

INNOVATION IN EDUCATION: A REVIEW OF THE LITERATURE ON METHODS AND PRACTICES

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Abstract

This research reviews existing literature on innovations in education, focusing on methods and practices implemented to improve student learning outcomes and the learning process. The main findings show that innovations such as project-based learning, flipped classroom and educational technology can increase student participation and motivation. In addition, approaches that prioritise personalisation and differentiation of education are effective in meeting individual needs and maximising each student's potential. However, the study also identified challenges in implementing innovations, including the need for adequate infrastructure, teacher training and acceptance of change. Support from various parties, including the government and educational institutions, is considered essential to ensure the success and accessibility of innovations across the board.

Keywords: Innovation, Education, Methods and Practices

Introduction

Technological development and globalisation have brought significant changes in various aspects of life, and education is no exception. The challenge faced by educational institutions today is how to prepare the younger generation to face an increasingly complex and dynamic world (Rahayu et al., 2025) ; (Aslan & Sidabutar ;, 2025) (Hapinas et al., 2025) ; (Komari & Aslan, 2025) . In this context, innovation in education is crucial.

Educational innovation involves the adoption of new methods and practices that aim to improve the quality of learning and adapt to the needs of the times. This can include the use of technology in the teaching-learning process, the application of creative pedagogies and the development of a more relevant curriculum. For example, the use of Learning Management Systems (LMS) such as Moodle and Google Classroom, as well as the implementation of project-based learning, has become a rapidly growing trend (Maalouf, 2024) .

Therefore, innovation in education plays a vital role in preparing students to face the challenges of the modern era that is full of rapid changes and evolving demands. Through innovation, learning methods can be better tailored to be relevant to students' actual needs and cognitive models, so as to increase learning engagement and motivation (Li, 2020) . The utilisation of digital technologies and new pedagogical approaches, such as project-based learning or flipped classroom, not only enrich the

learning experience but also equip students with critical thinking and problem-solving skills that are highly needed in the future world of work (Young, 2023b) . Therefore, educational innovation is not just a trend, but a fundamental necessity to create an adaptive and highly competitive education system.

The last decade has witnessed significant developments in educational innovation, fuelled by technological advances and paradigm shifts in teaching methods. One of the biggest changes has been the adoption of digital technologies in the classroom, which enables distance learning and the use of various digital tools such as Learning Management Systems (LMS), video conferencing sessions, and interactive educational applications (Yang, 2023) . In addition, new pedagogical approaches such as flipped classroom, blended learning, and project-based learning have become increasingly popular, providing students with opportunities to learn in a more independent and collaborative way. These innovations not only expand access to education for more people, but also improve the quality of education by making it more flexible, personalised and suited to students' individual needs (Saindah et al., 2025) ; (Sitopu et al., 2024) ; (Guna et al., 2024) ; (Iksal et al., 2024) ; (Fawait et al., 2024) .

However, while innovations in education have shown many potential benefits, there are still challenges and barriers that need to be overcome. Inadequate infrastructure, resistance to change and lack of training for educators are some examples of problems often encountered in the implementation of educational innovations (Schröer, 2021) . In addition, the effectiveness of these innovative methods and practices also needs to be continuously evaluated to ensure that they actually have a positive impact on student learning outcomes (Bush-Mecenas & Anderson, 2020) .

Geographical and economic disparities also add to the complexity of implementing educational innovations, especially in developing countries where access to technology and resources is limited. Therefore, it is important to conduct a comprehensive literature review on innovative methods and practices in education to understand how far these innovations have been implemented, what their impact has been and how challenges can be overcome.

Research Methods

The study in this research uses the literature method. The literature research method is a systematic approach to collecting, evaluating, and synthesising existing knowledge from various literature sources relevant to the research topic. In this method, researchers conduct a comprehensive search through academic databases, scientific journals, books, reports, and other sources to identify and collect related literature (Heriyanto ;, 2018) (Rizkykawasati, 2019) . The main steps in literature research include the formulation of research questions, development of inclusion-exclusion criteria for literature selection, critical analysis of the quality and contribution of the literature found, and synthesis of findings to formulate a conclusion or new insight. The

main purpose of literature research is to provide a comprehensive overview of the current state of knowledge in a field, identify existing research gaps, and offer a theoretical foundation for further research (Iryana, 2019).

Results and Discussion

Innovative Methods in Education

Since the last few years, various innovative methods have been adopted to revolutionise the way teaching and learning in educational institutions. One of the prominent methods is the use of project-based learning (PBL) model, where students learn through direct involvement in real-life relevant projects. This method allows students to explore complex issues in depth, develop critical thinking skills, and work together in teams. PBL places students at the centre of learning, encouraging them to become active learners responsible for their own learning (Zhang & Xiao, 2022).

In addition, the flipped classroom has become an innovative method that breaks down the traditional boundaries of learning time. In this model, theoretical teaching is done outside the classroom through videos or reading materials, so that in-class time can be focussed on group discussions, problem-solving and interactive activities. This allows for more personalised and adaptive teaching to students' individual needs, as well as providing more room for direct guidance from teachers when students encounter difficulties (Abdulkadir, 2024).

Technology-based education is also a key driver of innovation, with the integration of digital tools and e-learning platforms enriching the learning experience. Tools such as virtual simulations, educational games, and adaptive learning apps give students the opportunity to learn in a more interactive and enjoyable way. These technologies also enable more personalised learning, by measuring student progress in real-time and customising subject matter based on each individual's unique pace and needs (Syakhrani & Aslan, 2024); (Judijanto & Aslan, 2024); (Sartika & Fransiska, 2024); (Irwan et al., 2024).

Collaborative learning, which focuses on students interacting with each other to achieve shared learning goals, is also increasingly used. This method emphasises the importance of communication, teamwork and problem solving in a supportive learning environment. By working in groups, students can share diverse perspectives and experiences, enriching the learning process and building social and emotional skills that are essential for working together in future professional contexts (Ling, 2024).

Finally, there is also increasing attention to social and emotional learning (SEL) as part of educational innovation. SEL aims to develop emotional skills, such as self-awareness, emotion management and empathy. By prioritising the emotional and social aspects of students, education not only concentrates on academic development but also aims to form individuals who are balanced and skilled in interpersonal interactions. All of these innovative methods contribute to the establishment of an educational

environment that is dynamic, inclusive, and better prepared to face future challenges (Puffelen & Tauecchio ., 2021)

Thus, various innovative methods in education such as Project-Based Learning (PBL), flipped classroom, technology-based education, collaborative learning, and social and emotional learning (SEL) have revolutionised the way teaching and learning in educational institutions. These methods place students at the centre of learning, encouraging active engagement, social interaction and the development of essential skills needed in real life. By incorporating digital technology, focusing on the individual needs of students, and developing social and emotional aspects, these innovations in education aim to create learning environments that are more dynamic, inclusive, and able to prepare students for the challenges of the future.

Implementation of Innovative Practices in Education

Project-Based Learning (PBL) is a learning approach that places real projects at the centre of the learning process. In PBL, students are given the opportunity to plan, implement and complete a project relevant to their curriculum. The project usually involves in-depth research, collaboration, and presentation of the work in front of peers and teachers. By stimulating critical thinking and problem-solving skills, PBL helps students develop a deeper understanding of the subjects studied. More than that, PBL encourages students to take responsibility for their own learning, motivating them to work harder because they feel ownership of the project (Lewis, 2023) .

Flipped classrooms change the traditional classroom structure where live teaching is provided outside of class through videos or reading materials that students can access at home. Then, in-class time is used for discussion, working together on assignments, and getting direct help from the teacher when facing difficulties. This way, students can learn at their own pace and have more time to digest information before coming to class. Teachers, on the other hand, can focus more on providing individualised help and managing in-depth discussions in class. Flipped Classroom allows for more interactive and personalised learning (Almarzoqi & Mathis, 2024) .

The application of technology in education has opened up many opportunities for more dynamic and interactive learning methods. The use of digital devices such as tablets, laptops and educational apps can enrich the teaching and learning process. Technology allows access to an unlimited variety of learning resources, such as e-books, interactive simulations, and learning videos (Young, 2023a) . With online learning platforms, students can learn independently or in groups with flexibility of time and location. Teachers can also utilise the software to track student progress, assign tasks, and assess learning outcomes more efficiently (Kleckova ., 2021)

Collaborative learning emphasises cooperation between students in small groups to achieve shared learning goals. It teaches students important skills such as communication, co-operation and conflict resolution. In collaborative learning, each

member of the group has different roles and responsibilities, so all must contribute to achieving mutual success. Group discussions, team projects and educational games are some examples of collaborative activities that can be applied. Through collaboration, students can learn from different perspectives and strengthen their understanding through social interaction with classmates (POPESCU, 2022).

Social and Emotional Learning (SEL) is an approach that aims to develop the attitudinal and behavioural skills needed to manage emotions, foster good relationships, and make responsible decisions. The integration of SEL in the curriculum allows students to learn important life skills such as empathy, self-awareness, and self-regulation. SEL programmes often involve meditation exercises, group discussions about feelings, and activities that build trust and respect (Iddris et al., 2022). By focusing on the holistic development of students, SEL creates a more supportive learning environment conducive to effective academic learning.

Challenges and opportunities in implementing educational innovations

One of the main challenges in implementing educational innovation is resistance to change. Many educators, students and even parents may be comfortable with traditional teaching methods that they are familiar with. Changes in teaching methods can lead to confusion and concerns over the sustainability of the quality of education received. Educators must be retrained and provided with new knowledge and skills to effectively implement innovative methods (GILLPATRICK, 2020).

Another major challenge is limited infrastructure and resources. Many schools, especially in remote or less developed areas, may not have access to the latest technology which is often one of the key elements of educational innovation. The availability of technological devices, reliable internet connectivity and digital competence are important requirements that not all educational institutions always have. Addressing this issue requires substantial investment and careful planning from the government and related parties (Rachmawati et al., 2020).

On the other hand, technological innovation in education offers very promising opportunities. Technology-based learning such as e-learning and the use of online education platforms have opened the door for students to learn anytime and anywhere. Interactive and multimedia teaching materials are proven to be more attractive to students and can increase their motivation and interest in learning. In addition, technological advances allow educators to more easily monitor and evaluate student learning progress in real-time (Mawere & Muchemwa, 2024).

The implementation of innovation also provides opportunities to improve the quality of learning. More collaborative and project-based learning methods can encourage students to develop critical skills and teamwork that are essential in the modern world of work. In addition, personalisation of learning can be done more easily

through educational technology, allowing each student to learn according to their own style and pace (Sapienza et al., 2021) .

Overall, while there are many challenges in implementing educational innovations, such as resistance to change and limited infrastructure, the opportunities offered are also very significant. Technological innovations can improve the accessibility and quality of education, as well as prepare students with relevant skills for the future. With proper planning and support, these challenges can be overcome to create a more effective and efficient education system.

Thus, the key to success in implementing educational innovations is to prepare all the necessary resources, provide training and mentoring to educators, and ensure that every step of change is done carefully and planned.

Conclusion

In the literature on innovation in education, there is a wide range of methods and practices that have been evaluated and trialled. The main conclusion is that educational innovations can significantly improve student learning outcomes, optimise the learning process and overcome the challenges of traditional education. Methods such as project-based learning, flipped classrooms and the use of educational technology have proven effective in increasing student participation and motivation.

In addition, the literature shows that personalisation and differentiation in education can create more meaningful and relevant learning experiences for each student. Innovations that respect individual differences in learning styles and learning pace, and provide appropriate resources, can help students reach their full potential. The use of data and analysis to understand students' needs is also increasingly playing an important role in achieving these goals.

However, challenges in implementing educational innovations were also recognised in this literature review. Evaluations of infrastructure, teacher training and acceptance of change show that there are barriers that need to be overcome for innovations to be implemented effectively and sustainably. Therefore, support from the government, educational institutions and communities is essential to ensure that innovations are not only efficacious but also accessible to all parties involved.

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