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# Teachers' Views on the Use of Artificial Intelligence in the Education Process

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**Abstract**

This study aims to reveal teachers' thoughts on AI. Thus, from the teacher's perspective, it is to expose the positive and negative effects of AI technology on students and the educational process and to create a source for predicting the problems that may be encountered during its integration into the education system. Phenomenological design, one of the qualitative research methods, was used. The participant group of the study consisted of eight teachers from different branches formed by the maximum variation, one of the purposeful sampling types. In the interview conducted with the focus group interview, the questions in the semi-structured interview form prepared by taking expert opinions were asked to the participants, and the data of the research were collected. The collected data were analyzed with descriptive analysis and coding was executed. The research findings indicate that AI is perceived differently by teachers, that its applications vary, that technology presents both advantages and downsides and that there are individual and societal concerns that warrant attention. Teachers generally exhibit amazing, helpful, useful, and favorable attitudes toward the increasingly widespread usage of AI, demonstrating a high level of awareness of the technology. It is recommended to conduct applied research on the use of AI in education to clarify its positive and negative aspects.

**Keywords**: Artificial intelligence, Education, Teacher's view, Phenomenology.

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## Introduction

For many years, scientists have been curious about the human brain and its functioning has been the subject of research. With the invention of computer systems, it was discovered that the abilities related to human intelligence can be realized by machines. This discovery led to the idea of developing machines that can learn, think, and make decisions (Çetin & Aktaş, 2021). Attempts have been made to imitate the functioning of the human brain and to create similar structures. Research has led to significant progress in this field and many fields of study, concepts, and topics have emerged. AI, one of these concepts, first emerged when robots were able to feel or think (Kazu & Özdemir, 2009) and has recently developed rapidly and has become one of the most important tools of today. AI was first mentioned conceptually in a letter written by John McCarthy, Marvin L. Minsky, Nathaniel Rochester, and Claude E. Shannon at the Dortmund Conference in 1956, in which they proposed to study AI with a team of 10 people for 2 months (McCarthy et al., 2006). For this reason, John McCarthy is recognized as the inventor of the concept of AI (Alpaydın, 2011; Arslan, 2020).

AI is defined as mechanical intelligence that makes sense of and interprets the data it receives from outside the existing system, learns from these data, and can use the data and learning it obtains to serve specific purposes and tasks (Haenlein & Kaplan, 2019). AI, which is essentially based on imitating the human brain and examining how humans think and how they function in solving problems, is a tool that renews and improves itself thanks to the data it collects in this process. In its simplest definition, it is the intelligence created by machines (Alanoğlu & Karabatak, 2020). AI, which can work much faster than the human brain when it comes to the rapid processing of many complex tasks within a certain system at the same time (Teng, 2019), is used directly or indirectly in many areas of life, such as defense industry, health, finance, security, and education (Komalavalli et al., 2020; Popenici & Kerr, 2017). The number of AI tools that require human-specific metacognitive thinking (perception, thinking, learning, inference, problem-solving, suggestion, communication, and decision-making), such as smart assistants, recommendation engines, or chatbots, which are already in daily life, is increasing day by day (Alanoğlu & Karabatak, 2020; İncemen & Öztürk, 2024; Taşçı & Çelebi, 2020). While AI technologies serve people on almost every platform through various devices and applications, they have become an indispensable part of many sectors, from education to health, the economy to transportation, and communication to shopping, by replacing traditional tools (Banaz & Demirel, 2024). Autonomous vehicles, smart home technologies, or smartphone applications are examples of the use of these technologies in various fields.

AI, having emerged as a prominent force due to its distinguishing capabilities, has been advanced through research and today enhances human existence with attributes such as perception, self-learning, decision-making, and inference (İçöz & İçöz, 2024). It is anticipated that in the future, AI will enhance its functionality, influence human lives, and assume an active role comparable to that of humans through widespread integration into daily activities (Çetin & Aktaş, 2021). AI technology, which is swiftly becoming integral to daily life, enhances its role and functionality within educational services (Aruğaslan & Çivril, 2021; Chassignol et al., 2018; Çolak Yazıcı & Erkoç, 2023; Popenici & Kerr, 2017; Verma, 2018). It is posited that learning processes will become more prevalent and efficient without temporal and spatial constraints, offering personalized educational assistance (Akyel & Tur, 2024; Athanasios & Ioannidou, 2012; Ünsal, 2024). Moreover, functions such as the early identification of learning disabilities, delivering effective instruction for students with special needs, and offering educational opportunities for those facing attendance challenges due to illness are also noted (Altun, 2024; İşler & Kılıç, 2021). Besides enhancing learning and addressing deficiencies, AI is employed in various domains, including entrance and exit monitoring, instruction and assessment, attendance tracking, administrative tasks, providing feedback to educators regarding classroom management, and streamlining school administration (Arslan, 2020). The uses of AI in education are always broadening and evolving. This alteration will surely transform the future of education and the services offered in this domain (Kutlucan & Seferoğlu, 2024). Therefore, in addition to students, lecturers, teachers, and pre-service teachers should adapt to the rapid development of AI technologies by gaining awareness (Uzun et al., 2021; Yeşilyurt et al., 2024).

Technologies used in education are diversifying and developing day by day. AI applications are one of the innovative uses of technology in education. AI in education is rapidly becoming widespread as an

innovation with the potential to personalize learning processes, enrich teaching methods and reduce administrative burdens (Holmes & Porayska-Pomsta 2023). In particular, the fact that AI provides individualized feedback by analyzing data on students' learning processes and allows teachers to assume a more strategic role increases the importance of this technology. In recent years, the rapid increase in the use of AI technologies in education has brought about various debates. While AI provides positive effects such as increasing efficiency in education and personalizing learning processes, it also raises negative issues such as ethics, privacy and addiction (Kutlucan & Seferoğlu, 2024). When the studies conducted in this field are examined, it is seen that AI is mainly focused on learning and students, such as how AI can improve educational processes, how it can increase student success, how it can make learning processes more efficient and how it can make progress in this direction (Akdeniz & Özdinç, 2021; Altun, 2024; Çetin & Aktaş, 2021; İncemen & Öztürk, 2024; Yu et al., 2021; Zileli, 2023). However, it is seen that the studies addressing teachers' views on AI are limited in the literature (Bayraktar et. al., 2023; Küçükkara et. al., 2024; Özer et. al., 2023). This situation constitutes an important obstacle in the integration of AI into the education system and reveals the need for comprehensive studies on teachers' perceptions.

Teachers are the primary actors who know the dynamics of the classroom environment best and can closely observe the individual needs of students. Therefore, teacher opinions play a critical role in the effective and efficient implementation of AI applications in education. The extent to which the potential benefits offered by AI, such as personalized feedback and strategic instructional support, can be adapted to classroom practices depends largely on how teachers perceive, evaluate and use this technology. Despite the arguments that AI can improve educational processes, teachers' concerns about ethics, privacy, and addiction during the adoption process can pose significant barriers to the integration of technology into the educational environment (Will & Mishra, 2021). Teachers' positive or negative views of AI can directly affect the use of these technologies in the classroom and shape students' learning experiences. While a positive perception supports the adoption of innovative practices and the effective use of technology in the educational process, negative views can slow down or limit this process. Therefore, exploring teachers' views will allow for a better understanding of the role and potential risks of AI in education. Thus, it will provide important contributions in determining strategies to support the integration of AI into the education system, identifying potential risks and problems early, and developing solutions.

In this study, it is aimed to reveal teachers' thoughts on AI. Thus, the positive and negative effects of AI technology on teachers and the educational process will be revealed. In addition, the results of the research will be a source for predicting the problems that may be encountered during the integration of AI technology into the education system. In line with this purpose, answers to the following questions were sought:

1. What are teachers' views on AI and AI applications?
2. What are the opinions of teachers on the use of AI in the education process?
3. What are teachers' views on the advantages and disadvantages of using AI?
4. What are the opinions of teachers about the risks that AI may pose?

## Literature Review

While technological developments are radically transforming education systems, AI is at the center of this transformation. AI offers many potential benefits, such as personalizing student learning processes, reducing the workload of teachers, and enriching educational materials (İşler & Kılıç, 2021). In this direction, studies on the use of AI in education are increasing. In the historical process, student modeling and information tracking have an important place among the uses of AI in education. Corbett and Anderson (1995) established the foundations of individualized learning in ITSs by modeling students' procedural knowledge acquisition processes; Koedinger et al. (1997) supported the applicability of ITSs in school environments with experimental data. The ASSISTments ecosystem developed by Heffernan and Heffernan (2014) has brought a new dimension to data-driven research in AI-based educational applications by encouraging collaboration between teachers and researchers. Altundal (2024) comprehensively examined the history, definitions, application examples, and potential areas of use of

AI in many fields, especially in education. In particular, while rapidly developing AI applications lead to significant changes in the roles of students and teachers in foreign language teaching, Yiğit (2024) drew attention to the necessity of individualizing educational processes and improving teachers' use of technology and stated that AI-based mobile applications are still at an early stage. The systematic review by Akdeniz and Özdinç (2021) reveals that these studies have gained momentum in recent years and are mostly carried out at the university level. Coşkun and Gülleroğlu (2021) stated that the use of AI in education gained momentum after the Second World War and became widespread rapidly in the 21st century. In future perspectives, it is predicted that AI may change the role of the teaching profession. Çetin and Aktaş (2021) evaluated AI-supported teaching scenarios and discussed how these scenarios can transform the guidance role of teachers, while Küçükali and Coşkun (2021) analyzed the impact of digitalization on educational administration and emphasized that AI can create decision support systems for school administrators. In terms of educational data mining, Romero and Ventura (2007) highlighted the importance of data-driven approaches in optimizing learning processes; Chen et al. (2020) examined the versatile use of AI in education through systematic reviews, highlighted different application areas and potential benefits, and showed that automated and adaptive assessment systems can produce reliable and effective results. In addition to these studies, Keser et al. (2024) analyzed 4935 studies indexed in the Web of Science database and showed that most of the academic production on AI in education has occurred in the last five years. Historical and current studies reveal that this technology has led to revolutionary changes in educational practices and management. In the future, it is predicted that the increasing use of AI will reshape teaching methods and educational administration.

The applicability of AI in education attracts attention with the innovative solutions it brings. Today, the use of AI in education covers many subfields such as individualized learning, intelligent tutoring systems, educational data mining, and learning analytics. In this context, VanLehn (2011) revealed the potential of AI-supported applications on learning outcomes with a meta-analysis comparing the effectiveness of human teaching and intelligent tutoring systems, while Zawacki-Richter, Marín, Bond, and Gouverneur (2019) systematically examined AI applications in higher education, revealing how technological developments transform educational processes and the change in the role of educators. Savaş (2021) examines the innovative applications of AI in education and discusses how technological integration can increase student achievement. Arslan's (2020) study made significant contributions with the ability of AI to personalize learning processes, make intelligent predictions, and adapt to changing conditions. The use of AI-based tools in mathematics teaching stands out with its contributions to problem solving, analytical thinking, and personalized learning processes (Tutak, 2024). Students' interaction, motivation, and learning behaviors are also important factors in the evaluation of AI applications. While Papamitsiou and Economides (2014) systematically reviewed learning analytics and educational data mining studies, Baker et al. (2009) presented general models developed to detect inefficient learning behaviors of students. The importance of personalized instruction and emotional engagement in education is compared by Conati and Kardan (2013) with strategies that support personalized learning through student modeling. D'Mello and Graesser (2015) evaluated emotion-sensing learning technologies and emphasized the importance of integrating emotional factors into learning processes. Chi et al. (2001) discussed how these approaches can be reflected in the design of AI-based systems based on human teaching experiences. On the other hand, teachers' perceptions of AI also have an important place in research. In a qualitative study, Çetin and Baklavacı (2024) emphasized that teachers are willing to use AI but need strategic planning, while Ağmaz and Ergulec (2024) revealed in their metaphor analysis that pre-service teachers generally see AI as a “guide” or “supportive” tool. Moreover, while AI-based instructional materials and intelligent instructional systems stand out, especially in fields such as mathematics and science, the use of AI in in-service training programs accelerates teachers' adaptation to technology and increases their pedagogical competencies (Nayıroğlu and Tutak, 2024; Karbuz and Aydınlı, 2024). On the other hand, the innovations it brings to measurement and evaluation processes are some of the most remarkable aspects of AI in education. Çavuş (2024) states that AI-based assessment tools reduce the difficulties faced by teachers and can analyze student performance more objectively, while Aktay et al. (2023) examined students' perceptions of AI tools such as ChatGPT and revealed the supportive effects of these technologies on the learning process. Another important use of AI is the production of visual materials. Aktay (2022) investigated the use of images generated by AI as course materials and stated that these materials make learning more

effective. In addition, Tekin (2023) systematically analyzed educational research in Turkey and found that teachers are willing to use AI-based tools but do not receive adequate guidance and infrastructure support.

AI has the potential to bring about major changes in many areas beyond education. The increasing number of studies in the literature on how AI can be used in education raises expectations for this technology. However, the ethical limitations and potential risks of using AI in education should not be ignored. Öksüz Gül (2024) draws attention to these risks for academics in the field of education. In general, the reviewed studies show the potential of AI-based education systems to improve student performance, optimize individualized learning, and enhance data-driven decision-making. These different studies in the literature provide important insights into how AI applications in education can be developed both technologically and pedagogically.

## Method

### Research Design

This study employed a phenomenological design, a qualitative research method, to investigate teachers' perspectives on the integration of AI in the educational process. The phenomenological design emphasizes the meanings individuals construct on a certain event based on their life experiences (Creswell, 2018; Edmonds & Kennedy, 2017; Patton, 2018; Tekindal, 2021). Phenomenological investigations concentrate on domains where our understanding is limited and lacks depth (Ceylan Çapar & Ceylan, 2022; Yıldırım & Şimşek, 2021). This strategy is seen more appropriate for studies aimed at elucidating how individuals comprehend the things they encounter and interpreting their meanings (Merriam, 2018). This study aimed to elucidate the interpretations generated by educators on the phenomena of AI and its impact on educational processes. Consequently, a phenomenological design, deemed suitable for its essence, was employed in the execution of the investigation.

### Participant Group

In this study, the maximum variation, one of the purposeful sampling types, was used to determine the participants. With this approach, focus group interviews were conducted with eight teachers working in public schools in the 2023-2024 academic year. Maximum variation sampling aims to increase the variables of the participants to be included in the research as much as possible (Özmen & Karamustafaoğlu, 2023). In this relatively small sample, the similar and common aspects of the maximum variety of participants who can be parties to the research are tried to be revealed (Yıldırım & Şimşek, 2021).

Factors such as instructors' discipline, gender, seniority, age, institution level, and educational attainment were considered in selecting participants for the study to ensure diversity. Furthermore, to find applicants with a strong understanding of AI, efforts were made to pick participants who utilize any AI application, get training, and remain informed. The identities of the participants were anonymized and assigned numerical designations. Table 1 presents the participants' personal information.

Table 1.
Personal Information on Participants

| Participant | Gender | Age | Discipline | Institution Level | Year | Education Attainment |
|---|---|---|---|---|---|---|
| P1 | Male | 30 | English | Primary school | 6 | Bachelor's |
| P2 | Female | 27 | Classroom Teacher | Primary school | 4 | Bachelor's |
| P3 | Male | 33 | Science | Middle school | 12 | Bachelor's |
| P4 | Male | 45 | Geography | High school | 16 | Master's |
| P5 | Female | 31 | Visual Arts | Middle school | 8 | Bachelor's |
| P6 | Male | 32 | Literature | High school | 10 | Master's |
| P7 | Male | 29 | Guidance | Middle school | 7 | Bachelor's |
| P8 | Female | 34 | Classroom Teacher | Primary school | 13 | Master's |

Table 1 indicates that the study comprised three female and five male participants, based on the gender variable. The participants were allocated based on their respective branches: One English teacher, two classroom teachers, one science teacher, one geography teacher, one visual arts teacher, one literature

teacher, and one guidance counselor. The professors' ages range from 27 to 45 years, and their professional experience spans from 4 to 16 years. According to the level of the educational institution they work in, 3 teachers work in primary school, 3 teachers work in middle school and 2 teachers work in high school. Regarding educational qualifications, three teachers possess a master's degree, while five hold a bachelor's degree.

**Data Collection Tools**

The semi-structured interview was used as a data collection tool. Semi-structured interviews enable collecting answers through pre-prepared questions to obtain in-depth information without directing the participant (Büyüköztürk et al., 2018). In semi-structured interviews, questions are prepared in advance, but questions can be added or removed during the interview, or the order of questions can be changed according to the situation. This feature provides flexibility to the researcher to obtain detailed information by the purpose of the research (Akman Dömbekçi & Erişen, 2022). Within the scope of the research, a literature review was conducted first. Then, interview questions were prepared in the light of the information obtained and the opinions of three academicians who are experts in the preparation of the interview form were taken. The clarity, comprehensibility and scope of the questions were evaluated and the order and number of questions were changed within the framework of expert opinions. The final version of the interview form included nine questions. In addition to the interview questions, a 6-question "Personal Information Form" was created to determine the personal information of the participants. Information on gender, age, years of service, graduated branch, institution level, and education level of the teachers was collected through the form.

**Data Collection Process**

Data were collected through focus group interviews. A focus group is a technique of obtaining multidimensional and detailed information and generating ideas about the interests, experiences, thoughts, feelings, perceptions, and attitudes of the participants by utilizing group dynamics (Çokluk et al., 2011), which is carried out with 4-12 participants with several similar characteristics and a meeting chair (Gülcan, 2021). In the study, data were collected through focus group interviews with a group of eight teachers.

A focus group interview was preferred as it is possible to obtain richer answers than individual interviews thanks to group dynamics. Among the candidates reached through the personal information form, eight participants who were willing to voluntarily participate in the research, who had experienced at least three AI applications, and who were interested and experienced in AI were selected. In focus group interviews, the number of participants was kept to a minimum as it would be difficult to conduct the interview effectively. Table 2 presents the participants' AI experiences.

Table 2.
Participants' Experiences with AI

| Participant No | AI Experience |
|---|---|
| P1 | Preparing personalized feedback to students with AI. |
| P2 | Measurement and evaluation with AI. |
| P3 | Creating video content with AI. |
| P4 | Animating the visuals drawn with AI in 3D. |
| P5 | Opening an exhibition with images created with AI. |
| P6 | Writing stories with AI. |
| P7 | Analyzing aggregated data with AI. |
| P8 | Making lesson planning with AI. |

Table 2 indicates the teachers in the participant group used AI tools for purposes such as giving personal feedback, making assessment and evaluation, preparing videos and visuals, writing texts, data analysis and lesson planning according to their interests and needs. The interview with participants with AI experience was conducted through an online meeting platform. The researcher provided the participants with the necessary information for the meeting to be held on the specified date and time. The participants were welcomed and taken to the online meeting room. During the interview, care was taken to ensure that the names of the participants were written correctly to avoid addressing problems. The recording

was started by stating that the interview would be recorded. The purpose and scope of the research were explained and voluntary consent was obtained from the participants. Pre-prepared questions were directed to the participants and answers were obtained. Necessary explanations were made on incomprehensible issues. No positive or negative feedback was given to the participants' answers. At the end of the interview, the participants were thanked by reminding them that they would be contacted again to obtain participant confirmation when their statements in the interview were prepared in writing. The interview lasted one hour and forty-eight minutes.

**Data Analysis**

The data were analyzed using the descriptive analysis. This analysis aims to interpret and reach a conclusion by organizing the findings obtained from the data collected through techniques such as documents, interviews, and observations into topics or themes (Yıldırım & Şimşek, 2021). The interview conducted for the research was recorded. The statements in this interview recording were then transcribed. Coding was performed based on the research questions. In this study, the research questions were addressed as themes. The Maxqda program was used to analyze the data, and the findings were presented in figures.

**Validity and Reliability**

The two most important criteria used to ensure the credibility of research results are validity and reliability. In the study, internal validity was ensured through credibility, internal reliability through consistency, external validity through transferability and external reliability through verifiability (Güler et al., 2015; Yıldırım & Şimşek, 2021). Table 3 presents the measures taken to ensure the validity and reliability of the study.

Table 3.
Validity and Reliability Measures

| | | |
|---|---|---|
| Validity | Internal Validity | Obtaining expert opinions |
| | | Participant confirmation |
| | | Presenting findings with direct quotations |
| | External Validity | Giving and explaining the stages of the research process |
| | | Explanation of the data analysis process |
| | | Announcement of participant selection |
| Reliability | Internal Reliability | Preventing data loss by recording |
| | | Providing direct quotations |
| | | Consensus calculation |
| | External Reliability | Data retention |
| | | Appropriate discussion of data |

The semi-structured interview form used in the research was organized by taking expert opinions. The questions were asked similarly to the participants. Data loss was prevented by recording the interview. After the interview, the participants were asked to confirm their statements in writing. The participants did not want to change their statements. The research process and how the participants were selected were explained in detail. To enhance the validity and reliability of the research, select statements from consulted participants were directly quoted and incorporated into the findings. The gathered opinions were encoded and displayed in a manner that preserved the anonymity of the participants. The results were presented devoid of generalization or interpretation, allowing the reader to draw comparisons. The themes and codes obtained as a result of the analysis were presented to two experts to examine whether they were organized effectively. Necessary arrangements were made in line with the suggestions received. For the themes and codes determined by the researcher and experts, the issues of "consensus" and "disagreement" were discussed and necessary arrangements were made. Miles and Huberman's (1994) formula were used for the reliability calculation [Reliability = Consensus / (Consensus + Disagreement)] and the result was calculated as .89. According to Miles and Huberman, a reliability calculation of .70 and above indicates that the study is reliable.

## Findings

In this section, firstly, the word cloud obtained from the participant views is given, and then the themes and codes created in line with the research problems are supported by the participant expressions and shown in figures. A word cloud was created with the word frequency analysis method using participant opinions. While creating the word cloud, prepositions, conjunctions, etc. were excluded. The generated word cloud is presented in Figure 1.

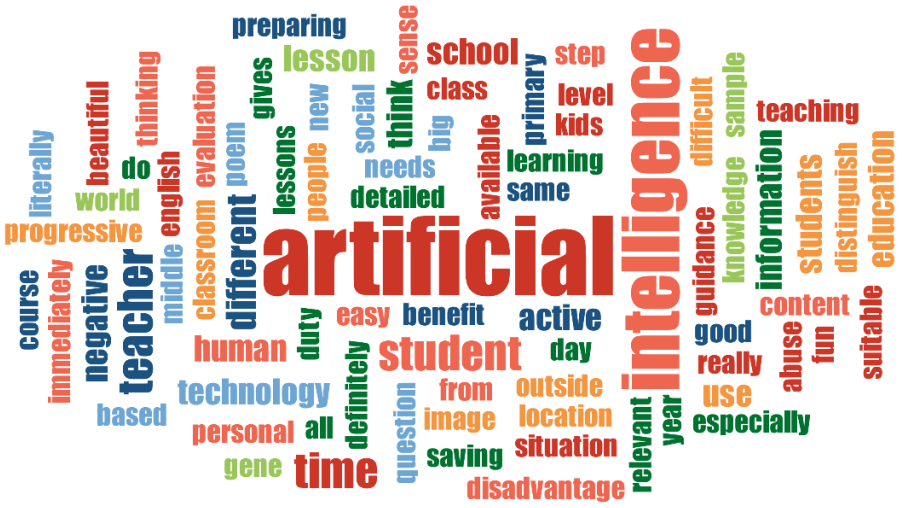


Figure 1. Word Cloud of Participant Views

Figure 1 shows that the participants mostly used words such as "artificial, intelligence, think, time, information, negative, active, human, student, teacher, lesson, different".

**What are teachers' views on AI and AI applications?**

The code model showing teachers' views on AI and AI applications is presented in Figure 2.

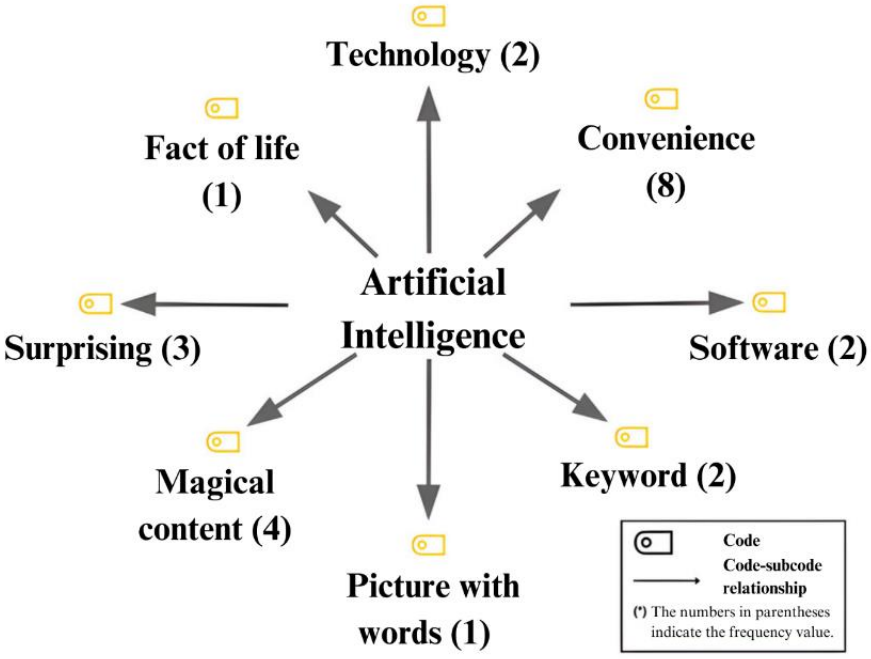


Figure 2. Code Model Showing Teachers' Views on AI and AI Applications

As seen in Figure 2, most of the teachers stated that AI provides convenience (*f*:8). In addition, teachers stated that AI offers people usage options in the fields of software (*f*:2) and technology (*f*:2), that there are different tools such as drawing pictures with words (*f*:1), producing magical content (*f*:4) with words, summarizing a text and expressing it with keywords (*f*:2) and surprising (*f*:3), and that using these tools is a fact of life (*f*:1). The statements of some teachers regarding the codes created are given below.

*"...you can't fly, the airplane provides this for you. Thanks to this technology, technology will become the wings of people, and they will fly."* (P1)

*"When we were preparing the project, there was a very long article, and instead of reading all the information we needed page by page, we asked him to give us a summary of it or express it with keywords for us. He gave us the part we needed by distilling it in a very nice way according to our needs."* (P5)

*"...artificial intelligence has sentences that surprise me."* (P3)

*"I make all my designs right now, let me tell you, for special occasions, or you can think of anything related to teacher's day, I make them all from magic content, the only thing I need to do is to enter a few keywords."* (P8)

*"When I can't find the visual, I want, I tell the magic content what kind of thing I want, for example, a male student who drops his books on the floor, and it creates different kinds of visuals about him."* (P2)

*"Of course, it is related to artificial intelligence, which is now becoming a fact of life, and I see no problem in using it within certain limits."* (P4)

*"It is a great advantage to use artificial intelligence applications in a very comfortable and easy way. It saves time for us, and the purpose of technology is to make our lives easier..."* (P6)

*"When we are working at the middle school or high school level, it facilitates our work in the high school and university placement preference processes of children."* (P7)

**What are the opinions of teachers on the use of AI in the education process?**

The code model showing teachers' views on the use of AI in the educational process is presented in Figure 3.

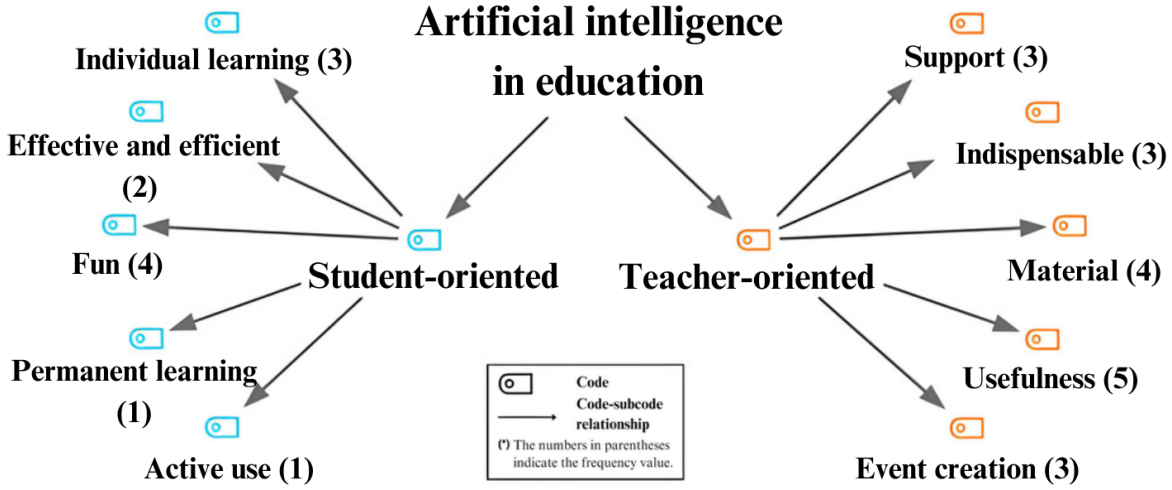


Figure 3. Code Model Showing Teachers' Views on the Use of AI in the Educational Process

As can be seen in Figure 3, teachers' views on the use of AI in the education process are divided into two themes: teacher-oriented and student-oriented. Under the student-oriented theme, opinions were expressed that AI provides students with active use (*f*:1) and provides personalized individual learning (*f*:3) opportunities. In addition, it was stated that AI is effective and efficient (*f*:2), provides permanent learning (*f*:1), and is fun (*f:*4) for students. The statements of some teachers regarding the codes created are given below.

*"In the evaluation process, he quickly provides feedback and tells the points where the student is missing, so that the student can benefit by providing individual learning without the need for a guide."* (P8)

*"...the children were shocked; I mean they were extremely surprised because they had never met before."* (P1)

*"The effect on learning, I can say that they learned more permanently and made the lesson more fun."* (P3)

*"Artificial intelligence tools make my job very easy for gamifying education and increasing students' motivation. Some tools lead students into an adventure with operations."* (P4)

Under the theme for teachers, most of the teachers stated that AI is useful in terms of usefulness (*f*:5). In addition, they stated that they use it to support (*f*:3) the teacher in the education and training process, that its use is indispensable (*f*:3) in today's conditions, and that they use it in creating materials (*f*:4) and events (*f*:3) to be used in lessons. The statements of some teachers regarding the codes created are given below.

*"From the point of view of teachers, it appeals to primary school and even pre-school, and I think its increasingly widespread use makes it indispensable to be used in lessons."* (P2)

*"I mean, in all the materials I have prepared, artificial intelligence has a touch, even if it is a point."* (P7)

*"Sometimes we may find it difficult to teach in class due to fatigue or because of an event we have experienced. We may be tired, we may be on duty, and we may have different special situations in mind. These are external negative factors for our lesson. It contributes to supporting us in such situations."* (P6)

*"We have feet, why do we get in the car? This does not prevent the development of our leg muscles. If I don't use it, I will fall behind the world, so I think it is indispensable. I will set off at the same time as someone else and if I say I am going with my own feet, I will fall behind."* (P1)

*"When I want to create open-ended questions while preparing an activity, he directs me by writing sample questions about the role of light in vision."* (P5)

**What are teachers' views on the advantages and disadvantages of using AI?**

The code model showing teachers' views on the advantages and disadvantages of using AI is presented in Figure 4.

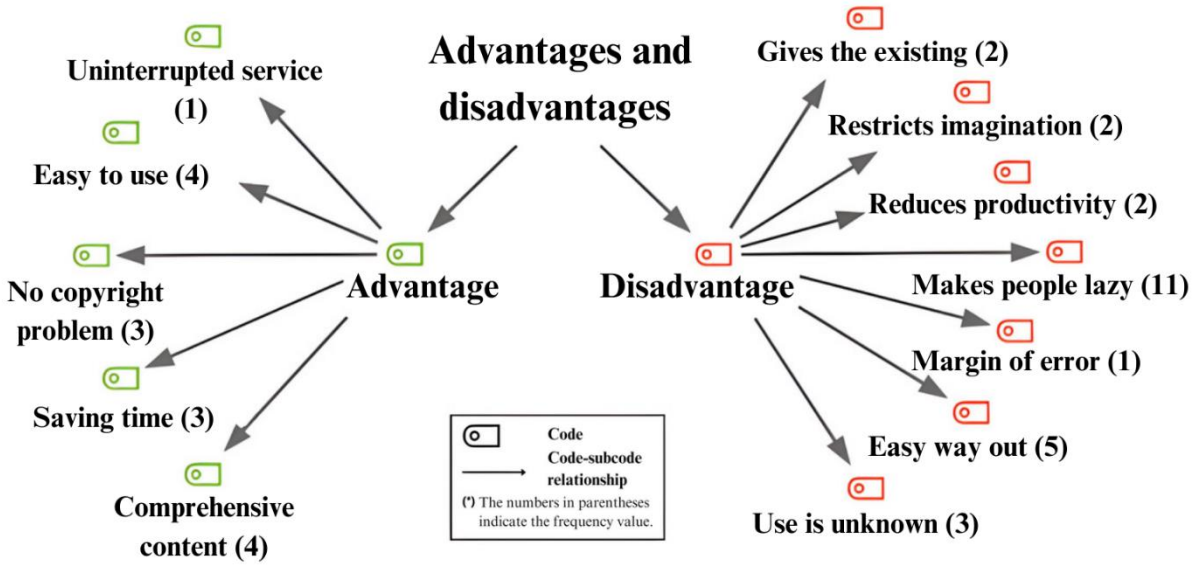


Figure 4. Code Model Showing Teachers' Views on the Advantages and Disadvantages of Using AI

As seen in Figure 4, teachers' views on the advantages and disadvantages of using AI were divided into two themes advantages and disadvantages. Under the advantage theme, the most frequently mentioned views were that AI is easy to use (*f*:4) and offers comprehensive content (*f*:4). In addition, the fact that AI provides uninterrupted service (*f*:1), no copyright problem (*f*:3), and saving time (*f*:3) were other views expressed as advantages. The statements of some teachers regarding the codes created are given below.

*"It is definitely advantageous for teachers because they can make different sentences by producing comprehensive content in the writing stage, even sentences that we cannot think of."* (P2)

*"Sometimes we may find it difficult to teach in class due to fatigue or because of an event we have experienced. We may be tired, we may be on duty, we may have different special situations in mind. These are external negative factors for our lesson. It contributes to support us in such situations. Even if you ask these questions to artificial intelligence 24/7, it will continue to serve without getting tired."* (P6)

*"I mean, can it replace classroom environments or workshop environments like mine, mechanically and theoretically, yes, the other side saturates the student with knowledge and even overwhelms them with knowledge."* (P5)

*"Since these tests are somewhat comprehensive tests, the use of artificial intelligence-based applications in evaluating and providing feedback facilitates the process both in terms of time and evaluation."* (P8)

Under the disadvantage theme, most of the teachers stated that AI makes people lazy (*f*:11) and leads them to take the easy way out (*f*:5). In addition, other views expressed as disadvantages were that AI gives the existing (*f*:2) product without creating a new product, restricts people's imagination (*f*:2), reduces productivity (*f*:2), has a margin of error (*f*:1) and its use is unknown (*f*:3). The statements of some teachers regarding the codes created are given below.

*"Artificial intelligence gives us what exists, yes, we say it produced it, but I write five words there and it gives me a visual, but it gives me this visual from a data in itself. "* (P1)

*"There is a lot of this in visual studies, especially in general, artificial intelligence cannot fully reflect human limbs, feet, and arms in a real way, either it makes them six-fingered, or it removes an extra arm, removes an extra foot, unfortunately, there is a margin of error."* (P5)

*"Instead of making effort and spending time, we are taking the easy way out, but now we are in the age of technology, we need to use it."* (P2)

*"It negatively affects the awareness of duty in the student, that is, he does not take the task on himself, for example, you are preparing a project, you are preparing the aims of the project, introduction, summary, etc., results, discussion, questionnaire, etc., the student does everything with artificial intelligence."* (P7)

*"I think students take it easy, they access information with artificial intelligence, but it is not clear whether this information is true or false or reliable."* (P3)

*"Ready-made information causes students to be more passive."* (P4)

**What are the opinions of teachers about the risks that AI may pose?**

The code model showing teachers' views on the risks that AI may pose is presented in Figure 5.

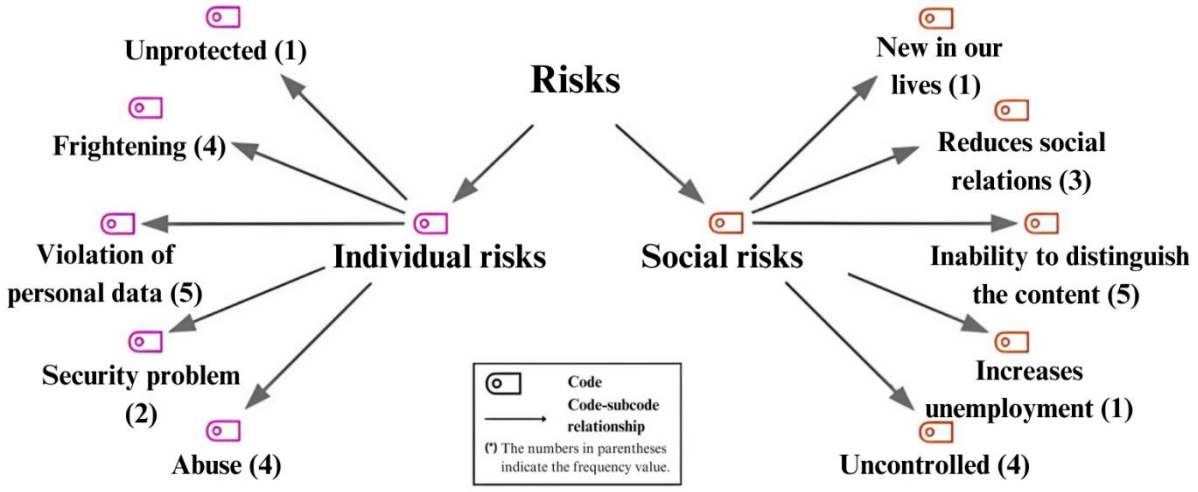


Figure 5. Code Model Showing Teachers' Views on the Risks of AI

As can be seen in Figure 5, teachers' opinions on the risks that may arise from the use of AI are divided into two themes individual and social risks. Under the theme of individual risks, the most frequently mentioned areas were the violation of personal data (*f*:5) shared during the use of AI, the abuse (*f*:4) of AI technology, and the frightening (*f:*4) effects of its dangers. In addition, other opinions expressed were that AI creates an unprotected (*f*:1) area for students and that there are security problems (*f:*2). The statements of some teachers regarding the codes created are given below.

*"I think there may be problems related to security because we inevitably share our data and these data are collected somewhere, and if they fall into the hands of malicious people, they can be used for different purposes, so security should be given importance."* (P2)

*"The possibility that a technology might be smarter than me scares people, and I include myself in this, it makes it difficult for people to accept this."* (P7)

*"Right now, I believe that all personal data is in the hands of someone somewhere. This is already a negative situation, and artificial intelligence can make this negativity even more negative."* (P1)

*"Since students do not have enough knowledge about this issue, it is an unprotected area for them."* (P3)

*"Yes, it is a risk factor of course, I mean, in general, for all the people who use it, it does not comply with the data privacy policy anyway, that is, the photo data can be used for malicious purposes in any way."* (P5)

Under the theme of social risks, most of the teachers stated that the inability to distinguish the content (*f*:5) produced with AI may pose a risk. In addition, other opinions expressed as risk factors were that AI is new in our lives (*f*:1), has an uncontrolled (*f*:4) area, reduces social relations (*f*:3), and increases unemployment (*f*:1). The statements of some teachers regarding the codes created are given below.

*"For example, in the Turkish lesson, I gave the student a homework assignment to prepare a summary and bring it to me or create a mini story and bring it to me with artificial intelligence, I absolutely cannot distinguish whether it was made with artificial intelligence or not."* (P4)

*"The problem with artificial intelligence is that you cannot see content elsewhere, it extracts every content as original content and it is very difficult for a teacher to decipher and reveal it because it is very new in our lives right now."* (P1)

*"Artificial intelligence has a brain but no heart. No matter how much we use our brains in the teaching profession, artificial intelligence can never completely replace the teaching profession because it is a profession done with the heart."* (P8)

*"Apart from that, there may be risks, it may reduce human relations. You know, their commitment to other people can reduce their social relations."* (P6)

## Discussion, Conclusion, and Suggestions

This study aims to examine teachers' views on the use of AI in the educational process. The results of the research show that teachers characterize AI as a surprising and facilitating tool. The purpose of using AI in education has different meanings according to teachers. In the same process, the purposes of use are diversified as supporting educational processes, preparing documents, and providing fun and active usage services. Teachers also think that their students do not view AI technologies in the same way as they do. It has been stated that while this technology provides various advantages, such as easy access to comprehensive content and saving time, it also has significant disadvantages, such as pushing people to laziness, limiting imagination, and having a margin of error in the data it produces. It was concluded that its use may pose existing or potential risks, either individually or socially. In general, it is clear that teachers have a positive attitude towards the phenomenon of AI, but they also have hesitations about the risks that may occur.

In the study, firstly, it was evaluated how teachers perceive and make sense of the concept of AI. According to the findings, teachers characterized AI as a surprising and facilitating technology and software. They stated that they generally benefit from this technology by using its features, such as extracting keywords from the text and creating visuals with words or magical content. In their study with prospective teachers, Çam et al. (2021) concluded that prospective science teachers defined AI as

a structure based on human intelligence, while prospective computer and instructional technology teachers defined it as a technology that can learn. In addition, they stated that teachers frequently associate AI with the concept of a robot. Acemoglu and Restrepo (2020) referred to AI as the study and development of machine-like software and algorithms that mimic human intelligence. The fact that teachers generally associate AI with technological terms is related to the idea that they can increase their knowledge by following current technology (Kılıçer, 2011). This is thought to be related to teachers' branches, their familiarity with the concepts, and their purpose for using this technology. Although the participant group of the study was determined by the maximum variation sampling method, it represents a community that is already interested in technology. It can be said that the teachers' expressions towards AI, whose use in life is becoming more prominent, are generally impressive, useful, and positive, and their awareness of AI is high.

The findings of the study obtained from teachers' opinions on the use of AI in the educational process show that the use of AI in the educational process has different meanings and serves different purposes according to teachers. According to the teachers, students can learn effectively, efficiently, and individually with AI, and that permanent learning can be achieved in students thanks to fun and active use; teachers use AI as an indispensable and useful support tool to prepare various materials and activities. It is thought that AI can help teachers better understand the needs of their students and provide more effective support by identifying learning gaps. Tekgüç and Adalıer (2019) stated that teachers should use AI technology to analyze student needs and create the learning processes needed. In this way, it will provide effective benefits by increasing the quality of education and supporting student success. In the research conducted by Çam et al. (2021), it was concluded that AI can be used to teach lessons, enrich the teaching process, provide supportive benefits for the teacher, and make student evaluations. It can be said that the use of AI in education should be adopted to provide feedback by tracking student performances, facilitate classroom management (Özer et al., 2023), use it as a teacher assistant, provide individualized learning services by analyzing student needs and behaviors (Nabiyev & Erümit, 2020), and increase the quality of education (Taşçı & Çelebi, 2020). Learning environments supported by AI technologies play an important role in providing students with individual learning experiences and personalizing the learning process (Kış, 2019). Learning environments supported by this technology can offer content according to students' learning styles, speeds, and needs. In this way, each student can progress at their own pace and receive support by their learning needs. It also supports teachers in monitoring students' performance, identifying their strengths and weaknesses, and providing feedback on students' progress. As a result of their study, Özer et al. (2023) concluded that AI-supported instructional materials have an important role in increasing student achievement. They stated that this is since AI creates individualized teaching plans for the needs of the student and provides efficient learning environments that develop thinking skills. Similarly, Soydemir Bor and Alkış Küçükaydın (2021) concluded in their study that AI-supported instruction contributed to high-level cognitive skills such as problem-solving and creative writing in students. In these studies where AI-based teaching is applied, the positive effect of individual learning stands out. It is thought to arouse interest in students, to be suitable for individualized learning and to increase students' success by providing a more effective and efficient experience in education.

Another problem of the research is to reveal the advantages and disadvantages of using AI. Based on the findings, it was concluded that the advantages of AI are that it provides continuous uninterrupted service, is easy to use, comprehensive content can be accessed without copyright problems, and saves time; while the disadvantages are that it reduces human productivity and makes people lazy, pushes people to take the easy way out, limits imagination, does not know how to use it, has a margin of error, and is limited to the data available in the existing data of AI. In the studies conducted, the advantages of AI are individual learning, speed, convenience, improving visual intelligence, reducing human errors (Özer et al., 2023), saving labor and time (Çam et al., 2021), systematic storage of large amounts of data, ease of access to information (Naviyev & Erümit, 2021), facilitating the preparation of materials and plans used in the educational process, improving creativity skills (Kaya, 2023), and increasing student participation (Freeman et al., 2017). Along with these benefits, disadvantages such as not being accessible to everyone, having high costs, being difficult to use in crowded classrooms (Özer et al., 2023), making people lazy, offering limited usage areas (Çam et al., 2021), having the possibility of increasing unemployment (Nabiyev & Erümit, 2020), reducing research skills (Demir Dülger &

Gümüşeli, 2023), lacking emotion, and not providing motivation and confidence (Çetin & Aktaş, 2021) are among the results reached. Çam et al. (2021) stated in their study that pre-service teachers from different branches stated that the rate of advantages provided by AI is higher compared to its disadvantages. While speed, practicality, and time savings stand out as the most important advantages, challenges such as high cost and not being accessible to everyone should also be taken into consideration. Reducing the cost and ensuring equal access are critical for the use of AI. By anticipating the possible benefits and harms of AI, which can be encountered in all areas of life, it can be integrated more effectively into the education system, and thus the quality of education can be increased.

The last problem of the research is to determine the risks that AI may pose. In the findings obtained, existing or potential risks were evaluated separately as individual and social. Situations such as the violation of personal data shared directly or indirectly while using AI services, being an unprotected area due to the lack of a secure usage area, being abusable for malicious purposes, and the fear that these possibilities create in people are evaluated as individual risks. As social risks, the fact that it is very new in our lives, the lack of a control mechanism, and the inability to distinguish the content produced with AI from other content were stated as important risk factors. Similarly, there are various studies in the literature that support the results of the research and conclude that the storage of personal data by AI creates ethical drawbacks, teachers do not have sufficient knowledge, there are data security concerns, and there are hesitations about security (Jones & McCoy, 2018; Çetin & Aktaş, 2021; Özer et al., 2023). Participants stated that they could not distinguish whether the products created were prepared directly with AI or not. Vetter et al. (2024), in their study focusing on the ethical concerns that arise in writing texts with AI, stated that they were constantly in doubt about whether the work was the product of the student or the AI. It is evident that the ethical and safety aspects of AI-based learning tools are important for teachers. Teachers are responsible for ensuring the privacy and security of both students' and their personal data during the use of these tools. Holmes and Porayska-Pomsta (2023) stated that the ethical use and sustainability of these technologies in education and training processes are vital. It is thought to be important for teachers to be aware of ethical and security issues related to the use of AI-based tools. Teachers should be regularly trained by educational institutions on ethical and safety issues, and awareness-raising activities should be carried out. In addition, it is thought that teachers need supportive training to use the opportunities it will provide effectively. Dakakni and Safa (2023) found in their study that students benefit from AI but have concerns about data security and that teachers are ready to receive training on AI to protect their students against potential risks. Providing teachers with access to up-to-date information and resources on this subject will enable them to use AI-based learning tools ethically and safely and protect the privacy of their data.

Teachers stated that AI may also have significant effects on society, reduce social relations, and increase unemployment. Similarly, Kaya (2023), in his study with teachers, concluded that communication between people will weaken and therefore affect social skills. It was stated in their study that the values we have will also be negatively affected by the weakening of social skills. Other studies conclude that the use of AI and other technologies in education can reduce students' social interactions, make learning experiences difficult, and weaken teacher-student relationships (Saengudomlert & Wongwanich, 2019; Selwyn, 2017). To prevent or reduce these negative consequences, it is important to use technology in a balanced and effective way. In addition to technology-supported learning methods, interactive activities such as group work, discussions, and project-based learning should be encouraged to increase students' social interactions.

Numerous questions around AI persist, which will impact nearly every domain in the future. The implementation of AI applications in education prompts critical inquiries regarding curriculum content and methodology, the transforming role of educators, and the social and ethical ramifications of this technology (Adams et al., 2023). The adaptation of personal learning offers substantial advantages, including enhanced access to and processing of extensive data, less waste of time and resources, and the realization of individual potential; nevertheless, these advantages are accompanied by inherent hazards. Both anticipated and unanticipated dangers necessitate discussion and investigation, including concerns over personal data privacy and security, equitable and precise allocation of services, errors, and the potential impact on various employment sectors.

**Suggestions**

- Applied research on the use of AI in education should be conducted to clarify the positive and negative aspects of AI.
- The participant group of the study represents a community that is currently interested in technology determined by maximum variation sampling method. Therefore, survey research with different sampling methods can be conducted to generalize the results.
- It is suggested that workshops and online trainings should be organized on the potential and conscious use of AI technologies, taking into account teachers' ethical concerns, risk factors and lack of knowledge in their use.
- Since it is a new and developing technology, the effects of using AI technologies in education should be evaluated with long-term studies in order to prevent problems that may be experienced in the process of adaptation to educational processes and to determine the effects it will create in the future.

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