ASEAN Journal of Educational Research and Technology

Journal homepage: https://ejournal.bumipublikasinusantara.id/index.php/ajert

Innovative and Digital Approaches in Higher Education for Student Motivation and Sustainable Development Goals (SDGs): A Literature Review

Nina Petrukha[1,], Denis Volskyi[2], Alina Pomaza-Ponomarenko[3], Stanislav Poroka[4], Nataliia Kharchenko[5]*

[1]Kyiv National University of Construction and Architecture, Kyiv, Ukraine
[2]National University of Ukraine on Physical Education and Sport, Kyiv, Ukraine
[3]Research Centre of the National University of Civil Protection of Ukraine, Kharkiv, Ukraine
[4]National University of Civil Protection of Ukraine, Cherkasy, Ukraine
[5]National Academy of Educational Sciences of Ukraine, Kyiv, Ukraine
Correspondence: E-mail: petrukha_nina@ujis.in.ua

ABSTRACT

This study reviews innovative and digital approaches in higher education as tools for increasing student motivation and supporting Sustainable Development Goals (SDGs). A literature review method was used by analyzing secondary sources related to digital learning, blended learning, flipped learning, problem-based learning, project-based learning, gamification, creativity development, inclusive education, artificial intelligence, and learning analytics. Innovative and digital approaches can strengthen student engagement, autonomy, critical thinking, creativity, and learning accessibility. Student motivation increases when digital tools are integrated with active pedagogy, inclusive support, meaningful learning experiences, and SDG-oriented educational goals.

ARTICLE INFO

Article History:
Submitted/Received 11 Jan 2026
First Revised 20 May 2026
Accepted 29 May 2026
First Available online 10 Jun 2026
Publication Date 01 Mar 2027

Keyword:
Digital learning;
Higher education;
Innovative teaching;
Student motivation;
Sustainable Development Goals;
Technology integration.

1. INTRODUCTION

Higher education is undergoing rapid transformation due to digitalization, globalization, changing labor market demands, and the need to support Sustainable Development Goals (SDGs). Digital transformation encourages universities to redesign learning environments, strengthen educational management, expand online and blended learning, and develop more flexible teaching strategies. This transformation is not only a technological issue but also a pedagogical and managerial challenge because universities must ensure that digital tools support learning quality, student engagement, and institutional effectiveness [1].

Digital transformation also requires higher education institutions to connect technological innovation with national and institutional development. In this context, universities need to move beyond the simple adoption of digital tools and develop educational strategies that support innovation, accessibility, and quality learning outcomes [2]. Therefore, the modernization of higher education should be understood as an integrated process involving technology, pedagogy, management, and student motivation.

The COVID-19 pandemic accelerated the transition to online, distance, and blended learning in higher education. Digital technologies can improve access to learning, but they also reveal challenges related to digital inequality, digital literacy, teacher readiness, and the quality of online interaction [3]. Blended and digital learning can become more effective when supported by appropriate pedagogical design, student support, and institutional readiness [4]. Furthermore, educational transformation must consider vulnerable learners because knowledge training and accessible learning support are important for individuals with intellectual disabilities and other groups requiring inclusive educational responses [5].

Student motivation is one of the most important issues in contemporary higher education. Motivation affects participation, persistence, academic performance, creativity, and readiness to engage with complex professional challenges. Innovative learning environments can improve motivation when students are actively involved, supported by meaningful interaction, and given opportunities to connect learning with real-life contexts [6]. Gamified e-learning is also relevant because game-based elements can increase student interest and engagement when they are aligned with learning objectives and higher education needs [7].

Innovative teaching methods such as flipped learning, project-based learning, problem-based learning, gamification, design thinking, and facilitation have become increasingly relevant in higher education. Flipped learning allows students to study learning materials before class and use classroom time for discussion, application, and problem-solving [8]. This model can support student autonomy, classroom interaction, and active engagement when it is implemented with clear learning guidance and appropriate digital support [9].

Problem-based learning and project-based learning can also increase student motivation because students are encouraged to apply knowledge to meaningful tasks and real-world problems. Problem-based learning supports motivation by placing students in active roles as problem-solvers and knowledge constructors [10]. Project-based learning similarly supports motivation because it connects learning with real tasks, collaboration, and practical outcomes [11]. In STEM education, project-based learning can also integrate subject knowledge, information technology, and entrepreneurship to develop digital and entrepreneurial competencies [12].

Digital tools provide new opportunities for increasing student motivation. Learning management systems, digital platforms, online classrooms, interactive software, artificial intelligence (AI), visualization tools, gamified applications, and learning analytics can support flexible learning, personalized feedback, collaboration, and access to diverse learning resources. Digital technologies can improve learning when they support active engagement, feedback, creativity, and meaningful interaction [13]. AI and learning analytics are also relevant because they can help educators monitor learning progress, identify student needs, and improve digital competence in support of quality education [14, 15].

The SDGs provide an important framework for interpreting innovation and digitalization in higher education. In this study, the most relevant goal is SDG 4, which emphasizes inclusive and equitable quality education and lifelong learning opportunities. Innovative and digital approaches can contribute to SDG 4 by improving access to learning, supporting inclusive participation, strengthening student competencies, and preparing graduates for professional and social challenges. Inclusive higher education and digital accessibility are important because quality education must be available to all students, including those who face physical, social, economic, or technological barriers [16].

Digital accessibility is also central to inclusive higher education. Accessible e-modules and inclusive digital design can help reduce learning barriers for students with disabilities and support more equitable participation in the classroom [17]. SDG-oriented education also requires a broader understanding of sustainability, including quality learning, accessibility, educational innovation, and student-centered development [18].

Although many studies have discussed digital learning, blended learning, innovative pedagogy, and student motivation, the literature still needs a clearer synthesis of how these approaches support student motivation and SDG-oriented higher education. Existing discussions often focus on specific methods or technologies, while the relationship among student motivation, digital innovation, inclusion, creativity, and SDGs is not always explained systematically. Teacher support, facilitation, and transformational leadership are also important because student motivation increases when learning environments are supportive, interactive, and psychologically meaningful [19].

Gamification also needs further attention in the discussion of student motivation and digital learning. Digital game-based elements can support learning when they are connected with competence development, interaction, and clear learning objectives [20]. Therefore, this study positions student motivation as the central link between innovative pedagogy, digital transformation, inclusive education, and SDG-oriented higher education.

This study aims to review innovative and digital approaches in higher education as tools for increasing student motivation and supporting SDG-oriented educational development. The objectives are: (i) to identify innovative and digital teaching approaches used in higher education; (ii) to explain how these approaches influence student motivation; (iii) to connect digital and innovative learning with SDG-oriented educational development; and (iv) to provide a conceptual basis for improving learning design in higher education institutions.

2. LITERATURE REVIEW

Innovative and digital learning in higher education is closely related to student motivation, institutional readiness, and SDG-oriented educational development. Digital transformation is effective when it is not treated only as technology adoption, but as a pedagogical and

institutional strategy. Blended learning, flipped learning, project-based learning, problem-based learning, gamification, AI, learning analytics, and inclusive digital design can support student engagement when they are aligned with meaningful learning goals, teacher support, and accessibility. The synthesis of key literature themes is presented in **Table 1**. Student motivation is strengthened when digital tools are combined with active pedagogy, inclusive learning environments, and meaningful teacher support. Therefore, innovative and digital approaches should not be implemented as isolated techniques. They should be integrated into a broader higher education strategy that supports SDG 4, student engagement, accessibility, creativity, digital competence, and lifelong learning.

3. METHODS

This study used a literature review approach based on secondary sources. The review focused on studies related to digital learning, innovative teaching methods, student motivation, blended learning, flipped learning, problem-based learning, project-based learning, gamification, creativity development, inclusive higher education, AI, learning analytics, and educational digital transformation. This approach was selected because the study aimed to synthesize existing knowledge and identify how innovative and digital approaches can support student motivation and SDG-oriented higher education. The data sources consisted of scientific articles, literature reviews, and conceptual studies listed in the reference section of the manuscript. The review prioritized works that discussed higher education, student motivation, digital transformation, technology integration, learning management systems, online learning, blended learning, innovative pedagogy, inclusive education, and SDGs. Sources that were not directly related to higher education, learning motivation, digital tools, or innovative pedagogy were not used as core references in the revised synthesis.

The literature was analyzed through descriptive and content analysis. Descriptive analysis was used to identify major themes in the literature, including digital transformation, student motivation, innovative teaching methods, inclusion, and SDG-oriented education. Content analysis was used to examine how each theme was discussed in relation to student engagement, learning autonomy, teacher roles, digital access, and institutional support. This analysis helped identify the relationship between pedagogical innovation and motivational outcomes.

The analysis was conducted in four stages. First, relevant literature was grouped according to topic, including digital learning, motivation, innovative teaching, creativity, inclusive education, and higher education transformation. Second, the main concepts and findings from each group were summarized. Third, the concepts were compared to identify connections among digital technology, student motivation, pedagogy, inclusion, and SDGs. Fourth, the findings were synthesized into a conceptual explanation of how modern innovative, and digital approaches can increase student motivation in higher education.

This study has several methodological boundaries. It does not use primary survey data, interviews, or experimental measurement. Therefore, the findings should be interpreted as a conceptual and literature-based synthesis rather than empirical testing of a specific intervention. However, the review provides a useful foundation for understanding how innovative and digital learning approaches can be used to strengthen student motivation, support inclusive education, and contribute to SDG-oriented higher education development.

Table 1. Synthesis of literature on innovative and digital approaches in higher education.

THEME	MAIN IDEA	RELEVANCE TO STUDENT MOTIVATION	SDG-ORIENTED CONTRIBUTION	REF
Digital transformation in higher education	Digitalization changes learning systems, educational management, access, and institutional strategy.	Students gain flexible access to learning resources and digital interaction.	SDG 4 through expanded access and quality learning systems.	[1, 2]
Blended and online learning	Blended and online learning expand flexible participation but require instructional readiness.	Supports autonomy, flexible pacing, and continuous engagement.	Lifelong learning and inclusive access to higher education.	[3, 4]
Inclusive response after COVID-19	Educational transformation should consider vulnerable learners and accessible support.	Helps students with specific needs participate more meaningfully.	Equity, inclusion, and quality education for all.	[5]
Student motivation	Motivation is influenced by learning environment, interaction, relevance, and academic support.	Strengthens participation, persistence, academic performance, and creativity.	Quality education through meaningful learning engagement.	[6, 7]
Flipped learning	Students study basic materials before class and use class time for discussion and practice.	Encourages preparation, active participation, and deeper classroom interaction.	Student-centered learning and quality instruction.	[8, 9]
Problem-based and project-based learning	Students solve real problems, complete projects, and apply knowledge to practical contexts.	Increases intrinsic motivation through relevance, autonomy, and collaboration.	Relevant skills, employability, digital competence, and SDG-oriented competencies.	[10-12]
Digital technologies and AI	Digital tools, AI, visualization, and learning platforms support interactive and personalized learning.	Provide feedback, visualization, adaptive support, and varied learning resources.	Quality education and digital competence.	[13, 14]
Learning analytics	Learning data can help educators monitor progress and identify student needs.	Supports timely feedback and personalized learning intervention.	Evidence-based quality education and digital competence.	[15]
Inclusive digital education	Inclusive higher education and digital accessibility reduce barriers for diverse learners.	Helps students feel supported, included, and able to participate.	Equity, inclusion, and SDG 4.	[16-18]
Teacher role and facilitation	Teachers act as facilitators, mentors, and motivators in innovative learning environments.	Builds trust, psychological support, and active learning participation.	Effective pedagogy and sustainable learning quality.	[19]
Gamification and digital tools	Gamified digital tools can increase interaction and competence development when aligned with learning goals.	Supports enjoyment, participation, and sustained engagement.	Innovative and inclusive digital learning.	[20]

4. RESULTS AND DISCUSSION

4.1. Digital Transformation and Student Motivation

Digital transformation in higher education supports student motivation by expanding access to learning resources, enabling flexible learning pathways, and providing more interactive forms of participation [21-23]. Online and blended learning allow students to access materials outside the classroom and learn at their own pace. This flexibility is important because students have different learning needs, digital skills, schedules, and levels of readiness. Blended learning can increase motivation when online activities are connected with face-to-face interaction and when students receive clear guidance from teachers [3]. However, digital learning does not automatically improve motivation. Students may lose interest when online learning is poorly organized, when instructions are unclear, or when interaction with teachers and peers is limited. Therefore, digital learning should be supported by appropriate instructional design, accessible platforms, and responsive feedback. Post-pandemic studies show that digital learning becomes more effective when institutions provide structured support and when teachers redesign learning activities for online and blended environments [4]. Digital transformation also has an inclusive dimension. The pandemic showed that vulnerable learners require accessible learning support, especially students with disabilities and students who face technological or social barriers. Knowledge training and accessible learning support are important for learners with intellectual disabilities, indicating that digital transformation must be connected with inclusion and educational equity [5]. Therefore, digital transformation in higher education should support not only efficiency but also equal participation and quality learning.

4.2. Innovative Teaching Methods for Active Engagement

Innovative teaching methods increase student motivation by moving students from passive reception to active participation. In traditional learning, students often receive information from teachers without enough opportunity to apply, discuss, or create knowledge. In contrast, innovative teaching methods encourage students to solve problems, complete projects, collaborate, and reflect on their learning process. This shift is important because motivation increases when students see the relevance of learning to real-life and professional contexts. Several innovative teaching methods are relevant for higher education. Flipped learning allows students to study basic content before class and use classroom time for discussion, practice, and application. This method can strengthen autonomy and encourage deeper classroom interaction when students are well prepared [8]. The development of flexible and technology-supported classroom models also shows that flipped learning can improve participation because students are not only listeners but also active contributors to the learning process [9].

Problem-based learning and project-based learning are also important for student motivation. Problem-based learning motivates students because it requires them to analyze real problems, formulate ideas, and justify solutions [10]. Project-based learning supports motivation because students work on meaningful tasks that have practical outcomes and social relevance [11]. In undergraduate STEM education, project-based learning can also integrate chemistry, information technology, and entrepreneurship, helping students develop digital and entrepreneurial competencies [12].

The main innovative teaching methods discussed in this study are presented in **Figure 1**. Flipped learning, problem-based learning, and technology integration are central innovative

teaching methods. These approaches are related because all of them support active learning, student autonomy, and practical application. In the context of SDG-oriented higher education, these methods can help students develop critical thinking, collaboration, creativity, and professional readiness.

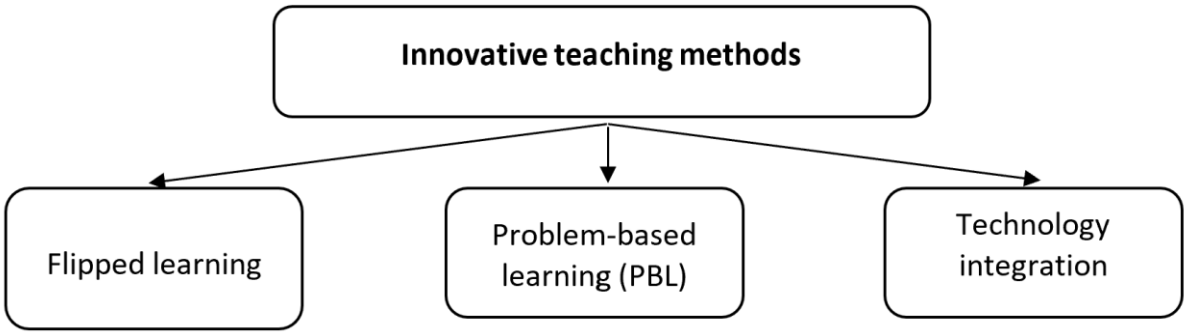

Figure 1. Innovative teaching methods.

4.3. Creativity Development in Higher Education

Creativity is another important outcome of innovative teaching [24]. In higher education, creativity is not limited to artistic production. It includes the ability to generate ideas, solve complex problems, adapt to new situations, and work across disciplinary boundaries. Creativity is closely related to student motivation because students are more engaged when they are allowed to experiment, express ideas, and participate in meaningful tasks. Innovative learning environments can support creativity through project-based learning, design thinking, brainstorming, interdisciplinary learning, and facilitation. These approaches allow students to explore problems from different perspectives and develop original solutions. Teaching creativity in higher education requires active learning, collaboration, and a supportive classroom environment where students feel safe to take intellectual risks [16].

The role of the teacher is also important in creativity development. Teachers should not only deliver information but also facilitate exploration, guide reflection, and support student independence. A supportive teacher role helps students become more confident in expressing ideas and engaging with complex problems. The synthesis of creativity-oriented methods is presented in **Table 2**. Creativity development depends on both learning methods and the learning environment. Students are more motivated when they can connect knowledge with practice, participate actively, and receive support from teachers. Therefore, creativity-oriented learning should be integrated into higher education as part of student-centered and SDG-oriented teaching.

4.4. Technology Integration, Artificial Intelligence (AI), and Learning Analytics

Technology integration can increase student motivation when digital tools support interaction, feedback, visualization, and personalization. Digital technologies such as learning management systems, interactive media, online classrooms, simulations, artificial intelligence, and visualization tools can help students understand complex concepts and monitor their own progress. These technologies are useful when they are connected with clear learning objectives and when teachers guide students in using them effectively [13]. AI

is increasingly relevant in higher education. AI-driven information systems can support learning personalization, adaptive feedback, and academic support. However, AI should not be used only as a technical tool. It should be integrated with ethical learning design, teacher guidance, and student needs [14]. When used appropriately, AI can help teachers identify learning difficulties and provide timely support for students.

Table 2. Methods of creativity development in higher education.

METHOD	DESCRIPTION	EXAMPLE OF APPLICATION	IMPACT ON STUDENT MOTIVATION
Project-based learning	Students work on real or simulated tasks connected with practice.	Interdisciplinary projects involving technology, business, and social issues.	Increases motivation because students work on meaningful and practical problems.
Design thinking	Students solve problems through empathy, ideation, prototyping, and testing.	Team-based design activities linked with innovation and sustainability.	Encourages experimentation and reduces fear of failure.
Brainstorming and lateral thinking	Students generate many ideas and explore non-standard solutions.	Creative discussion and idea-generation sessions.	Increases engagement through freedom of expression.
Interdisciplinary approach	Students combine knowledge from different fields to develop new ideas.	Projects combining technology, art, health, science, or business.	Stimulates curiosity through unusual combinations of knowledge.
Teacher as facilitator	The teacher guides, supports, and moderates the learning process.	Mentoring, feedback, reflection, and experiential learning activities.	Builds trust, independence, and intrinsic motivation.

Learning analytics also has strong potential for supporting motivation and SDG-oriented education. Learning analytics helps educators monitor student progress, identify patterns of engagement, and design interventions based on learning data. This can support quality education because students receive more appropriate feedback and teachers can make better instructional decisions [15]. In this sense, learning analytics connects digital innovation with SDG 4 because it supports evidence-based improvement of learning quality.

4.5. Inclusive and SDG-oriented Higher Education

Innovative and digital learning should be connected with SDG 4. SDG 4 emphasizes inclusive and equitable quality education, lifelong learning, and relevant skills for future life and work. Innovative and digital approaches can contribute to SDG 4 by improving access, supporting student engagement, strengthening competencies, and making learning more flexible. Inclusive higher education is important because not all students have the same access to learning resources. Students may face barriers related to disability, socioeconomic status, digital access, geography, or learning needs. Institutional practices and managerial perceptions are important for strengthening inclusive higher education, especially for students with disabilities [16]. Digital accessibility and inclusive design can also help reduce barriers by providing learning materials that are more flexible and easier to access [17].

SDG-oriented education also requires meaningful learning experiences. Learning should not only focus on content delivery but also on student participation, creativity, digital

competence, and social responsibility. Studies on SDGs in education show that sustainability-oriented learning should be connected with definitions, conceptual clarity, literature development, and educational practice [18]. Therefore, higher education institutions should design digital and innovative learning as part of a broader commitment to quality, equity, and sustainability.

The relationship between innovative and digital approaches, student motivation, and SDGs is summarized in **Table 3**. SDG-oriented higher education requires an integrated approach. Innovative methods increase student engagement, digital tools expand access and feedback, and inclusive design ensures that learning opportunities are available to diverse students. Therefore, motivation, innovation, and inclusion should be treated as interconnected dimensions of quality education.

Table 3. Relationship between innovative and digital approaches, student motivation, and SDGs.

APPROACH	CONTRIBUTION TO STUDENT MOTIVATION	RELEVANT SDG ASPECT	EDUCATIONAL IMPLICATION
Blended learning	Supports flexible learning and student autonomy.	Lifelong learning and access.	Institutions should combine online and face-to-face learning with clear guidance.
Flipped learning	Encourages preparation, discussion, and active participation.	Quality learning.	Teachers should use class time for interaction and application.
Problem-based learning	Increases relevance through real-world problem solving.	Relevant skills.	Learning should connect theory with practical and professional contexts.
Project-based learning	Builds collaboration and practical achievement.	Skills for work and life.	Students should work on meaningful projects with clear outcomes.
Gamification	Increases enjoyment, participation, and sustained engagement.	Inclusive and engaging learning.	Game elements should be aligned with learning objectives.
AI and learning analytics	Provides feedback, monitoring, and personalized support.	Quality improvement and digital competence.	Institutions should use learning data ethically to support students.
Inclusive digital design	Reduces barriers for diverse learners.	Equity and inclusion.	Digital materials should be accessible and supportive for all students.

4.6. Teacher Role, Facilitation, and Motivational Learning Environments

The teacher's role changes significantly in innovative and digital learning environments. Teachers are no longer only transmitters of knowledge. They become facilitators, mentors, designers of learning activities, and motivators. This shift is important because student motivation depends not only on the method used but also on the quality of teacher-student interaction.

Transformational leadership and teacher support are relevant in higher education because they influence motivation, instructional effectiveness, and learning climate [19]. Teachers who provide feedback, emotional support, and meaningful guidance can help students develop confidence and independence. In digital learning environments, this role becomes

even more important because students may experience isolation, uncertainty, or reduced interaction.

Gamification also supports the teacher's motivational role when used appropriately. Digital gamification can increase students' participation and language competence when learning activities are well designed and connected with educational objectives [20]. However, gamification should not be used merely for entertainment. It should support learning goals, feedback, achievement, and active participation.

Overall, the results show that innovative and digital approaches can increase student motivation when they are integrated with active pedagogy, teacher facilitation, inclusive support, and SDG-oriented goals. Higher education institutions should therefore develop learning environments that combine technological innovation with humanistic and student-centered education.

5. CONCLUSION

This study reviewed innovative and digital approaches in higher education as tools for increasing student motivation and supporting SDGs. The synthesis shows that blended learning, flipped learning, problem-based learning, project-based learning, gamification, AI, learning analytics, and inclusive digital design can strengthen engagement, autonomy, creativity, feedback, and learning accessibility. Student motivation improves when technology is integrated with active pedagogy, teacher facilitation, meaningful tasks, and inclusive support. The study highlights SDG 4 as the main framework for quality, equitable, and lifelong learning. Future studies should empirically examine these approaches across disciplines and learning contexts and diverse institutional settings.

6. ACKNOWLEDGMENTS

We would like to thank the respective institutions for their academic support during the preparation of this study. We also acknowledge the contributions of scholars whose works provided the foundation for reviewing innovative and digital approaches in higher education, student motivation, inclusive learning, and SDGs.

7. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

8. REFERENCES

[1] Rosack-Szyrocka, J. (2024). The era of digitalization in education: Where do universities 4.0 go? *Management Systems in Production Engineering, 32*(1), 54-66.

[2] Holovnia, Y. (2023). Digital transformation of higher education in Ukraine: From academic center to educational, scientific and innovative complex. *Economy and Society, 58*, 1-7.

[3] Amenduni, F., and Ligorio, M. B. (2022). Blended learning and teaching in higher education: An international perspective. *Education Sciences, 12*(2), 129.

[4] Bretan, B. D. (2024). Undergraduate students' opinion on digital learning in a post-pandemic era: A case study. *Studia UBB Psychologia-Paedagogia, 1*, 81-96.

[5] Dada, O. C., Ogundele, I. S., Akinade, F. O., and Jinadu, F. G. (2024). Impact of knowledge training on COVID-19 management among individuals with intellectual disability in Nigeria. *ASEAN Journal of Community and Special Needs Education, 3*(2), 71-80.

[6] Shalgimbekova, K., Smagliy, T., Kalimzhanova, R., and Suleimenova, Z. (2024). Innovative teaching technologies in higher education: Efficiency and student motivation. *Cogent Education, 11*(1), 1-14.
[7] Aguilos, V., and Fuchs, K. (2022). The perceived usefulness of gamified e-learning: A study of undergraduate students with implications for higher education. *Frontiers in Education, 7*, 945536.
[8] Ryabukha, T., Kulikova, L., Gostishcheva, N., and Kharchenko, T. (2020). Flipped learning as an innovative technology for teaching foreign languages in higher education. *Pedagogy of Forming a Creative Personality in Higher and Secondary School, 2*(72), 100-106.
[9] Sankey, M., and Hunt, L. (2014). Flipped university classrooms: Using technology to enable sound pedagogy. *Journal of Cases on Information Technology, 16*(2), 26-38.
[10] Arifiani, I., Nurul, H. L., and Rahmawan, S. (2025). Problem based learning (PBL) learning model for increasing learning motivation in chemistry subject: Literature review with bibliometric analysis. *ASEAN Journal for Science Education, 4*(1), 17-30.
[11] Pratiwi, D. T., Zahratunnisa, F., and Rahmawan, S. (2025). The impact of project-based learning (PjBL) on students' motivation and learning outcomes: A literature review. *ASEAN Journal for Science Education, 4*(1), 53-58.
[12] Rahim, N. A., and Mustafar, S. (2026). Integrating chemistry, information technology, and entrepreneurship through project-based learning: A framework for enhancing digital and entrepreneurial competencies in undergraduate STEM education. *ASEAN Journal for Science Education, 5*(1), 53-60.
[13] Haleem, A., Javaid, M., Qadri, M. A., and Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers, 3*, 275-285.
[14] Karin, J., Dharmayanti, D., Luckyardi, S., Soegoto, E. S., Ximmataliyev, D., Yusof, M. K., Chochole, T., and Zangana, H. M. (2026). Evolution of artificial intelligence (AI)-driven information systems in higher education: A review. *ASEAN Journal of Educational Research and Technology, 5*(3), 271-278.
[15] Ahmed, F. T., Ganiyu, A. A., and Ibrahim, A. (2026). Perceived usefulness and efficacy of learning analytics among science educators for advancing quality education and digital competence to support Sustainable Development Goals (SDGs). *ASEAN Journal for Science Education, 5*(1), 95-102.
[16] Maru, A. M. (2026). Strengthening inclusive higher education for students with disabilities through institutional practices and managerial perceptions in public universities. *ASEAN Journal of Community and Special Needs Education, 5*(2), 115-124.
[17] Musayaroh, S., Asmiati, N., Utami, Y. T., Mulia, D., Sidik, S. A., Abadi, R. F., Pratama, T. Y., Maslahah, S., and Pramudyo, A. S. (2023). A digital accessibility and inclusive design-based e-module in higher education: Does it work in a classroom with a deaf student? *ASEAN Journal of Community and Special Needs Education, 2*(1), 55-60.
[18] Maryanti, R., Rahayu, N. I., Muktiarni, M., Al Husaeni, D. F., Hufad, A., Sunardi, S., and Nandiyanto, A. B. D. (2022). Sustainable development goals (SDGs) in science education: Definition, literature review, and bibliometric analysis. *Journal of Engineering Science and Technology, 17*(6), 161-181.
[19] Presas, E. J. (2026). Transformational leadership, teachers' motivation, and instructional effectiveness: Integrating teacher mental health into a professional development program. *ASEAN Journal of Community and Special Needs Education, 5*(2), 97-114.

[20] Toshmuradovna, S. I. (2026). Developing students' English language competence through gamification: Definition, digital tools, and a literature review from a community service perspective. *ASEAN Journal of Community Service and Education, 5*(2), 143-152.
[21] Fiandini, M., Nandiyanto, A. B. D., and Agustin, R. R. (2026). Exploring digital learning media research trends in education for sustainable development relating to particle technology: A bibliometric analysis approach. *Journal of Advanced Research Design*, *139*(1), 50-73.
[22] Al Husaeni, D. F., Al Husaeni, D. N., Ragadhita, R., Bilad, M. R., Al-Obaidi, A. S. M., Abduh, A., and Nandiyanto, A. B. D. (2022). How language and technology can improve student learning quality in engineering? Definition, factors for enhancing students comprehension, and computational bibliometric analysis. *International Journal of Language Education*, *6*(4), 445-476.
[23] Fauziah, S. P., Suherman, I., Febriani Sya, M., Roestamy, M., Abduh, A., & Nandiyanto, A. B. D. (2021). Strategies in language education to improve science student understanding during practicum in laboratory: Review and computational bibliometric analysis. *International Journal of Language Education*, *5*(4) 409-425.
[24] Oktiani, R., Wahyu, W., and Nandiyanto, A. B. D. (2026). Hands-on activities for making colloidal products to train students' creativity. *AIP Conference Proceedings*, *3464*(1), 090005.