

CONTEMPORARY PEDAGOGICAL STUDIES: ACTIVE LEARNING AND STUDENT-CENTERED LEARNING IN THE PERSPECTIVE OF 21ST-CENTURY EDUCATION

Dewi Sriwahyuni¹, Taat Wulandari^{2*}

^{1,2}Universitas Negeri Yogyakarta

*Corresponding author: taat_wulandari@uny.ac.id

Abstrak

Perkembangan pendidikan abad ke-21 menuntut adanya transformasi paradigma pembelajaran dari pendekatan yang berpusat pada guru (*teacher-centered learning*) menuju pembelajaran yang berpusat pada peserta didik (*student-centered learning*). Salah satu pendekatan yang dianggap relevan dalam menjawab tuntutan tersebut adalah pembelajaran aktif (*active learning*), yang menempatkan peserta didik sebagai subjek utama dalam proses pembelajaran. Artikel ini bertujuan untuk mengkaji konsep pembelajaran aktif dan *student-centered learning* dalam perspektif pedagogik kontemporer serta menganalisis relevansinya terhadap kebutuhan pendidikan abad ke-21. Penelitian ini menggunakan metode studi kepustakaan (*library research*) dengan menganalisis berbagai sumber ilmiah berupa buku, artikel jurnal, dan dokumen pendidikan yang relevan. Hasil kajian menunjukkan bahwa pembelajaran aktif dan *student-centered learning* memiliki peran penting dalam mengembangkan keterampilan berpikir kritis, kreativitas, komunikasi, kolaborasi, serta kemampuan pemecahan masalah yang dibutuhkan pada abad ke-21. Selain itu, kedua pendekatan tersebut mampu meningkatkan motivasi belajar, keterlibatan peserta didik, dan kualitas hasil pembelajaran. Implikasi kajian ini menunjukkan bahwa penerapan pembelajaran aktif dan *student-centered learning* perlu terus diperkuat melalui pengembangan kompetensi guru, inovasi strategi pembelajaran, dan pemanfaatan teknologi pendidikan yang efektif.

Kata kunci: pedagogik kontemporer, pembelajaran aktif, *student-centered learning*, pendidikan abad ke-21, keterampilan 4C.

Abstract

The development of 21st-century education requires a transformation of learning paradigms from *teacher-centered learning* to *student-centered learning*. One approach considered highly relevant in addressing these demands is *active learning*, which positions learners as the primary subjects in the learning process. This article aims to examine the concepts of *active learning* and *student-centered learning* from the perspective of contemporary pedagogy and to analyze their relevance to the needs of 21st-century education. This study employs a *library research* method by analyzing various scholarly sources, including books, journal articles, and relevant educational documents. The findings indicate that *active learning* and *student-centered learning* play a significant role in developing critical thinking, creativity, communication, collaboration, and problem-solving skills required in the 21st century. Furthermore, these approaches enhance learning motivation, student engagement, and the overall quality of learning outcomes. The implications of this study suggest that the implementation of *active learning* and *student-centered learning* should be continuously strengthened through the development of teachers' competencies, the innovation of instructional strategies, and the effective utilization of educational technology.

Keywords: contemporary pedagogy, *active learning*, *student-centered learning*, 21st-century education, 4C skills.

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1. INTRODUCTION

The advancement of science, technology, and globalization has brought significant changes to various aspects of human life, including education. In the twenty-first century, education is no longer solely oriented toward the transmission of knowledge from teachers to learners but also focuses on developing competencies that enable individuals to adapt to rapid and complex changes (Yang et al., 2024; Chu et al., 2021; Sudana et al., 2023). International organizations such as UNESCO and the Partnership for 21st Century Learning emphasize that learners need to be equipped with critical thinking, creativity, communication, and collaboration skills, collectively known as the 4C skills (Trilling & Fadel, 2009; Thornhill-Miller et al., 2023). These competencies are considered essential because contemporary workplaces and social environments require individuals who can solve problems, work effectively in teams, and generate innovations that respond to societal needs.

In this context, educational paradigms have undergone a substantial transformation. Traditional instructional models characterized by teacher-centered learning are increasingly regarded as inadequate for addressing the challenges of twenty-first-century education. In this model, teachers function as the primary source of information, while learners tend to become passive recipients of knowledge. Consequently, the learning process often focuses primarily on academic achievement and provides limited opportunities for learners to develop higher-order thinking skills and social competencies required in real-life situations (Arifin, 2011; Bereczki & Kárpáti, 2021). These conditions have encouraged the emergence of various contemporary pedagogical approaches that place greater emphasis on learners' active engagement in the learning process.

One of the approaches that has received considerable attention in modern educational discourse is student-centered learning. This approach positions learners as the central actors in the learning process, while teachers serve as facilitators who assist learners in constructing knowledge through meaningful learning experiences. The concept of student-centered learning is rooted in constructivist theory, which argues that knowledge cannot simply be transferred from teacher to learner but must be actively constructed through interaction with the environment and learning experiences (Huda, 2014; Katawazai, 2021; Rosli & Azman, 2025). Therefore, learning should be designed in such a way that learners are provided with opportunities to explore, discover, and construct their own understanding.

In line with this concept, active learning has emerged as one of the most relevant strategies for implementing student-centered learning. Active learning is an instructional approach that encourages learners to participate directly in various learning activities, such as group discussions, problem-solving tasks, simulations, case studies, collaborative projects, and reflection on their own learning experiences (Bonwell & Eison, 1991; Ardiyani & Puspitaloka, 2025; Mutanga, 2024). Through these activities, learners do not merely receive information passively but engage in thinking, analyzing, evaluating, and applying knowledge in different contexts. According to Prince (2004), active learning has been shown to enhance conceptual understanding, knowledge retention, and student engagement more effectively than conventional lecture-based methods.

The importance of active learning is further supported by numerous studies demonstrating a positive relationship between student engagement and learning outcomes. When learners are given opportunities to participate actively in the learning process, they tend to exhibit higher levels of motivation, greater responsibility for their learning, and stronger critical thinking abilities. Moreover, active learning enables learners to develop social skills through collaboration and communication with peers. This finding is consistent

with Huda's (2014) argument that collaborative learning strategies promote both social interaction and balanced academic development among learners.

Despite its recognized benefits, the implementation of active learning and student-centered learning in many educational institutions continues to face significant challenges. In practice, many schools and educational institutions still rely heavily on traditional teaching approaches dominated by lectures. Teachers frequently remain the focal point of classroom activities, while learners act primarily as listeners and note-takers. Such conditions contribute to low levels of student participation and limit opportunities for learners to develop twenty-first-century competencies. Several studies conducted in Indonesia indicate that learning processes remain largely oriented toward academic achievement and have not fully accommodated the development of critical thinking, creativity, communication, and collaboration skills (Fatoni, 2016).

Furthermore, the rapid advancement of digital technology requires continuous innovation in educational practices. Technology functions not only as a learning aid but also as a means of creating interactive, collaborative, and flexible learning environments. The integration of technology into active learning provides learners with opportunities to access diverse learning resources, communicate effectively, and develop digital literacy skills that are increasingly essential in the information age (Trilling & Fadel, 2009). Therefore, teachers are expected to possess adequate pedagogical and technological competencies to design learning experiences that align with learners' characteristics and contemporary educational demands.

Studies on active learning and student-centered learning have been widely conducted by educational researchers. Nevertheless, there remains a research gap concerning a comprehensive understanding of the relevance of these approaches within the framework of contemporary pedagogy and twenty-first-century education, particularly at the primary and secondary education levels in Indonesia. Most existing studies focus primarily on the effectiveness of specific instructional models in improving learning outcomes, while research integrating contemporary pedagogical perspectives with the demands of twenty-first-century competencies remains relatively limited (Lauta & Arsyad, 2020; Syam et al., 2020). This gap highlights the need for more in-depth investigations into how active learning and student-centered learning can serve as foundational principles for creating educational processes that are relevant to present and future needs.

Based on the foregoing discussion, this study aims to examine the concepts of active learning and student-centered learning from the perspective of contemporary pedagogy and to analyze their relevance to the demands of twenty-first-century education. This study is expected to contribute theoretically to the advancement of educational knowledge while also serving as a practical reference for teachers, schools, and policymakers in designing innovative, participatory, and competency-oriented learning strategies. Ultimately, education should not only produce individuals with strong academic knowledge but also equip them with the skills, character, and adaptability required to successfully navigate global challenges.

2. METHOD

This study employs a library research method with a descriptive-analytical approach. Library research is a research method that focuses on the collection, review, and analysis of various relevant literature sources to obtain a comprehensive understanding of a particular phenomenon or concept (Arifin, 2020). This method was selected because the objective of the study is to examine in depth the concepts of active learning and student-centered learning from the perspective of contemporary pedagogy and their relevance to the demands of

twenty-first-century education. Through library research, researchers can identify theoretical developments, findings from previous studies, and various instructional practices that have been implemented in modern educational contexts.

The data sources in this study consist of secondary data obtained from a variety of scholarly references, including books, national and international journal articles, conference proceedings, research reports, and educational policy documents related to contemporary pedagogy, active learning, and student-centered learning. According to Arifin (2020), the use of secondary data in library research enables researchers to acquire extensive and in-depth information about a topic without conducting direct field data collection. Therefore, the selected sources were chosen based on their relevance to the research focus and their contribution to the analysis of twenty-first-century educational practices.

The data collection process was conducted through several stages. The first stage involved identifying literature related to the concepts of contemporary pedagogy, active learning, student-centered learning, and twenty-first-century skills. The literature consisted of scholarly publications discussing both theoretical perspectives and empirical research findings concerning learner-centered instructional strategies. The second stage involved selecting literature based on criteria of relevance, source credibility, and the currency of information. The selected literature had to be directly related to the objectives of the study and capable of contributing meaningfully to the discussion.

After the data had been collected, the next stage involved data analysis using a descriptive-analytical approach. Descriptive analysis was conducted by explaining various concepts, theories, and research findings related to active learning and student-centered learning. Analytical procedures were then employed to compare, interpret, and synthesize the perspectives of different scholars in order to develop a more comprehensive understanding of the relationship between these approaches and the demands of twenty-first-century education. This approach enabled the researcher to identify similarities, differences, strengths, and challenges associated with the implementation of learner-centered instructional models (Huda, 2014).

During the analysis process, the literature was categorized into several major themes, namely: contemporary pedagogical concepts, characteristics of active learning, principles of student-centered learning, and their contributions to the development of twenty-first-century skills. This thematic categorization was intended to facilitate data interpretation and ensure a systematic discussion. In addition, the researcher synthesized findings from previous studies to identify patterns demonstrating the effectiveness of active learning in enhancing learners' critical thinking, creativity, communication, and collaboration skills (Fatoni, 2016; Syam et al., 2020).

The validity of the data was maintained through source triangulation, which involved comparing information obtained from different scholarly references. This technique was employed to ensure that the data and information used in the study possessed a high degree of validity and academic reliability. By examining various perspectives and findings from previous research, the researcher was able to obtain a more objective understanding of the implementation of active learning and student-centered learning in twenty-first-century education.

The limitation of this study lies in its exclusive reliance on publicly available literature sources without the collection of primary data through observations, interviews, or field surveys. Consequently, the findings emphasize conceptual analysis and theoretical synthesis rather than empirical testing. Nevertheless, the library research approach provides an important contribution to enriching the understanding of contemporary pedagogy and

establishing a conceptual foundation for the development of instructional strategies that align with the demands of twenty-first-century education.

Therefore, the findings of this study are expected to serve as a valuable reference for educators, researchers, and policymakers in designing learning environments that are more active, participatory, and oriented toward the holistic development of learners' competencies.

3. RESULT AND DISCUSSION

Result

1) Active Learning

The literature review indicates that active learning is one of the pedagogical approaches that plays a significant role in improving the quality of both the learning process and learning outcomes in the twenty-first century. Active learning is defined as an instructional approach that positions learners as the primary actors in the learning process through various activities that encourage intellectual, emotional, and social engagement. Unlike traditional teacher-centered instruction, active learning provides learners with opportunities to construct knowledge through direct experiences, discussions, exploration, and reflection on the material being studied (Bonwell & Eison, 1991).

Based on the literature analyzed, active learning has been shown to create more meaningful learning experiences because learners do not merely receive information passively but actively participate in discovering, processing, and applying knowledge. According to Prince (2004), learners' active involvement in the learning process facilitates deeper conceptual understanding than conventional lecture-based methods. This occurs because learners are given opportunities to connect new knowledge with their prior experiences and existing understandings.

The review also reveals that active learning promotes intensive interaction among learners and teachers, among learners themselves, and between learners and available learning resources. Such interactions are essential in the knowledge construction process because they enable the exchange of ideas, clarification of concepts, and collaborative problem-solving. From a constructivist perspective, knowledge is built through social processes and authentic learning experiences; therefore, active learning serves as an effective means of implementing student-centered education (Huda, 2014; Ardiyani & Puspitaloka, 2025; Panjaitan & Fardana, 2023).

Various instructional models categorized under active learning include problem-based learning, project-based learning, group discussions, simulations, case studies, role-playing, and cooperative learning. These models provide learners with opportunities to develop higher-order thinking skills through activities involving analysis, evaluation, and the creation of solutions to real-world problems. Fatoni (2016) found that implementing instructional strategies integrating problem-solving activities significantly improved both collaboration and learning outcomes among students. This finding demonstrates that active learning influences not only cognitive development but also affective and social dimensions.

In addition to enhancing conceptual understanding, active learning contributes to the development of 21st-century skills, commonly referred to as the 4Cs: critical thinking, creativity, communication, and collaboration (Trilling & Fadel, 2009; Bell, 2019; Corbisiero-Drakos et al., 2021). Through discussion and problem-solving activities, learners are trained to think critically when analyzing information and making decisions. Project-based and simulation activities foster creativity by encouraging learners to generate innovative ideas and solutions. Meanwhile, group work provides opportunities to develop communication and collaboration skills that are essential in both social and professional contexts.

Another finding from the literature review indicates that active learning positively affects learners' motivation. When students are directly involved in the learning process, they tend to feel more responsible for their own learning success. This condition enhances self-confidence, interest in learning, and emotional engagement in classroom activities. Rahayu (2013) explained that simulation-based learning increases student participation because learners have opportunities to experience situations directly related to the learning content.

Despite its numerous advantages, active learning also faces several implementation challenges. Studies indicate that the success of this approach largely depends on teachers' competencies in designing learning activities that align with learners' characteristics and instructional objectives. Teachers are expected to function as facilitators who not only deliver content but also create learning environments that encourage active participation. Furthermore, limited facilities, restricted instructional time, and large class sizes often hinder the optimal implementation of active learning (Huda, 2014).

Overall, the findings suggest that active learning is highly relevant to the demands of twenty-first-century education because it enhances conceptual understanding, learning engagement, motivation, and the development of critical thinking, creativity, communication, and collaboration skills. Therefore, active learning should continue to be developed and integrated into educational practices to produce learners who possess not only strong academic abilities but also the competencies necessary to navigate the challenges of a globalized world.

2) *Student-Centered Learning*

The literature review demonstrates that student-centered learning (SCL) is a contemporary pedagogical approach that places learners at the center of the entire educational process. This approach emerged as a response to the limitations of traditional teacher-centered instruction, in which learners tend to function as passive recipients of information. In student-centered learning, learners are given greater opportunities to participate actively in determining learning objectives, processes, strategies, and assessments according to their needs, interests, abilities, and individual characteristics (Huda, 2014).

The analysis of various studies indicates that student-centered learning is grounded in constructivist theory, which views knowledge as actively constructed by learners through learning experiences and interactions with their environment. Consequently, learning is no longer understood as a process of transferring knowledge from teacher to learner but rather as a process of knowledge construction involving exploration, reflection, and problem-solving. Within this framework, teachers serve as facilitators, motivators, and mentors who assist learners in developing their potential to the fullest extent (Arifin, 2011).

The literature further shows that the implementation of student-centered learning positively influences the quality of education. When learners become the focal point of instructional activities, they have greater opportunities to develop responsibility for both the learning process and outcomes. Learners are encouraged not only to understand educational content but also to manage their time effectively, determine suitable learning strategies, and evaluate their own learning progress independently. These abilities are important indicators of lifelong learning, a competency increasingly required in the era of globalization and technological advancement (Trilling & Fadel, 2009).

Moreover, numerous studies demonstrate that student-centered learning significantly contributes to the development of critical and creative thinking skills. In learner-centered environments, students are encouraged to ask questions, express opinions, analyze information, and seek solutions to various problems. Such activities provide opportunities to

develop higher-order thinking skills, which are among the primary demands of twenty-first-century education. Huda (2014) argues that student-centered learning facilitates deeper learning because learners are directly involved in searching for and processing information.

Beyond fostering critical thinking, student-centered learning also promotes creativity. The freedom to explore ideas, select problem-solving strategies, and produce learning outputs allows learners to express their creative abilities. Flexible and open learning environments encourage the development of innovative ideas and perspectives. This condition is particularly important in addressing the challenges of the twenty-first century, which require adaptability and innovation across various domains of life (Trilling & Fadel, 2009).

The review also indicates that student-centered learning plays an important role in enhancing learner motivation and engagement. When students' needs and interests are considered in instructional planning, they tend to feel more valued and develop a stronger sense of ownership over their learning process. This active involvement contributes to increased learning interest, self-confidence, and satisfaction with learning experiences. Fatoni (2016) found that instructional approaches providing opportunities for active participation significantly improve collaboration, motivation, and learning outcomes.

In addition, student-centered learning supports the development of social competencies that are essential for twenty-first-century success. Through collaborative activities such as group discussions, project-based learning, and cooperative learning, students learn to work effectively with others, communicate efficiently, respect diverse opinions, and establish positive social relationships. These communication and collaboration skills are indispensable in contemporary society and workplaces that increasingly require teamwork across diverse disciplines (Lauta & Arsyad, 2020).

Nevertheless, implementing student-centered learning is not without challenges. Several studies reveal that shifting from teacher-centered to student-centered instruction requires readiness from teachers, learners, and educational institutions. Teachers must possess adequate pedagogical competencies to design meaningful learning experiences, manage classrooms effectively, and conduct assessments that emphasize both learning processes and outcomes. Furthermore, educational cultures that remain focused on memorization and academic achievement often hinder the optimal implementation of student-centered learning (Arifin, 2020).

Overall, the findings indicate that student-centered learning is highly relevant to the needs of twenty-first-century education. This approach not only improves learners' academic understanding but also develops critical thinking, creativity, communication, collaboration, learner autonomy, and responsibility for learning. Therefore, the implementation of student-centered learning should continue to be strengthened through instructional innovation, teacher professional development, and educational policies that support the holistic development of learners' potential.

3) *Twenty-First-Century Skills*

The literature review reveals that the implementation of active learning and student-centered learning significantly contributes to the development of twenty-first-century skills. These skills represent a set of competencies required for individuals to navigate the challenges of modern life, the workplace, and technological advancement in the era of globalization. Various international educational organizations emphasize that success in the twenty-first century depends not only on academic knowledge but also on the mastery of critical thinking, creativity, communication, and collaboration, collectively known as the 4Cs (Lemke, 2002; Trilling & Fadel, 2009).

Within the context of modern education, critical thinking is considered one of the most essential competencies because it enables learners to analyze information deeply, evaluate arguments, and make decisions based on valid evidence. The literature indicates that active learning provides extensive opportunities for learners to engage in problem-solving, discussions, case studies, and reflective activities, thereby facilitating the development of critical thinking skills. Through these activities, learners move beyond memorization and learn to understand conceptual relationships, identify problems, and formulate logical solutions. Trilling and Fadel (2009) argue that critical thinking serves as a fundamental competency for addressing the complexities of a rapidly changing society.

In addition to critical thinking, creativity is another crucial skill in the digital and knowledge-based economy. Creativity involves the ability to generate new ideas, develop innovative solutions, and view problems from multiple perspectives. The literature demonstrates that student-centered learning fosters creativity by providing learners with opportunities to explore ideas, conduct experiments, and develop learning products aligned with their interests and abilities. Activities such as project-based learning, simulations, and problem-based learning encourage divergent thinking and innovation. Lemke (2002) emphasizes that creativity must be cultivated from an early age to enable learners to adapt to ongoing social, economic, and technological transformations.

Communication is also a major competency developed through active learning and student-centered learning. Effective communication encompasses not only speaking skills but also the ability to express ideas clearly, listen actively, write effectively, and utilize communication technologies in various contexts. The findings indicate that instructional strategies such as presentations, group discussions, debates, and collaborative projects enhance learners' abilities to express opinions and interact with others. Strong communication skills enable learners to convey ideas effectively, build positive social relationships, and participate successfully in both academic and professional settings (Trilling & Fadel, 2009).

Furthermore, collaboration has become increasingly important in response to workplace demands that emphasize teamwork. Collaboration refers to the ability to work effectively with individuals from diverse backgrounds, perspectives, and skill sets to achieve common goals. The literature shows that active learning encourages participation in group activities requiring cooperation, task sharing, collective decision-making, and constructive conflict resolution. Through these experiences, learners develop respect for others' perspectives, empathy, and interpersonal skills necessary for social and professional success (Huda, 2014).

The review further demonstrates that these four competencies are interconnected and mutually reinforcing. Critical thinking is often necessary for generating creative ideas, while creativity requires effective communication to ensure that ideas are understood and implemented by others. Likewise, communication is a fundamental prerequisite for productive collaboration. Therefore, twenty-first-century education should not focus on developing a single competency in isolation but rather on integrating all four dimensions of the 4Cs within the learning process (Trilling & Fadel, 2009).

Beyond the 4Cs, several studies suggest that twenty-first-century education also requires digital literacy, information literacy, adaptability, and lifelong learning skills. Active learning and student-centered learning support the development of these competencies by encouraging learners to seek information independently, use technology responsibly, and engage in continuous learning. Consequently, learners acquire not only academic knowledge but also the readiness to face the challenges of an ever-evolving world (Lemke, 2002).

Overall, the literature review indicates that active learning and student-centered learning are effective approaches for developing twenty-first-century competencies. Through learners' active engagement in the educational process, critical thinking, creativity, communication, and collaboration skills can be cultivated optimally. Therefore, the implementation of these approaches has become an urgent necessity within modern educational systems to produce graduates who are competent, adaptable, innovative, and prepared to address global challenges in the digital era.

Discussion

The findings of this review indicate that contemporary pedagogy, grounded in active learning and student-centered learning, has strong relevance in addressing the challenges of twenty-first-century education. Both approaches have emerged as alternatives to traditional instructional models that have long been dominated by teacher-centered learning. In traditional models, learners often function as passive recipients of information, while teachers serve as the primary source of knowledge. Such conditions limit learners' opportunities to develop higher-order thinking skills, creativity, and social competencies that are essential for real-world contexts (Huda, 2014).

The findings reveal that active learning provides broader opportunities for learners to engage directly in the learning process through activities that require participation and interaction. Strategies such as group discussions, project-based learning, problem-based learning, simulations, and case studies enable learners to construct knowledge through authentic learning experiences. According to Prince (2004), active participation in learning enhances conceptual understanding, knowledge retention, and the ability to apply concepts across different situations. Consequently, learning becomes oriented not only toward content mastery but also toward the development of critical thinking and problem-solving abilities.

From a constructivist perspective, knowledge is constructed through experience and social interaction. Therefore, active learning serves as an effective means of encouraging learners to build their own understanding of the subject matter. This finding is consistent with the study conducted by Cahyono (2013), which demonstrated that the implementation of cooperative learning models improved student learning outcomes because learners were actively involved in the instructional process. Through interaction with peers, learners exchange ideas, clarify their understanding, and collaboratively construct knowledge. Such activities also contribute to the development of communication and teamwork skills, which are important components of twenty-first-century competencies.

In addition to active learning, the student-centered learning approach has been shown to make a significant contribution to improving educational quality. Within this approach, learners are given opportunities to actively participate in determining learning strategies, exploring learning resources, and evaluating their own learning outcomes. Teachers no longer function as the sole source of information but rather as facilitators who support learners throughout the learning process. This condition fosters self-directed learning, which is increasingly important in an era characterized by rapid scientific and technological advancement (Arifin, 2011).

The findings also demonstrate that the implementation of active learning and student-centered learning contributes substantially to the development of the 4C skills: critical thinking, creativity, communication, and collaboration. Critical thinking develops through activities involving analysis, evaluation, and problem-solving. Creativity emerges when learners are provided with opportunities to explore diverse ideas and generate innovative solutions. Meanwhile, communication and collaboration skills are cultivated through

discussions, presentations, and group work that require learners to interact and cooperate with others (Trilling & Fadel, 2009).

These findings are supported by the study of Syam et al. (2020), which found that cooperative learning models increased students' active participation while simultaneously improving learning outcomes. Similarly, Fatoni (2016) reported that learning approaches integrating problem-solving strategies enhanced both collaborative skills and academic achievement. These studies reinforce the argument that learner-centered instruction influences not only cognitive development but also affective and social dimensions of learning.

On the other hand, the rapid advancement of digital technology provides substantial opportunities for the implementation of contemporary pedagogical approaches. Educational technology enables the creation of learning environments that are more flexible, interactive, and collaborative. The use of Learning Management Systems (LMSs), video conferencing applications, interactive learning media, and various online collaboration platforms can effectively support learner engagement. Through technology, learners gain broader access to educational resources, communicate more effectively with teachers and peers, and experience learning that is more personalized and adaptive to their individual needs (Trilling & Fadel, 2009).

Nevertheless, the implementation of active learning and student-centered learning continues to face several challenges. One of the primary challenges concerns teachers' readiness to design and manage learner-centered instruction. Many teachers remain accustomed to lecture-based methods because they are perceived as easier to implement and more compatible with curricula that emphasize content coverage. However, active learning requires careful planning, effective classroom management, and the ability to conduct authentic assessments that evaluate both learning processes and outcomes (Arifin, 2020).

In addition to teacher-related factors, the availability of educational facilities and infrastructure also plays a critical role in determining the success of contemporary pedagogical implementation. Limited access to technology, inadequate learning facilities, and excessively large class sizes may hinder the effective application of learner-centered approaches. Therefore, support from various stakeholders—including schools, governments, and communities—is essential to create learning environments that facilitate the successful implementation of active learning and student-centered learning.

Overall, the findings indicate that contemporary pedagogy based on active learning and student-centered learning represents an effective approach to improving the quality of twenty-first-century education. These approaches not only enhance academic achievement but also foster critical thinking, creativity, communication, collaboration, and learner autonomy. Therefore, their implementation should continue to be strengthened through teacher professional development, instructional innovation, educational technology integration, and policy support that is responsive to learners' needs and the demands of an evolving global society.

4. CONCLUSION

Based on the findings of the literature review, it can be concluded that active learning and student-centered learning are contemporary pedagogical approaches that are highly relevant in addressing the demands of twenty-first-century education. These approaches shift the learning paradigm from teacher-centered learning to learner-centered learning, thereby enabling a more participatory, meaningful, and competency-oriented learning process.

Through learners' active involvement in various instructional activities, the process of knowledge construction can occur more effectively, resulting in deeper and more meaningful learning experiences.

The findings indicate that active learning and student-centered learning make significant contributions to the development of twenty-first-century skills, particularly critical thinking, creativity, communication, and collaboration, collectively known as the 4C skills. In addition, these approaches enhance learning motivation, learner autonomy, problem-solving abilities, and students' responsibility for their own learning processes. Consequently, education becomes oriented not only toward academic achievement but also toward the development of competencies required to address the challenges of modern life, the workplace, and technological advancement in a globalized world.

This review also highlights that the successful implementation of active learning and student-centered learning is strongly influenced by teachers' readiness to design, implement, and evaluate learner-centered instruction. Teachers are expected to possess adequate pedagogical, professional, and technological competencies in order to create learning environments that encourage active participation, collaboration, and knowledge exploration. Furthermore, the availability of educational facilities and infrastructure, including the effective use of digital technology, represents a critical factor in supporting the successful implementation of these approaches.

From a theoretical perspective, this study contributes to the advancement of contemporary pedagogical scholarship, particularly regarding the relationship between active learning, student-centered learning, and the development of twenty-first-century skills. From a practical perspective, the findings may serve as a reference for educators, educational institutions, and policymakers in designing instructional strategies that are more innovative, adaptive, and responsive to learners' needs in the digital era. Therefore, the implementation of active learning and student-centered learning should continue to be strengthened through teacher professional development, instructional innovation, and the effective and sustainable integration of educational technology.

Nevertheless, this study has limitations because it relies exclusively on a library research approach that focuses on the analysis of existing literature without incorporating direct empirical data. Therefore, future research is recommended to conduct field-based investigations across various educational levels in order to examine the effectiveness of active learning and student-centered learning in more specific contexts. Future studies may also empirically measure the impact of these approaches on the development of learners' twenty-first-century skills, thereby providing a more comprehensive understanding of their contribution to improving educational quality.

5. REFERENCES

- Aini, M., Taruna, R. M., & Rohani, C. (2016). Pengaruh model kooperatif tipe student teams achievement divisions terhadap hasil belajar IPS. *Pedagogi: Jurnal Pendidikan Dasar*, 4(3).
- Ardiyani, M., & Puspitaloka, N. (2025). Students' experiences towards the use of discovery learning strategy in learning reading comprehension. *Judika (Jurnal Pendidikan Unsika)*, 13(1), 99–118. <https://doi.org/10.35706/judika.v13i1.13028>
- Arifin, Z. (2011). *Evaluasi pembelajaran*. Remaja Rosdakarya.
- Arifin, Z. (2020). Metodologi penelitian pendidikan. *Jurnal Al-Hikmah*, 1(1).

- Bell, S. (2019). Project-based learning for the 21st century: Skills for the future. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 83(2), 39–43.
- Bereczki, E. O., & Kárpáti, A. (2021). Technology-enhanced creativity: A multiple case study of digital technology-integration expert teachers' beliefs and practices. *Thinking Skills and Creativity*, 39, Article 100791. <https://doi.org/10.1016/j.tsc.2021.100791>
- Bonwell, C. C., & Eison, J. A. (1991). *Active learning: Creating excitement in the classroom* (ASHE-ERIC Higher Education Report No. 1). George Washington University.
- Cahyono, D. (2013). Pengaruh model kooperatif student teams achievement divisions (STAD) terhadap hasil belajar IPS tentang persiapan kemerdekaan Indonesia. *Kalam Cendekia PGSD Kebumen*, 4(3).
- Chaer, A. (2014). *Psikolinguistik: Kajian teoretik*. Asdi Mahasatya.
- Chu, S. K. W., Reynolds, R. B., Tavares, N. J., Notari, M., & Lee, C. W. Y. (2021). *21st century skills development through inquiry-based learning: From theory to practice*. Springer.
- Corbisiero-Drakos, L., Reeder, L. K., Ricciardi, L., & Zacharia, J. (2021). Arts integration and 21st century skills: A study of learners and teachers. *International Journal of Education & the Arts*, 22(2). <http://www.ijea.org/v22n2/>
- Fatoni, F. (2016). Pengaruh pembelajaran kooperatif tipe STAD dengan strategi problem based learning terhadap kerjasama dan hasil belajar IPS siswa kelas V SD. *Jurnal Review Pendidikan Dasar: Jurnal Kajian Pendidikan dan Hasil Penelitian*, 2(1), 84–91. <https://doi.org/10.26740/jrpd.v2n1.p84-91>
- Huda, M. (2014). *Cooperative learning: Metode, teknik, struktur dan model terapan*. Pustaka Pelajar.
- Katawazai, R. (2021). Implementing outcome-based education and student-centered learning in Afghan public universities: The current practices and challenges. *Heliyon*, 7(5), e07076. <https://doi.org/10.1016/j.heliyon.2021.e07076>
- Lauta, B., & Arsyad, S. N. (2020). Peningkatan hasil belajar melalui penerapan pembelajaran kooperatif tipe jigsaw dengan materi IPS kepahlawanan dan patriotisme kelas IV SD Inpres Panaikang II/1 Makassar. *Embrio Pendidikan: Jurnal Pendidikan Dasar*, 5(2), 26–39.
- Lemke, C. (2002). *enGauge 21st century skills: Digital literacies for a digital age*. North Central Regional Educational Laboratory.
- Mutanga, M. B. (2024). Students' perspectives and experiences in project-based learning: A qualitative study. *Trends in Higher Education*, 3(4), 903–911. <https://doi.org/10.3390/higheredu3040052>
- Panjaitan, K., & Fardana, N. (2023). Peningkatan motivasi belajar siswa melalui pendekatan permainan dalam pembelajaran penjas. *Gelanggang Olahraga: Jurnal Pendidikan Jasmani dan Olahraga (JPJO)*, 7(1), 54–61. <https://doi.org/10.31539/jpjo.v7i1.6857>
- Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education*, 93(3), 223–231. <https://doi.org/10.1002/j.2168-9830.2004.tb00809.x>
- Rahayu, S. (2013). Model simulasi dalam mata kuliah strategi pembelajaran fisika. *Jurnal*

Pendidikan Fisika dan Teknologi, 1(2), 118–122.

Rosli, N. F., & Azman, N. N. (2025). Developing a student-centered project-based learning model for English writing: Insights from ESL learners. *19*(1), 100–116.

Sudana, P. A. P., Santosa, M. H., Ratminingsih, N. M., Padmadewi, N. N., Adnyani, L. P. S., & Artini, L. P. (2023). Pre-service teachers' perception of digital literacy. *Journal of Education Technology*, 7(4). <https://doi.org/10.23887/jet.v7i4>

Syam, F., Pillang, A. R., Hamid, S., & Arsyad, S. N. (2020). Peningkatan hasil belajar PKn melalui model pembelajaran kooperatif tipe snowball throwing pada siswa kelas V SD Inpres NIPA-NIPA Kota Makassar. *Klasikal: Journal of Education, Language Teaching and Science*, 2(1), 63–73.

Thornhill-Miller, B., Camarda, A., Mercier, M., & Burkhardt, J.-M. (2023). Creativity, critical thinking, communication, and collaboration: Assessment, certification, and promotion of 21st century skills for the future of work and education. *Journal of Intelligence*, 11(3), 54. <https://doi.org/10.3390/jintelligence11030054>

Trilling, B., & Fadel, C. (2009). *21st century skills: Learning for life in our times*. Jossey-Bass.

Yang, H., Shao, Y., Liu, Y., Dong, J., Li, Q., & Chen, Y. (2024). The construction and application of a blended contextual teaching model for computational thinking development. In *Proceedings of the 2024 15th International Conference on E-Education, E-Business, E-Management and E-Learning* (pp. 99–106). <https://doi.org/10.1145/3670013.3670027>