HUMANIS
(Humanities,Management and Science Proceedings)

Vol. 5 • No. 1 • Desember 2024

Pege (*Hal.*) : **187 – 195**

ISSN (*online*) : 2746 - 4482
ISSN (*print*) : 2746 - 2250

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Special Issue:
ICoMS 2024
The 5th International Confrence on Management and Science

Website:
http://www.openjournal.unpam.ac.id/index.php/SNH

Analysis Of The Application Of Artificial Intelligence (Ai) Technology On Learning Motivation

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Abstract: The application of artificial intelligence (AI) in the education sector has the potential to revolutionise efficient teaching and learning methods and create a more inclusive and personalised learning environment. Artificial intelligence (AI) can provide personalised learning through virtual tutors and adaptive learning systems that adjust content based on students' individual needs as well as automation of administrative tasks, such as assessment and student data management, allowing teachers to focus more on direct interaction with students as curriculum development steps. In a study, previous research or relevant research is very important because previous research or relevant research serves to strengthen the theory and phenomenon of the relationship or influence between variables. The research method used in this research is a literature study with a qualitative approach. This research focuses on identifying the use of artificial intelligence (AI) in the learning process, analysing the effects of using artificial intelligence (AI) on academic achievement. In the context of education, artificial intelligence (AI) cannot replace the role of the teacher, but it can be a powerful tool to support the learning process. The results show that the use of artificial intelligence (AI) in the learning process can make a positive contribution because students are stimulated to be active so as to create learning satisfaction.
Keywords: Artificial Intelligence (AI), Learning Motivation

INTRODUCTION

The development of information and communication technology in recent decades has had a significant impact on various aspects of life, including in the field of education. One technological innovation that is currently receiving great attention is artificial intelligence (AI). According to John McCarthy (1956) argues that artificial intelligence (AI) is an attempt to model the human thought process and design machines so that they can imitate human behaviour. Meanwhile, according to Sri Kusumadewi (2003), artificial intelligence (AI) is one part of computer science that makes machines (computers) can do work like and as well as humans do. AI promises a range of opportunities to enhance the student learning experience through personalisation of learning, deep data analysis, and more responsive interactions with students (Kiron, 2020). These technologies are capable of transforming traditional approaches to teaching by providing adaptive solutions tailored to the

individual needs of students, thereby improving knowledge retention and overall academic outcomes (Makridakis et al., 2021). Previously only understood as a technology used in the industrial and business sectors, artificial intelligence (AI) is now being used to improve the effectiveness of the learning process and support teaching in a more effective and adaptive way.

In the context of modern education, learning motivation is a crucial factor that influences the success of the learning process. According to W.S Winkel (2004: 526) learning motivation is the overall driving force within students that causes learning. Meanwhile, according to Dalyono (2009: 57), learning motivation is a driving force or encouragement possessed by humans to do a job, namely learning. However, maintaining and increasing student learning motivation is not always easy, especially in the face of challenges that arise in a fast-paced and constantly evolving learning environment.

Based on UNESCO data in 2023, around 67% of students experience challenges in maintaining their learning motivation with conventional learning methods. This has prompted educational institutions to adopt technology-based solutions, particularly artificial intelligence (AI), in an effort to provide a more personalised and adaptive learning experience that is tailored to each student's needs and abilities, thereby increasing students' intrinsic motivation, which in turn can improve their learning outcomes and engagement in the educational process. The application of artificial intelligence (AI) in learning offers various potentials such as personalisation of learning materials, real-time feedback, and content adaptation based on individual abilities. However, the implementation of this technology also raises questions about its effectiveness in improving students' learning motivation. This research aims to analyse the application of artificial intelligence (AI) in education, particularly in relation to students' learning motivation. This research will identify the forms of artificial intelligence (AI) application in learning, analysing its impact on students' learning motivation. Through literature study and comprehensive analysis, this research is expected to provide a deeper understanding of the role of artificial intelligence (AI) in improving learning motivation, as well as provide practical recommendations for educational institutions in optimising the use of artificial intelligence (AI) technology to support a more effective learning process.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The Covid-19 pandemic in 2020 has changed the behaviour of people in the world. Where changes in lifestyle and behaviour of people who continue to develop and do not know space and time make digitalisation increasingly quickly accepted by people in the world.

Figure 1. Essential Digital Headlines
Sumber: https://datareportal.com/reports/digital-2022-indonesia

According to Indonesian digital data, as of February 2022, internet usage has reached 73.7% of the Indonesian population. While data from January 2019 (before the Covid 19 pandemic) internet users in Indonesian society were still 57% of the population

This shows an increase in internet and data usage until 2022 and continues to this year. However, education in the Digital Age is not just the use of information and communication technology, but a change in mindset in education where e-learning becomes the basis of education. E-learning itself is a concept of learning methods using digital technology where the teaching and learning process can be done anytime and anywhere. Where stakeholders are required to use various media, didactic approaches, strategies and creativity. So to support this education, many experts began to create many applications and technologies that support the learning process. Technology certainly cannot run alone because technology is also supported by the application of artificial intelligence (AI). Artificial intelligence (AI) is a concept of human intelligence paired with a computer system. According to Hardiansyah (2023) artificial intelligence (AI) was created to achieve a goal, namely providing computers with the ability to think, learn and act like humans. Meanwhile, according to Bambang (2023) artificial intelligence (AI) is a computer program designed and built to be able to imitate human intelligence, including decision-making skills, logic and other intelligence characteristics. The presence of artificial intelligence (AI) technology is to help human activities that affect all fields of science and technology and it is also felt in the world of education. In some countries the use of artificial intelligence (AI) has been carried out since the last few years and continues to grow rapidly. The application of AI involves machine learning, chatbots, augmented reality (AR), virtual reality (VR), GPT chat and many more. The presence of artificial intelligence (AI) in education helps students understand lessons, and helps teachers in making appropriate and effective learning methods. Merujuk dari berbagai jurnal yang telah kami himpun, penulis telah mendapatkan gambaran terkait penggunaan kecerdasan buatan dalam proses pembelajaran. Berikut adalah contoh penerapan Artificial Intelligence (AI) yang sudah diimplementasikan di dunia pendidikan secara khusus di SMA/SMK di Indonesia. Antara lain sebagai berikut:

1. AI-based CONKER

   An AI-based app developed by Mote Technologies, designed to make it easier for education practitioners/teachers to create standards-compliant educational quizzes and assessments. The app uses AI technology to generate targeted and efficient quizzes, focusing on educational standards such as NGSS (Next Generation Science Standards) and TEKS (Texas Essential Knowledge and Skills). Key features of the AI-based Conker include:

   a. Automatic Quiz Creation IS Conker can automatically create a variety of question types, including multiple choice and short answer, tailored to the needs of the class and subject matter.
   b. Integration with LMS (Learning Management Systems) is Conker.ai can be integrated with Learning Management systems so that education practitioners/teachers can directly export or share quizzes that have been created with students, which greatly facilitates online learning.
   c. Accessibility is Conker.ai is equipped with accessibility features, such as text reading function, which makes it easier for students with special needs to take the quiz.
   d. Instant Feedback is Students can receive immediate feedback on the quiz results, helping them understand the areas that need improvement.

   The Conker AI application is the umpteenth AI application practised by partners so that it adds new experiences in helping teaching and learning activities in the classroom. The results obtained from data processing before and after training showed that the experience and knowledge of teachers increased so that it became evidence that the training provided could improve the competence of teachers at SMK Reformasi.

2. CHATBOT

   A chatbot is a computer programme that can have a conversation with a user using natural language. The history of chatbots began in the 1950s which were used to answer questions,

provide information and perform other specified tasks. Chatbots are developed with several methods including:

a. Rule based Methods that use pre-defined rules to determine the response of the chatbot. The chatbot will execute the rules according to the input from the user and provide an appropriate response.
b. Statistical based This method uses statistical analysis to determine the response of the chatbot.
c. Machine learning This method uses machine learning technology to determine the response of the chatbot.
d. Hybrid This method combines several methods such as rule based and machine learning so that the chatbot will execute rules that match user input and can also learn from the data provided so as to provide better responses. Examples of chatbots include: Siri (Apple), Google Assistant, Amazon's Alexa, Cortana, messenger bots.

With the chatbot artificial intelligence technology can be utilised in order to develop the quality of services in schools that serve several levels of education, so that with a large number of students, information services remain effective and efficient.

3. POSEBLOCK

A term used in the field of artificial intelligence (AI) and computer vision, particularly in the analysis of human body pose or position. In this context, Poseblock usually refers to a component or method in an AI model that works to process, recognise, and estimate human poses from images or videos by detecting the positions or angles of body joints (such as shoulders, elbows, knees, etc). Some key points about Pose Block:

a. Body Pose Estimation is Pose Block is used to identify key points of the human body in an image or video and estimate the overall body position. It aims to capture the layout or configuration of the various parts of the human body.
b. Motion Segmenting is the nature of activity analysis, Poseblock also helps to separate or identify different motions. By tracking position changes over time, Pose Block can identify complex activities such as running, jumping, or dancing.
c. Data Augmentation and Pre-processing is in some AI models, Pose Block is also used as an augmentation or pre-processing method, so that the pose data learned is more diverse and the model is more robust in recognising pose variations. Real-World Application: Poseblock is often used in various applications such as health surveillance, fitness tracking, augmented reality (AR), and human computer interaction.

4. TEACHABLE MACHINE

Teachable machine is a web-based tool developed by Google in 2017 to help users create simple artificial intelligence (AI) models without writing code. The categories of data required in the teachable machine include:

a. Images i.e. models to recognise objects or faces in images.
b. Voice, which is a model to recognise voice or audio.
c. Body Pose is a model for recognising body movements or poses.

5. SCRATCH

Scratch is a software created by the Massachusetts Institute of Technology, United States to make it easier for children to learn computer programming and is expected to accelerate the understanding of STEAM (Science, Technology, Engineering, Art, Math) for children. There are also those who argue that Scratch is a tool to help develop applications without having to write any code but simply by assembling puzzles. Scratch's characteristics and features include:

a. Visual Code Blocks are Scratch uses a block-based interface, where each block represents an instruction or command. The user simply drags and arranges these blocks to create a programme. This makes it easy to understand programming logic without the need to type in syntax.

b. Creative Development is that Scratch helps in making characters (sprites) move, speak, change colour, or play sounds according to instructions suitable for creating interactive stories, animations, to simple games.
c. Understanding Basic Programming Concepts Scratch helps kids learn concepts like loops, if-then conditions, variables, and logic flow for advanced programming.
d. Collaborative Community is Scratch provides an online platform where users can share their projects, view other users' projects, and collaborate thus helping in social learning and idea sharing among users.
e. Educational Applications is Scratch is widely used in primary education to teach programming as it has an intuitive and fun interface for children to learn programming logic early on.

6. AUTOMATIC ASSESSMENT

Automated assessment here offers several advantages, to verify automated questions online. Teachers can realistically and quickly utilise artificial intelligence (AI) as a test, exam or quiz by utilising this technology and artificial intelligence (AI). Where teachers can automatically adjust it according to the level of questions they order, and teachers can even finish answering questions automatically, so that teachers no longer need to create questions, find answers, check them, and give grades. An example of this automated assessment is Quizziz. The training can be carried out well and participants can do the quizzes and assignments given, as well as create projects in the form of interactive learning media with Stracth, Quiziz, Teachable Machine, and material enrichment in the form of AI applications that are available on several sites and are useful for student learning.

7. GLOBAL COURSE

Gobal Courses is a programme that allows instructors and students to conduct online courses using artificial intelligence (AI). In addition, we have the option to choose the online courses we need or want. Thus, SMA Negeri 3 Bukittinggi can also benefit from this technological development and artificial intelligence. Examples of the implementation of these courses include: Udemy courses, Google AI, Alison, Khan Academy, Duolingo. Teachers have implemented artificial intelligence (AI) into their lesson plans. With the advancement of technology, students can now answer questions from teachers more effectively and efficiently, and teachers can now conduct the teaching and learning process more easily.

METHODS

The research method used in this research is a literature study or literature review, namely a series of activities carried out to collect, read, record, and process library data and other reliable sources either in written form or in digital format that are relevant and related to the object being studied which is related to the problem and research objectives. This expression is in line with what was stated by Suharsimi Arikunto (2010: 45), Literature Study is a method of collecting data by looking for information through books, newspapers, magazines and other literature. Other experts also put forward the definition of literature study, including according to (Sarwono, 2006) stating that literature study is the study of data from various reference books and the results of previous research relevant to research to obtain a theoretical basis for the problem to be studied. Meanwhile, according to Danial and Warsiah (2009: 80), literature study is a research conducted by researchers by collecting a number of books, magazines related to the problems and objectives of the research Literature study is a very important activity in the process of research or writing scientific papers. The main purpose of literature study is to explore information and in-depth understanding of a particular topic. More specifically, the objectives of the literature study can be described as follows:

1. Building a Theoretical Foundation

Literature studies help researchers or writers to build a strong theoretical framework as a basis for analysing the problem or phenomenon under study. By understanding relevant theories, researchers can develop a systematic framework.

2. Identifying Research Problems
   Through literature studies, researchers can identify gaps or problems in previous research that have not been answered. This allows researchers to formulate original and relevant research questions.
3. Knowing Previous Research
   Literature studies help researchers to find out about previous studies that have been conducted on the same topic. Thus, researchers can avoid duplication of research and build on the results of previous studies.
4. Determining Research Methodology
   Literature studies can assist researchers in choosing research methods that are in accordance with the research objectives and the type of data to be collected.
5. Finding Concept Definitions
   The literature study helps researchers to find clear concept definitions that are consistent with the research being conducted.
6. Avoiding Plagiarism
   By understanding various sources of information, researchers can avoid plagiarism by providing proper citations and references.
7. Finding Different Perspectives
   Literature study allows researchers to find different perspectives and viewpoints related to the research topic. This can enrich the researcher's understanding of the problem under study.

Based on the explanation above, the researcher concludes that literature study is an important part of a research or scientific work because it serves to provide a clear picture of the researcher's understanding of the topic under study, as well as a basis for developing further arguments and analyses.

Table 1. Previous Research

Judul Penelitian	Hasil Penelitian
Pelatihan Artificial Intelligence untuk Tenaga Pendidik dan Guru Sekolah	Enrichment material in the form of AI applications that are available on several websites and are useful for student learning.
Dasar Muhammadiyah (Online Thematic Academy Kominfo RI)	Participants get an increased score with an average increase of 37 points or an increase of 76%. Score is 37 points or 76% increase.
Penerapan Artificial Intelligence pada Aplikasi	That the application of
Chatbot sebagai Sistem Pelayanan dan Informasi Online pada Sekolah	Application as an online service and information system in schools can improve the quality of services and information to be more effective and efficient.
Pengembangan Bahan Ajar E-Comic melalui Aplikasi Canva pada Mata Pelajaran IPAS di Sekolah Dasar	E-Comic-based teaching materials are suitable for use in learning for students.
Penerapan Aplikasi Conker Berbasis Ai Pada Smk Reformasi	Users: AI technology is very helpful in the Education sector and educators feel the need to know and explore through real practices in the field so as to increase teacher competence in

	facing the digitalisation era in 2030. Facing the digitalisation era in 2030.

RESULTS AND DISCUSSION

The following are the results of research from various journals that we have collected, including the following: The results of research from the journal Edy Subowo, M. Naufal Dhiya'ulhaq, Ika Wahyu Khasanah (2022) The introduction of AI for educators is carried out online with the Zoom application platform with certified teachers from Kominfo and is carried out in five meetings including the introduction of AI, learning support applications such as Stratch, Quizizz, Teachable Machine, and Poseblock. Participants who pass the training will receive an e-Certificate from Kominfo. It is hoped that this training will provide an understanding of Artificial Intelligence-based learning for teachers so that it can be channelled to the students they teach. Participants take a Pre Test with material related to the use of Artificial Intelligence to support learning in elementary schools, while at the end of the session a PostTest is carried out with the same material and different questions, with training, participants get an increased score with an average increase in score is 37 points or an increase of 76%. The results of research from the journal Erlina, Julyanto, Jeffrey Rustandi, Alexander, Leo Francisco, Ni'matul Ma'muriyah, Sabariman (2023), namely research on the application of this chatbot application to (1) Discuss the improvement of the effectiveness of information services of a school that has several levels of education, and (2) Discuss solutions that can help students to get accurate information about schools anywhere and anytime only through applications. This research uses a literature study method based on several publications that have been reviewed previously. After conducting a literature study, it can be concluded that the application of artificial intelligence chatbot applications as an online service and information system at schools can improve the quality of services and information at schools to be more effective and efficient. The results of research from the journal Diva Nadiyatus Shahwa, Mustamiroh Mustamiro, Iksam Iksam, Tri Wahyuningsih (2024) are: 1) The development of E-Comic-based teaching materials uses the ADDIE model through 5 stages, namely analysis, design, development, implementation, and evaluation. The process of developing teaching materials is carried out by analysing student needs, characteristics and curriculum, making designs such as storyboard design, material design and product design design including character and cover design using the AI-assisted canva application. 2) The results of the feasibility test by media experts 1 and 2 scored 86% and 90% in the ‘Eligible’ category, the results of the feasibility test by material experts 1 and 2 scored 84% and 98% in the ‘Eligible’ category. The final stage was carried out field trials and then evaluated with product revisions. Teacher response test, response. The results of research from the journal Dwi Wulandari Sari, Kurnia Gusti Ayu, Fajar Edyana (2024), namely based on the results of the post-test and pre-test filled in by 22 Reformed Vocational School teachers, showed an increase in knowledge about the use of AI applications that were very helpful in classroom learning tasks. The conclusion of this community service is that the use of AI technology is very helpful in the education sector and educators feel the need to know and explore through real practices in the field so as to increase teacher competence in facing the digitalisation era in 2030.

Based on the journals used, we as authors were able to compile an in-depth analysis of the implications and relevance of the findings presented within the framework of the study on the opportunities and challenges of using artificial intelligence in improving student learning motivation. These include the following:

1. Personalised Learning is AI enables learning that is tailored to each individual's needs and learning style. This creates a more relevant and engaging learning experience, thus increasing motivation.
2. More Effective Feedback AI can provide quick, specific and constructive feedback. This helps students understand their mistakes and encourages them to keep trying.
3. Easier Access to Information is that AI can help students find the information they need quickly and efficiently. This reduces frustration and increases motivation to keep learning.

4. Interactive Learning is AI can make learning more interactive and fun through games, simulations, and other learning tools.
5. Better Learning Support is AI can provide better learning support, such as virtual tutors or learning assistants. This helps students overcome learning difficulties and boosts their confidence.
6. Time Efficiency is that AI can provide information faster so that eventually students and educators can be efficient in using their time, where students or teachers can use the remaining time for other activities such as analysing the data generated or perhaps carrying out other activities.
7. Cost Efficiency is the existence of AI that is applied in various applications that can be downloaded automatically can make students or educators do cost efficiency, where by buying an internet quota budget or credit, they can already access these AI-based applications.
8. Data Processing Skills, namely with the existence of AI, educational practitioners are required to have the ability / skill in processing data. Where the data generated by AI is quite fast but the data may be owned by other educational practitioners. So that the information generated (output) from the data that distinguishes between one educational practitioner and another.

CONCLUSIONS

The successful implementation of Artificial Intelligence (AI) in SMA/SMK throughout Indonesia can be carried out through optimal performance training and being able to utilise technology and its implementation. Not only trainings, each SMA/SMK also evaluates the trainings conducted so that it can be seen to what extent students and educational practitioners such as teachers understand applications that use artificial intelligence in the teaching and learning process at SMA/SMK. After training and evaluation, educational practitioners can find out what things need to be improved and further developed to be able to produce new applications with the application of artificial intelligence (AI). Where with the formation of applications based on artificial intelligence (AI) can ultimately help so that the teaching and learning process can run effectively and efficiently and ensure that the application of artificial intelligence is only used as a tool for the advancement of education and does not make dependence on students and educators.

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