CHALLENGES PROSPECTIVE TEACHERS REGARDING LEARNING MODELS IN THE 4.0 ERA

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ABSTRACT

This study aims to examine the experiences of prospective elementary school teachers with various learning models they witnessed being implemented by teachers during their observations in schools. The research used a descriptive case study method conducted at PGMI UIN Tulungagung. There were 10 respondents in this study. The results showed that all respondents (100%) reported significant experience with the implementation of various learning models by the teachers studied. The following subjects attracted interest and the learning methods applied: First, 37% of participants chose mathematics, with learning methods that included singing, mental arithmetic, media use, and memorization. Second, 26% of participants chose science, with an approach that involved out-of-class practical activities, games, bridges, and media use. Third, 15% of participants chose language subjects, which used methods that combined games and drama. Fourth, for social studies, 12% of participants chose learning methods that included singing and riddles. Another 10% of participants chose religion, which included singing. Approximately 90% of participants indicated that the challenges they noticed in understanding various learning models were how to differentiate between models, methods, approaches, and learning strategies.

Key words: *Learning Models, Prospective Teachers, Era 4.0*

INTRODUCTION

Education in Indonesia continues to evolve with the times. Education is an effort made by teachers to help students learn according to their needs.[1]

[1] Andri Anugrahana, 'Persepsi Calon Guru Tentang Model-Model Pembelajaran: Studi Kasus Mahasiswa Pendidikan Guru Sekolah Dasar', *DIDAKTIKA TAUHIDI: Jurnal Pendidikan Guru Sekolah Dasar*, 7.2 (2020), 83 <https://doi.org/10.30997/dt.v7i2.2694>.

Teachers also help students use various other learning resources in educational settings so that students can develop their attitudes, knowledge, and skills. The goal is for students to gain the desired understanding by using various tools, methods, and resources that suit their needs, as well as discussing the material or carrying out activities. Therefore, we need to prepare prospective teachers who are ready to face various challenges in the future. Creating a learning plan and interaction concept is very important to consider.[2] Therefore, a learning plan cannot simply be replaced with an information plan. Interaction is closely related to student diversity. This is what makes it necessary for prospective teachers to create a variety of different learning plans.

Before we delve deeper into learning models, we must first understand what education is. According to current legislation, education must be based on instilling national and cultural values and must incorporate advances in technology and science. Today, education needs to continue to innovate in a clear and sustainable manner. Therefore, many parties must participate in this process so that learning can take place in accordance with the nation's expectations and the needs of the times.[3]

The challenge faced by prospective educators today is an education system that is expected to produce individuals with comprehensive skills. This means that education is required to produce graduates who are competitive, innovative, creative, able to work together, and have good character.[4] In this context, it can be explained that the progress achieved by humans today is certainly related to the function of education in Indonesia. Law Number 20 of 2003 states that education is a conscious and planned effort to create a learning environment and learning process that enables students to actively develop their potential. The goal of this is to obtain spiritual strength related to religion, the ability to regulate oneself, good attitudes, intelligence, high ethics, and the skills needed by individuals, communities, the state, and the nation.

Learning models are generally developed based on various scientific principles or theories. Experts design learning models by referring to various knowledge bases or theories. They create learning models by considering learning principles, psychological theories, sociology, systems analysis, or strongly supporting other theories. Joyce and Weil researched models based on learning theory and grouped them into four types of learning models.[5]

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[2] Muhammad Arifin, Muhammad Umar, and Arif Hidayat Siregar, 'Model-Model Pembelajaran Di Era 4 . 0 Dan Disrupsi Dalam Implementasi', *Journal on Education*, 06.02 (2024), 11110–19.

[3] Huda, Miftahul. Model-Model Pengajaran dan Pembelajaran. Yogyakarta. 2018. Pustaka Belajar

[4] Hany Handayani and others, 'Dampak Perlakuan Model Pembelajaran Radec Bagi Calon Guru Terhadap Kemampuan Merencanakan Pembelajaran Di Sekolah Dasar', *Pendas : Jurnal Ilmiah Pendidikan Dasar*, IV (2019), 79–93 <https://doi.org/10.23969/jp.v4i1.1857>.

[5] Lexi Jalu Aji and others, 'Model-Model Pembelajaran Dalam Dunia Pendidikan', 2024, 1–62 <https://repository.qrisetindonesia.com/id/publications/587251/>.

These models are common ways of learning in order to achieve desired goals. Joyce and Weil argue that learning models are strategies or frameworks that can be used to create curricula (long-term learning plans) that include the design of lesson materials and the organization of the learning process in the classroom or elsewhere. Learning models can be alternatives, which means that teachers have the freedom to choose the most appropriate and efficient model to achieve their learning objectives.[6] In addition, in this era of the industrial revolution 4.0, which is rich in technology, we need innovative and different learning methods. In particular, we need learning methods that can attract the attention and interest of students. This view is supported by Ikhlas, who says that we need learning models to adjust to changes in student attitudes in a good and creative way. This learning model is closely related to the way students learn and the methods used by teachers, which can be summarized as SOLAT (Learning and Teaching Styles). The learning model can also be interpreted as a structure that shows the planned stages in organizing learning experiences in order to achieve specific educational goals.[7]

The Fourth Industrial Revolution, or Industry 4.0. Zero is the development of the internet network. In the third era, computers were introduced, and this major change occurred because these computers were connected to each other around the world via the internet. The speed of data transmission became very important. In the Fourth Industrial Revolution era, there is also the term "Internet of Things," which refers to everything connected to the internet. The Internet of Things (IoT) impacts how we work and carry out our daily activities. Significant transformations are taking place not only in our daily lives but also in how we learn.[8] The way we learn and search for information has changed dramatically. New terms such as "googling" to search for information on the internet have emerged, and this shows that we can now easily find information through search engines. In the past, teachers, books, television, or radio were the main sources of information. Now, information on the internet has become a very important reference for people.

Before Industry 4.0, many learning methods were still traditional, such as teaching through lectures, discussions, and question and answer sessions. Some of the learning methods known before Industry 4.0 were Lectures: a method in which teachers explain something verbally to students. Discussion:

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[6] Indrawati, Ena Suma, and Yeni Nurpatri. "Problematika pembelajaran ipa terpadu (kendala guru dalam pengajaran ipa terpadu)." *Educativo: Jurnal Pendidikan* 1.1 (2022): 226-234.

[7] Nur Rohmatul Amaliyah, 'Penggunaan Model Pembelajaran 4.0 Bagi Tenaga Pendidik Sekolah Dasar Jakarta', *DIDAKTIKA TAUHIDI: Jurnal Pendidikan Guru Sekolah Dasar*, 8.1 (2021), 43 <https://doi.org/10.30997/dt.v8i1.3342>.

[8] Koko Adya Winata, 'SCAFFOLDING : Jurnal Pendidikan Islam Dan Multikulturalisme TUNTUTAN ERA REVOLUSI INDUSTRI 4 . 0 Koko Adya Winata UIN Sunan Gunung Djati Bandung SCAFFOLDING : Jurnal Pendidikan Islam Dan Multikulturalisme', *SCAFFOLDING: Jurnal Pendidikan Islam Dan Multikulturalisme*, 2.1 (2020), 12–24.

a method in which students talk with teachers or classmates to discuss a topic. Question and answer: a method in which teachers ask questions to students and students provide answers. Demonstration: a method in which teachers show how to do something directly. Field trips: a method in which students go to a place to learn that is not too far from school.

Learning models that are in line with the times can support students in developing important skills for the future, such as critical thinking, creativity, and cooperation. In addition, effective learning methods can support students in understanding and coping with changes around them. Therefore, it is very important to apply innovation and develop learning methods that are in line with the times and the needs of students. Therefore, prospective teachers need to have good skills to be able to guide students so that they acquire sufficient abilities. The teaching methods used in the learning process must help students to be able to work together, innovate, and communicate well. The learning process must emphasize the importance of learning in a meaningful way and also how to solve problems by thinking intelligently and improving social aspects. The teaching methods applied by prospective teachers must encourage students to create new things and fresh ideas that can be used to solve existing problems. Collaborative and creative learning methods are believed to be the answer to facing the challenges of the Industry 4.0 era.

METHOD

The research method contains the method selected or used in the research. Examples include library research, quantitative, qualitative, or mixed methods. Then, a description of the design is outlined in accordance with the research method selected or used.

This research is a descriptive case study. It presents information on 1) how students respond to the learning methods applied by teachers when they are observed. 2) an analysis of the difficulties experienced by students when learning various learning models. After that, the data obtained is calculated as a percentage and explained. This study was conducted in the Madrasah Ibtidaiyah Teacher Education study program. The research was conducted in a study program that examined learning models. The number of participants in this study consisted of 5 students from the PGMI Program. The research data was collected through stories and casual conversations with students. They shared their experiences about how their teachers taught them when they were in elementary school. These students, who are now prospective teachers, recounted interesting things they had seen. Their notes were then processed to find out the relationship between how teachers taught in the past and the issues being studied. Thus, the data consisted of stories, not numbers,

which described the prospective teachers' views on how their teachers used to teach in elementary school.

LITERATURE REVIEW.

Studies in the era of Industry 4.0 show that learning methods must be able to adapt to the times and technological advances. Various innovative learning methods have been designed to support these needs. Students have expressed the challenges they face in relation to learning methods. Based on the analysis conducted, it was found that almost all students, namely 90%, had difficulty distinguishing between learning models, methods, approaches, and strategies. These four aspects often cause confusion and sometimes overlap with one another. In fact, some even argue that these learning methods and models are identical. The reason they experience these difficulties is because these things are often confused. Therefore, in this section, students gain a better understanding of the differences between learning models, methods, approaches, and strategies.

Mulyatiningsih explains in her article that the way we learn is our view of the learning process. This refers to the way we see the process, which is still very general. Within this, this method can store, inspire, reinforce, and underpin learning methods with certain theories. In addition, it is also explained that learning methods are divided into two types. The first is an approach that focuses on students. The second is an approach that focuses on teachers.[9]

Meanwhile, Selvy Meilasari in her article also states that a learning model is a basic concept that outlines the steps involved in structuring learning experiences to achieve learning objectives. Joyce and Weil explain that educational models consist of five main elements, namely (1) syntax, which refers to the stages of learning, (2) social systems, which include the atmosphere and norms that exist during the learning process, (3) reaction principles, which explain how teachers should view, treat, and respond to students, (4) support system, which includes all tools, materials, or environments that assist in the learning process, and (5) instructional effects and maintenance effects—namely, learning outcomes that are directly obtained in accordance with the objectives to be achieved (instructional effects) and learning outcomes that occur outside the specified objectives (maintenance effects).[10]

Aris Yulianto explains that lesson planning is an important step that teachers and students must take to ensure that learning objectives are achieved

[9] Choiroyaroh, Siti Istatik. "Implementasi Model Pembelajaran Klasik dan Model Pembelajaran Kelompok PAUD Bintang Ananda Botoran Tulungagung." *Absorbent Mind* 4.1 (2024): 235-245.

[10] Meilasari, Selvi, and Upik Yelianti. "Kajian model pembelajaran problem based learning (pbl) dalam pembelajaran di sekolah." *BIOEDUSAINS: Jurnal Pendidikan Biologi Dan Sains* 3.2 (2020): 195-207.

effectively and efficiently. Teaching methods are the ways in which teachers implement these plans into actual activities. There are many methods to choose from, ranging from classroom lectures, hands-on demonstrations, brainstorming sessions, role-playing simulations, lab or field practice, brainstorming, debates, to scientific meetings (symposiums). All of these methods help teachers make lessons more interesting and easier to understand.[11]

Students' mental development needs to be improved and adapted to social changes and progress, which must be managed properly. At that time, students were considered to have learned if they could connect what had been taught with the predetermined learning objectives. Therefore, integrated, accurate, targeted, and effective assessment and evaluation are needed.[12] Responding to changes that occur when someone realizes shortcomings in teaching and learning methods, starting from determining learning objectives, selecting teaching materials, choosing approaches, media, methods, and assessment systems. Innovations made by teachers are more focused on the teaching process, because teachers have the duty and right to manage learning activities in order to achieve predetermined learning objectives. In this case, the work of teachers goes beyond ordinary professional work, because they must not only be experts in their field, but also be able to manage the teaching and learning process well.

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Learning models are very important in the teaching and learning process in order to achieve the desired goals. Educators use learning models as a reference for planning lessons in the classroom. According to Joyce and Weil, learning models are like plans or patterns that can be used to create curricula, design lesson materials, and guide the learning process in the

[11]A. Yulianto and others, 'Pembelajaran Projekct Based Learning Berbasis Lesson Study Untuk Meningkatkan Keaktifan', *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, 3.2 (2017), 448–53.

[12] Essa, Mulia Rifanti. "Model Pembelajaran Inovatif Cooperative Learning (Cl) Pada Mata Pelajaran Ilmu Pengetahuan Alam Kelas VI Madrasah Ibtidaiyah Al-Abror Tentang Listrik Sederhana." *Universitas Muhammadiyah Sidoarjo* (2018).

[13] Yustanti, Ike, and Dian Novita. "Pemanfaatan e-learning bagi para pendidik di era digital 4.0 utilization of e-learning for educators in digital era 4.0." *Prosiding Seminar Nasional Program Pascasarjana Universitas Pgri Palembang*. 2019.

classroom or elsewhere.[14] According to Adi, learning models can be defined as a framework that provides an overview of the steps in organizing learning experiences to achieve specific goals. Learning models help educators plan and carry out learning activities.[15] Winataputra explains that learning models are frameworks that describe systematic steps in organizing learning experiences to achieve specific learning objectives and serve as guidelines for lesson designers and teachers in planning and implementing teaching and learning activities.[16]

From the various perspectives of experts, it can be concluded that teaching methods are planned approaches used by educators to deliver lessons. The aim is for students to be able to manage their learning experiences well so that they achieve the expected learning objectives.

RESULTS

Research results are the process of properly organizing and grouping information about an activity based on facts through the researcher's efforts to systematically and objectively process and analyze the object or topic of research in order to solve a problem or test a hypothesis, thereby creating general principles or theories.

If the research results show learning models that are relevant in the 4.0 era, they include the following: Blended learning: a combination of face-to-face and online learning. This model gives students the opportunity to learn independently in a more flexible way, while still receiving support from teachers. Blended learning is considered a more modern way of learning. This is because this method uses technology to improve the learning process, while still maintaining the important values of face-to-face learning. The real challenge of this learning method is its dependence on technology, and both teachers and students need to have a good knowledge of this technology.[17]

Combining various teaching methods, the first characteristic of this method is combining traditional or offline learning models with online learning. In fact, this method is not something new, but rather an addition to online learning or e-learning. In this blended learning, the main focus is on students who are expected to be able to learn independently. They must also

[14] Setyowati, Annisa Jannah, Heri Setiyawan, and Endang Nuryasana. "Model Pembelajaran Mastery Learning pada Mata Pelajaran Matematika Materi Bangun Datar Siswa Kelas III." *Jurnal Inovasi Penelitian* 1.2 (2020): 107-116.

[15] Wulandari, Nila. *Kemampuan Pemahaman Konsep Matematika Peserta Didik Dengan Menggunakan Model Pembelajaran Student Facilitator And Explaining Pada Materi Segi Empat Di Mts. Nurul Islam Pongangan Manyar Gresik*. Diss. Universitas Muhammadiyah Gresik, 2018.

[16] Febianto, Debi, Sasmi Nelwati, and AfdalIlham Dani. "Analisis Model Pembelajaran Rolle Playing dan Implikasi dalam Pembelajaran pada Sekolah Dasar." *Indonesian Journal of Innovation Multidisipliner Research* 2.1 (2024): 126-134.

[17] Mukhlasin, Ahmad. "Kepemimpinan Pendidikan di Era Revolusi Industri 4.0." *Jurnal Tawadhu* 3.1 (2019): 674-692.

be responsible for following lessons and completing all assigned tasks. With a mix of effective teaching methods and learning styles, blended learning will motivate students to engage in various independent learning activities. They can also easily ask questions through discussion forums, either to teachers or other students.

Flipped classroom: a learning model that reverses the roles of teachers and students. Students study the material independently at home, while class time is used for discussion and questions and answers. For example, before discussing the material to be taught, the teacher first gives students assignments to study the material in the learning media. This learning model requires students to be more independent because they study the material in advance before the class meeting. This model also makes students more active because their curiosity is higher.[18]

Project-based learning: a learning method that focuses on learning experiences through projects. Students will learn by creating projects related to the topics being studied. Project-based learning is a teaching method that exposes students to real-world challenges that are considered important, and they work together to find solutions to those challenges. This learning method makes the learning experience more "real" for students. Students and teachers will complete projects within a certain period of time, where they are directly involved in finding solutions and answering difficult questions.[19] The goal of Project-Based Learning (PBL) is to increase students' enthusiasm for learning so that they can learn independently, collaboratively, creatively, and focus on solving problems related to everyday life. Students can demonstrate what they know and can do through presentations or products they create for others to see. In addition, project-based learning also helps students master deeper knowledge and develop critical thinking, collaboration, creativity, and communication skills.

Game-based learning: a learning model that uses games as a learning tool. Students will learn by playing games related to the lessons they are taking. Game-based learning is an idea that teachers often refer to for implementation in the classroom. In addition to being easy, this learning model has its own appeal to attract students' interest so that they remain engaged and focused in the learning process. Once students are accustomed to this method, they will surely be able to grasp more of the material taught by the teacher and have the desire to learn more deeply.[20]

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[18] Imania, Kuntum Annisa, and Siti Husnul Bariah. "Pengembangan flipped classroom dalam pembelajaran berbasis mobile learning pada mata kuliah strategi pembelajaran." *Jurnal Petik* 6.2 (2020): 45-50.

[19] Nakada, Akiko, et al. "Project-based learning." *Journal of the Medical Society of Toho University* 65.4 (2018): 157-163.

[20] Adipat, Surattana, et al. "Engaging students in the learning process with game-based learning: The fundamental concepts." *International Journal of Technology in Education* 4.3 (2021): 542-552.

These new learning models can be used at various levels of education, including elementary schools. As we enter the era of Industry 4.0, these learning models can help students hone skills that are important for the future, such as critical thinking, innovation, and collaboration.

This study explains how students view the teaching methods used by teachers they observed while they were in elementary school. The information presented is descriptive, and it will be analyzed and interpreted to reveal the most memorable learning model observed. In the second part, students also discuss the challenges they faced when attending lectures using this learning model.

The results of the study show that all students observed stated that the teachers' teaching methods were very memorable. The following is a list of lessons that were considered interesting and the teaching methods that were applied. First, 37% of survey participants chose mathematics with methods that involved singing, counting, teaching materials, and memorization. One way to use singing in mathematics lessons is to change the lyrics of popular songs to lyrics related to mathematics, for example, changing the lyrics of the song "Naik-Naik ke Puncak Gunung" to lyrics about units of length measurement. The counting method is also an effective choice in mathematics teaching because it can help students remember the material more easily, especially in terms of multiplication. Tools in mathematics learning are items that make it easier for us to understand concepts, such as beads for calculations, as well as used items such as cans, bottles, and cardboard boxes that are used to learn material about spatial shapes. Ismawati also utilizes tools in her studies, namely magnetic boards, to help students better understand the basics of integer calculations.

Second, 26 percent of respondents chose science learning methods through practice, outdoor activities, games, mnemonics, and the use of media. Further interviews revealed that mnemonics are also often used in chemistry learning. The mnemonic approach is considered very useful. For this method, teachers must be creative in making abbreviations, which have been proven to help in the memorization process. For example, in chemistry lessons, Herlina, Robi, and their friends found it very difficult. Group IIA, such as Bebek Mangan and Cacing Seret, really frustrated them. This was not only related to chemistry, but also to Javanese language lessons, especially regarding Javanese script. For example, there are expressions such as naga sikil papat and kana buntut keket.

Third, 15% of respondents chose language, games, and drama subjects. The types of games used included monopoly and picking up fallen papers. Word guessing games are activities in which the teacher places a word on a student's head, while the other students give clues from sentences to help guess the word. In foreign language learning, teachers usually conduct an

activity known as the chain message game. In this game, each class is divided into four groups. Each group consists of eight individuals. In this activity, the teacher prepares a sentence in English that must be read aloud by a member of the group. After that, the representative is required to explain the content of the sentence they have read without referring to the text. Next, the listener will continue to tell the other members, and this process will continue until the last member. The last member's task is to accurately convey the content of the sentence with clear pronunciation. Research shows that the use of picture cards can support vocabulary development. Another activity that can be done is assembling domino cards. In this game, the deck of cards is divided into two sides, with answers on the left and questions on the right. The game is played by placing a card marked "START" and answering the questions next to it until we find a card marked "FINISH." In addition, there are modified traditional games, such as boy-boyan, which replaces roof tiles with cards.

Fourth, 12% of respondents chose to learn social studies by singing and playing puzzles. Puzzles here refer to activities that involve putting together pieces of pictures or writing. For example, putting together an irregularly shaped map.

A total of 10% of them chose to learn religion by singing. Singing was used to help them remember the names of prophets in religious studies. In subsequent interviews, several students stated that the teacher's method of teaching the sequence of wudhu (ablution) through singing was very useful and is still remembered today.

Teacher-observed learning models. The following is a list of subjects that attracted attention, along with the learning models applied in each subject:

Table 1

Subject	Learning Model	Respondent Presentation
Mathematics	Singing, reciting, media use, memorization	37%
Science	Out-of-class practice, games, donkey bridges, use of media	26%
Indonesian Language	Games, drama	15%
Social Studies,	Singing, playing puzzles	12%
Religion	Singing	10%

In addition, around 90% of participants also indicated that the challenge that needs to be considered in understanding various learning models is how to distinguish between learning models, methods, approaches, and strategies.

Lack of knowledge about the latest curriculum: To implement learning methods in the 4.0 era, we need a new curriculum that is in line with what society needs today. However, understanding of the current curriculum is still low and many people experience difficulties when implementing digital learning. Lack of training for teachers: Teachers must be trained to use digital tools and technology effectively in the classroom. However, many teachers may not yet have sufficient skills and knowledge to implement digital learning methods. Limited student access to technology: Students may not have access to the necessary technological tools, such as smartphones or laptops, to participate in digital learning.

DISCUSSION

The discussion contains how the data obtained provides solutions to the problems to be solved. Interpreting the results obtained by providing arguments for the importance of these findings and the common thread and objectives to be achieved. Based on an analysis of the students' review results, it is known that all students (90%) believe that students often find it difficult to distinguish between models, methods, approaches, and learning strategies. These four things are often confusing and sometimes interchangeable between one concept and another. Some even answered that learning approaches and models are the same. The reason for this difficulty is that they are often interchangeable, so in this section, students are given insight into the differences between models, methods, approaches, and learning strategies. Learning models have five basic elements namely (1) syntax, which are the operational steps of learning, (2) social system, which is the atmosphere and norms that apply in learning, (3) principles of reaction, which describe how teachers should view, treat, and respond to students, (4) support system, all facilities, materials, tools, or learning environments that support learning, and (5) instructional and nurturing effects, learning outcomes obtained directly based on the targeted objectives (instructional effects) and learning outcomes beyond the targeted objectives (nurturing effects). There are several learning methods that can be used to implement learning strategies, including: (1) lectures; (2) demonstrations; (3) discussions; (4) simulations; (5) laboratories; (6) field experiences; (7) brainstorming; (8) debates; (9) symposiums; and so on. Approximately 90% respondents also expressed the opinion that the difficulty that needs to be emphasized in understanding learning models is distinguishing between models, methods, approaches, and learning strategies.

Lack of training for teachers: Teachers need to be trained to use digital tools and technology effectively in the classroom. However, many teachers may not have the skills and knowledge necessary to implement digital learning. Limited student access to technology: Students may not have access to the necessary technology, such as smartphones or laptops, to participate in digital learning.

In addition, lack of understanding of the latest curriculum: The implementation of learning models in the 4.0 era requires a new curriculum that is in line with what society needs today. However, many people do not yet fully understand this curriculum and still find it difficult to implement digital learning.[21] Lack of training for teachers: Teachers need training so they can make good use of digital tools and technology in the classroom. Unfortunately, many teachers may not have the skills or knowledge needed to implement digital learning. Limited student access to technology: Students may not be able to access the technology needed, such as smartphones or laptops, to participate in digital learning.

When designing learning methods in the current era, there are several things that parents and schools must pay attention to. This is not because they are inappropriate, but rather to understand what is needed and to maintain balance in the learning process so that learning in the digital age becomes more effective. In addition, creating a learning concept in this digital era requires research and analysis of each student's character. In the digital era 4.0, both teachers and students must participate in every activity and learn how to adapt to these new learning methods.

CONCLUSION

The results of the study show that all students had a very good experience when using teaching methods that were carefully considered by the lecturers. The following are a number of interesting lessons and the methods used in the learning process. First, 37 percent of participants chose mathematics with teaching methods that included singing, counting, the use of media, and memorization. Second, 26 percent of participants chose natural sciences with practical methods outside the classroom, games, mnemonics, and the use of other media. Third, 15 percent of participants chose language subjects that used games and drama. Fourth, 12 percent of participants chose to learn social sciences through singing and playing puzzles. Ten percent of participants chose to learn religious subjects through singing. In addition, around 90 percent of participants also stated that one of the challenges in the

[21] Tannady, Hendy. "Meningkatkan peran guru sebagai pendidik di era digital." *Jurnal Inovasi Hasil Pengabdian Masyarakat (JIPEMAS)* 8.1 (2025): 59-69.

learning method was distinguishing between models, methods, approaches, and strategies in the teaching and learning process.

The emergence of the 4.0 industrial revolution, marked by the emergence of interconnected computers and the term "internet of things," has completely changed the way we learn and teach. In this era of industrial revolution, a number of learning methods have been found to be suitable for implementation, including blended learning, flipped classrooms, project-based learning, problem-based learning, collaborative learning, and game-based learning. Although there are learning models that are suitable for implementation, although there are learning models that are suitable for implementation, there are still challenges that need serious attention, such as limited internet access, inadequate instructors, lack of understanding of the latest curriculum, lack of teacher training, and limited student access.

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