

## **The Impact of Utilizing Artificial Intelligence In Independent Curriculum-Based Learning**

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### **Abstract**

The 5.0 era is a milestone in all forms of technological development in various fields. The emergence of a system that provides wide access and is able to easily solve every problem with the right solution is called artificial intelligence. The system has now entered the scope of education. Its use is in the administration and implementation of learning, by providing convenience for teachers in presenting innovative material content. Artificial intelligence (AI) has a significant impact on the implementation of independent curriculum-based learning. The curriculum emphasizes student-centered learning, so the use of AI can be an alternative to developing interesting and fun teaching methods and media so that students get a meaningful learning experience. This research aims to determine the impact of the use of AI on independent curriculum-based learning. Then, using a descriptive qualitative research method with literature review analysis. Furthermore, the results of the research are that artificial intelligence is able to improve student understanding through more interactive learning, because in the implementation of learning using various methods, models, and media adapted to student needs. The impact of the use of artificial intelligence (AI) as a form of technological advancement in learning includes several important aspects, namely 1) in learning using artificial intelligence (AI) to improve learning personalization and 2) the use of artificial intelligence (AI) is in line with independent curriculum-based learning that carries the concept of independent learning. Thus, artificial intelligence (AI) can be used as a teacher's learning assistant to strengthen and develop the preparation of effective teaching tools.

**Keywords: Artificial Intelligence; Learning; Independent Curriculum**

### **Introduction**

Efforts to improve the quality of education in Indonesia have been carried out continuously by the central and regional governments. The government continues to make efforts to improve the implementation of the curriculum that is adjusted to educational developments. The curriculum that is being echoed as a new curriculum in the world of education is an independent curriculum. This curriculum provides flexibility and flexibility to educators in compiling teaching tools based on student characteristics. The independent curriculum carries the concept of Independent Learning with a focus on student-centered learning (Student Center Learning). In this curriculum, educators play the role of facilitators in the learning process, so that the knowledge obtained by students does not only come from educators but also through various kinds of references such as discussion results, the internet, books, product or work creation while still being strengthened by teachers. In this process, students are directly involved with the aim of getting a more meaningful learning experience. Therefore, learning activities like this are able to develop the potential of students. The implementation of the curriculum in learning in the digital era, accompanied by the development of significant technological

advances. The development of technological advances does not only occur in industrial sectors, but has penetrated into the world of education. In the digital era, technological advances that are growing rapidly in the field of education are in the form of Artificial Intelligence. Artificial Intelligence (AI) is a program that functions to provide accurate information needed by a person. In education, these technological advances can help educators in facing various teaching challenges that arise in the field of education in the modern digital era.

Thus, the ability to Artificial Intelligence (AI) can provide convenience for educators to design teaching tools according to student characteristics, so that the implementation of teaching and learning can run effectively in order to achieve the learning goals that have been set in the teaching module (Mambu et al., 2023). Artificial intelligence has become a form of technological advancement. Artificial intelligence is a program designed to produce a computer system that has cognitive abilities such as human intelligence. With the capabilities presented by Artificial Intelligence (AI) provides smarter solutions and is able to quickly solve a variety of complex tasks ranging from analyzing data to generating innovative and creative ideas.

Use Artificial Intelligence (AI) is able to expand the limits of technological capabilities. The development of technology in the modern era, Artificial Intelligence (AI) is increasingly used in various fields, especially in the field of education. Artificial intelligence (AI) is able to perform its tasks automatically by having the ability to learn from experience in processing the data obtained by correcting errors in the data. In this case, Artificial Intelligence (AI) is used as one of the most important innovations in the digital era, because of the presence of artificial intelligence in helping humans in various activities. With the existence of Artificial Intelligence (AI), humans can simplify various kinds of problems and complex processes with fast and optimal results.

The education sector uses artificial intelligence as a tool or assistant in learning, artificial intelligence is used by educators in compiling more interactive teaching tools to improve the quality and quality of learning in educational units (Hasni et al., 2023). However, educators need to pay attention that the use of AI is limited to tools to help in preparing innovative teaching tool planning, in order to welcome an interesting and fun learning process. In this case, artificial intelligence (AI) cannot replace the central role of educators as someone who has full responsibility and authority to educate and guide students personally. The world of education today is greatly influenced by technological advances. Educators have an important role in the implementation and development of the learning process in the classroom in order to achieve educational goals.

In this case, educators must certainly be able to keep up with the development of technological advances in the field of education. Educators must be wise in using and utilizing these technological advances. Thus, the utilization of Artificial Intelligence (AI) has developed rapidly in various fields, especially the world of education can provide various benefits and potentials in helping educators develop teaching tools to be applied when providing materials in the classroom to improve the quality and quality of learning at every level in the education unit (Diantama, 2023). Furthermore, the use of AI in education in the digital era provides various benefits in improving the quality of learning through the implementation of an independent curriculum in learning.

The use of technology in the form of Artificial Intelligence (AI) can make it easier for educators to prepare all educational administrations such as the preparation and planning of teaching tools, determining learning models and media. With the presence of Artificial Intelligence (AI) can provide recommendations and suggestions to educators regarding the use of more adaptive teaching tools in order to boost the quality of learning (Fitri and Dilia, 2024). The use of artificial intelligence is used by educators with the aim

of learning activities running effectively. Educators must integrate the use of technology while maintaining important aspects by making positive contributions and strengthening material understanding in order to improve the quality and quality of education (Fitri and Dilia, 2024). So, teachers can be wise in taking advantage of the features and recommendations provided by Artificial Intelligence (AI), by first reviewing all responses and answers given Artificial Intelligence (AI) before being used or applied in classroom learning with students.

Utilization Artificial Intelligence (AI) in independent curriculum-based learning can have a positive impact on education along with technological developments. The independent curriculum has provided a lot of convenience and flexibility for educational units in compiling and preparing learning tailored to the needs of the educational unit. With the flexibility provided by this curriculum, it is accompanied by the development of technological advances by presenting AI that can help educational units, especially educators, in facing various challenges that arise in the learning process in this modern era. The program can be used by educators as a tool that is able to provide recommendations and suggestions that can be used in compiling and preparing interesting teaching tools, so that the learning process takes place happily.

## **Method**

The purpose of the study is to explain the use of artificial intelligence for independent curriculum-based learning, which has both positive and negative impacts. By using descriptive qualitative research methods. The descriptive approach is an approach that focuses on actual problems about a particular phenomenon. Thus, descriptive qualitative research is research that seeks to describe an event and occurrence, then described descriptively about the meaning contained in it (Sugiyono, 2009). Furthermore, this research method seeks to analyze the data encountered in the field by focusing on actual problems related to phenomena. This approach has the goal of describing the phenomenon in depth and comprehensively. Qualitative methods can be used to explore the implementation of technological advances with the flexibility provided by the independent curriculum, of course, it can have an impact on learning in the classroom, as well as the long-term development of students. The use of the literature review method to identify existing research results related to the topic being researched, through this method provides understanding to researchers in the form of broader and deeper insights, as well as strengthening researchers in understanding the research topic being studied.

## **Results And Discussion**

### **1. Artificial Intelligence (AI)**

Artificial intelligence (AI) ethologically consists of two words, namely, Artificial means artificial, and Intelligence means human intelligence or ability to think. Artificial intelligence (AI) can be interpreted as an entity, a program on a computer system designed to be able to process data accurately like human intelligence. The ability of artificial intelligence (AI) systems is the result of the development of technological advances in the digital era, now it has been widely used in various industrial fields, especially now it has penetrated into the field of education. The use of artificial intelligence (AI) in the field of education has brought changes in the preparation of teaching tools, the implementation of the learning process, learning assessments, and overall learning evaluation, as well as curriculum development (Rifky et al., 2024).

In Indonesia, the independent curriculum has now been implemented in educational units, the learning process is adjusted to the needs of each student, in order

to provide a meaningful learning experience (Rifky et al., 2024). Artificial intelligence (AI) is a program designed to be implemented on machine devices or computer systems. Artificial intelligence (AI) design aims to make the system work effectively in solving all problems with the right solutions (Gaffar et al., 2021). Artificial intelligence (AI) continues to develop along with technological advances in the digital era, where artificial intelligence (AI) is designed to be able to carry out its tasks automatically and quickly. Furthermore, there are four approaches used for the development of artificial intelligence (AI) Gaffar et al., (2021) as follows:

**a. Turing Test Approach**

The Turing Test approach is a method designed to create artificial intelligence (AI) that is able to act humanly. In the Turing test approach, AI is like a Turing machine that is designed with the ability to imitate human intelligence in solving various complex tasks. With the Turing test approach, artificial intelligence (AI) is able to imitate human abilities, including the ability to communicate, solve problems, and perform certain other tasks effectively.

**b. Cognitive Model Approach**

The cognitive model approach is an approach in artificial intelligence that aims to create artificial intelligence (AI) capable of thinking humanly. In the cognitive model approach, artificial intelligence (AI) is designed using computer models or programs that can integrate cognitive theories appropriately, so that artificial intelligence (AI) processes information, makes decisions, and solves problems such as human intelligence or human mindset. Through the cognitive model approach, AI is expected to be able to understand and respond to all situations based on thoughts that are equivalent to human intelligence or mindset.

**c. The Low of Thought Approach**

The low of thought approach is an approach designed so that artificial intelligence (AI) can think rationally. Through a low-of-thought approach, artificial intelligence (AI) is expected to be able to use logical reasoning to produce the right conclusions based on the thought process in a structured manner. In thinking rationally, artificial intelligence (AI) uses logic and critical thinking to analyze data and information obtained in making a decision or conclusion. Therefore, in the low of thought approach, it is designed as an intelligent and sophisticated system where decisions are made based on the principles of rationality and logic so that they are able to provide optimal results.

**d. Rational Agent Approach**

The rational agent approach is an approach in artificial intelligence (AI) that focuses on the ability of artificial intelligence (AI) to act rationally. This approach is a system that is able to perform effective actions to provide optimal results based on proper reasoning. In the rational agent approach, artificial intelligence (AI) is designed to be able to perform its tasks efficiently with the aim of creating a system that is able to respond to various situations with optimal decisions based on logical reasoning. The development of technological advances is so rapid in this digital era in the form of artificial intelligence (AI). Artificial intelligence has become one of the emerging innovations in this era. With artificial intelligence (AI) capabilities that can not only perform complex tasks, but are able to provide effective and efficient solutions with intelligent systems. The following is an overview of artificial intelligence (AI), as follows:

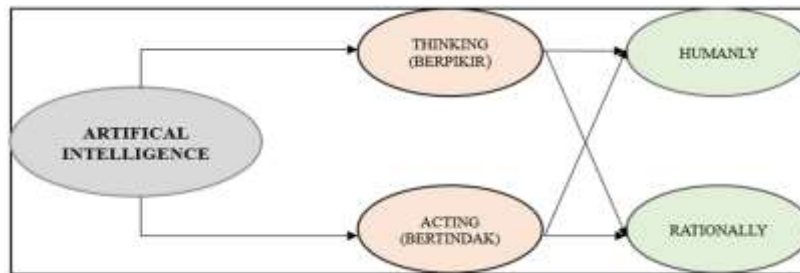


Figure 1. Artificial Intelligence (AI)

Source: Gaffar et al., (2021)

Based on the image above, artificial intelligence or Artificial Intelligence (AI) is a technology designed to be able to imitate human intelligence with two main aspects, namely thinking and acting. In terms of thinking, Artificial Intelligence (AI) can process information obtained like humans through cognitive models, while acting Artificial Intelligence (AI) is able to mimic human behavior tested through the Turing test. In addition to being able to imitate human intelligence, Artificial Intelligence (AI) is able to think and act rationally so that it is able to make a decision based on logic. Artificial intelligence (AI) in this digital era can be seen as Agent the smart, Artificial Intelligence (AI) is not only able to imitate human intelligence but also able to make decisions based on logical reasoning. Artificial intelligence (AI) includes a variety of systems used to make computers have human-like intelligence. The following are some of the components or aspects of cognitive skills that are focused on by Artificial Intelligence (AI) (Rifky et al., 2024: 47), as follows:

- 1) Learning, learning is a part of artificial intelligence (AI) that focuses on the process of gathering data or information. After obtaining the data, it will then be processed and converted into information that can be used. Through this process, artificial intelligence (AI) is able to learn from experience in collecting the data obtained and improve its performance in solving more complex problems based on structured data processing.
- 2) Reasoning, reasoning is one of the components of artificial intelligence that aims to select and use the right algorithm to obtain optimal results. Artificial intelligence (AI) uses the reasoning process to make logical decisions and conclusions based on data, so that it is able to solve problems optimally.
- 3) Self-correction, self-correction is an element of artificial intelligence (AI) that functions to improve the problem-solving process to obtain more optimal results. Artificial intelligence (AI) uses self-correction to continuously correct errors that occur during the data processing process, so that it is able to improve the performance of artificial intelligence (AI) to improve in obtaining accurate results.
- 4) Creativity, creativity is one aspect of artificial intelligence (AI) that focuses on the ability of artificial intelligence (AI) to create something new, such as artwork in the form of images, text, music, or even innovative ideas. In this case, artificial intelligence (AI) can be used to produce creative works that can be used in various fields.

The development of technology in the digital era, especially in the field of education, has developed so rapidly by focusing on four main aspects of cognitive skills. The four aspects include learning, where artificial intelligence (AI) is able to collect and process data into information that can be used, then reasoning which provides artificial intelligence (AI) to be able to choose and apply the right algorithm to achieve the desired result, self-correction is the ability artificial intelligence (AI) to improve and increase its accuracy automatically over time, and creativity is the ability of artificial intelligence (AI) to create new works and ideas in the form of text, images, music, and other innovative ideas.

The presence of artificial intelligence (AI) is a technological advancement that is able to perform complex tasks such as analyzing data, processing information in the form of text to answer questions or provide solutions, producing images, and even being able to process sounds. The ability of artificial intelligence (AI) in doing these various tasks not only speeds up the work process but also provides the right solutions, especially in the field of education, the abilities provided by artificial intelligence (AI) can be used by educators as a tool in compiling all educational administrations such as teaching tools, as well as determining interactive learning media that can be used to create a learning environment fun in class.

Based on the description above, artificial intelligence (AI) is a technology that is able to imitate human intelligence with the ability to think and act. Artificial intelligence (AI) plays an important role in various aspects of cognitive skills, from being able to analyze data to generating creativity or innovative ideas such as images and music. With artificial intelligence (AI), tasks that previously required human intervention can now be carried out by technology in the form of artificial intelligence (AI) faster. Thus, it is very important for every individual to control the use of artificial intelligence (AI) wisely, so that the presence of technological advances can be used to improve the quality of life to overcome various challenges that arise in various fields of industry and education in the digital era.

## 2. Independent Curriculum-Based Learning

The use of this curriculum carries the concept of Freedom of Learning. The determination of the independent curriculum is based on the challenges and obstacles in the previous curriculum. The curriculum aims to provide flexibility to educators at the planning stage, namely compiling the Learning Objectives Flow (ATP) and Teaching Modules guided by the Learning Outcomes (CP) of the Ministry of Education and Culture based on the Pancasila Student Profile. The preparation of teaching tools is an urgent matter that needs to be prepared by educators in a systematic and planned manner, by developing material content that will be taught to students, so that the implementation of the learning process can take place effectively in order to achieve the educational goals that have been set (Sutriyanti et al., 2024). The following is a table related to the concept of the curriculum, namely:

Table 1. The Concept of Freedom of Learning

It	The Concept of Freedom of Learning
1.	The implementation of USBN is regulated directly by the school.
2.	The abolition of the UN was replaced by a new system, namely the Minimum Competency and Character Assessment.
3.	Developing student competencies from cognitive, affective, and psychomotor aspects in order to become competent human resources.
4.	Simplification of Learning Modules.
5.	Determination of zoning system policies in the admission of new students, except for the 3T area.

Source: Manalu et al., (2022)

Based on the table above related to the concept of independent learning, education units are given authority by the government to regulate the implementation of learning according to the needs of each school. Therefore, independent curriculum-based learning provides several benefits for educators in carrying out the learning process, namely 1) educators are not required to pursue dense learning goals, 2) the implementation of learning is adjusted to the learning style and characteristics of students, 3) it provides

flexibility and flexibility for educators to explore student potential based on a conducive and fun learning environment, and 4) more simplified learning makes educators do not feel burdened in the implementation of the learning process (Sesmiarni, 2021).

The independent curriculum provides schools with freedom in regulating and implementing the curriculum in learning. Then, educators have a central role in applying it to the student learning process in the classroom. The existence of this curriculum makes educators who act as learning facilitators with the aim of exploring all the potential that students have. With such a learning system, it can provide a meaningful learning experience (Kustiana, 2021). Strengthened by Permendikbudristek No. 12 of 2024 regarding the structure of the independent curriculum which is divided into three parts, namely, 1) intracurricular learning, 2) co-curricular, and 3) extracurricular (Permendikbudristek, 2024). The following is a table about the three learning components, as follows:

Table 2. Independent Curriculum Structure

It	Independent Curriculum Structure
1. Intracurricular Learning	A series of compulsory learning activities for students. There are three main things in intracurricular learning activities, namely; 1) classical process; 2) refer to the structure of the school curriculum; and 3) material competence according to the subject.
2. Co-Curricular Learning	A series of activities to support the compulsory learning process, aiming to develop student potential based on the competency standards that have been set by the school. Choreographic learning in the independent curriculum is P5 activities. The project was implemented by the school by choosing one of the themes that had been determined by the government. Then, schools can apply the theme according to the needs of the school. In its implementation, students will be involved directly to strengthen and instill Pancasila values. Where, P5 activities are indeed echoed as activities to shape student character based on the six dimensions listed in the Pancasila Student Profile.
3. Extracurricular Learning	A series of activities are carried out to develop and hone students' talents. This activity is guided directly by experts who are competent in their fields. The implementation is carried out outside of compulsory class hours. Extra activities can be used as a channel for students' talents, so that not only their academic abilities are honed continuously, but are interspersed with positive non-academic activities.

Based on the table above, it describes the structure of the independent curriculum which is divided into three parts, namely, 1) intracurricular learning, 2) co-curricular learning, and 3) extracurricular learning. Each of these three parts has an important role in supporting cognitive, effective, psychomotor and character development of students

based on the values contained in Pancasila. The elaboration in more depth related to the three components. First, intracurricular learning is a mandatory activity that involves classical processes in the classroom based on the structure of the school curriculum which includes basic competencies and educational achievements (CP). Intra learning aims to ensure that students can gain in-depth academic knowledge.

Based on the independent curriculum with all the flexibility provided, it makes it easier for educators to prepare learning planning stages such as the Learning Objectives Flow (ATP), Teaching Modules (MA), determination of models, approaches, and learning media that are tailored to the needs and learning styles of students. Basically, in one class there are various students with their backgrounds, needs, and learning styles. In general, there are three types of learning styles, namely, 1) audio-visual learning styles; 2) visual learning style, and 3) kinesthetic learning styles. Second, co-curricular learning is a learning support activity that is carried out to develop the potential of students through the P5 program.

The project activities focus on shaping student character based on the Pancasila Student Profile. The school carries out P5 activities by applying the theme that has been set by the government in each educational unit. Cocurricular learning aims to create a fun learning atmosphere, students have a more meaningful learning experience. Because this activity involves students directly and is related to daily life, so that students can more easily understand the knowledge they have acquired optimally. Third, extracurricular learning has an important role as a learning activity to develop students' creativity, interests and talents. The existence of extracurricular activities provides opportunities for students to develop their non-academic skills as a whole.

Where, students are given the freedom to choose non-academic activities that they want to develop, accompanied directly by teachers who are experts in their fields. Based on the description related to the three learnings above, it turns out that each other is related to each other to provide a balance between the achievement of student competencies both cognitively and the development of students' character. Thus, the concept of this activity is in line with independent curriculum-based learning so that students in the future will be able to face challenges in community life equipped by non-academic abilities that they have acquired while sitting in school. So, students are not only equipped with academic knowledge, but also non-academic, as well as the cultivation of character education based on Pancasila values through P5 activities.

The implementation of the independent curriculum is in line with the 21st century learning model. The learning model aims to develop the potential of students, with a student-centered learning process (student center learning). The independent curriculum emphasizes student-centered learning by involving it directly during the learning process. By providing flexibility when carrying out learning. The main subject in learning is the student himself. Students have an important role in acquiring knowledge in depth, and are able to apply it in daily life. However, it should be noted that in the process of acquiring knowledge, students must be accompanied and guided directly by the teacher concerned (Wahyudiono, 2023). Thus, teachers and students have an important role in the learning process, in order to achieve the educational goals that have been set.

Not only the output or learning outcomes are prioritized, but the process of gaining knowledge is an important thing that needs to be considered, so that teachers and students can deeply interpret the understanding related to teaching materials. The following is a table related to 21st century skills and learning strategies that can be applied in the implementation of learning in the classroom (Wahyudiono, 2023). These skills are known as the 4C (critical thinking, communication, creativity, collaboration), which are very important to provide a deep understanding and develop students' character, namely:



Table 3. 4C

It	Skills	Strategy
1.	Critical thinking	<ol style="list-style-type: none"> <li>1. A student-centered approach to learning.</li> <li>2. Ignite the material with a question about the problems that exist in the environment.</li> <li>3. Opening a discussion forum.</li> <li>4. Providing examples based on students' experiences, as well as those in daily life.</li> <li>5. Giving reflection.</li> </ol>
2.	Communication	<ol style="list-style-type: none"> <li>1. Delivering teaching materials with clear ideas.</li> <li>2. The use of language is simple and easy to understand.</li> <li>3. Implement effective learning methods, to build interpersonal communication between teachers and students.</li> <li>4. The use of technology as an interesting learning medium.</li> </ol>
3.	Creativity	<ol style="list-style-type: none"> <li>1. Explore material with assignments to create products or projects.</li> <li>2. Providing opportunities for students to be creative in creating the assignments given.</li> <li>3. Guide students to develop creative ideas related to learning topics or themes.</li> </ol>
4.	Collaboration	<ol style="list-style-type: none"> <li>1. Learning uses cooperative methods.</li> <li>2. Forming students in several groups.</li> <li>3. Give students the responsibility to complete their assignments.</li> <li>4. Students are given space to collaborate with their peers.</li> <li>5. Students are taught to be able to appreciate a variety of different opinions.</li> </ol>

Based on the table above, in 21st century learning there are four skills that are very important in learning, namely critical thinking, communication, creativity, and collaboration, as well as using the right strategies to be applied in developing the four skills in the implementation of learning. In critical thinking skills, the strategies used include a student-centered learning approach, conducting discussions, and providing explicit assistance to students through reflection activities. In communication skills, teachers are able to convey ideas about the material clearly, students can listen effectively, and are able to utilize existing technology. Furthermore, creativity skills, students are encouraged to be active in exploring learning materials in more depth by expressing their creativity in making product assignments. Meanwhile, collaboration skills emphasize student cooperation in groups by respecting each other's opinions, and sharing responsibilities fairly.

Thus, the learning strategies used in developing skills in 21st century learning aim to equip students with skills that are relevant to the needs needed in this era. Based on the description above, it can be concluded that in independent curriculum-based learning that carries the concept of independent learning provides flexibility in the implementation of the learning process, where students are given space to develop their potential according to their interests and talents. In the independent curriculum structure, learning is divided into three, namely intracurricular learning, co-curricular learning, and extracurricular learning to support the development of academic competence and student character.

Then, independent curriculum-based learning must be adjusted to 21st century learning skills such as critical thinking, communication, creativity, and collaboration. Thus, the independent curriculum is designed so that students can master knowledge while being able to develop their potential, so that they are ready to face all challenges and changes that exist in the future.

### **3. The Impact of the Utilization of Artificial Intelligence (AI) in Independent Curriculum-Based Learning**

The development of technology in the world of education provides various benefits such as the presence of artificial intelligence (AI) which can help educators in creating learning media used in the classroom. The central government has set a new policy regarding curriculum changes with the introduction of a curriculum that carries the concept of independent learning. The implementation of the independent curriculum in educational units can provide flexibility and flexibility to educators in preparing teaching tools. In this case, educators and students must be able to adapt to the digital-based educational process (Salim et al., 2023).

Increasing expertise in the field of technology is very necessary in supporting the ability of educators in the use of technology, by providing trainings on the importance of using technology in planning, implementing, and evaluating learning by analyzing the development of student potential by affirming learning outcomes (Sudarsana, 2018). Thus, educators have the readiness to integrate artificial intelligence (AI) into the learning system. The existence of artificial intelligence (AI) has a significant impact on the world of education. The integration of advanced artificial intelligence (AI) technology in the field of education provides opportunities to improve the quality of learning. With an artificial intelligence (AI) system that is designed to imitate human intelligence, artificial intelligence (AI) is able to create and compile teaching tools attractively and quickly (Ulimaz et al., 2024).

Therefore, educational units can utilize and integrate artificial intelligence (AI) in learning wisely. Artificial intelligence (AI) can be used by educators as a tool and learning assistant to improve the personalization of learning in the classroom. Thus, the use of artificial intelligence (AI) technology in independent curriculum-based learning wisely and effectively will certainly be able to create a more adaptive learning process. This digital era hopes that educators will be able to keep pace with the development of artificial technology that is developing rapidly. The development of science and technology is an urgent matter that needs to be considered by all stakeholders, especially its development has now penetrated into the world of education.

With independent curriculum-based learning where learning is adjusted to the needs of students (student-centered). The curriculum in Indonesia has developed rapidly to adapt to all challenges that arise in the era of globalization. The development of a new curriculum over the previous curriculum aims to focus learning on students. This learning approach can explore and develop students' potential and talent interests, and is accompanied by the cultivation of moral values based on the six dimensions of the Pancasila student profile (Indarta et al., 2022). Thus, educators get a form of convenience to prepare planning, implementation, and evaluation stages on curriculum-based learning with the concept of independent learning accompanied by the development of artificial technology in the digital era by utilizing it as wisely and as best as possible.

However, educators still pay attention to all existing aspects so as not to lose their role as someone who has full control as a figure who is a role model for students to guide them by training, teaching positive activities directly during the learning implementation process in the classroom, so that students can become competent individuals and able to

compete in society. Furthermore, the use of artificial intelligence has a significant impact on the education sector. Of course, this needs to be faced wisely by educators. Independent curriculum-based learning is flexible learning, namely teachers are given the freedom to develop the potential of students, this is a milestone to form skills and abilities both in the academic and non-academic fields. So that with a learning system like this, it can create an effective and efficient learning environment as a form of approach to explore students' potential more deeply (Ningtyas & Juliantari, 2022). Therefore, the presence of artificial intelligence (AI) can provide many benefits in helping educators to personalize learning, namely teaching materials are arranged according to student characteristics. With the help of artificial intelligence (AI), educators can use it to analyze data on student learning development that is carried out in more depth, so that educators can identify learning difficulties faced by students. However, behind the many potentials obtained through artificial intelligence (AI), educators need to be aware of the challenges that arise due to the use of artificial intelligence (AI).

The excessive use of artificial intelligence (AI) can reduce social interaction and interpersonal communication between educators and students. The implementation of the learning process needs to establish good interpersonal communication between teachers and students, becoming an important foundation in instilling moral values based on Pancasila to shape the character of students. Such activities cannot be replaced by technology. Therefore, educators must continue to balance the use of artificial intelligence (AI) with a pedagogical approach in order to encourage direct interaction and discussion between students. Thus, the proper use of artificial intelligence (AI) is very good in the implementation of independent curriculum-based learning.

The application of artificial intelligence in the world of education will have both positive and negative impacts. First, the positive impact felt through the use of AI is to simplify the task of educators in compiling education administration more quickly, technology can be used anywhere and anytime as long as there is internet. Second, the application of artificial intelligence also has a negative impact if it is overused. Therefore, more in-depth trainings are needed on the use of technology that is currently developing, especially about AI in education. Furthermore, another negative impact is that artificial intelligence (AI) will definitely be damaged because it is made in the form of a computer program (Setiawi et al., 2024).

Therefore, educators in utilizing technology in the form of artificial intelligence must be wise so that artificial intelligence (AI) can have a positive impact in helping educators carry out the learning process. Furthermore, artificial intelligence systems can be a solution for educators to improve learning strategies, learning models with the use of learning media in independent curriculum-based learning by taking advantage of technological advances in this era. With artificial intelligence, it can help educators in personalizing learning, and creating learning interventions with new learning plans. However, the use of artificial intelligence (AI) systems must be carefully considered so that educators and students are not dependent on all the conveniences provided by artificial intelligence (AI) features.

In this case, artificial intelligence (AI) has an important urgency in development in the world of education (Zulkhi et al., 2024). With various benefits offered by artificial intelligence (AI), educators still have an important role in using them wisely to improve learning and help students to be ready to face all forms of technological developments in the digital era. The use of artificial intelligence (AI) in independent curriculum-based learning must be integrated by supporting the development of learning skills in the 21st century. In 21st century learning, it focuses on four skills in learning, namely critical thinking, communication, collaboration, and creativity (Wahyudiono, 2023). The use of

Artificial Intelligence (AI) can be used to ease the administrative burden of educators, so that educators can focus more on developing learning skills and character of students. Educators must play an active role in ensuring that artificial intelligence (AI) is used to facilitate inclusive learning.

Thus, educators are able to equip students with strong digital literacy skills so that students not only become passive users but can think critically, creatively and can take advantage of other new technologies that are now developing rapidly in the world of education. Based on the description above, it can be concluded that the impact of the use of artificial intelligence (AI) on independent curriculum-based learning will be optimal if educators are able to balance the use of technological advances while still actively interacting with students during the implementation of the learning process. The development of technological advances in the form of artificial intelligence (AI) is used as a support in creating a holistic learning environment. The use of AI, assisting teachers in carrying out the learning process is accompanied by the use of technology, as the main focus is on the cognitive, social, and emotional development of students.

Artificial intelligence (AI) technology can help educators in personalizing learning, which is able to prepare teaching material content according to the needs of each student. By using a comprehensive approach in learning, it aims for teachers to emphasize on cognitive development, as well as the social-emotional development of students. Therefore, educators must master the classroom and create a conducive and dynamic environment, by utilizing artificial intelligence (AI) as an innovative medium in preparing teaching tools that will be used in the implementation of the learning process. The development of artificial intelligence (AI) technology can be used wisely to ensure that learning continues to run conductively, both in academic aspects and in the development of student character so that educational goals that have been set by the educational unit can be achieved.

## **Conclusion**

The use of artificial intelligence or Artificial Intelligence (AI) in independent curriculum-based learning has a very significant impact. Utilization Artificial Intelligence (AI) has the potential to improve the quality and effectiveness of personalized learning. Artificial intelligence providing students with a more adaptive and meaningful learning experience, as students are directly involved in the process, as well as encouraging 21st century learning skills. In the learning process, educators play a central role in ensuring that the use of Artificial Intelligence (AI) does not reduce the essence of education that is humanist, interactive, and based on strengthening students' character education. With the right use of approaches, Artificial Intelligence (AI) can enrich the implementation of learning with wider access for students to acquire their knowledge, as well as prepare students to face various challenges in the era of globalization. Further, the use of Artificial Intelligence It can help educators in balancing the use of technological advances while still actively interacting in the implementation of the learning process in the classroom. Artificial intelligence (AI) can help educators in adjusting teaching tools and the content of teaching materials that are tailored to the needs of students. However, in the implementation of direct learning, educators still play a direct role in guiding the cognitive and socio-emotional development of students. Therefore, Artificial Intelligence (AI) must be used effectively and used as a tool in independent curriculum-based learning. Thus, the presence of technological advances in the digital era in the world of education educators need to be wise in utilizing Artificial Intelligence (AI) as a learning assistant while still paying attention to ethical aspects, as well as maintaining a balance between technological developments and interactions between educators and students in order to achieve the educational goals that have been set.

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