




Teacher Happiness in the Age of Artificial Intelligence

Yapay Zeka Çağında Öğretmen Mutluluğu



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Özet

Bu makale, yapay zekâ (YZ) ile öğretmenlik mesleği arasındaki ilişkiyi incelemektedir. İnsan benzeri zekâ sergileyebilen YZ teknolojilerinin, özellikle makine öğrenmesi, doğal dil işleme ve bilgisayarla görme gibi alanlarda, eğitimde önemli uygulamaları olduğu vurgulanmaktadır. Çalışmada literatür taraması yöntemi kullanılarak YZ'nin öğretim uygulamaları üzerindeki etkisi ve dijital çağda öğretmenlerin rolü ele alınmıştır. Makale, insan öğretmenlerin yerini YZ'nin alacağı yönündeki kaygılara rağmen, YZ'nin eğitime önemli fırsatlar sunduğunu ortaya koymaktadır. Etkili öğretmenlerin; mesleki bilgi, etik standartlar ve toplumsal değişim odaklı bir yaklaşımı harmanlayarak öğrenci gelişiminde merkezi bir rol üstlenmeye devam ettiği vurgulanmaktadır. Bulgular, öğretmen eğitiminde dijital yeterliliklerin ve YZ'nin pedagojik katkılarını anlamının kritik olduğunu göstermektedir. Ayrıca, öğretmenlerin değişime uyum sağlayabilmesi için esnek öğretim stratejileri, sürekli destek sistemleri, iş birliği ortamları ve öz liderlik becerilerinin geliştirilmesi gerektiği ifade edilmektedir. Dijital çağın getirdiği öğrenci çeşitliliği, öğrenme yöntemlerindeki değişim ve öğretmen eğitimi gibi alanlarda köklü dönüşümler yaşandığına dikkat çekilmektedir. Makale, öğretmenlerin güçlendirilmesi ve mesleki dirençlerinin artırılması gerektiğini savunarak, teknolojik gelişmeler karşısında öğretmen etkinliğinin ve mutluluğunun sürdürülmesine katkı sağlamaktadır. Genel olarak çalışma, yapay zekânın öğretmenlik mesleğine bir tehdit değil; destekleyici, tamamlayıcı bir bileşen olarak görülmesi gerektiğini ve dolayısıyla öğretmen mutluluğunu vurgulamaktadır.

Anahtar Kelimeler: *Yapay zeka, öğretmenlik mesleği, mutluluk, değişim*

Abstract

This article examines the possible relationships between the teaching profession and artificial intelligence. We are experiencing an era in which artificial intelligence technologies that can exhibit teacher-like or learner-like intelligence are important applications in education. The effects of the transformation brought by the age of artificial intelligence in the education process and the role of teachers were examined in this study using the literature review method. Leaving aside the concerns of whether artificial intelligence is replacing teachers in society; it is aimed to highlight the opportunities that artificial intelligence has brought. In this context, artificial intelligence has threats as well as opportunities for the teaching profession. According to the research findings, the pedagogical contributions of artificial intelligence tools and digital literacy skills have come to the fore in the pre-service and in-service continuous education planning of teachers. In addition, it is seen that teachers who can adapt to change, are flexible, agile and have high self-leadership capacity; and can manage themselves, their classes and artificial intelligence tools can come to the fore. In line with these results, it is recommended that teachers be strengthened with in-service support and pre-service teacher candidates be equipped with skills appropriate to the era. As in all situations of change and uncertainty, ensuring teacher effectiveness in the face of technological developments will indirectly contribute to the maintenance of teacher happiness. In an education system prepared according to these predictions, it can be said that artificial intelligence can be seen as a supportive, complementary component rather than a threat.

Keywords: *Artificial intelligence, teaching profession, happiness, change*

INTRODUCTION

Artificial intelligence is seen as a change opportunity or threat that brings about radical transformations in many critical areas of life such as a teacher's professional development and working conditions. The artificial intelligence storm is blowing from a teacher's daily life to every stage of the learning process. Artificial intelligence tools based on the idea that machines can gain thinking skills like humans are not limited to learning games on smart boards or achievement/learning output applications used to fill out a class notebook. At this point, the question of whether artificial intelligence can participate in the education process just like a teacher and threaten people whose profession is teaching is being discussed. AI can be defined as a supercomputer with human-like functions, focused on achieving goals in the world. It is a discipline that involves building intelligent machines that adapt to situations with limited resources. AI is expanding its role in harmonizing information in everyday situations. AI encompasses technologies such as computer vision, speech recognition, machine learning, big data, and natural language processing. Its main goal is to mimic human intelligence by collecting, analyzing and self-improving information to perform specific tasks (Chen et al., 2020; Chiu et al., 2023; Copeland, 2024; McCarthy, 2007; Sutton, 2020; Wang, 2020).

Education is one of the most important contact areas of for artificial intelligence. It is unlikely that all components related to education will not be affected by artificial intelligence. For this reason, it is important for teachers, students, parents and administrators to learn artificial intelligence technologies in a versatile way. It is primarily the responsibility of the teacher to represent the phenomenon of learning in the context of artificial intelligence. Teachers play an important role in critical thinking, gaining a deep understanding, and future readiness so that students can correctly interpret and use the information provided by artificial intelligence. Teachers need to develop themselves in using the potential of AI in an ethical way and help students as well. Studies show that teachers are open to systems that support intelligent teaching (Annuš, 2024).

There are ongoing uncertainties about how artificial intelligence (AI) will impact education and the teaching–learning process. It is essential to distinguish between Artificial Intelligence in Education (AIED), which refers to using AI to enhance teaching and learning (Luckin et al., 2016), and AI Literacy, which focuses on learning about AI's principles and implications (Long & Magerko, 2020). While AI literacy initiatives are expanding, the effects of learning with AI (AIED) remain unclear and

vary across contexts (Zawacki-Richter et al., 2019). Research mainly highlights student-centered AIED applications, with teacher-centered AIED still underdeveloped. From a teacher perspective, AIED is designed to assist rather than replace teachers (Holmes, 2023). Clarifying these concepts is crucial for addressing AI's role in education effectively.

Because artificial intelligence plays an important role in education from early childhood education to advanced levels, teacher transformation must be achieved rapidly. The field of Artificial Intelligence-Education necessitates the transition from traditional classroom teaching to intelligent systems. In all these transformation processes, the teacher is still in the role of classroom manager. Although AI-CAI systems initially came with uncertainties, such as replacing teachers, in the following years, they started to show a tendency towards an individualized tutoring model. In this way, with the emergence of Intelligent Tutoring Systems (ITS); Online technologies that allow students to learn without the need for a teacher with internet-based tools have developed rapidly. With these developments, flexibility, freedom and efficiency have added a completely different dimension to learning processes. The transformation that has occurred in learning processes is undoubtedly seen in the role of the teacher (Brusilovsky & Peylo, 2003; Chen et al., 2020). The question of whether a teacher is needed did not arise suddenly, but has developed as a result of a long-term transformation.

The teaching profession is undoubtedly rapidly transforming and continuing to keep up with the times. From daily lesson plans to annual or long-term plans, artificial intelligence technologies are used practically by experts in every field. Accelerators who make their routine work easier with artificial intelligence tools can spend more time in their remaining time. With the support of instructors and institutions strengthened with artificial intelligence-supported digital tools, it is becoming more accepted and the connection between them is constantly improving. The requirements of the age have fundamentally transformed the lives of teachers and have revealed new skills, and actors have supported their commercial responsibilities and reputations by acquiring them at this speed. Artificial intelligence tools and the digital age present opportunities as challenges for the teaching profession. Teachers who highlight opportunities make a difference and are noticed by their students and institutions (Verganti et al., 2020; McKnight, 2016; Bates, 2015; Alam, 2021).

The current age of artificial intelligence also offers opportunities for developing teacher skills. While in the past, long and uneconomical plans were required for in-

service training or courses, a flexible, free and efficient in-service training plan can be created with online opportunities. Therefore, it is important for teachers to use the process of identifying and discovering artificial intelligence opportunities during their own development and then continue to use them in their classrooms. Teachers who first use these opportunities for themselves will be able to contribute to their students and the reputation of the profession. In this context, following international organizations that produce content and taking responsibility for their own development is an important first step for teachers. Teachers should accept the impact of the age on education and recreate their own future in four basic dimensions: knowledge, skills, attitudes and values. Flexible, innovative, collaborative and strong teachers can see the threat of artificial intelligence as an opportunity (Caena & Redecker, 2019; Starkey, 2020).

A forced and rapid demo of the future, experienced under the conditions of a mandatory pandemic, provided valuable insights. The mandatory online education experience in pandemic uncertainty brought opportunities as well as challenges, and teacher competences underwent unique transformations. During the pandemic, educators whose skills and determination to provide authentic and meaningful learning experiences have strengthened have come to the fore. In addition, creative solutions such as adapting physical resources to the digital world and utilizing online infrastructure have been explored. These examples aimed to inspire teacher educators and provide engaging and high-quality virtual learning experiences in in-service and pre-service trainings (Fidan, 2020; Goldberg & Lannoye-Hall, 2023).

In the light of post-pandemic experiences, learning systems intertwined with internet networks and smart devices and applications, artificial intelligence-supported opportunities have emerged. Smart devices that children use as learning tools also offer learning and teaching opportunities for teachers. Therefore, by integrating technology into education, the digital skills of students and teachers are developing, and innovative tools are provided to teachers, especially as the most fundamental component of education (Fidan, 2021; Kilag et al., 2023). In every era, the teaching profession requires integrating technology into teaching practices and adapting to the changing educational environment. This includes using artificial intelligence tools, designing and implementing technology-supported learning activities, and engaging in continuous learning and innovation.

Artificial intelligence is creating significant changes and innovations in the field of education and training. It changes teachers' teaching methods and students' learning

methods. The applications of artificial intelligence in education contribute to the professional development of teachers and reduce the teaching workload. According to the data obtained through questionnaires and interviews, teachers understand and use artificial intelligence products. The most frequently used AI products are mobile applications and online education platforms. Some teachers use new technologies such as smart classrooms and robotic assistants in teaching. Most teachers recognize the role of AI in teaching and believe that it helps professional development. Artificial intelligence will further develop and progress in the field of education (Xue & Wang, 2022).

The three main roles of AI in education are providing adaptive teaching strategies, improving teaching skills, and supporting teachers' professional development. In studies on providing adaptive teaching strategies, content and tasks appropriate to the needs of students were presented using intelligent tutoring systems and multimodal sensor data. In order to improve teaching skills, computer-aided instruction and artificial intelligence technologies were used to improve teachers' classroom management and teaching efficiency. In studies conducted to support teachers' professional development, real-time data were analyzed and suggestions and comments were provided to teachers, and teaching evaluation models were created. However, these artificial intelligence applications have limitations in practice, and there are not enough evaluation criteria yet. In addition, some teachers may experience a lack of control because they do not fully understand how the technologies work (Chiu et al., 2023).

In addition to the creativity of teachers in the transformation of their professional roles, their roles in the development process of artificial intelligence applications are also seen. In a study by Çelik et al. (2022), it was revealed that teachers assume various important roles in the development of AI applications. These roles can be listed as acting as a model in the training of AI algorithms and contributing to AI development by checking the accuracy of AI automatic evaluation systems.

Studies on teaching in the age of artificial intelligence continue to increase. In one of these studies (Yolcu, 2024), it is stated that a qualified teacher education plan must be established for teachers to adapt effectively to the artificial intelligence era. In a world of increasing uncertainty and unpredictability on the one hand, the well-being of teachers should be included in this planning. Teacher well-being in the age of artificial intelligence greatly affects their ability to fulfil their changing role effectively and professionally (Altan & Özmusul, 2022). In another study, while teachers draw

attention to some disadvantages related to the future of teaching in the context of artificial intelligence, engineers see artificial intelligence as a tool that will provide quality and benefit for everyone in the education sector (Gocen & Aydemir, 2020). Therefore, such a planning and study should be carried out in such a way that teachers' AI literacy, their ability to use, produce and transform themselves, and thus teacher welfare should be strengthened.

In this study, answers to the following question were sought:

- How do artificial intelligence technologies affect teacher well-being?
- What can be done to strengthen teacher well-being in the age of artificial intelligence?

METHODOLOGY

Although a literature review is defined as the examination of published material on a subject, there is no specific or official definition of a literature review. The definition of this term and its applicability to a document is left to the decision of the indexer. A literature review is a type of document that involves the analysis and synthesis of information focusing on bibliographic citations. It is also stated that literature reviews are usually inductive in nature and aim to summarize, evaluate and integrate primary reports. While literature reviews focus on the examination of previously published material, they may also involve the development of theoretical statements (Cooper, 1988).

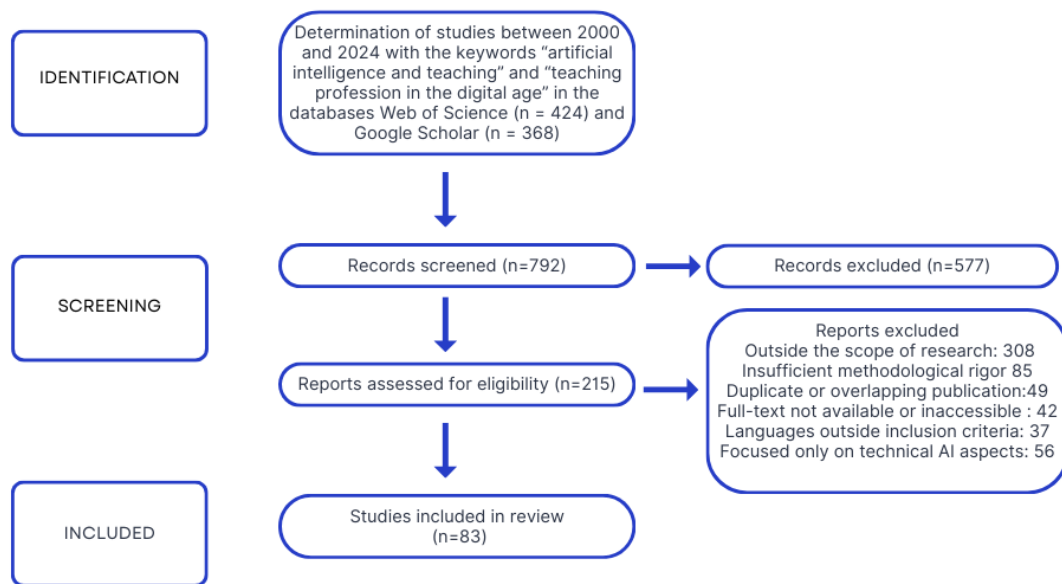
A literature review reveals the sources of a study and strengthens its relevance and rigor. It plays a central role in academic research and information systems, helping to prepare comprehensive overviews on a topic. The process, involving backward and forward searches, is often challenging, especially in fields like artificial intelligence where sources are abundant. To ensure credibility, the inclusion and exclusion criteria must be transparent. A literature review summarizes a subject area, identifies high-quality articles, and evaluates their relevance. The processes of this study focused on reliability, validity and reproducibility. In this context, sufficient effort has been made on research methods to support the comprehensiveness, reliability and scientific soundness of the research (Brocke et al., 2009).

This review article systematically examines the teaching profession in the digital age (Denyer & Tranfield, 2009; Pautasso, 2013; Manisha, 2023; Rowley & Slack, 2004). Studies focusing on teacher education and digital transformation were selected and sources published between 2000 and 2024 were analysed. Initially, a pool of 215 articles

was screened and 83 sources were found suitable. As a result, this review article was developed in the basic structure focusing on the teaching profession in the age of artificial intelligence.

In this study, a systematic review method was adopted to comprehensively evaluate the existing literature on the teaching profession in the digital age. During the study process, the relevant literature was identified, selected, analysed and synthesised meticulously. In the present study, the literature review was carried out carefully and meticulously with a systematic review method. The literature concerning the teaching profession in vital dimensions was carefully scanned, and evaluations such as data determination, data extraction and quality were meticulously carried out. The scientific search engines WoS and Google Scholar databases were queried with the search "Teaching profession in the digital age". The studies that were found to be suitable within the scope of this research were included and those that were not considered to meet the criteria were excluded. The selection process of the publications included in the study is shown in Figure 1 with the PRISMA 2020 flowchart.

Figure 1. PRISMA Flowchart for Systematic Reviews



FINDINGS

In this section, research findings are presented under headings. Five main themes affecting teacher well-being in the digital age were identified. These themes emerged from a combination of selected studies and show how multifaceted teachers' well-being is. Each theme includes important elements that affect teachers' professional

fulfilment and emotional strength. In particular, the effects of digital transformation and artificial intelligence in education are discussed within this framework. Table 1 summarises the themes, subheadings and highlights to make it easier to understand the findings.

Table 1

Thematic Framework for Teacher Happiness in the Digital Age

Theme	Sub-Components	Representative Focus
Teaching Profession	Ethical values, competence, lifelong learning	Foundation of satisfaction
Flexibility & Resilience	Uncertainty management, emotional regulation, coping skills	Emotional strength in changing times
Self-Leadership & Motivation	Autonomy, moral agency, intrinsic drive	Internal source of well-being
Pedagogical Agility	Adapting strategies, agile curriculum use, feedback systems	Classroom dynamism and innovation
Technology Integration	AI use, belief transformation, digital adaptation	Technological harmony and empowerment

The Teaching Profession and Foundational Qualities

Teaching is a globally recognized professional activity dedicated to educating, influencing, and guiding learners within academic contexts. As one of the largest and most diverse professions, teaching involves acquiring specialized knowledge through formal education, professional certification, and adherence to established ethical standards (Havighurst, 2023).

Effective teaching is characterized by essential foundational qualities, such as comprehensive professional knowledge, instructional planning proficiency, and strong assessment skills, which collectively contribute to positive, inclusive learning environments (Stronge, 2018). Teachers equipped with these skills significantly enhance student performance and contribute positively to broader societal outcomes, including economic development (Hanushek, 2011; Korthagen, 2004).

Michael Fullan (1993) highlights the importance of integrating moral purpose with change-agent capabilities within teaching practices. Moral purpose involves impacting students' lives positively, whereas acting as a change agent requires ongoing strategic innovation to address evolving educational challenges. Hence, teacher education programs must prioritize competencies such as inquiry-based learning, collaborative

problem-solving, and personalized instructional approaches, enabling teachers to adapt effectively to student needs.

Qualified teachers demonstrate essential attributes such as effective time management, collaborative teamwork, continuous pedagogical improvement, emotional regulation, and respect for diversity (Çelikten, Şanal, & Yeni, 2005). The quality of teachers can be measured by their performance, especially during pandemics or periods of extraordinary uncertainty. In this context, the ability to survive in the face of uncertainty, to provide rapid solutions to change, and to act with pedagogical agility are the basic indicators that distinguish qualified teachers (Beteille et al., 2020).

The qualities of the teaching profession are constantly changing and teachers are adapting to this change rapidly. In doing so, one of the important determinants of professional development is collaboration. Joint research and collaboration projects with colleagues encourage the emergence of innovative ideas, All five fingers are different. Each teacher in the school can support each other positively with different skills. Knowledge increases as it is shared and integrated skills are much more than piecemeal efforts. In short, continuous professional development and collaboration not only improve teachers' professional performance but also positively affect students' academic and social achievement (Darling-Hammond, 2000; Korthagen, 2017).

With the Artificial Intelligence Age, the use of technology in education has increased significantly. This development has led to radical changes in teaching methods and pedagogical practices. Thanks to the opportunities offered by technology, more resources have been made available to students and learning processes have been personalised. However, various challenges have emerged in terms of digital literacy gaps, data security issues, privacy concerns and equal opportunities in education. At this point, it can be said that these problems need to be addressed effectively in order to take full advantage of the opportunities brought by artificial intelligence in the field of education (Greenhow et al., 2009).

Teacher happiness has been at the heart of this transformation. It was shaped by personal life satisfaction, internal motivation and positive relationships. This happiness strengthened teachers' emotional resilience. It also increased their professional satisfaction. Happiness has played an important role in teachers' adaptation to technological and educational changes (Diener & Ryan, 2009; Fisher, 2010; Helliwell et al., 2020; Easterlin, 2003; Veenhoven, 2023).

It can be said that artificial intelligence plays an increasing role in education. It can be thought that it reduces the workload of teachers and facilitates lesson planning. It is even stated that it offers students more personalised learning opportunities. Nevertheless, it is stated that teachers need to improve their digital skills in order to use these technologies effectively. It has even been emphasised that some teachers may be hesitant towards artificial intelligence (Altan & Özmusul, 2022; Göcen & Aydemir, 2020). It is also a fact in the literature that it can be argued that teachers who successfully use artificial intelligence increase their professional productivity and satisfaction levels (Chiu, 2023; Ertmer et al., 2012).

It can be said that teachers who use digital platforms such as YouTube effectively are more successful in their profession. Thanks to these platforms, it may be possible for them to reach wider student groups. It can also be considered that teachers have the chance to continuously evaluate and improve their own practices. As such, an increase in teacher happiness and professional productivity can be expected (Copper & Semich, 2019; Rich & Hannafin, 2009).

Intrinsic motivation strongly influences teachers' technological integration and professional happiness. Positive experiences with technology foster enthusiasm, satisfaction, and innovation, highlighting the need for strategic professional development programs to maximize technological benefits (Chocarro et al., 2021; Ertmer et al., 2006; Fidan, 2022).

Research underscores that teachers' beliefs about technology evolve positively through increased exposure and interaction, particularly evident during rapid digital transitions such as the COVID-19 pandemic. Supporting these shifts requires ongoing professional development and clear, proactive educational policies (Levin & Wadmany, 2006).

Flexibility and Resilience

While it is recognized that educational content, classroom practices and learning environments need to change, teachers' tendencies to cope with uncertainty are also very important. There are studies that draw attention to the importance of teachers' life experiences and mindsets for coping with current, emerging and future uncertain challenges. Teacher flexibility, resilience and problem-solving skills can be considered together (Faulkner & Latham, 2016). Unpredictable rates or levels of uncertainty are also important in the context of teacher resilience. In the case of strong uncertainty during the pandemic period, problems arising from the uncertainties of the process as well as the communication tools that enable teachers to reach children are at the

forefront. Although it was observed that teachers had no difficulty in adapting, uncertainty was a heavy burden. In a sense, it can be said that the most fundamental difficulty in the pandemic period compulsory distance education process is the phenomenon of uncertainty (Fidan, 2020).

The concept of flexibility is very important in the context of teachers' survival in all kinds of uncertainty situations. A flexible teacher knows how to adapt teaching methods to student needs. He/she practices who, what and how to teach with flexible solutions. Some students learn from the teacher and some learn from the teacher's correct guidance. In this way, countless flexible products such as increased student participation, increased motivation, improved behavior management and increased learning levels will emerge. A flexible teacher does not force students to learn from me. Guidance to the right learning tool is also included in teaching. It is stated that this skill increases teachers' professional success.

On the other hand, the concept of resilience that supports teacher quality also stands out. The ability of a teacher to continue teaching, to continue their profession and to continue teaching effectively in any difficulty they encounter, in short, in any conditions, is related to resilience (Masten, Best & Garmezy, 1990). The conditions of the age of artificial intelligence are also included in this. Resilient teachers are open to being motivated and focusing on opportunities that create all kinds of stress. For teachers who do not strengthen resilience and who give up at every obstacle, the threat of artificial intelligence can be a significant reason to give up (Brunetti, 2006). Resilient teachers are also thought to be able to resist external pressures and have the power to overcome their own limits (Oswald et al., 2003; Patterson et al., 2004). These qualities, resilience and beyond, play a critical role in sustaining their professional success.

Teacher resilience is an attitude that shows how they react to difficulties in the environment and how they protect themselves in this process. This resilience emerges and develops especially during stressful periods. Teachers' self-confidence, sense of self-efficacy and problem-solving skills play an important role in this process. However, supportive relationships with colleagues also increase their resilience and help them cope with challenging situations (Beltman et al., 2011; Tait, 2008). For example, when teachers face economic uncertainties and pressures such as mobbing, such supportive relationships can play a critical role in maintaining their resilience.

Self-Leadership and Professional Motivation

The three main roles attributed to AI are to improve the performance of management platforms, provide appropriate and personalized services, and support the

educational decision-making process with evidence. AI is seen to increase the performance of management platforms. Management platforms, which are made more effective for administrators by assigning AI-supported routines, have been made more secure and their jobs have been made easier. AI technologies have been used to provide personalized academic and non-academic suggestions. For example, activity recommendation systems increase the work efficiency and quality of staff by suggesting the most suitable activities for students. AI technologies also provide educational administrators and management teams with decision-making processes supported by evidence. Information is provided on the possibility of students dropping their courses, factors affecting academic performance, and information that can help in course selection (Chiu, 2023).

Self-leadership refers to individuals' ability to lead themselves through effective decision-making, time management, value alignment, and self-regulation, regardless of their formal leadership status (Fidan, 2018; Neck et al., 2019; Manz & Sims, 1980). It empowers individuals to manage their own lives and performance and prepares them for effective leadership within groups.

Critically, self-leadership is closely tied to teacher well-being. According to Self-Determination Theory (Deci & Ryan, 2000), the satisfaction of autonomy, competence, and relatedness needs fosters intrinsic motivation and psychological well-being. Teachers who develop strong self-leadership skills are more likely to feel autonomous, manage their work effectively, and experience greater emotional resilience, leading to higher levels of professional satisfaction and happiness.

In the context of teaching, self-leadership and personality are arguably the most important characteristics of effective teachers. While many aspects of teaching can be developed, it is more difficult to change a person's personality. Therefore, it is important to support teachers' personalities and strengths in internal processes, as well as to develop their self-leadership skills, intrinsic motivation, and personality traits. This will contribute to the effective guidance of students and the creation of positive learning environments (Stronge, 2018).

The teacher is a change agent who makes a difference, improves and develops things, contributes to a deep human and social experience, and has a responsibility to change the world (Ayers, 2015; Fullan, 1993). In addition, teachers demonstrate teacher leadership by influencing colleagues, parents, students, and decision-making processes with their roles beyond the classroom (Wenner & Campbell, 2017; York-Barr

& Duke, 2004). For example, the leadership role of teachers in online education processes due to the Covid 19 pandemic is undeniable.

In teacher leadership, collaborative initiatives established between parents, students, and learning are considered important dimensions of academic success. Teachers encourage students to create innovative learning opportunities by using digital information resources and to develop their creativity and critical thinking capacities. Therefore, the role of teachers in establishing a meaningful, sustainable connection not only in school but also between home and school is important (Hutchison et al., 2020).

The studies in the literature provide important information in terms of preserving and developing teacher leadership in the age of artificial intelligence. Recent research suggests that AI can both strengthen and negatively impact teacher leadership. In the context of teacher leadership, teachers should be able to be leaders of AI. AI tools that provide personalization tools, facilitate curriculum development, automate administrative tasks, and support professional development can facilitate teacher leadership. Teachers can fascinate their students with the power of AI (Ghamrawi et al., 2024).

There are study results in the literature that address the relationship between teacher leadership and artificial intelligence. Leading teachers can quickly access the right data with artificial intelligence tools to make the right decisions and take the right steps. The data and findings of artificial intelligence should ultimately be organized and controlled for the most accurate steps with the ethical and human touch of teachers. Because artificial intelligence needs human touch, especially in ethical matters. While the most ideal results are obtained with the data of artificial intelligence and the ethical human touch of the leading teacher, teacher leadership will also be strengthened (Wang, 2021).

Pedagogical Agility and Innovation

Applications where artificial intelligence is used with innovative and agile teachers are rapidly increasing. Experimental studies on these are also seen. In one of them, the results were reported as beneficial for students (Yılmaz and Yılmaz, 2023). In another experimental study, teachers' technological, pedagogical and content knowledge was examined. The study results indicate that if teachers have more information to interact with artificial intelligence-based tools, they will better understand the pedagogical contributions of artificial intelligence. In addition, technological knowledge supports teachers' better evaluation of artificial intelligence decisions (Celik, 2023).

With the technologies of the digital age, students can now determine their learning times based on cooperation and participation in traveling hybrid learning areas. It has been determined that young people frequently use learning technologies outside of school and that this increases school, preparation and participation. Activities related to communication, information sharing and learning are carried out through social networking sites. There is a potential that these new technological competencies add value to education (Greenhow et al., 2009). The concept of pedagogical agility has been introduced in the context of schools and teachers being able to quickly adapt to technological competencies.

The application of artificial intelligence to student learning has been classified into four roles. The first role is to determine tasks based on individual competence. In this role, artificial intelligence personalizes tasks according to students' needs. The second role is to provide human-machine conversations through artificial intelligence chatbots and interactive books. In this way, students are helped to develop their language skills. The third role is to analyze student work for feedback. Artificial intelligence supports the learning process by providing timely guidance and feedback to students. The fourth role is to increase adaptability and interaction in digital environments with artificial intelligence technologies. In this role, student profiles and personas are created using artificial intelligence data and the learning experience is personalized (Chiu et al., 2023).

Agility, fundamentally, refers to swiftly and precisely altering direction (Sheppard & Young, 2006). Within education, pedagogical agility involves integrating agile methodologies, principles, and values into technology-enhanced learning environments at schools. Applying agile practices in education can enhance quality and ensure modern, adaptive learning experiences for students, teachers, and institutions (Galés & Gallon, 2019). Simply put, pedagogical agility emphasizes flexibility in teaching and learning processes. Thus, schools should prioritize pedagogical agility, fostering a culture that embraces agile practices and technological innovation.

An effective teacher is someone consistently committed to self-improvement, actively pursuing opportunities to grow professionally and personally (Seferoğlu, 2004). Beyond personal advancement, such a teacher also motivates colleagues and learners (Zehm & Kottler, 1993). Indeed, a teacher's most significant trait is the ability to inspire others through professional excellence and personal example. Hence, the blend of personal qualities and educational expertise is crucial for teachers to become

influential role models (Arnon & Reichel, 2007). Therefore, inspiring teaching must persist across diverse learning contexts, whether traditional or digital, essential for guiding students effectively in rapidly evolving educational landscapes.

During the pandemic process experienced, distance education methods were used compulsorily and widely at all levels of education. During this process, it was seen that support activities for teachers could be carried out with online opportunities. In the study conducted by Sullivan et al. (2020), online studies carried out in the context of teacher education during the pandemic period were examined with examples. It is also emphasized that online environments offer many opportunities to teachers and that teachers give positive feedback to this process. It is stated that teachers can use online environments for their professional development, especially with intrinsic motivation. This can provide teachers with opportunities to acquire new skills, use digital teaching tools effectively and interact with students.

The return to post-Covid-19 schools has necessitated teachers to update their classroom management skills. It has become important both to use the physical classroom environment more efficiently and to increase cooperation among students (Stronge, 2018). Moreover, classroom management is no longer limited to face-to-face education, but must also cover the rapidly growing field of online education (Crawford-Ferre & Wiest, 2012). The pandemic has provided teachers with the opportunity to rethink and improve their management techniques. Therefore, it is essential for teachers to constantly renew the skills required by the age. Schools should also help teachers by supporting this process.

Through the continuous learning opportunities provided, teachers can improve their planning and organisation skills. While teachers sometimes prepare detailed unit plans on their own, sometimes they create goal-oriented lesson designs with after-school collaboration (Stronge, 2018). The proliferation of artificial intelligence in education requires teachers to respond quickly and adaptively to changes in technology and pedagogy. Research shows that teachers can both maintain effective teaching skills and gain resilience in AI-supported learning environments through continuous professional development (Chiu et al., 2023; Holmes, 2023). Therefore, if schools support teachers' abilities to create innovative and student-centred classrooms, functional outcomes can occur.

Technology Integration and Teacher Beliefs

As Chiu et al. (2023) state, technology is creating a significant transformation in education. Artificial intelligence can predict success, especially in online education, by

analysing data such as frequency and quality of student participation. It is seen that artificial intelligence evaluates faster and more consistently in areas such as maths, writing and speaking compared to teachers. In other words, artificial intelligence offers important opportunities in education with its capacity to automatically grade student work and predict success.

Not only that, artificial intelligence is undoubtedly rapidly coming to the fore with its multifaceted effects on various aspects of education. It is clear that there are challenges that need to be taken into account as well as the opportunities that arise. For example, artificial intelligence is changing both the content, teaching methods and student profile. Technology has the potential to facilitate a transformative learning experience for students and positively affect the learning environment. However, this may require significant improvements in educational curricula and teacher training (Oke & Fernandes, 2020).

Continuing developments in educational technology, mobile devices, and tablets provide students with greater flexibility in accessing and controlling the creation and sharing of information. These developments empower students and educators, increase motivation and offer new opportunities for learning.

Especially in the context of blurred lines between work and home and the transition to remote work, it is important to establish clear boundaries and policies to protect the well-being of teachers. In a way, coping with the challenges of remote work and maintaining teachers' work-life balance will be possible by defining certain boundaries and policies. In a period when the role of technology in education is increasing, it is undeniable that teachers cannot remain indifferent to this change and the importance of their skills to use technology effectively cannot be denied. Despite the prediction that educational scenarios will be technology-focused in the future, it is stated that teachers have the skills to turn this situation into an opportunity. In other words, it is thought that teachers can play an active role in the process of redefining the boundaries of technology in education and adapt to this change (Young & Muller, 2010).

It can be said that it is important for teachers to have the necessary competence to effectively integrate technology into their teaching practices in order to provide quality education. Thus, technological developments save teachers from being stuck in a narrow space and allow them to cope with difficulties, develop new pedagogies, teaching and learning styles, and establish new alliances with their students. This can help teachers reshape their educational practices and adapt them to the needs of the

age. In addition, the distance education process has become a part of life as a teaching process that includes different administrative and organizational structures, course design and technologies, and students and educators can participate without space restrictions. This situation can be considered as an opportunity for teachers and educators to adapt to different teaching environments and gain new skills in using technology effectively (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012).

It is seen that distance teachers develop their teaching skills by using many innovations in the internet environment. Especially in recent years, an increasing number of "YouTube teachers" (Copper & Semich, 2019) can reach thousands of students through the videos they record. The videos recorded by these YouTube teachers also have the role of allowing the teacher to analyze their own performance and examine their development over time. Teachers who can make corrections, additions, and deletions on videos can create more flawless teaching content (Rich & Hannafin, 2009). This shows that the use of digital media in education provides teachers with an important tool to improve teaching practice and reach students more effectively. At the same time, it can be said that these technological approaches also offer teachers opportunities to manage and improve their own learning processes.

The results of a study conducted on teachers who have a good relationship with technology aimed to discover the reasons for the interest of teachers who quickly apply technological developments to teaching and to determine ways to introduce technology to other teachers more easily. It is seen that the motivation of teachers who adapt quickly to technology is largely fuelled by their own beliefs, attitudes and confidence. This can be interpreted as teachers' interest in technology and their success in adaptation processes are directly related to intrinsic factors (Ertmer et al., 2006). Therefore, it is recommended to understand and support teachers' intrinsic motivations while providing technology education to them.

In a study conducted by Levin and Wadmany (2006), it was stated that teachers' beliefs about technology are quite different from each other and are changing. The study also concluded that using technological applications can change more easily than general beliefs. This shows that teachers' beliefs can also change as they encounter technological tools. It is thought that distance education, which is rapidly implemented as in the pandemic process, can change teachers' beliefs about technology. In a study conducted by Güler (2020), significant changes are emphasized in teachers' perceptions after using online educational technologies. In other words,

teachers' encountering technological changes more can positively affect technology use. According to the results of another study conducted by Fidan (2020), teachers were reported to have positive changes regarding technology. This shows that teachers can develop a positive attitude as they interact more with technology and experience new technologies.

As a result, it is emphasized that teachers' beliefs about technology are changing and that this change can be supported by teachers interacting more with technology. The ongoing development of technology in education requires a supported and therefore constantly evolving teaching approach to overcome challenges and maximize benefits. Continuous professional development, clear policies and a focus on privacy and security will contribute to a positive and effective technological integration in the teaching profession. Digital transformation brings both challenges and opportunities to the education sector. The teaching profession should be supported first in terms of eliminating preparation gaps and embracing technological innovations, reshaping cooperation, investments and education for the future.

CONCLUSION AND DISCUSSION

This literature review provides important information on the effects of the digital age on the teaching profession and how to adapt to these changes.

How are the age of artificial intelligence and the teaching profession generally defined?

The age of artificial intelligence (AI) marks the convergence of the physical, digital, and biological worlds, deeply transforming all aspects of society, including education (Chiu et al., 2023). In this new era, the teaching profession evolves under the strong influence of technological innovations. Although defining the qualities of a "good teacher" remains complex, extensive research highlights that teacher effectiveness has a profound impact on student achievement and even future earnings (Hanushek, 2011).

Teacher development is now recognized as a continuous process involving cognitive, emotional, and motivational growth. Collaboration with administrators and parents supports the development of leadership and motivational skills among teachers, contributing positively to both student performance and teachers' personal satisfaction (Deci & Ryan, 2000). In addition to academic knowledge, teachers' ability to apply

knowledge flexibly, design inclusive curricula, and address diverse learning needs has become increasingly critical for success in the AI-driven educational landscape.

What changes are taking place in the teaching profession in the age of artificial intelligence?

The digital transformation has introduced profound changes in teaching: it has diversified student populations, redefined learning environments, reshaped teacher education, and pushed education policies toward embracing technological innovation. In this context, artificial intelligence tools stand out as one of the transformative components. Artificial intelligence tools that personalize learning, provide intelligent learning paths, and provide highly predictive support systems should be included in the teacher professional development processes. From personal smart devices to smart materials in school and all possible AI applications in the student's room, broad-minded teachers should be targeted (Chiu et al., 2023; Holmes, 2023).

Because even though AI can increase participation and personalize education with all its potential, the place of the teaching profession can never be completely filled. Teachers' empathy, experience, emotional interaction and much more are the data that AI also needs. AI is currently continuing to learn in these areas. Therefore, teacher leadership is still a need for AI. Teachers will be able to rediscover their own role, knowledge and capabilities as they develop. Teachers with improved AI literacy can support the learning process by leading the deficiencies of AI tools (Ghamrawi et al., 2024).

In the process of being able to lead the learning process supported by artificial intelligence, it is important for teachers to be supported in order to maintain their intrinsic motivation. In this context, Deci and Ryan's (2000) self-determination logic can be used. If basic psychological needs such as autonomy, competence and commitment are met, teacher leadership and motivation will become functional. Here, just as there are duties for the teacher, everyone related to the field of education also has responsibilities. Considering that the author of this article is also a teacher, it can be said that the future of the teaching profession in the age of artificial intelligence is in the hands of teachers themselves.

Is it possible to support the teaching profession?

There is a general cliché in society that education is a must. There is also a perspective called education is love, which emphasizes the internal aspect of education. It can be concretized as external support or internal support. In this context, internally

supported teachers are willing to adapt quickly and make individual efforts in artificial intelligence. For teachers who need external support, comprehensive support plans can be made by their colleagues and administrators. Administrator efforts are of great importance in expanding teacher leadership to the field of artificial intelligence (Zhao & Watterston, 2021).

As the era of artificial intelligence rapidly transforms, teachers have also found themselves struggling. While some teachers entered this environment of uncertainty prepared, others were simply caught empty-handed. Teachers who are empty-handed in terms of skills and competence can naturally feel powerless and alone. At this point, peer support and administrative leadership are important in igniting the inner fire of the teaching profession (Bakker & Demerouti, 2017).

The Role of Self-Leadership and Pedagogical Agility

In the age of artificial intelligence, self-leadership has changed as teacher leadership has changed. In addition to classical skills such as being able to make your own decisions and time management, self-leadership that is suitable for the era also requires contemporary competencies such as interaction with smart devices, social media leadership, and artificial intelligence literacy (Neck et al., 2019). These skills, which are said to have become the rules of the teaching profession in the age of artificial intelligence, also reveal the transformation and role of self-leadership in possible uncertainties for teachers and learners.

On the other hand, pedagogical agility, which involves integrating agile methodologies, principles and values into technology-supported learning environments in schools, is an important supporter. It is important that a teacher can first improve their own quality and then the quality of teaching in their classroom by using agile practices. This framework can provide modern, adaptable learning experiences for students, teachers and institutions. This means opportunities for the teaching profession (Galés & Gallon, 2019).

For a teacher, self-leadership and pedagogical agility can be suggested as ideal solutions. The aim here is not only to adapt to technological changes, but also to increase their job satisfaction and emotional resilience, thus promoting teacher happiness.

Balancing Technological Innovation and Teacher Well-Being

Under the conditions where the storm of artificial intelligence in education is blowing rapidly, both opportunities and challenges for teachers are emerging at the same time.



Barnard's (1938) theory of equilibrium can be applied in the context of harmonising teachers' personal efforts with the requirements of AI. When the balance is achieved, teachers' motivation and emotional resilience, and thus their AI competences can be shaped positively. However, when there is no space of acceptance between teachers and transformation, disharmony, stress and job dissatisfaction may occur. Therefore, it is highly recommended that educational administrators create environments that will balance between technology and teacher needs and encourage open communication and collaboration.

Studies shows that although technology has the potential to improve teaching processes, it can lead to technology-induced stress (technostress), burnout and job dissatisfaction if not used in a balanced manner (Tarafdar et al., 2019). Therefore, it is vital to support teachers in multiple ways, strengthen their AI literacy, encourage positive attitudes towards technology, and foster an innovative mindset. In addition to all these, sustainable working conditions, emotional support mechanisms, and continuous professional development opportunities and more stand out as key elements in maintaining teachers' motivation and well-being in the AI era.

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