

## THE EFFECTIVENESS OF IMPLEMENTING THE STUDENT CENTERED LEARNING (SCL) METHOD IN THE TEACHING PROCESS IN HIGHER EDUCATION: A QUALITATIVE DESCRIPTIVE STUDY

Andi Mardiana Paduppai<sup>1</sup>, Vika Septianika Fridayanti<sup>2</sup>, Mochamad Nashrullah<sup>3</sup>

<sup>1,2</sup>University Muhammadiyah Sidoarjo, <sup>3</sup>Surabaya State University, Indonesia

Email : [andimardiana@umsida.ac.id](mailto:andimardiana@umsida.ac.id)<sup>1</sup>, [vikaseptianika@gmail.com](mailto:vikaseptianika@gmail.com)<sup>2</sup>,  
[24010976006@mhs.unesa.ac.id](mailto:24010976006@mhs.unesa.ac.id)<sup>3</sup>

### ABSTRACT

In response to the growing demand for graduates equipped with 21st-century skills, higher education is increasingly transitioning from the traditional Teacher-Centered Learning (TCL) paradigm to a Student-Centered Learning (SCL) approach. This study focuses on evaluating the effectiveness of the SCL method's implementation within an Indonesian university, specifically aiming to describe its impact on students' conceptual understanding, intrinsic motivation, and active engagement. A qualitative descriptive methodology was employed, gathering data from 100 second-semester students and 10 lecturers in an Elementary School Teacher Education program. The primary instruments included an online questionnaire for students, interviews with lecturers, and direct classroom observations, with data analyzed using the Miles and Huberman interactive model and verified through triangulation. The findings overwhelmingly demonstrate the method's success; for instance, 76.6% of students reported better conceptual understanding, 78.6% felt more motivated to study independently, and 80% affirmed that the lecturer's facilitator role enhanced their critical thinking skills. It is concluded that while challenges such as student dependency and varying lecturer readiness persist, the SCL approach effectively creates an interactive and relevant learning experience that successfully fosters key competencies like independence and critical problem-solving.

**Keywords:** *Student-Centered Learning, Teaching Management, Lecturer-Centered Learning, Learning Effectiveness, Descriptive Qualitative Method.*

### ABSTRAK

Menanggapi meningkatnya permintaan lulusan yang dibekali keterampilan abad ke-21, pendidikan tinggi semakin beralih dari paradigma Pembelajaran Berpusat pada Guru (PBL) tradisional ke pendekatan Pembelajaran Berpusat pada Siswa (PBL). Studi ini berfokus pada evaluasi efektivitas implementasi metode PBL di universitas di Indonesia, khususnya untuk menggambarkan dampaknya terhadap pemahaman konseptual, motivasi intrinsik, dan keterlibatan aktif mahasiswa. Metodologi deskriptif kualitatif digunakan, mengumpulkan data dari 100 mahasiswa semester dua dan 10 dosen di program Pendidikan Guru Sekolah Dasar. Instrumen utama meliputi kuesioner daring untuk mahasiswa, wawancara dengan dosen, dan observasi langsung di kelas, dengan data dianalisis menggunakan model interaktif Miles dan Huberman dan diverifikasi melalui triangulasi. Temuan ini secara meyakinkan menunjukkan keberhasilan metode tersebut; misalnya, 76,6% mahasiswa melaporkan pemahaman konseptual yang lebih baik, 78,6% merasa lebih termotivasi untuk belajar mandiri, dan 80% menyatakan bahwa peran dosen sebagai fasilitator meningkatkan keterampilan berpikir kritis mereka. Disimpulkan bahwa meskipun tantangan seperti ketergantungan mahasiswa dan kesiapan dosen yang bervariasi masih ada, pendekatan SCL secara efektif menciptakan pengalaman belajar yang interaktif dan relevan yang berhasil menumbuhkan kompetensi utama seperti kemandirian dan pemecahan masalah kritis.

**Kata Kunci:** *Pembelajaran yang Berpusat pada Mahasiswa, Manajemen Pengajaran, Pembelajaran yang Berpusat pada Dosen, Efektivitas Pembelajaran, Metode Kualitatif Deskriptif.*

## INTRODUCTION

Higher education institutions bear a significant responsibility for preparing graduates who are not only knowledgeable but also adaptable and equipped with essential 21st-century skills. The rapid evolution of the global workplace and the increasing demand for complex competencies necessitate a fundamental transformation in the traditional learning process. In response to these challenges, a pedagogical shift towards Student-Centered Learning (SCL) has been identified as a highly relevant and effective approach. This educational model strategically positions students as active stakeholders and primary agents in their own learning journey, rather than passive recipients of information. By doing so, SCL aims to cultivate crucial attributes such as independence, critical thinking, and creative problem-solving abilities. This paradigm shift is no longer a mere option but a strategic imperative for universities seeking to produce graduates who can thrive in and contribute to an ever-changing world, ensuring that the educational experience is both meaningful and impactful for future professional and personal success.

The ideal of Student-Centered Learning is strongly supported by a growing body of empirical evidence. A comprehensive meta-analysis conducted by Bernard (2021) demonstrated that educational practices rooted in the SCL model yield significantly higher academic achievement compared to traditional instructor-centered models. However, the gap between this ideal and its practical implementation presents a considerable challenge. Research by Trinidad (2020) reveals that while SCL can substantially boost student engagement, its application within higher education is often fraught with difficulties. These obstacles include a fundamental disconnect in perceptions between lecturers and students regarding their respective roles, a lack of readiness among students to manage their learning autonomously, and insufficient institutional support structures. This discrepancy highlights a critical tension: although the potential benefits of SCL are well-documented, overcoming the systemic and cultural barriers to its effective implementation remains a significant hurdle for educational institutions worldwide, demanding a more nuanced and supportive approach to this pedagogical transformation.

In the Indonesian context, the implementation of Student-Centered Learning encounters a unique set of social and cultural challenges that differentiate it from the experiences in many developed nations. The transition from a more hierarchical educational culture to one that promotes student autonomy requires careful consideration of local norms and expectations. A study by Andriyani (2014) found that the success of SCL in Indonesia is not solely dependent on a well-designed lesson plan but is heavily influenced by the lecturer's readiness and ability to transition from a traditional instructor to a skilled facilitator who actively encourages classroom interaction. This finding underscores the reality that a simple adoption of SCL methodologies is insufficient. Achieving the full potential of this approach necessitates a synergistic and collaborative effort involving well-prepared students, adaptable lecturers, and a supportive institutional framework. Without this alignment, the risk of a superficial or failed implementation remains high, hindering the development of essential student competencies.

Given these complex conditions, a significant gap exists in the understanding of how Student-Centered Learning functions within the specific context of Indonesian higher education. While the global benefits are acknowledged, local challenges necessitate a focused investigation. This study, therefore, aims to describe and analyze the effectiveness of SCL as it

is currently applied in the teaching and learning processes at the tertiary level in Indonesia. The primary objective is to identify the specific factors and conditions that either support or hinder its successful implementation. Through this in-depth understanding, it is anticipated that more adaptive and contextually appropriate strategies can be developed. The ultimate goal is to find ways to optimize the SCL approach in a manner that aligns with the unique characteristics of Indonesian students and the prevailing learning environments in its higher education institutions, thereby bridging the gap between pedagogical theory and practical, effective application.

To achieve the goal of producing graduates equipped with higher-order skills, the learning paradigm in higher education must decisively shift from the traditional Teacher-Centered Learning (TCL) model to the more dynamic Student-Centered Learning (SCL) approach. SCL fundamentally redefines the educational landscape by positioning students as the primary subjects who are actively and meaningfully engaged in constructing their own knowledge. In this framework, the role of the educator is transformed into that of a facilitator who guides, supports, and cultivates a collaborative and inquiry-driven learning environment (Alfina, 2022). This approach moves beyond mere knowledge transmission and instead focuses on developing competencies such as critical thinking, complex problem-solving, and the capacity for lifelong, independent learning. By empowering students to take ownership of their educational journey, SCL directly addresses the demands of the modern world and prepares them for future challenges far more effectively than traditional, passive learning methods.

The SCL approach is operationalized through a diverse array of active learning strategies designed to maximize student engagement and foster deep, meaningful learning. These strategies include collaborative methods like brainstorming, group discussions, and seminars; experiential learning through simulations and role-playing; and problem-based learning via case studies and workshops (Anastassis, 2023). These models are intentionally designed to increase student participation, cultivate intrinsic motivation, and develop competencies that are directly relevant to real-world situations. The efficacy of these methods is well-supported by research. For instance, a meta-analysis by Anastassis (2023) demonstrated that the application of active learning methods in higher education significantly increases student learning outcomes by a standard deviation of 0.489 compared to conventional passive methods. This robust evidence underscores the superiority of active, student-centered approaches in achieving desired educational outcomes and preparing students for future success.

Of course. Here is the text developed into two distinct paragraphs with enriched detail and academic language:

The innovation of this research lies in its specific focus on providing a comprehensive, data-driven evaluation of Student-Centered Learning (SCL) implementation within the unique context of Indonesian higher education. While a significant body of previous studies has acknowledged the general challenges associated with this pedagogical shift, much of the existing literature offers descriptive accounts of barriers without empirically isolating the factors that determine success. This study aims to fill that critical gap by systematically analyzing the complex interplay between three core variables: the facilitation skills possessed by lecturers, the cognitive and motivational readiness of students for autonomous learning, and the level of tangible institutional support provided. Research by scholars such as Alfina (2022) and Sadaf (2023) indicates that while the lecturer's role is influential, it is not solely decisive, strongly suggesting that other systemic factors are at play. Therefore, this study pioneers an integrative model to analyze how these variables collectively and interactively shape the

effectiveness of SCL, moving beyond siloed analysis to present a holistic understanding of the implementation landscape.

Consequently, the findings of this investigation are expected to yield significant practical and strategic contributions for educational policy and practice in Indonesia. By moving beyond theoretical discourse, the research will provide actionable, evidence-based recommendations tailored to help institutions formulate targeted strategies. These will include precise guidelines for developing faculty training programs focused on cultivating facilitation rather than traditional lecturing, frameworks for curriculum redesign that embed inquiry-based and project-based learning, and clear proposals for supportive institutional policies. Such policies may involve revising evaluation metrics for teaching effectiveness and allocating resources to foster collaborative learning environments. Ultimately, this research aims to equip university leaders and policymakers with a strategic roadmap to not only overcome implementation hurdles but also to foster a sustainable academic culture that successfully transitions to a student-centered paradigm, thereby enhancing the overall quality of education and cultivating graduates with the critical thinking and lifelong learning skills required for the future.

## **RESEARCH METHODS**

This study was designed using a qualitative descriptive approach to provide a comprehensive and detailed account of the implementation of student-centered learning (SCL) within a higher education context. The methodology was selected to facilitate a deep, contextual understanding of the phenomenon from the perspectives of both students and lecturers, rather than for statistical hypothesis testing. The research was conducted within the Elementary School Teacher Education (PGSD) study program at the University of Muhammadiyah Sidoarjo. Participants included 100 second-semester students and 10 lecturers. Students were selected through purposive sampling, based on the rationale that they possessed foundational experience with university-level instruction but were still in the initial stages of adapting to SCL methodologies, thus providing valuable insights into the transition process. The university environment was deemed appropriate for this study due to its inherent support for the active and varied learning models that characterize the SCL approach, allowing for a rich exploration of its practical application and effectiveness in the field.

Data collection was conducted between July 15-22, 2025, following a multi-method strategy to ensure a robust and triangulated dataset. The process commenced with formal coordination with the study program to secure research permissions. The primary instrument was a questionnaire distributed to students via Google Forms, which incorporated both open and closed questions to capture quantitative and qualitative insights into participation levels, perceptions of the lecturer's role, and the impact of SCL on motivation. This instrument underwent a content feasibility test to ensure its validity. To supplement this data, semi-structured interviews were conducted with lecturers to explore their views on SCL's effectiveness, implementation challenges, and strategic approaches. Additionally, direct, non-participatory observations of classroom teaching and learning activities were performed to gather authentic data on the interactional dynamics between lecturers and students, thereby enriching the findings from the questionnaires and interviews with real-world contextual evidence.

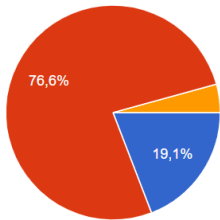
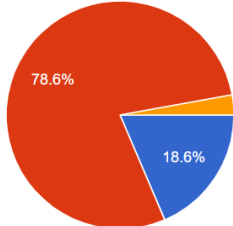
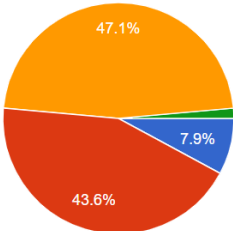
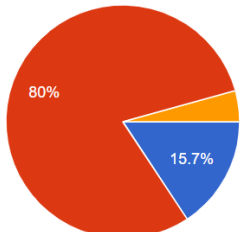
The analysis of the collected data followed the interactive model proposed by Miles, MB, & Huberman, which involves three concurrent stages: data reduction, data display, and conclusion drawing. Initially, data reduction was performed to select, focus, and simplify the information gathered from questionnaires, interviews, and observations. Subsequently, the

organized data was presented in a structured narrative form to facilitate pattern recognition. To ensure the trustworthiness of the findings, several verification techniques were employed. Source triangulation was achieved by cross-referencing data from different sources, such as comparing observation notes with student questionnaire responses. Technical triangulation was applied by using multiple data collection methods to confirm emerging themes. Furthermore, a member-checking process was conducted by clarifying interpretations with selected respondents to ensure the final analysis accurately reflected their lived experiences, thereby maintaining the validity and credibility of the research conclusions.

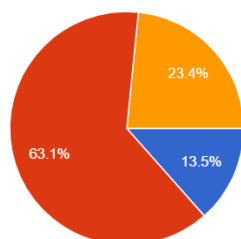
## RESULTS AND DISCUSSION

### Research result

**Table 1. Student Perceptions of Student-Centered Learning (SCL)**

Picture	Information
	<p><b>76.6% of students</b> agreed <u>that</u> they understood learning concepts better because they were actively involved in group discussion processes and collaborative activities in class.</p> <p><b>19.1% of students</b> strongly <u>agree</u></p> <p><b>4.3% of students</b> <u>disagreed</u></p>
	<p><b>78.6% of students</b> <u>agree</u> more motivated to study independently outside of lecture hours.</p> <p><b>18.6% of students</b> strongly <u>agree</u></p> <p><b>2.8% of students</b> <u>disagreed</u></p>
	<p><b>47.1% of students</b> <u>disagree</u> have sufficient opportunity to express opinions and ask questions during learning activities.</p> <p><b>43.6% of students</b> <u>agree</u></p> <p><b>7.9% of students</b> strongly <u>agree</u></p> <p><b>1.4% of students</b> strongly <u>disagree</u></p>
	<p><b>80% of students</b> feel <u>agree</u> The role of the lecturer as a facilitator in SCL helps develop critical thinking and problem-solving skills.</p> <p><b>15.7% of students</b> strongly <u>agree</u></p> <p><b>4.3 students</b> <u>disagreed</u></p>

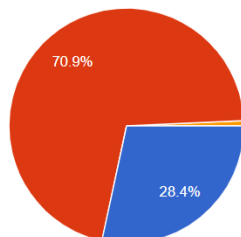




**63.1% of students** agreed that they were more confident in completing assignments.

**23.4% of students** disagreed

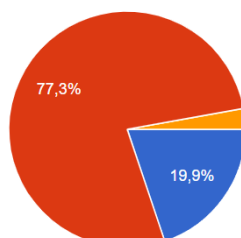
**13.5% of students** strongly agree



**70.9% of students** agree more valued and encouraged to take initiative in learning in the SCL classroom environment.

**28.4% of students** strongly agree

**0.7% of students** disagreed



**77.3% of students** agreed because they were helped to relate lecture material to real situations or problems that exist in the world of work/society.

**19.9% of students** strongly agree

**2.8% of students** disagreed

Table 1 research results show that the implementation of student-centered learning (SCL) brings significant positive changes to the way students interact, understand the material, and view the learning process itself. Students involved in SCL learning reported that they had more space to actively participate, whether in the form of discussions, presentations, or group problem-solving. They felt more valued as subjects of learning and not just recipients of information. These findings also revealed that students were able to develop a deeper understanding of the material, because learning did not only focus on memorizing concepts, but also on direct involvement through activities that stimulate critical thinking and collaboration.

Furthermore, many students reported that this approach encouraged them to be more independent in their learning. They became accustomed to seeking additional references, expressing their opinions, and asking critical questions. This demonstrated an increase in intrinsic motivation stemming from a sense of ownership in the learning process itself. Furthermore, the lecturer's role as a facilitator was seen as helping create a more conducive classroom atmosphere. Lecturers more frequently provided guidance that encouraged students to find their own answers, rather than simply providing solutions.

When compared with the percentage data obtained from the research questionnaire, it appears that the majority of students agreed or strongly agreed that SCL helped them better understand learning concepts, feel motivated, have the opportunity to express their opinions, and are able to relate the material to real-life situations. The high level of student agreement on these aspects strengthens the evidence that SCL provides a more meaningful learning experience. This percentage data also shows that most students feel more confident and valued when learning takes place using the SCL approach, which means this method has created a supportive learning environment.

## **Discussion**

The findings of this study provide compelling evidence that the implementation of Student-Centered Learning (SCL) significantly enhances student motivation, active engagement, and conceptual understanding within the higher education context. The high percentage of students affirming that SCL facilitates active discussions, fosters independent learning, and develops critical thinking skills underscores the successful achievement of its primary pedagogical goals. This outcome strongly reinforces the argument that shifting from traditional, lecturer-dominated paradigms to more student-driven approaches is a strategic and effective method for cultivating learners who are independent, collaborative, and oriented towards deep conceptual mastery. The data clearly indicates that students not only perceive the method favorably but also recognize its direct impact on their ability to achieve expected learning competencies. This confirmation is crucial, as it validates SCL not merely as a methodological alternative but as a foundational strategy for aligning university-level education with the demands of the 21st century, which prioritize autonomy, critical inquiry, and proactive engagement in the learning process (Lumatauw et al., 2020).

This research aligns seamlessly with contemporary educational theories and empirical findings that advocate for student-centered approaches. The observed increase in long-term learning motivation corresponds with research by Liang (2024), which posits that granting students greater control over their learning journey transforms their perception of education from a mere obligation into an opportunity for genuine self-development. Similarly, the effectiveness of SCL in creating more meaningful and contextually relevant learning experiences, as highlighted by the students in this study, directly addresses the weaknesses of traditional methods, a point emphasized by Wang (2023). By situating learning within real-world problems and scenarios, SCL bridges the gap between abstract theory and practical application, making the educational experience more impactful and memorable for students. This synergy between our findings and the existing literature strengthens the case for a broader adoption of SCL as a means to foster a more profound and lasting engagement with academic material across various disciplines (Meer et al., 2023; Soubra et al., 2022).

Furthermore, the positive impact of SCL on academic achievement observed in this study is consistent with the robust conclusions drawn from extensive meta-analyses. Research conducted by Anastassis (2023) and Sadaf (2023) has demonstrated that active learning methodologies consistently yield superior academic outcomes when compared to conventional lecture-based instruction. In our specific context, students did not only exhibit a better grasp of the subject matter but were also more adept at connecting theoretical concepts to tangible, real-world problems relevant to their future professions. This capacity for application is a hallmark of deep learning and indicates that SCL successfully cultivates higher-order thinking skills. It demonstrates that the SCL approach is far more than a simple alternative; it is a powerful strategic framework for developing the critical, analytical, and collaborative competencies that are indispensable for success in today's complex and rapidly evolving professional landscapes (Rehman et al., 2023; Salsabila et al., 2025).

The quantitative data collected provides a granular view of SCL's success, revealing a high degree of consensus among students regarding its benefits. The overwhelming agreement across indicators—such as the facilitation of active discussions, increased motivation for independent study, and the development of critical thinking—paints a clear picture of a pedagogical model that resonates deeply with the student body. This widespread positive assessment suggests that the implementation of SCL at the institution has effectively created a learning environment where students feel empowered and engaged. The results reinforce the notion that when students are given the agency to explore, question, and collaborate, they are

more likely to take ownership of their education. The success reflected in these percentages is a testament to the potential of SCL to not only meet but exceed educational objectives, fostering a vibrant academic culture centered on inquiry, collaboration, and profound conceptual understanding (Mangiri & Prabawanto, 2024; Soubra et al., 2022).

Despite the overwhelmingly positive results, the implementation of a Student-Centered Learning model is not without its inherent challenges. A notable observation from this study is the persistent tendency of some students to rely on lecturers for direction, indicating a lack of initiative that may stem from years of conditioning within more traditional, passive learning environments. This highlights a critical need for a cultural shift in learning and requires ongoing institutional support and development to ensure the optimal and sustainable implementation of SCL. Furthermore, the success of this pedagogical approach is heavily contingent upon the capabilities of the academic staff. Lecturers must transition from being dispensers of information to becoming skilled facilitators of learning. This requires continuous professional development focused on creating supportive, inquiry-based learning environments and guiding students effectively without dominating the intellectual space, a skill set that is fundamentally different from that required for traditional lecturing.

The broader implications of this research for higher education are significant, confirming that SCL is a potent strategy for cultivating the core competencies required in the modern era. By providing students with greater autonomy and responsibility in managing their own learning pathways, SCL directly addresses the pressing need for graduates who are not only knowledgeable but also independent, creative, and adept at problem-solving. The findings strongly suggest that institutions of higher learning should consider a more systemic integration of SCL principles across their curricula to better prepare students for the complexities of the contemporary workforce. The supportive percentage data further solidifies this conclusion, as the majority of respondents explicitly stated that the SCL method was instrumental in helping them achieve the desired learning outcomes. This serves as a powerful endorsement for educational leaders and policymakers to champion and invest in the widespread adoption of student-centered pedagogical models (Lee et al., 2021; Toifur et al., 2025; Uzmi et al., 2023).

While this study provides valuable insights into the effectiveness of SCL, it is important to acknowledge its limitations. The research was conducted within a specific institutional context, which may limit the generalizability of the findings to other universities with different student demographics, cultural norms, or resource availability. Additionally, the data was collected through self-report measures, which, while useful, may be subject to response bias. Future research should aim to address these limitations by employing a multi-institutional, comparative approach to explore how SCL implementation varies across different educational settings. A longitudinal study tracking a cohort of students over several years could also provide deeper insights into the long-term effects of SCL on academic performance, career trajectories, and lifelong learning habits. Furthermore, incorporating observational data and qualitative methods, such as in-depth interviews, would offer a more nuanced and holistic understanding of the student experience within an SCL framework.

## **CONCLUSION**

This study convincingly demonstrates that the implementation of Student-Centered Learning (SCL) significantly improves student motivation, active engagement, and conceptual understanding. Quantitative data demonstrates a high percentage of student agreement, recognizing that SCL facilitates active discussions, encourages independent learning, and develops critical thinking skills. This success confirms that shifting from the traditional lecturer-centered paradigm to a student-driven approach is a highly effective strategy. These findings

Copyright (c) 2025 EDUCATIONAL : Jurnal Inovasi Pendidikan & Pengajaran



align with various contemporary educational theories and previous research, which suggest that providing student autonomy can transform their perceptions of education and create more meaningful learning experiences. By bridging the gap between abstract theory and practical application, SCL has been shown to foster in-depth conceptual mastery relevant to the demands of the 21st century.

Despite the overwhelmingly positive results, the implementation of SCL is not without challenges. One observed obstacle is the tendency of some students to remain dependent on lecturers' guidance, indicating a lingering habit of passive learning. Furthermore, the success of SCL depends heavily on the lecturer's ability to transition from a role as a transmitter of information to a skilled learning facilitator, a shift that requires ongoing professional development. The implications of this research are significant, providing strong justification for higher education institutions to integrate SCL principles more systemically. While this study has limitations due to its conduct in a single institutional context, its findings provide strong support for educational leaders to invest in student-centered pedagogical models to prepare independent, creative, and problem-solving graduates.

## REFERENCE

- Alfina. (2022). The effectiveness of lecturers as facilitators in the student center learning method. *Journal of Information Technology Education (J-Diteksi)*, 2(2), 24–27. <https://doi.org/10.30604/diteksi.v2i1.1124>
- Anastassis. (2023). Effect of active learning versus traditional lecturing on the learning achievement of college students in humanities and social sciences: A meta-analysis. *Higher Education*, 86(6), 1377–1394. <https://doi.org/10.1007/s10734-022-00977-8>
- Andriyani. (2014). Implementation of the Al-Islam and Muhammadiyah Curriculum (AIK) through the Student Centered Learning (SCL) model in the Medical Education Study Program, Faculty of Medicine and Health, Muhammadiyah University of Jakarta. *Ta'dibuna: Journal of Islamic Education*, 3(2), 141. <https://doi.org/10.32832/tadibuna.v3i2.591>
- Bahrudin. (2019). Implementation of student-centered learning-based learning approach. *Pro Patria: Journal of Education, Citizenship, Law, Social, and Politics*, 2(1), 59–71. <https://doi.org/10.47080/propatria.v2i1.493>
- Bernard. (2021). A meta-analysis of teacher and student-centered practices and processes in undergraduate science education. *Journal of Higher Education Theory and Practice*, 21(10), 178–197. <https://doi.org/10.33423/jhetp.v21i10.4633>
- Kurniawan. (2018). Student-centered learning in higher education: A review at UIN Sunan Kalijaga Yogyakarta. *Lentera Pendidikan: Journal of Education and Teacher Training*, 21(1), 1–11. <https://doi.org/10.24252/lp.2018v21n1i1>
- Lee, D., et al. (2021). Differences in personalized learning practice and technology use in high- and low-performing learner-centered schools in the United States. *Educational Technology Research and Development*, 69(2), 1221. <https://doi.org/10.1007/s11423-021-09937-y>
- Liang, W. (2024). The effects of student-centered teaching methods on the motivation of English language learning. *Communications in Humanities Research*, 32(1), 78–83. <https://doi.org/10.54254/2753-7064/32/20240018>
- Lumatauw, L., et al. (2020). Application of Student Centered Learning (SCL) method through discovery strategies in vocational educations. *Open Journal of Social Sciences*, 8(11), 82. <https://doi.org/10.4236/jss.2020.811008>

- Mangiri, G. R. P., & Prabawanto, S. (2024). Meaningful learning: A problem-based learning approach to arithmetic sequences and series. *Proceedings of International Conference on Multidisciplinary Research*, 7(1), 20. <https://doi.org/10.32672/picmr.v7i1.2184>
- Meer, N. van der, et al. (2023). Virtual reality and collaborative learning: A systematic literature review. *Frontiers in Virtual Reality*, 4. <https://doi.org/10.3389/frvir.2023.1159905>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Sage Publications.
- Rehman, N., et al. (2023). Fostering twenty-first century skills among primary school students through math project-based learning. *Humanities and Social Sciences Communications*, 10(1). <https://doi.org/10.1057/s41599-023-01914-5>
- Sadaf. (2023). *Effectiveness of teacher-centered approach on student learning at university level*. [Publication information missing].
- Salsabila, A., et al. (2025). Berpikir induktif sebagai dasar kompetensi sikap kritis bagi peserta didik generasi millennial abad 21. *CENDEKIA Jurnal Ilmu Pengetahuan*, 5(1), 264. <https://doi.org/10.51878/cendekia.v5i1.4465>
- Sarnoto. (2023). Analysis of the influence of the Student Center Learning model on learning outcomes: A literature review study. *Journal of Education and Entrepreneurship*, 11(2), 615–628. <https://doi.org/10.47668/pkwu.v11i2.828>
- Soubra, L., et al. (2022). Impacts on student learning and skills and implementation challenges of two student-centered learning methods applied in online education. *Sustainability*, 14(15), 9625. <https://doi.org/10.3390/su14159625>
- Toifur, I., et al. (2025). The effectiveness of problem based learning model and learning style on mathematical creative thinking ability of students of SMA Negeri 1 Salaman Magelang. *SCIENCE Jurnal Inovasi Pendidikan Matematika Dan IPA*, 5(3), 1137. <https://doi.org/10.51878/science.v5i3.5673>
- Trinidad. (2020). Understanding student-centred learning in higher education: Students' and teachers' perceptions, challenges, and cognitive gaps. *Journal of Further and Higher Education*, 44(8), 1013–1023. <https://doi.org/10.1080/0309877X.2019.1636214>
- Uzmi, A. H., et al. (2023). Developing English interactive learning media based on Android by using Articulate Storyline 3 apps. *ELP (Journal of English Language Pedagogy)*, 8(2), 168. <https://doi.org/10.36665/elp.v8i2.746>
- Wang, L. (2023). The impact of student-centered learning on academic motivation and achievement: A comparative research between traditional instruction and student-centered approach. *Journal of Education, Humanities and Social Sciences*, 22, 346–353. <https://doi.org/10.54097/ehss.v22i.12463>