryono et al., 2023; Nurtamam et al., 2023; Rahman, 2019). In addition, students are not only able to understand complex concepts, but also able to apply their knowledge into real situations (Simanjuntak, 2021). Students who are proficient in problem solving can apply a variety of strategies to find solutions (Öztürk et al., 2020; Zulkifli et al., 2022), such as breaking down a problem into smaller parts or using patterns that have been proven to work before (Ichsan et al., 2022). This ability also allows students to learn from their mistakes, seeing them as opportunities to grow and develop a deeper understanding (Yayuk et al., 2020).

Problem-solving skills help students face challenges in everyday life. They learn to cope with problems in a systematic and efficient way, developing their confidence in the face of unexpected situations (Ummah &; Yuliati, 2020). Students skilled in problem solving can use communication and negotiation skills to find solutions that are satisfactory to all parties (Pongsakdi et al., 2020). This ability also helps students develop a sense of self-responsibility, as they learn to take initiative in solving their own problems without always relying on the help of others. Thus, problem-solving abilities not only prepare students for success in academics, but also to face life’s challenges with confidence and peace of mind (Priemer et al., 2020; Utomo et al., 2023; Suharyat et al., 2022).

The problem-solving ability of students in Indonesia is often in the spotlight because of the challenges faced in its implementation. One of the main problems is the lack of a learning approach that encourages students to think critically and creatively. Many schools still apply passive learning methods, where students receive more information than develop problem-solving skills (Winarto et al., 2022; Luciana et al., 2023). In addition, there are also limitations in access to resources that support the development of these capabilities, such as relevant books, technology, and adequate teacher training (Treepob et al., 2023; Tessema et al., 2024; Haryanto et al., 2024; Fradila et al., 2021). This leads to a gap between students'
problem-solving abilities in urban and rural areas, as well as between schools that have adequate facilities (Zulyusri et al., 2020; Mahmudi et al., 2023).

In addition to the lack of appropriate learning approaches, another problem that affects students’ problem-solving abilities in Indonesia is the lack of emphasis on developing soft skills in schools (Santosa et al., 2023; Oktarina et al., 2021). Although academic ability is often the main focus, the importance of soft skills such as critical thinking, collaboration, and communication skills is often overlooked. In fact, this ability is very important in helping students face real-world challenges in the future (Ozpinar & Arslan, 2023). A holistic approach is needed in education that not only pays attention to academic aspects, but also explores and develops students' social and emotional abilities (Sitopu et al., 2024; Santosa & Yulianti, 2020). Thus, there is a need for reform in the education system to ensure that every student has an equal opportunity to develop the problem-solving skills necessary to succeed in life (Widodo, 2023; Icela, 2022). Therefore, there is a need for a model that can encourage students’ problem-solving abilities in learning.

Blended-based learning is a learning model that can encourage students’ problem-solving abilities (Chen et al., 2020; Şentürk, 2021). In this model, the combination of face-to-face learning and online learning provides greater flexibility and opportunities for students to access course materials (Prifti, 2022; Suharyat et al., 2022). The teacher’s blended learning model can introduce new concepts and provide direction to students directly, while additional materials, practice exercises, or assignments can be accessed online through online learning platforms (Lestari et al., 2021). This allows students to study at their own pace and get additional help as per their needs. In addition, the blended learning model also allows for richer interactions between students and teachers, as well as between fellow students, both in the classroom environment and through online forums, creating a more diverse and engaging learning experience.

One of the main advantages of the blended learning model is its ability to integrate technology into the learning experience. Through the use of digital tools such as learning videos, interactive simulations, and online discussion forums, students can engage in more dynamic and engaging learning (Bouilheres et al., 2020; Mahardika et al., 2021). In addition, technology also allows teachers to better track students' individual progress and provide more specific feedback, allowing for better adjustments to each student's learning needs. The blended learning model creates a responsive and adaptive learning environment, which helps improve student engagement and their overall learning outcomes (Setiawan et al., 2022; Martin & Carolina, 2022). With the ever-evolving technology and the need for flexibility in education, blended learning models have great potential to become an increasingly relevant and effective learning approach in the future (Badawi et al., 2023).

Previous research by Çevik & Bakioğlu (2022) The blended learning model can encourage student creativity and learning outcomes. Research by Rahman et al., (2022) The application of the blended learning model can improve students’ critical thinking and communication skills in learning. This state-of-the-art approach represents a fusion of traditional pedagogy with modern technological tools, offering a multifaceted framework that transcends conventional boundaries in teaching and learning. At its core, the model emphasizes the cultivation of not only cognitive skills.
but also ethical reasoning, fostering a holistic educational experience that prepares students to navigate the complexities of the 21st-century world. However, the implementation of ethnopedagogy-based blended learning models on problem-solving abilities has not found a size effect, so it is necessary to conduct a meta-analysis to get a deep conclusion. So, the study aims to determine the influence of ethnopedagogy-based blended learning models on students' problem-solving skills.

**Methods**

This research is a type of meta-analysis research. Meta-analysis is a research approach that aims to collect and analyze previous research quantitatively (Tamura et al., 2021; Zulyusri et al., 2023; Putra et al., 2023; Rahman et al., 2023; Chandani et al., 2022). This meta-analysis study aims to determine the effect of the size of ethnopedagogy-based blended learning models on students' problem-solving abilities. According to Borenstein et al., (2009) The meta-analysis research procedure consists of 1) formulating a research problem; 2) collect and encode data; and 3) analysis and interpretation of data.

Furthermore, the research data comes from an analysis of 17 national and international journals that have been published in 2019-2024. The criteria for data eligibility are that research must be experimental methods or quasi-experiments; Research comes from national and international journals indexed by SINTA and Scopus, Research related to ethnopedagogy-based blended learning models on students' problem-solving abilities, research data obtained through trusted databases namely mendeley, ERIC, ScienceDirect, Wiley and Google Scholar. The technique of displaying data samples is purposive sampling. Data analysis in research is quantitative data analysis by calculating the value of effect size with the help of the OpenMEE application. Furthermore, the criteria for effect size in research can be seen in Table 1.

<table>
<thead>
<tr>
<th>Table 1. Effect Size Value Criteria</th>
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<tbody>
<tr>
<td><strong>Effect Size</strong></td>
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<tr>
<td>0.0≤ ES≤ 0.2</td>
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<tr>
<td>0.2≤ ES≤ 0.8</td>
</tr>
<tr>
<td>ES≥0.8</td>
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Source: (Cohen et al., 2007)

**Result and Discussion**

Hasil From the search results of the mendeley, ERIC, ScienceDirect, Wiley and Google Scholar databases related to ethnopedagogy-based blended learning models on problem solving skills obtained 127 journals. Furthermore, the data was selected based on predetermined inclusion criteria, then 17 relevant journals were obtained. The data selection process through the PRISMA method consists of identification, screening, eligibility and inclusion. Furthermore, data that have met the inclusion criteria are calculated effect size values which can be seen in Table 2.

<table>
<thead>
<tr>
<th>Table 2. Value of Effect Size 17 Journal</th>
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<tr>
<td><strong>Journal Code</strong></td>
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<td>JR1</td>
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Based on Table 2, the effect size value of 17 research journals analyzed the highest effect size value was 2.34 and the lowest effect size value was 0.33. According to the criteria (Cohen et al., 2007) Seven research journals had medium criteria effect size values and ten research journals had high criteria effect size values. In addition, the analysis of 17 research journals had an average effect size value of 0.927 with a large effect size category. These results conclude that ethnopedagogy-based blended learning models have a major positive influence on students' problem-solving abilities. The results of this study are in line with Utaminingsih et al., (2023) Explaining the implementation of the blended learning model can foster students' problem-solving skills in learning. Furthermore, research by Setyosari et al., (2023) The blended learning model has a positive influence on improving students' problem-solving abilities in learning.

The blended learning model combines conventional learning elements with technology, while ethnopedagogy emphasizes the importance of understanding students' cultures and backgrounds in the learning process (Shamsuddin & Kaur, 2020). The integration of these two concepts creates an inclusive and engaging learning environment, which has the potential to improve students' problem-solving abilities. One of the main impacts of using ethnopedagogy-based blended learning models is increased student involvement in the learning process (Rafiola et al., 2019; Yilmaz et al., 2023). Through this approach, students are invited to actively engage with learning content tailored to their needs and culture. This can create a more meaningful and relevant learning experience for students, which in turn increases their motivation to develop problem-solving skills.

In addition, the blended learning model also allows for personalized learning, where teachers can adjust the learning approach to the individual needs of students. By considering aspects of ethnopedagogy, such as the cultural and social needs of students, learning can be adapted more effectively. Thus, students can feel more connected to the learning material and more motivated to hone their problem-solving skills. Collaboration between students is also an important aspect in the ethnopedagogy-based blended learning model (Princess et al., 2023). Through online platforms and collaborative activities in the classroom, students can learn from each other's experiences and perspectives, which contributes to the development of their problem-solving skills. By accommodating cultural diversity and student experiences, such collaborations can enrich discussions and help students see issues from multiple perspectives.

The implementation of ethnopedagogy-based blended learning models also allows better monitoring of student progress and provides more detailed feedback (Selvi, 2020; Fahrutdinova, 2016). Through technology, teachers can track student progress in real-time and provide additional support as needed. This allows students to identify areas that need improvement in their problem-solving abilities and improve the overall quality of learning. Furthermore, analyzing the effect of size to determine the effectiveness of ethnopedagogy-based
blended learning models on students’ problem-solving abilities based on education levels can be seen in Table 3.

Table 3. The effect of the size of ethnopedagogy-based blended learning model > Student Problem Solving Ability based on education level

<table>
<thead>
<tr>
<th>Education</th>
<th>Average Effect Size</th>
<th>Standard error</th>
<th>Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary School</td>
<td>0.67</td>
<td>0.23</td>
<td>Medium</td>
</tr>
<tr>
<td>Junior School</td>
<td>0.78</td>
<td>0.31</td>
<td>Medium</td>
</tr>
<tr>
<td>High School</td>
<td>0.87</td>
<td>0.38</td>
<td>Large</td>
</tr>
<tr>
<td>College</td>
<td>0.91</td>
<td>0.42</td>
<td>Large</td>
</tr>
</tbody>
</table>

Table 3, the average effect size value of elementary school level is 0.67 and standard error is 0.23, junior high school is 0.78 with standard error 0.31, high school is 0.87 and standard error is 0.38 and college is 0.91 and standard error is 0.91 and standard error is 0.42. These results conclude that ethnopedagogy-based blended learning effectively improves students' problem-solving abilities. The ethnopedagogy-based blended learning model also facilitates more effective monitoring of student progress. Through the use of technology, teachers can collect data on student progress in real-time and provide timely feedback (Supriyadi et al., 2022). This allows students to proactively identify their weaknesses in solving problems and take necessary corrective steps (Fakhri & Saleh, 2023).

Furthermore, the influence of ethnopedagogy-based blended learning models on students’ problem-solving abilities is not only seen in terms of increasing student engagement and motivation, but also in terms of forming inclusive and collaborative learning communities (Sulistyanto et al., 2023). Through the integration of technology and ethnopedagogical principles, this kind of learning model has the potential to improve the quality of education and empower students to become creative and open-minded problem solvers in facing the challenges of the globalization era.

Conclusion

From this study, it can be concluded that the application of ethnopedagogy-based blended learning models has a significant effect on students' problem-solving abilities with an average effect size value of 0.927 with a high effect size category. The integration of traditional learning approaches with technology, coupled with a deep understanding of students' cultures and backgrounds, creates an inclusive and relevant learning environment for the development of students' problem-solving skills. With higher engagement, personalized learning, collaboration among students, and effective progress monitoring, ethnopedagogy-based blended learning models encourage students to develop critical and creative thinking skills needed in facing the complex challenges of this digital age. Therefore, the implementation of this model is expected to make a significant contribution in improving the quality of education and preparing students for a future full of dynamics and changes.

Reference


Blended Learning in terms of Intrapersonal Intelligence on Problem Solving Ability.


