Analysis of Learning Models in Secondary Schools to Improve the Quality of Student Education

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INFO ARTIKEL	ABSTRACT
	This research examines various learning models implemented in secondary schools in different countries and their impact on the quality of education. In the context of globalization and rapid changes in the world of work, education is expected to develop skills relevant to future challenges. This research analyzes seven main learning models that have been proven effective in various countries, namely competency-based models, project-based learning, flipped classroom, inquiry-based learning, collaborative learning, problem-based learning, and technology-based models. Each model has its own characteristics and advantages, and is applied based on local needs and context. Competency-based models, for example, focus on developing students' practical skills needed in the world of work, while flipped classroom and technology-based models provide flexibility in material delivery and allow for more interactive learning. This study uses a literature study approach to collect data and information related to the implementation of these learning models. The results show that the implementation of the right learning model can improve students' motivation, engagement and learning outcomes. Other important factors are infrastructure readiness, teacher training, and education policy support for learning innovation. In Indonesia, the adaptation of these models can improve the quality of education at the secondary school level, provided that there are supporting policies and training for educators. This research provides recommendations for the development of more innovative and skills-based education policies to prepare young people for global challenges.

1. Introduction

Education is one of the main pillars in the development of a country, because through education, a country can produce qualified generations who are able to compete at the global level (Yang & Xiu, 2023). The learning model applied in schools plays an important role in determining the quality of education. Effective education is not only seen from the amount of material learned, but more on how the teaching and learning process takes place, how students

interact with the material and with each other, and how the teacher is able to facilitate the development of students' skills and knowledge as a whole (Ding, 2021). Therefore, the application of the right learning model is very important to create deep and meaningful learning for students.

In many countries, there are various learning models that are implemented with the aim of responding to various existing educational challenges. These models are designed to not only focus on knowledge transfer, but also to develop students' life skills, emotional intelligence and critical abilities (UNESCO et al., 2021). Some popular learning models include Project-Based Learning (PBL), Inquiry-Based Learning (IBL), Blended Learning, Flipped Classroom, and Gamification, all of which aim to create learning experiences that are more interactive, participatory, and relevant to students' real lives (Huang et al., 2023). These models are being implemented in various countries with the hope of facilitating the development of 21st century skills which include creativity, collaboration, communication, and problem solving (Smith et al., 2022).

However, while many models have been implemented with enthusiasm, the reality is that not all of these learning models have been effectively implemented in all countries (Köpeczi-Bócz, 2024). The success or failure of implementing learning models is strongly influenced by various contextual factors, such as educational culture, infrastructure readiness, teacher quality and training, and parental participation in children's education (Segura-Robles et al., 2020). Therefore, this study aims to explore and analyze the implementation of various learning models in different countries by assessing the factors that influence their success. This research will provide a clearer picture of whether certain learning models are more effective in certain countries and how the local context affects educational outcomes.

Project-Based Learning (PBL) is one of the most popular learning models that has been implemented in many countries, such as the United States, Australia, and several countries in Europe. This model requires students to work in groups to complete projects based on real problems (Haatainen & Aksela, 2021). In PBL, students learn collaboratively, take an active role in their learning, and solve problems relevant to the real world. This model can improve students' critical thinking skills, creativity, and communication and cooperation abilities (Zhang & Ma, 2023). In countries such as the United States and Canada, PBL is often used to introduce more complex concepts through hands-on experience, focusing on more applied problem solving (Thomas, 2000).

Meanwhile, Inquiry-Based Learning (IBL) emphasizes on question-based learning, where students are invited to explore knowledge independently by conducting investigations and experiments (Aguila & Ricafort, 2023). In countries such as Finland and Australia, IBL is applied to develop students' critical thinking and investigative skills. This model gives students the freedom to define their own research questions and seek answers through conversations, research, and experiments. IBL encourages students to become more active learners and take responsibility for their own learning process. As a result, IBL can strengthen students' natural curiosity and develop their ability to analyze information more deeply (Bekteshi et al., 2023).

Blended Learning is a learning model that combines face-to-face classroom learning and online learning. This model provides students with flexibility in accessing learning materials, allowing them to learn anytime and anywhere (Cao, 2023). Countries such as the UK and Singapore have implemented Blended Learning to facilitate students in utilizing digital technology to enhance their understanding of the subject matter. In Blended Learning, students can access learning videos, discussion forums and online tests that help them learn in a more varied way and according to their individual learning styles (GEM Report UNESCO, 2023). The advantage of this model is its ability to provide a more flexible and personalized learning experience, which accommodates the needs of students with diverse backgrounds.

Flipped Classroom is a learning model that reverses the tradition of conventional learning, where students first study the subject matter independently outside of school hours using learning videos or other resources, then in class they engage in discussion and application of the concepts through various practical activities (Kepler College, Kigali, Rwanda & Dusengimana, 2023). This model is widely applied in developed countries such as the United States, the Netherlands, and Australia. In Flipped Classroom, the teacher's role focuses more on facilitating discussions, providing feedback, and guiding students in applying the concepts they have learned independently. This model is proven to be effective in increasing student engagement and their understanding of the material, as well as encouraging students to become more independent in the learning process (Bai, 2023).

One other learning model that is gaining popularity is Gamification, which involves using game elements in the learning process to increase student motivation and engagement (Jaramillo-Mediavilla et al., 2024). Countries such as Japan and South Korea are starting to implement Gamification in their classrooms with the aim of turning learning into a more fun and engaging activity for students. Through Gamification, students not only learn academic material but can also hone skills such as cooperation, communication, and problem solving in a fun and non-monotonous context (Papadakis & Kalogiannakis, 2023). For example, students are given game-based challenges that encourage them to cooperate with their classmates and solve problems within a limited time.

However, while these models offer various advantages, major challenges in their implementation remain. One of the main challenges is the readiness of adequate infrastructure and technology, especially in developing countries. Limited access to technology and inadequate teacher training can hinder the effective implementation of these learning models. In addition, cultural factors also greatly influence how a model is accepted by society and implemented in schools. For example, in some countries, models that require major changes in traditional approaches may face resistance from teachers and parents who are more accustomed to the existing education system (Sabornido et al., 2022).

This research is important to provide insight into the implementation of different learning models in different countries, as well as analyzing their challenges and successes. By knowing the advantages and disadvantages of each model, it is hoped that countries can be wiser in choosing a model that suits their conditions and needs. In addition, this research also aims to provide recommendations for education policies that are more responsive to changing times, which will help advance the quality of education in developing countries, such as Indonesia. Therefore, this research not only provides information on various learning models that have been implemented abroad, but also provides an overview of how these models can be adapted to the local context in Indonesia.

2. Method

This research uses the literature study method to identify and analyze the application of learning models used in various countries and their impact on learning outcomes in secondary schools. This literature study approach was chosen because it allows researchers to gain in-depth insights by collecting and analyzing secondary data that already exists in scientific literature related to the topic under study. As stated by Creswell (2014), literature review is an effective method for reviewing relevant research results to identify trends, patterns and gaps in a particular field (Creswell, 2014). In this case, the research did not involve direct primary data collection, but relied on analyzing relevant and verified previous research results.

The data sources used in this research are scientific journals, articles, research reports, and books that discuss the implementation of learning models at the secondary education level. These sources were selected based on their credibility and relevance to the research topic. Some of the international databases referenced to locate these sources include Scopus, ERIC,

and Google Scholar, which are widely recognized for the quality and reliability of the data they present. In addition, reports from international education organizations such as UNESCO and OECD were also important references. UNESCO has provided many guidelines on global education, including learning models that can be adapted in different countries. Reports from the OECD often contain comparative analysis of education policies and best practices implemented in their member countries, providing insights into the influence of different learning models on educational outcomes (OECD, 2022).

The literature study method allows researchers to identify different learning models implemented in countries with different education systems, as well as to understand the factors that influence the success or failure of the implementation of these models (Ohene, 2023). Thomas (2000) states that through this approach, researchers can analyze the application of learning theories in a practical context, identifying the benefits and challenges that arise from the implementation of these models. In this study, the main focus is on seven learning models that have been widely implemented, namely competency-based models, project-based learning, flipped classroom, inquiry-based learning, collaborative learning models, problem-based learning, and technology-based learning models.

The data collected from the various sources were then analyzed narratively. As suggested by Sukhera (2022), narrative analysis allows the researcher to organize findings from various literatures and connect them to provide a broader picture of the phenomenon under study (Sukhera, 2022). The researcher connects findings from the literature to describe how learning models are implemented in different countries and their impact on education quality, student engagement and learning outcomes. The research also assesses the challenges faced by countries in implementing these models, such as resource constraints, teacher readiness, education infrastructure and resistance to change.

Furthermore, the results of this literature analysis will be discussed by referring to relevant data findings and showing practical implications and recommendations for education policy development in Indonesia. Flores et al. (2014) emphasize the importance of adapting learning models based on local contexts to achieve maximum results (Flores et al., 2014). This study seeks to compile a comprehensive picture of the application of learning models in developed and developing countries and how they can be adapted to improve the quality of education in Indonesia, especially in secondary schools.

By using this method, the researcher hopes to make a significant contribution to the development of the education system in Indonesia, especially in the context of implementing learning models that have proven effective at the international level. As stated by Kalb et al. (2015), the application of appropriate and evidence-based learning models can have a positive impact on the overall quality of education, if balanced with appropriate policy support and readiness from various parties involved in education (Kalb et al., 2015).

3. Result and Discussion

Based on the results of literature studies conducted related to the application of learning models in various countries, there are various findings that show the positive impact of the application of these models, both in the context of increasing student engagement, critical thinking skills, and in improving the overall quality of learning. However, it cannot be denied that the implementation of these models also faces various challenges, both in terms of infrastructure, teacher readiness, and the socio-cultural context in each country.

The following table summarizes the findings related to the implementation of the seven learning models in different countries, including successes achieved, challenges faced and sources that support these findings.

Table 1. Summary of Findings on the Application of Learning Models in Different Countries

Learning Model	Country	Success	Challenge	Source
Project-Based Learning	United States, Indonesia, India	Increase student engagement, critical thinking skills, and real-world problem solving.	Limited facilities and teacher training, lack of time for projects.	Martini et al.,(2024)
Inquiry-Based Learning	Finland, Australia, Indonesia	Improve students' ability to think critically and independently in research and experimentation.	Lack of teacher training and resources for experiments.	Novianti & Tersta, (2024)
Blended Learning	Canada, UK, Indonesia	Improve access to a wider range of learning resources and facilitate flexible learning.	Limited internet access and devices in remote areas.	Alvarez, (2020)
Flipped Classroom	United States, Germany, Indonesia	Efficiency of learning time, increased discussion and direct application of material in class.	Lack of readiness of students and teachers in adapting to this model.	Setren et al., (2021)
Collaborative Learning	Sweden, Netherlands, Indonesia	Increased student engagement in discussions and better understanding of the subject matter.	Cultural barriers and teacher preparedness in managing large groups.	Trung & Truong (2023)
Gamification	South Korea, Japan, Indonesia	Increase students' motivation and engagement in learning through the element of play.	Limited equipment and teacher training, and technology infrastructure.	Sotirov et al., (2023)
Montessori Method	Italy, United States, Indonesia	Better development of independent and social skills through exploration-based learning.	Standardized curriculum and limitations in teacher training.	Azrial Syahrur Ramadahn, (2023)

The table above provides a brief overview of seven learning models that have been implemented in various countries, as well as the successes and challenges faced in their implementation. These models range from Project-Based Learning (PBL), Inquiry-Based Learning (IBL), to approaches such as gamification and the Montessori Method. Below is an in-depth explanation of each aspect in the table.

a. Project-Based Learning (PBL)

The implementation of Project-Based Learning (PBL) in secondary schools shows that this model is highly effective in improving student engagement and critical thinking skills. Based on studies conducted in the United States, PBL has been widely used in various high schools with positive results. For example, in California, projects that focus on solving real problems, such as sustainable urban design or environmental problem solving, have improved students' ability to identify problems, design solutions and collaborate with their classmates. Research results show that students who engage in this project-based learning have a deeper understanding of the topics studied and tend to be more motivated to learn because they feel connected to the real world (Martini et al., 2024).

However, despite its apparent effectiveness, PBL requires adequate facilities and well-trained teachers. In some developing countries, such as Indonesia and India, limited facilities and human resources are often a major challenge in implementing PBL. In Indonesia, for example, some schools that tried to implement PBL complained of limited time and support from school management, leading to a lack of sustainability of the program.

b. Inquiry-Based Learning (IBL)

The implementation of Inquiry-Based Learning (IBL) in countries such as Finland and Australia has shown encouraging results, by improving students' ability to think critically and conduct research independently. In Finland, for example, IBL is applied in science and math subjects, where students are given the opportunity to ask their own questions and design experiments to answer those questions. Research shows that students in Finland who learn through IBL tend to have a deeper understanding of scientific concepts, because they do not only passively receive information, but also actively seek answers through investigation and experimentation (Novianti & Tersta, 2024).

On the other hand, in some countries such as India, the implementation of IBL faces several challenges, mainly related to teacher readiness and the availability of supportive resources. Many teachers have not been trained to facilitate the inquiry process, which causes difficulties in managing the class and ensuring all students are actively involved. Nonetheless, the successful implementation of IBL in countries like Finland provides valuable lessons on the importance of continuous teacher training and careful curriculum planning.

c. Blended Learning

Blended learning models that combine face-to-face and online learning have been implemented in many countries, with varying results. In Canada and the UK, blended learning is used to provide greater access to students, especially in remote areas with limited educational infrastructure. For example, in Canada, some schools in rural areas are implementing blended learning to facilitate students' access to a wider range of learning materials, using online platforms to provide learning materials that can be accessed anytime and anywhere. In the UK, blended learning is implemented in secondary schools to increase student engagement by providing various learning resources accessible through technology (Alvarez, 2020).

However, the biggest challenge in implementing blended learning is the limited access to technology in some developing countries. In Indonesia, for example, limited internet access and lack of digital devices in some areas are still barriers to the implementation of this model. However, there are efforts from the government and non-governmental organizations to improve technology infrastructure in schools in remote areas, which may accelerate the implementation of blended learning in the near future.

d. Flipped Classroom

The implementation of flipped classrooms has shown promising results, especially in developed countries such as the United States and Germany. In the United States, flipped classrooms have been used at various levels of education to improve the efficiency of learning time and provide more opportunities for students to discuss and collaborate in class. For example, in some high schools in the US, students are given learning videos outside of class that they have to watch before coming to class. Class time is used for discussion, problem-solving and practical application of the concepts that have been learned through the videos (Setren et al., 2021).

However, although the results have been very positive in some countries, this model faces some obstacles in developing countries, including Indonesia. In Indonesia, most students are not yet familiar with independent learning through videos or other online materials. Therefore, although the flipped classroom has great potential, the biggest challenge is the readiness of students and teachers in adapting this model. Teachers need to take the time to provide additional support to students who have difficulty accessing online materials or who are not used to learning independently.

e. Collaborative Learning

Collaborative learning, which prioritizes cooperation between students in achieving shared learning goals, has been proven effective in improving students' social and communication skills. In countries such as Sweden and the Netherlands, collaborative learning is used to increase student engagement in learning. In Sweden, this model is implemented in almost all primary and secondary schools, with a focus on group learning in a variety of subjects, from languages to science. Research results show that students who learn in groups tend to be more engaged in discussions and have a better understanding of the subject matter (Trung & Truong, 2023).

However, in some developing countries, the implementation of collaborative learning still faces challenges. In Indonesia, for example, despite efforts to integrate collaborative learning in the curriculum, cultural barriers and lack of training for teachers make the implementation

of this model not always smooth. Some teachers are still more comfortable with traditional learning methods that emphasize one-way teaching, which hinders the adoption of collaborative learning models.

f. Gamification

Gamification or the use of game elements in learning is increasingly popular around the world, especially in countries with good access to technology, such as South Korea and Japan. In South Korea, gamification is applied in math and English learning to increase student motivation. Students are given points and levels based on their achievements, and they can use the points to earn rewards or other benefits. Research shows that gamification can increase student engagement and motivation, which in turn can improve their learning outcomes (Sotirov et al., 2023).

However, in countries with limited infrastructure, such as parts of Africa and Southeast Asia, the application of gamification is still limited to the accessibility of supportive devices and training for teachers. Therefore, to ensure the success of this model, there needs to be significant investment in technology and teacher training.

g. Montessori Method

The Montessori model is known for its independent learning approach that gives students the freedom to choose their own activities. Its wider application in countries such as Italy and the United States shows that it is highly effective in developing students' social skills and independence. In Italy, where the Montessori method was first developed, many primary and secondary schools have adopted this approach to create an environment that supports independent exploration and learning. In the United States, Montessori became popular in elementary schools, with many educational institutions adopting it to support more individualized and purposeful learning (Azrial Syahrur Ramadahn, 2023).

However, the application of the Montessori method in countries with more conventional education systems often faces barriers. In Indonesia, for example, a more structured and standardized curriculum makes implementing the Montessori method challenging, although there are some schools that have adopted it successfully.

Overall, the implementation of the seven learning models discussed PBL, IBL, Blended Learning, Flipped Classroom, Collaborative Learning, Gamification, and Montessori Method show great potential to improve the quality of education in secondary schools around the world. While these models have many advantages in improving student engagement and mastery of material, challenges in their implementation, such as limited infrastructure, teacher readiness, and access to technology, must be addressed to ensure the success of widespread implementation of these models.

4. Conclusion

Based on the results of this literature study, it can be concluded that various learning models implemented in various countries have a significant impact on improving the quality of education at the secondary school level. The seven main learning models that are widely used, namely competency-based models, project-based learning, flipped classroom, inquiry-based learning, collaborative learning, problem-based learning, and technology-based learning models, each show positive results in improving student engagement and learning outcomes.

The successful implementation of these models is strongly influenced by the local context and the readiness of resources, such as infrastructure, teacher training and education policy support. Although each model has its own challenges, their proper implementation can have a major positive impact on student learning, both in improving practical skills and critical thinking ability.

Indonesia, as a country with vast cultural diversity and educational needs, has great potential to adapt these learning models. However, achieving optimal results requires

supportive education policies, continuous teacher training and adequate infrastructure. The Indonesian government needs to develop a curriculum that is more based on skill development and problem solving, so that students not only learn the material but are also trained to be ready for future challenges.

Overall, this research shows that although there are various learning models used at the international level, the basic principles that should be applied are student-centered education and oriented towards developing skills that are relevant to the needs of the world of work and global challenges. The implementation of these learning models in Indonesia can improve the quality of education and provide better opportunities for students to develop holistically.

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