

Happy Student in the Age of Artificial Intelligence

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Abstract

This paper discusses the potential benefits of integrating artificial intelligence (AI) into education and how it can affect students' well-being and happiness. The study used a phenomenological design and involved 46 teachers who observed their students' experiences with AI and happiness. The findings were organised under five main themes. First, AI provides personalised learning opportunities that empower students. Second, AI enables teachers to focus more on teaching by reducing administrative tasks. Third, AI increases students' engagement and motivation, leading to more effective learning experiences. However, the study also highlighted ethical concerns that need to be addressed to prioritise students' welfare. Finally, the integration of AI into education prepares students for an AI-driven future and positively influences their learning experiences. These findings can benefit students, teachers and administrators by providing valuable insights into how AI can be utilised in education.

Keywords: artificial intelligence; student happiness; educational management; smart board; teacher empowerment

1. Introduction

Artificial intelligence (AI) is a powerful phenomenon of recent times that is widely and rapidly incorporated into every aspect of life. Many examples illustrate how AI is impacting various aspects of human life, such as access to information over the Web, consumption of news and entertainment, surveillance systems that identify individuals, financial market performance, citizens receiving welfare payments, and how drivers and pedestrians navigate [1]. Artificial Intelligence (AI) refers to the ability of machines to perform tasks that often require human intelligence. These tasks include gaming, language translation, expert systems, and robotics. While the idea of machines imitating intelligence dates back centuries, true machine intelligence emerged with digital computers in the 1940s, and as computer processing power improved, artificial intelligence evolved from simpler tasks (such as playing chess) to more complex tasks such as visual pattern recognition and natural language understanding [2]. With its use in every field in recent years, artificial intelligence can be defined as a supercomputer model or an ultra-advanced computer with human-like functions [3].

Intelligence has been defined as the computational part of the ability to achieve goals in the world. Artificial intelligence can be defined as the science and engineering of making

intelligent machines, especially intelligent computer programmes. This definition draws attention to the fact that intelligence, whether in humans, animals or machines, is goal-oriented and problem-solving [4,5]. Although there is no common definition, it can be said that each definition brings explanations to the field of artificial intelligence and has an equivalent. When all definitions are analysed, as a general definition, artificial intelligence is expressed as adapting to insufficient information and resources [6]. Artificial intelligence applications come to the fore as the harmony between scarce resources and information that cannot be obtained for numerous reasons and information sources develops.

In recent years, it can be said that there is almost no area where artificial intelligence has not come to the fore. The use of artificial intelligence to increase and accelerate scientific discoveries is one of them. Artificial intelligence helps scientists to generate hypotheses, design experiments, collect and interpret large data sets. Among the breakthroughs of artificial intelligence in the last decade are self-supervised learning, geometric deep learning and generative artificial intelligence methods. Artificial intelligence, which helps scientists in scientific processes with these and similar methods, gives a lot of hope to those interested in what they can do [7].

In the field of education, artificial intelligence transforms the way students learn, interact and relate to information. Studies examining the relationship between human communication and AI emphasise the transforming role of AI in communication processes. Topics such as human-computer interaction and computer-mediated communication, the role of AI as a communicator or mediator, and the tension between human agency and machine agency are addressed. In all these topics, although there are positive and negative effects of artificial intelligence on human communication, there is an optimistic attitude towards the exploration of new concepts, frameworks and topics [8].

The field of AI-Education has evolved over the years and first focussed on intelligent systems replacing traditional classroom teaching. However, in the late 1970s, there was a shift towards the tutoring model where AI-CAI systems aimed to provide individualised tutoring and solve educational problems rather than replace teachers. This led to the emergence of Intelligent Tutoring Systems (ITS). The advent of web-based education has further changed the landscape by offering online learning materials that cater to the needs of students without a teacher. This model provided personalised learning experiences and greater flexibility. AI-supported education benefits students and teachers by providing personalised, flexible and engaging learning opportunities. AI tools enhance the learning process by enabling students to be more independent and improve their learning experience. Moreover, web-based and online educational materials support students' activities such as downloading, studying and completing assignments. Artificial intelligence plays a very important role in education, even in early childhood education [3,9].

Artificial intelligence (AI) has revolutionised the education sector by automating administrative tasks and enhancing the learning experience. By leveraging AI tools, tasks such as scheduling, grading, and attendance tracking can be efficiently automated, giving teachers more time to focus on teaching and providing support to students. Education Management Information Systems (EMIS), powered by AI algorithms, enable education leaders to store, analyse and disseminate data, facilitating data-driven decision-making in various aspects of the education system. A well-designed EMIS can improve efficiency, aid planning and policy-making, and monitor educational outcomes through reliable data analysis and reporting. AI also provides opportunities for

personalised learning as it can diagnose student needs, make recommendations and identify students at risk for timely intervention and support. The growing interest in AI in education is leading to further research and evaluation of its pedagogical potential. In general, AI has become an integral component of education, transforming traditional processes and improving educational outcomes [10-12].

It can be said that artificial intelligence automates learning. Modern students are more connected to organizations that want to educate them. In this new era, networks and software can transfer knowledge from educational institutions to learners and continuously improve experiences in real time. Artificial intelligence is attracting great attention in a wide range of areas today. Digital learning, social networks and software-based learning tools have become ubiquitous, leading to increased automation and artificial intelligence transforming every field, including education [10].

Using engaging educational approaches such as game-based learning and mobile learning can improve students' motivation and outcomes in the learning process. Implementing an AI-powered recommendation system can have positive results on students' engagement, motivation, and learning outcomes. Additionally, Artificial Intelligence (AI) has the potential to address fundamental challenges in education, transform teaching and learning practices, and contribute to global education goals. AI technologies can increase student engagement and provide personalized learning experiences by offering instant feedback and enabling self-correction. AI can also support collaborative learning environments that simulate real-world scenarios. Intelligent teaching systems and virtual learning assistants powered by AI encourage active participation, personalized learning, instant feedback and collaboration in education. Overall, AI has the capacity to revolutionize education and improve learning experiences for students [13,14].

Artificial intelligence systems used in education include expert systems, intelligent tutoring systems and dialogue-based systems. Especially during the Covid 19 Pandemic that affected the whole world in 2020, the use of artificial intelligence has become very important with applications such as data mining and student analytics that support online learning. Studies investigating the role of artificial intelligence in special education, all levels of education, educational robots and smart classes are increasing [15,16]. Using artificial intelligence-supported technologies, working with artificial intelligence tools and producing appropriate tools from the first grade of primary school to teacher training in faculties has become very important in recent years [17,18].

In studies questioning the future of artificial intelligence in education, the importance of experts, educators and students working together is emphasized. For this purpose, teachers' collaboration and support from artificial intelligence can play an important role. However, traditional school structures and culture can make this collaboration difficult to achieve. Using artificial intelligence to meet expectations can be beneficial in reducing teachers' workload and providing support to students. However, it is necessary to be aware of the dangers and potential disadvantages that come with the use of artificial intelligence and to address these points. Still, artificial intelligence has the potential to empower students and create change, but it is important to use it responsibly [19].

There are application examples of researchers who want to benefit from the power of artificial intelligence in the field of education. For example, academics specializing in artificial intelligence and education aim to help professors by creating smart campus environments using smart teaching and management techniques. In addition, efforts are being made to improve student learning experiences while increasing teacher efficiency

by using artificial intelligence technologies such as images, face recognition and adaptive learning in schools. In education management and decision-making processes, pedagogical quality is tried to be increased by better evaluating educational data with artificial intelligence and big data analysis. In this context, it is thought that artificial intelligence can have an impact on issues such as adaptive learning, teacher evaluation, smart tutoring robots, smart campuses and virtual classrooms and more, thus affecting student curiosity, interest and happiness [20].

The rapid development of AI technologies has had a significant impact on education. These technologies are especially used in the field of artificial intelligence-based education (AIEd). AIEd aims to support the educational process through the use of artificial intelligence technologies. For this purpose, tools such as smart tutoring systems, chatbots, robots, learning analytics dashboards, adaptive learning systems and automatic evaluation are being developed. Chatbots are specifically based on technologies such as natural language processing, machine learning and deep learning. Early chatbots used either keyword matching mechanisms or natural language processing mechanisms. Looking from today to the future, it can be predicted that the use of artificial intelligence technologies in education will witness further advances [21].

Various tools are being developed regarding the use of artificial intelligence (AI) technologies in education. These tools include chatbots, intelligent tutoring systems, robots, adaptive learning systems, learning analytics dashboards, and automated assessment. Chatbots, for example, use natural language processing, machine learning and deep learning technologies. With the advancement of AI, these technologies are expected to become more widespread in education. According to the literature, the AI educational paradigm can be divided into three groups: AI-guided learners, AI-assisted learners, and AI-enhanced learners. The first paradigm, which is the most basic, is that students are recipients of AI services, but AI can also be used to represent knowledge models and guide cognitive learning [22].

The purpose of this study is to question the role of artificial intelligence (AI) in educational processes and its effect on student happiness based on teacher observations. In particular, this study will address the main themes of AI [23], such as adaptive learning, personalization and learning styles, expert systems, and intelligent tutoring systems, and evaluate the potential impact of these themes on student happiness. In this age where technology is rapidly advancing, the aims of this study are to examine how AI can affect the well-being and happiness of students and how this effect can be evaluated in line with teachers' opinions. In this context, the research problem is as follows:

- How do artificial intelligence technologies affect student happiness?

2. Method

The phenomenology pattern was used in this qualitative study, which aimed to explore teacher experiences regarding educational tools and student happiness involving artificial intelligence. Phenomenology is an analytical approach that aims to reveal individuals' personal experiences and their underlying patterns of meaning. This approach involves a comprehensive examination of individual experiences to gain a deeper understanding of a particular phenomenon. Phenomenology was specifically used in this qualitative study involving teacher insights because it enables researchers to comprehensively and nuanced understanding complex human experiences within their contextual frameworks [24].

2.1. Working group

In phenomenological research, purposeful sampling methods can be used to select various individuals or groups. Maximum variation sampling is also one of the purposive sampling methods and aims to capture a wide range of perspectives on the topic you are interested in [25]. The study group consists of 46 teachers who had the opportunity to closely observe their students' experiences with artificial intelligence and happiness. Regarding the opportunities and infrastructure of the teachers working in the city center of Ankara, primary school classroom teachers (19), mathematics teachers (3), guidance teachers (2), English teachers (7), Turkish teachers (5), science teachers (5), teacher (2), music teacher (2), visual arts teacher (2), computer and instructional technologies teacher (3) and physical education teacher (1) voluntarily participated in the semi-structured interview form. Of the teachers who participated in the study with their valuable opinions, 27 were women and 19 were men. The average professional experience is 2.3 years. While 32 of the teachers work in colleges, 14 teachers work in public schools.

It is claimed that artificial intelligence technologies have created a revolution in education [21]. Studies stating that artificial intelligence technologies have left 20 years behind in education are frequently encountered [3]. Although periods such as twenty-thirty years are expressed and the history of artificial intelligence systems does not date back to very old times; There are studies showing that artificial intelligence has developed tremendously and has begun to be widely used in almost all areas of education [16]. When this literature data is considered together, it is predicted that the teachers who participated in the research may also have opinions about artificial intelligence. In addition, the teachers in the study experienced online education during the pandemic period [18]. Teachers with an average professional experience of less than three years are young teachers who experienced the pandemic period while receiving pre-service teacher training and are therefore closer to technology.

2.2. Data Collection and Analysis

This research aims to explore the impact of artificial intelligence on student happiness in teacher experiences. For this purpose, firstly, an in-depth literature review was conducted. This paper is primarily a review of the literature on the phenomena of artificial intelligence and student happiness. The review process involves searching the relevant literature, analysing and comparing the information found and presenting a concrete case. In the in-depth research process before starting the qualitative research part of the paper, the steps taken included identifying the research topic, evaluating and prioritising sources, identifying relationships and main ideas, outlining, writing and finalising the paper. Tips for success in conducting the review are also considered, including maintaining objectivity and balance, avoiding tedious data presentation and avoiding simplistic conclusions. In the literature review phase, it provides conceptual frameworks for understanding the AI era, highlights inconsistencies in the literature, synthesises results and provides an overview of the field [26,27].

In the study, data were collected using a semi-structured interview form. Descriptive and content analysis results were evaluated according to various criteria. The researcher's perspective and experiences were taken into account. Qualitative research processes, data collection, analysis and reporting are interconnected. However, with careful planning, a structured framework for these processes can be created [24]. This framework guides the research process and ensures that the research is systematic and rigorous. The research process provides an in-depth understanding of students'

experiences and exploring how these experiences interact with AI. This provides a broader understanding of how AI can impact students' experiences of happiness. Therefore, this research can successfully fulfill the aim of exploring students' experiences of artificial intelligence and happiness by using the qualitative research processes outlined in the literature.

In this study, participants were informed about the purpose of the research and their verbal consent was obtained for voluntary participation. Interviews were recorded for analysis. Data were analyzed using content analysis, which involves grouping similar views based on specific statements and themes. The main purpose of qualitative data analysis is to reveal hidden information in social reality. Each participant's opinion was categorized, themed and coded using the deductive method, and the findings were presented in a report with frequency and percentage values. Although qualitative research processes are generally intuitive and relative, a general framework can be created with planned studies that include data collection, analysis and reporting [24].

2.3. Validity and Reliability

This article focuses on examining artificial intelligence and student happiness with qualitative research method. Reliability and validity are important issues to consider in qualitative research. To ensure reliability, long-term participation, consistent data collection through continuous observation, and the use of triangulation are recommended and taken into account in this study. For transferability, the research context and processes were defined in detail. Steps such as meticulous documentation, audit trails, peer questioning, member checking, and reflexive journaling were followed to increase reliability [28]. In addition, opinions were taken from teachers who interacted with students over a long period of time to gain a deeper understanding of their experiences with artificial intelligence and its impact on their happiness. On the other hand, validation studies were conducted with the participants to ensure that their experiences were accurately represented. Throughout all of these research processes, care was taken to keep a reflexive journal to reflect on researcher biases and influences.

3. Findings

In interviews with teachers, it is seen that artificial intelligence has entered the agenda of schools. All education components, especially students, and naturally teachers are interested in artificial intelligence. Although an artificial intelligence-centered perspective generally prevails, a collaborative interaction led by students and with artificial intelligence tools is gradually being experienced. In the literature, artificial intelligence training paradigms are divided into three groups. These are expressed in three paradigms: the first paradigm in which students guided by artificial intelligence are just recipients, the first paradigm in which students are guided by artificial intelligence, that is, they learn as collaborators, and the other one, empowered by artificial intelligence, in other words, the student as a leader. Although students in the first group, the most basic paradigm, are generally recipients of artificial intelligence services, artificial intelligence can be significantly used to represent knowledge models and guide cognitive learning [22]. Teacher opinions about how artificial intelligence is used in the context of education embody this literature knowledge.

The expressions obtained in teachers' opinions are grouped under five themes and given in table 1. According to teachers, artificial intelligence (AI) in education benefits students and teachers by providing personalized learning opportunities. Thus, it can be said that artificial intelligence helps student empowerment. Second, AI's ability to reduce

administrative workload allows teachers to focus more on teaching. Third, AI can increase students' learning engagement and motivation, making the learning experience more effective. Fourth, the potential of AI raises ethical concerns, and these concerns should be addressed with an approach that prioritizes student well-being. Finally, the integration of AI in education positively impacts students' learning experiences and prepares them for an AI-driven future. These five themes provide important information about how AI can be used in education and the potential impacts of this technology on students, teachers, and administrators.

Table 1. Effects of Artificial Intelligence Technologies on Student Happiness

Theme	Description	Teachers' Opinions	Frequency
Personalized Learning and Student Empowerment	Artificial intelligence (AI) in education benefits students and teachers by providing personalized learning opportunities.	39	%86
Reducing Administrative Burden	AI reduces administrative workload and allows teachers to focus more on teaching.	36	%79
Increasing Participation and Motivation	AI can increase students' learning engagement and motivation.	41	%90
Ethical Considerations and Emotional Well-being	The potential of AI also brings ethical concerns. These concerns must be addressed with an approach that prioritizes student well-being.	12	%26
Preparing Students for an AI-Driven Future	The integration of AI in education positively impacts students' learning experiences and prepares them for an AI-driven future.	20	%43

As seen in the table, Artificial Intelligence (AI) can be used in education in various ways, and this use can have various effects on student happiness and well-being. These effects were determined in five basic themes in collaboration with teacher opinions and literature and are explained in the table. According to the table, AI benefits students and teachers by providing personalized learning opportunities. A significant majority (86%) of the teachers participating in the study made statements regarding artificial intelligence's personalized learning and therefore empowerment of students. On the other hand, artificial intelligence regarding its ability to reduce workload accounts for 79% of teachers' opinions. Teachers do their jobs faster and easier with artificial intelligence. On the other hand, there is a very high percentage of teacher opinions (90%) who find artificial intelligence useful in the context of students' motivation. Teacher opinions regarding examples where artificial intelligence can motivate students just by mentioning its name offer remarkable inferences.

In addition to all these positive aspects, the potential of AI also brings ethical concerns. These expressions of concern in teachers' opinions can be explained by an approach that prioritizes student welfare. A significant, albeit low, percentage of teacher opinions (26%) emphasize the need to be careful about artificial intelligence. Beyond all these themes, the fifth theme is explained with the codes of integration of AI into education, its positive effects on students' learning experiences and preparing them for an AI-driven future. Teachers have very hopeful views (43%) about preparing students for the future with an artificial intelligence experience that has been addressed in all its aspects and fulfilled its requirements. Overall, these five themes, when considered together, provide important information about how AI can be used in education, the potential impacts of this technology, and student happiness.

3.1. Personalized Learning and Student Empowerment

The field of Artificial Intelligence-Education has witnessed the emergence of adaptive and intelligent education systems since the 1970s. These systems were originally

created to address the limitations of Computer Assisted Instruction (CAI) systems by offering smarter assessment of student knowledge and personalized instruction. These systems, known as Intelligent CAI or AI-CAI, were intended to replace traditional classroom teaching. However, a change took place in the late 1970s with the introduction of the "private lesson" model. Rather than replacing teachers, AI-CAI systems focused on providing individualized tutoring and solving educational problems. This led to the development of Intelligent Tutoring Systems (ITS). Web-based education has also brought about a paradigm shift, with learning materials being delivered online to meet the needs of students without the presence of a teacher or instructor. This model offers personalized learning experiences and greater flexibility for students [9].

Artificial intelligence-supported education benefits students and teachers by providing personalized, flexible and interesting learning opportunities. Artificial intelligence tools are software that can help students' learning processes [29]. Artificial intelligence tools enable students to be more independent and improve their learning experiences because they personalize the learning phenomenon [30]. It also supports students' activities such as downloading, studying and completing assignments by using web-based and online educational materials. In this way, artificial intelligence plays an important role in education, including early childhood education [3].

The views of a classroom teacher (teacher 6) are important in this context: Artificial intelligence is pure happiness. What have we suffered so far? I was able to do vocalization, syllable combining, aloud reading, concretization, and gamification all through the smart board. This is as much as I know, what I can learn, and what I can get from young friends. Who knows what else is out there? I have been teaching primary reading for years and I have seen that these e-books and applications make things much easier. On the other hand, the statements of an English teacher (Teacher 26) who teaches kindergarten and primary school level are as follows: There are teachers I follow on social media. When they find new applications and share them, I use them immediately. I was working hard on material design using the methods I learned at the faculty. Now everything is as easy as a link. Every child participates. Nobody is left out. Attention is at a high level throughout the lesson. Giving homework and tablet etc. It is very easy to reach each student. I can see everything on the school's smart application. Children can see it too.

AI-powered education systems provide an effective and efficient learning experience by allowing students to receive personalized and adaptive instruction. In addition, AI can be used to provide special support to students by increasing awareness of knowledge gaps and helps in real-time evaluation of complex skills and knowledge [12]. In addition, artificial intelligence tools can be used in online training courses to support students in improving their knowledge and skills. Adaptive education systems aim to adapt content and activities according to students' needs, while intelligent education systems can perform tasks such as coaching students and detecting misconceptions. These tools can analyze students' learning needs, adapt learning content, and provide instant feedback [29].

In this context, the views of a mathematics teacher (teacher 21) can provide an important example: Although I do not use the concept of artificial intelligence directly, the tools I frequently use, namely social media, online education tools, videos with educational content, are included in this artificial intelligence. There are dozens of artificial intelligence-supported applications on my computer at home or on my smartphone anywhere. The applications in which I review my notes, plans, and the achievements I have been able to write down, and prepare and share sample videos with my students

are very successful. Also, as a student, I am also studying for the exam. (There is an exam called KPSS to pass to a public school). We plan my exam process with an online institution and my teacher. I have online classes and there is a smart platform that keeps track of what I need to do every week, teaches in the evenings and keeps me informed of the latest developments. Let me tell you the bottom line: there are artificial intelligence tools while learning, teaching, and maybe even while sleeping. You said, "What is its relationship with happiness?" If all this didn't happen, I'd be even more unhappy than this.

AI-powered adaptive learning platforms analyze student performance data to adapt educational content. These systems create personalized learning paths by identifying individual strengths, weaknesses and learning styles. When students feel that their education addresses their unique needs, they experience a sense of empowerment and ownership over their learning journey [29]. It offers a range of benefits that enhance students' learning experiences. Personalized learning, instant feedback, enhanced collaboration, access to educational resources, intelligent learning analytics and continuous learning support are some of the benefits that AI brings to education. By using AI technologies, educators can enhance students' learning experiences and increase overall educational effectiveness. [14].

Current research shows how AI can assist in improving learning opportunities for students and management systems. Sustainable Development Goal 4 aims to ensure equitable and inclusive education and promote lifelong learning opportunities for all. AI technologies ensure equitable and inclusive access to education by providing appropriate learning opportunities for marginalized people, people with disabilities, refugees, and those living in isolated communities. AI can also personalize learning and create individual learning plans based on students' strengths, weaknesses, preferences, and activities. The use of these technologies is promising for increasing opportunities in terms of quality and access in education [11].

As a result, artificial intelligence (AI)-supported education systems are used to offer personalized and intelligent education to students. AI tools support students' independent learning skills, enhance learning experiences using online materials, and help teachers facilitate teaching. Artificial intelligence also provides benefits such as providing adaptive education and offering tailored support to students by analyzing student performance data.

3.2. Reducing Administrative Burden

Thanks to artificial intelligence tools, many business processes have become digital. Thanks to these automation processes, human labor and management are reduced. For example, arranging lesson times in schools, preparing classroom boards or adapting learning content are no longer entirely a burden on the teacher. Artificial intelligence can perform such tasks faster and more efficiently. While administrative tasks can overwhelm educators and distract them from teaching; AI simplifies administrative processes by automating routine tasks such as grading, attendance tracking, and scheduling. It is conceivable that when teachers have more time to focus on teaching and guiding, students will benefit from a more engaging and supportive learning environment [10].

Education Management Information System (EMIS) is a system used for education leaders to store, analyze and disseminate information. EMIS can make data-driven decisions with artificial intelligence algorithms. The development of EMIS, the generation of AI-powered data in every field, has the potential to support real-time decisions in every

aspect of the education sector. A well-designed and functioning EMIS provides useful information to manage and manage the education system more efficiently, develop feasible and cost-effective plans, formulate responsive policies, and monitor and evaluate education outcomes. With data collected reliably and regularly, AI-enhanced EMIS can automatically analyze data to create data dashboards at both the school level and national level [11].

Artificial intelligence (AI) offers various opportunities and advantages in the field of education. AI has the potential to support learning and can be used for tasks such as diagnoses, recommendations and decisions. Additionally, AI-supported education systems are used to analyze classroom dynamics and identify students at risk. In this way, timely intervention is provided. The pedagogical potential of AI is being evaluated by researchers and practitioners and is increasing scientific outcomes. AI plays an important role in the field of education [12]. AI can also enhance collaborative learning and give teachers insight into students' discussions, thus driving student engagement and learning. [11].

With data analysis skills and machine learning algorithms, educators can learn about students' strengths, weaknesses, and learning patterns. Based on this information, teachers can create customized learning paths, set targeted intervention goals, and provide timely feedback. Artificial intelligence also facilitates the creation of various learning materials and media along with technological advancements in education. Teachers can choose from available platforms and applications without needing an in-depth understanding of technology [30]. It can also help teachers free up their time to focus on student guidance and one-on-one communication [11].

In this context, the following statements made by a classroom teacher (teacher 3) may be revealing: After working in public schools for 24 years, I continue to learn with students in a collage. There are smart practices that I learned during the seminar with my young colleagues and that I want to improve myself. It can be downloaded anywhere, in the classroom, at home, and on my smartphone. I'm not saying to make things easier, look, he does things himself. Many websites have countless smart applications. I open a few and show them, and more than half of the class learns them on their own. While they are doing their books and notebooks, I can devote plenty of time to the remaining students. This means being able to make interventions that used to be done outside of class, during extra time, or after a semester's delay, within that class. My workload is less and my mind is more at ease. How happy I am to leave learned children on the way home in the evening! Even though it was difficult to upload photos, videos, a lot of homework files, etc. to the school's smart application, it worked very well. The parent also becomes happy as he keeps track of everything, and it is enough to summarize the situation with the satisfied parent in two words once a month.

In addition, the views of a physical education teacher contain important concretizations in the context of reducing the administrative burden: I prepared children for tournaments for years. These are the ones that come to my mind: chess, tennis, futsal, wrestling (my field, laughter), darts. In the past, preparing documents for these tournaments was more difficult than preparing the children. It's easier now. It's all on the computer. You mentioned what else there is, I'll tell you as soon as I remember: There is filling out the class notebook, for example. I would forget what I achieved in each class. It's been a few years since I learned a practice, it's legendary. Always up to date. Open it, look at it and fill it for two minutes...

It is anticipated that as AI development progresses, the roles of educators will transform. It is suggested that as AI tools take on more analytical tasks, educators will need to focus on “softer” intuitive and empathetic skills [31]. In one sense, the roles of educators are decreasing on the one hand and increasing on the other. Artificial intelligence will also play an important role in administrative tasks and can help streamline processes and reduce costs. However, it is a controversial issue if artificial intelligence completely replaces the teacher or lecturer. While work becomes easier, educators' human touch roles such as guidance, establishing relationships, and encouraging creative thinking come to the fore with increasing importance [30].

As a result, the use of artificial intelligence in education enables the automation of many processes, reducing the burden on teachers and administrators. Artificial intelligence also provides different opportunities for students by offering personalized learning strategies, targeted interventions, and timely feedback. It can analyze classroom dynamics and identify students at risk so timely intervention can be made. However, there is debate about whether artificial intelligence will completely replace teachers or whether their roles will change. Artificial intelligence has the potential to improve education and empower educators to create a more effective learning environment, but educators' skills such as motivation, relationship building, and creative thinking are still important.

3.3. Increasing Participation and Motivation

The future of artificial intelligence in education is exciting. As technology advances, it is clear that we will see more advanced AI-powered tools and platforms. These tools will be able to improve students' learning experience even more than today. Artificial intelligence can enhance the role of educators, personalize learning and facilitate access to information. However, in this process, educators' motivating human touch roles such as mentoring, building relationships, and encouraging creative thinking are increasingly important [30].

Students' participation in the learning process is a strong supporter of motivation. Using engaging educational approaches such as game-based learning and mobile learning can improve learning motivation and outcomes. When an artificial intelligence-supported recommendation system is implemented that affects students' learning engagement, motivation, and outcomes, positive results can be achieved [13].

Artificial intelligence has the potential to tackle some of the biggest challenges in education today, innovate teaching and learning practices, and accelerate progress towards global education goals (UNESCO, 2023). Artificial Intelligence (AI) technologies can increase student engagement and provide personalized learning experiences. AI facilitates students' self-learning by providing immediate-constructive feedback, enabling them to make self-cognitive and behavioral corrections. Additionally, AI can support collaborative learning environments, creating a dynamic learning environment that mimics real-world scenarios. Intelligent teaching systems and virtual learning assistants encourage active participation, personalized learning, instant feedback, and collaborative learning in education through AI-powered tools [14].

A recent study investigated how teacher support may moderate the effects of student mastery on need satisfaction and intrinsic motivation to learn with AI technologies. The results of the study show that both teacher support and student expertise, including self-regulated learning and digital literacy, play an important role in intrinsic motivation and competence to learn with AI chatbots. This highlights the importance of teacher

participation and guidance in the effective use of AI technologies in educational environments [33].

Artificial intelligence (AI) is a technology that has the potential to greatly improve education systems. AI is growing rapidly in the education sector, and many innovative companies are creating AI tools to transform learning processes. These tools can create immersive virtual learning environments, break down language barriers, create custom plans for each student, and more. For example, platforms such as Course Hero and Gradescope are tools that demonstrate the potential of AI in education. The application called Course Hero offers homework help to students using artificial intelligence. Duolingo, on the other hand, provides personalized language lessons, ALEKS or MathGPTPro adaptive assessments for math, and personalized learning plans. Doping Memory, on the other hand, personalizes traditional classroom guidance with online tools [34]. Launched on November 30, 2022, ChatGPT attracted attention with its power and ability to perform complex tasks, reaching more than one million users in a week. Although its use in the field of education is controversial, the potential benefits and inherent limitations of ChatGPT in promoting teaching and learning are highlighted [35]. With these and countless similar applications, artificial intelligence provides a variety of opportunities such as individualized education, automatic assessment, data analysis, student collaboration and interaction.

It is possible to concretize this issue with the experiences of a teacher (teacher 29): I myself was appointed thanks to artificial intelligence. I assume you are aware of collage working hours. If you don't know, it's a lot. We are at school from morning to evening and I have no free time. Even if there is, other work and course fillings are done. So, I enrolled in an online course during my college years. Sometimes I worked all night until the morning. The system that identified the subjects I was missing caught my attention at that time. Now I help children. I give a lot of online homework on tablets.

Technological education stakeholders, constantly evolving with significant innovations and changes, have significant impacts on the intellectual happiness and well-being of students. These tools are so fast and widespread that various academic sectors are having great difficulty keeping up with education-based technology trends that can enhance learning and teaching experiences. These education technology trends include broad open online courses or MOOCs, artificial intelligence or AI, augmented reality (AR) and virtual realities (VR), gamification, big data, learning analytics, and many other forms of learning that can be used outside of or in support of the traditional classroom environment. They are available in numerous options [36].

The statements of a classroom teacher (Teacher 12) on this subject can be included: I have been using smart boards etc. for approximately 10 years. At that time it was called smart board, but now it is something completely different. This must be artificial intelligence. Let me put it this way: In the early days, boards were like projectors. Maybe it seemed that way to us, or that we could use it that much. There were things like overhead projectors when we were kids... There was an ongoing technology called projection devices, which were less advanced than overhead projectors, and smart boards. Oh, let me tell you this, the common thing in every period is that these tools always had the motivational power. Technology continues to motivate all children. These tools turn into miracles, especially in the hands of teachers who are knowledgeable (who are interested in technology and can use it correctly in lessons).

Consequently, the use of artificial intelligence (AI) in education holds great promise for improving the learning experience for students. Engaging approaches such as game-

based and mobile learning can increase motivation and results, and an AI-powered recommendation system can further increase engagement. However, the role of educators in building relationships, guiding students, and encouraging creative thinking remains important. Teacher support and student expertise in self-regulated learning and digital literacy are also important factors in motivating students to learn with AI technologies.

3.4. Ethical Considerations and Emotional Well-being

The use of AI in education is beneficial for supporting emotional well-being and personalized learning experiences. However, it also raises ethical concerns regarding student privacy, algorithmic bias, transparency, misuse of student data, and potential inequality. AI systems should not undermine student and teacher autonomy, and measures such as transparent communication, ongoing evaluation, and strong security measures are necessary. While AI-powered platforms can analyze students' learning styles and deficiencies to provide personalized support, it is crucial to address privacy concerns and provide fair algorithms. Similarly, AI-powered collaboration tools can improve group discussions and collaboration, but over-reliance on AI can reduce empathy and emotional connection between students. To ensure a balanced approach, it is important to find the right balance between leveraging AI technologies and maintaining ethical principles [37].

The integration of artificial intelligence in education also presents challenges such as privacy and security of student data, ethical issues, and passivation of learning experiences. AI collects and analyzes student data for personalized learning experiences, which means data protection and regulations are important. The use of student data and decision processes raise ethical questions and highlight that AI systems must comply with ethical standards such as fairness and transparency. Additionally, it is possible for AI to deliver personalized learning experiences, but this could lead to passive learning, which carries the risk of overconfidence. Therefore, it is important to strike a balance between human interaction and AI training. Policymakers and educators must address these challenges and manage the role of AI in education in accordance with ethical standards [14].

The views of an exemplary teacher (teacher 38) in the context of establishing a balance between human interaction and artificial intelligence are as follows: We had produced a project to establish a small YouTube channel. The students and I were recording math subjects at home. Watching and interpreting those videos on the smart board in our classroom was a good artificial intelligence-supported activity. We never showed our faces while doing this. Just our hands and a white paper, pencils etc. Most people share everything quite easily. We focus on our lesson. Our goal is not to get likes, etc., but just to learn by telling. It may not be a problem today, but we don't know what will happen in the future. It is better to be cautious. It is my responsibility to protect the rights of children.

AI in education requires carefully approaching issues of privacy, ethics, and striking a balance between AI and human education. The integration of AI in education brings challenges that need to be addressed, such as privacy and ethical issues regarding student data. AI is based on collecting and analyzing personal information to provide personalized experiences. Additionally, over-reliance on AI technologies may pose a risk of a passive learning experience for students. Maintaining a balance between AI and human training is important to sustain meaningful interactions and promote deeper understanding [14].

It is clear that AI and other AI-enabled technologies are here to facilitate human life and contribute to the progress of humanity. However, it is important not to fall into the mindset that technology is good by default and to take a critical approach before fully integrating AI into educational processes. As part of this critical approach, it is important to first establish an ethical policy and clearly define ethical boundaries for how AI will use human-generated data. Additionally, it is important to test AI-enabled training processes and retest automated processes to prevent mechanical learning [23].

In this context, the views of a guidance counselor can be included: It is necessary to think not once but ten times and then share. Everyone has smart devices. Everyone is a videomaker. Everyone is a director. How did it happen? Of course, thanks to artificial intelligence applications. When it comes to easy sharing of effects and music, we are always on the internet. Attention I say attention and attention.

Publicly available generative artificial intelligence (GenAI) tools are rapidly expanding and are therefore outpacing national regulations. This jeopardizes users' data privacy and leaves educational institutions unprepared to use the tools correctly. Therefore, GenAI tools need to be streamlined by adopting a human-centered approach. Key steps such as requiring data privacy protection and setting an age limit for independent conversations with GenAI platforms are suggested. Additionally, it is important to take a human-centered and age-appropriate approach to ethical verification and pedagogical design processes [38].

As a result, artificial intelligence provides many benefits in education and has an important role in supporting emotional well-being and personalized learning experiences. However, it also raises ethical concerns such as student privacy, algorithmic bias, transparency, and misuse of data. Transparent communication, ongoing evaluation, and strong security measures are required to address these concerns. AI-powered platforms have the potential to provide personalized support to students, but privacy concerns and fair algorithms need to be addressed significantly. Policymakers and educators are required to manage artificial intelligence in education in accordance with ethical standards. A critical approach is needed to determine the ethical limits of artificial intelligence use and ensure a human-centered approach.

3.5. Preparing Students for an AI-Driven Future

Artificial intelligence (AI) has various transformational areas in the field of education. Going beyond traditional pedagogical approaches, AI can create educational robots that enrich the learning experience using embedded computer systems. These robots are capable of teaching basic skills such as spelling and pronunciation and can be customized to the student's individual abilities. Additionally, AI supports the use of web-based and online training materials. This facilitates students' activities such as downloading educational materials, studying them, and completing their assignments. In this way, AI plays an important role at every stage of education, from early childhood education to primary school to lifelong learning [3]. This highlights the potential and impact of AI in the education sector. Therefore, applications of AI in education can play an important role in shaping future pedagogical strategies and educational policies. This can help the education sector better understand how it can integrate AI technologies to improve students' learning experiences and achieve educational goals.

The integration of artificial intelligence (AI) in education positively affects students' learning experiences. Thanks to AI, personalized learning, instant feedback and enhanced collaboration can be achieved. Education is important in improving artificial

intelligence skills and aims to close the skills gap in this area. Artificial intelligence skills require not only the use of technology but also the rethinking of educational contents and methods. Developing new digital skills is important in a society empowered by artificial intelligence. The aim is to unlock the power of digital competencies that can analyze, use, and decode Artificial Intelligence [11].

I would like to include the opinions of a classroom teacher (Teacher 2) who was very impressed by me while listening: We started primary school online during the pandemic. All my parents and school administration asked, "Teacher, how did you teach these children to read and write remotely?" They said the sentence many times. And I always say, "This is their age. Children are more ready for this age than we are. "I just adapted." I told. That's it. We are preparing them for the future. Yes, the pandemic left a lot of trauma. We are very sorry. We lost our loved ones. But we had the opportunity to quickly experience the future lives of our children. There was an advertisement in my high school years that said the future will come fast. Now just like that, the future of these children came pretty quickly.

The Information and Communication Technologies Competence Framework for Teachers (ICT-CFT), developed by UNESCO in 2011, outlines the competencies that teachers need to integrate into their practice to develop critical knowledge and awareness in students in the digital age. The framework highlights the role of digital technologies in supporting six key areas of knowledge: Understanding ICT in Education, Curriculum and Assessment, Pedagogy, ICT, Organization and Management and Teacher Professional Learning. It also describes three stages of knowledge acquisition: technology literacy, knowledge deepening, and knowledge creation [34].

It determines the competencies required for teachers to integrate digital technologies into their professional practices and develop critical knowledge and awareness with their students. It also emphasizes that it is not enough for teachers to only have the skills to manage and teach digital technologies, but they also need to support their students in having the ability to collaborate. These skills become a part of citizenship education in the growing technological world, enabling students to participate in the digital society [40].

In this context, the adventure of opening a robotic coding course and the observations of a classroom teacher (teacher 41) can be given as an example: Getting a robotic coding certificate was quite good. Teaching is my main job. My hobby is coding workshop. There must be work to do at school all day long. We even made traditional lessons more fun. Servest activity lessons are written robotically in our syllabus. We changed the name. We switched to Arduino sets this year with the class I started last year. There's been a lot of progress. Even other students at school called me their robotics teacher. We are considering participating in robot tournaments.

The proliferation of artificial intelligence (AI) and digital technologies in the classroom requires teachers to acquire new skills to use these technologies effectively. These capabilities include understanding how AI-powered systems work, interpreting and managing the data provided by these systems. Additionally, teachers need to understand the dangers and opportunities of AI, develop more human capabilities, and equip students with skills that cannot possibly be replaced by machines. Therefore, teacher preparation programs should take these new abilities into account [41]. However, it is not enough for teachers to simply understand and comprehend these new technological possibilities; AI developers also need to collaborate with educators, content designers, and interdisciplinary experts.

Artificial intelligence should be seen as a tool to support educators rather than replace them. Collaboration between artificial intelligence technologies and true natural intelligence teachers is important to create effective learning environments. Digital literacy and artificial intelligence skills should also be encouraged. Students must learn to critically evaluate and use AI-enabled tools and understand ethical rules. In this way, artificial intelligence can improve learning experiences and create positive effects in the field of education [14]. The education world should adapt to technological developments to improve the quality of information and communication technology-focused education by using artificial intelligence systems [30].

The views of a classroom teacher (teacher 18) can be included to support this issue: I also studied computer teaching as a minor so that children would be ready for the future. First of all, I thought I should be ready at the faculty. It's good that! I want to tell you about some of the things I saw in the teachers' room. Many teachers are very eager to adapt and learn new technologies. On the other hand, there are teachers who try to do business only with old stone bath books. Of course, I would like to mention those who are successful in this way, keeping them aside. I think classes whose teachers adapt to artificial intelligence technologies are luckier. So why shouldn't other classes be lucky?

Overall, AI has the potential to greatly improve the quality of education and enhance students' learning experiences. Artificial intelligence can be used to develop educational robots that teach basic skills and can be customized to individual student abilities. Additionally, artificial intelligence supports the use of web-based and online educational materials, providing easier access to learning resources. The integration of artificial intelligence in education enables personalized learning, instant feedback, and improved collaboration between students. Teaching artificial intelligence skills in schools is important to close the skills gap in this rapidly developing field. A happy student in the age of AI is one who feels equipped to navigate the AI environment with confidence.

4. Conclusion

As a branch of computer science that aims to have intelligent behavior and improve human actions, the effects of artificial intelligence on the transformation in the field of education have been dizzying. In education, AI is used for a variety of purposes, such as delivering personalized learning experiences, intelligent training, and data-driven insights through machine learning systems and algorithmic processes. By integrating AI into education, learning processes become more adaptable and personalized. AI, also known as Machine Intelligence, involves the ability to learn and perform various tasks. AI is a branch of science whose visibility increases day by day compared to the previous day, with its algorithmic structure that imitates human intelligence and tries to meet demands by processing user data [23-37].

Collaboration studies in the field of artificial intelligence and education are taking place with increasing momentum day by day. Literature reviews show that artificial intelligence has become increasingly visible in the world of education in recent years. The research results, conducted using the Web of Science database during the literature review phase of this study, show with the VOSviewer visual which concepts artificial intelligence stands out in the field of education.

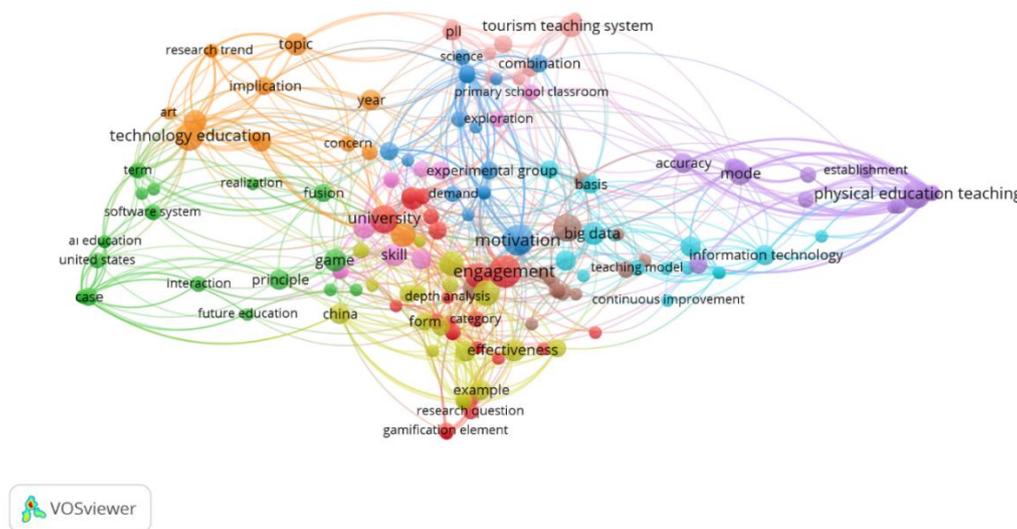


Figure 2 – The impact of artificial intelligence on education

This VOSviewer image shows a word cloud and its relationships analyzing the impact of AI on education. It aims to explain the role of key concepts such as image, technology, education, motivation and effectiveness in the field. Relationships between different concepts are represented by the thickness of the lines, indicating the frequency with which these concepts occur together. Additionally, different colors indicate different groups or related concepts. This image helps viewers understand the main themes and important issues related to artificial intelligence in education. Overall, this image is a valuable tool for identifying concepts that are important in the field of education, especially concepts such as technology, motivation, and effectiveness. Understanding these concepts is extremely important to understanding the impact of artificial intelligence on education.

The role of artificial intelligence (AI) in education is considered in communication processes, human-computer interaction and computer-mediated communication. AI has the potential to transform the way students learn and interact with information. Although AI has both positive and negative impacts on human communication, there is optimism in exploring new concepts and frameworks. AI can automate learning and provide learners with knowledge transfer and continuous improvement in real-time experiences. AI applications in education include creating smart campus environments, increasing teacher efficiency, improving student learning experiences and evaluating educational data. AI is seen as a future component of educational processes such as adaptive learning, personalization, expert systems and intelligent tutoring systems by promoting students' well-being and happiness.

Artificial intelligence cognitive agents, coded learning contents, can perform various cognitive activities such as speaking, hearing, seeing and learning. Artificial intelligence technologies such as vision, natural language and speech have transformed traditional education, transforming information processing and intelligent adaptive learning. This has inspired educational institutions and teachers to rethink their curricula. Teachers and students can make a customized learning plan based on students' needs and existing learning environments by eliminating mismatches through various AI-based methods.

This can provide a more engaging learning experience for students while also increasing their learning capacity and efficiency. Studies addressing the relationship between artificial intelligence and education may benefit teachers, students, and researchers in the future by providing teaching strategies, methods, and techniques, as well as materials for thinking about new directions and applications of artificial intelligence in education [30].

In conclusion, artificial intelligence plays an important role in the field of education and will shape future learning processes. The age of artificial intelligence presents students with both opportunities and challenges. Educators can provide a positive and fulfilling educational experience by focusing on personalized learning, emotional well-being, and ethical issues. It is important to embrace AI as a tool that increases students' happiness and equips them for a dynamic future.

Suggestions

Artificial intelligence (AI) offers a broad perspective with the potential to improve the quality of education and enrich students' learning experiences. AI can be used as a tool to create educational robots that can adapt to students' individual abilities and teach basic skills. Additionally, AI serves as a support mechanism to provide more convenient access to web-based and online educational materials. Incorporating AI into educational processes brings opportunities such as personalized learning, rapid feedback and increased collaboration between students. Teaching AI skills in schools is critical to addressing the skills gap required by this rapidly evolving field. In the age of AI, a student's happiness is directly related to their ability to feel safe in the AI environment.

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