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Department of Foreign Language Education
English Language Teaching Program

Master Thesis

**Turkish EFL Teachers' Awareness and Perspectives on Artificial Intelligence
Incorporation into Language Instruction**

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TEZ ÇALIŞMASI ORJİNALLİK RAPORU

Turkish EFL Teachers' Awareness and Perspectives on Artificial Intelligence Incorporation into Language Instruction başlıklı tez çalışmamın toplam **74** sayfalık kısmına ilişkin, 10/07/2024 tarihinde tez danışmanım tarafından **Turnitin** adlı intihal tespit programından aşağıda belirtilen filtrelemeler uygulanarak alınmış olan orijinallik raporuna göre, tezimin benzerlik oranı **%8** olarak belirlenmiştir.

Uygulanan filtrelemeler:

1. Tez çalışması orijinallik raporu sayfası hariç
2. Bilimsel etik beyannamesi sayfası hariç
3. Önsöz hariç
4. İçindekiler hariç
5. Simgeler ve kısaltmalar hariç
6. Kaynaklar hariç
7. Alıntılar dahil
8. 7 kelimedenden daha az örtüşme içeren metin kısımları hariç

Necmettin Erbakan Üniversitesi Tez Çalışması Orijinallik Raporu Uygulama Esaslarını inceledim ve tez çalışmamın, bu uygulama esaslarında belirtilen azami benzerlik oranının (%30) altında olduğunu ve intihal içermediğini; aksinin tespit edileceği muhtemel durumda doğabilecek her türlü hukuki sorumluluğu kabul ettiğimi ve yukarıda vermiş olduğum bilgilerin doğru olduğunu beyan ederim.

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Doç. Dr. Cemile DOĞAN

BİLİMSEL ETİK BEYANNAMESİ

Bu tezin tamamının kendi çalışmam olduğunu, planlanmasından yazımına kadar tüm aşamalarında bilimsel etiğe ve akademik kurallara özenle riayet edildiğini, tez içindeki bütün bilgilerin etik davranış ve akademik kurallar çerçevesinde elde edilerek sunulduğunu, ayrıca tez hazırlama kurallarına uygun olarak hazırlanan bu çalışmada başkalarının eserlerinden yararlanılması durumunda bilimsel kurallara uygun olarak atıf yapıldığını ve bu kaynakların kaynaklar listesine eklendiğini beyan ederim.

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ABBREVIATIONS

AI: Artificial Intelligence

AIED: Artificial Intelligence in Education

ANN: Artificial Neural Networks

CALL: Computer-Assisted Language Learning

DL: Deep Learning

EFL: English as a Foreign Language

ELT: English Language Teaching

ICT: Information and Communication Technology

ITS: Intelligent Tutoring Systems

ML: Machine Learning

MoNE: Ministry of National Education

NLP: Natural Language Processing

SPSS: Statistical Package of Social Sciences

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ÖZET

Necmettin Erbakan Üniversitesi, Eğitim Bilimleri Enstitüsü
Yabancı Diller Eğitimi Anabilim Dalı
İngiliz Dili Eğitimi Bilim Dalı
Yüksek Lisans Tezi

İNGİLİZCE ÖĞRETMENLERİNİN YAPAY ZEKANIN DİL ÖĞRETİMİNE DAHİL EDİLMESİNE İLİŞKİN FARKINDALIKLARI VE BAKIŞ AÇILARI Seher ÜRETMEN

Yapay zeka teknolojisinin ilerlemesi öğretim verimliliğini ve öğrenme sonuçlarını etkileyen yeni araçlar sunarak dil öğretimindeki geleneksel rolleri ve yöntemleri yeniden şekillendirmektedir. Bu çalışma Türkiye'deki İngilizce öğretmenlerinin yapay zeka entegrasyonuna ilişkin farkındalıklarını ve görüşlerini incelemeyi amaçlamaktadır. Araştırmada bu amaca ulaşmak için karma yöntemli araştırma deseni kullanılmıştır. Nicel veriler, "Öğretmenler için Yapay Zeka Farkındalık Düzeyi Ölçeği" kullanılarak toplanmıştır. Bu ölçek 51 madde ve *pratik bilgi, inanç/tutum, ilişkilendirme yeteneği ve teorik bilgi* olmak üzere dört alt boyuttan oluşmaktadır. Toplam 448 katılımcıdan veri toplanmış, ancak 11 eksik yanıt nedeniyle analiz 437 katılımcı ile SPSS 27.0 programı kullanılarak gerçekleştirilmiştir. Ayrıca, nicel bulguları derinlemesine incelemek için 14 gönüllü öğretmen ile yarı yapılandırılmış görüşmeler yapılarak nitel veriler toplanmıştır. Görüşme soruları, ilgili literatür incelenerek araştırmacı tarafından hazırlanmış geçerliliğini sağlamak için uzman görüşüne başvurulmuştur. Bu veriler, ses kayıtları MAXQDA 24 programına yüklenerek içerik analizi yöntemi ile analiz edilmiştir. İstatistiksel analizlere göre, Türk İngilizce öğretmenlerinin yapay zeka teknolojilerine ilişkin yüksek düzeyde farkındalığa sahip olduğu ortaya çıkmıştır. Cinsiyet ve yaş değişkenlerine göre farkındalık düzeylerinde istatistiksel olarak anlamlı farklılıklar görülmüştür. Bağımsız örneklem t-testi sonuçları, yüksek lisans veya doktora derecesine sahip öğretmenlerin, lisans derecesine sahip olanlara göre yapay zekayı etkili bir şekilde uygulama konusunda daha farklı bir anlayışa sahip olduğunu ortaya koymuştur. Ayrıca lisans mezuniyetleri birbirinden farklı olan öğretmenlerin, İngilizce Öğretmenliği bölümü mezunlarından daha yüksek teorik bilgi puanlarına sahip olduğu tespit edilmiştir. Ancak öğretmenlerin görev yaptıkları kademe türü ve öğretim deneyim yıllarına göre aralarında anlamlı bir farklılık bulunmamıştır. Nitel analiz sonuçları, yapay zekanın dil becerilerini artırma, zaman tasarrufu ve motivasyon artışı sağlama, yaratıcılığı teşvik etme, etkileşimi artırma, anında geri bildirim sağlama, maliyetleri düşürme ve özgüveni artırma gibi avantajlarını ortaya koymuştur. Bunun yanı sıra, farklı dezavantajlar belirlenmiştir. Sonuç olarak, katılımcıların çoğunun yapay zeka hakkında bilgi sahibi olduğu ve İngilizce öğretiminde kullanmanın faydalarını ve zararlarını bildikleri tespit edilmiştir. Yapay zekanın İngilizce öğretiminde destekleyici bir araç olarak kullanılması, öğretmenlerin ise öğretim sürecinde merkezi rolü sürdürmeye devam etmeleri önerilmiştir.

Anahtar Kelimeler: Yapay zeka, Yabancı dil eğitimi, Yabancı dil olarak İngilizce öğretmenler

ABSTRACT

Necmettin Erbakan University, Graduate School of Educational Sciences
Department of Foreign Language Education
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Master Thesis

TURKISH EFL TEACHERS' AWARENESS AND PERSPECTIVES ON ARTIFICIAL INTELLIGENCE INCORPORATION INTO LANGUAGE INSTRUCTION

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The advancement of artificial intelligence technology (AI) is redefining the traditional roles and methodologies within language instruction, providing new tools that improve both teaching efficiency and learning outcomes. The current study aimed to explore EFL teachers' awareness and perspectives on AI incorporation in Türkiye. This study employs a mixed-method research design to accomplish this purpose. Quantitative data was collected by using "The AI Awareness Level Scale for Teachers", consisting of 51 items and four sub-dimensions: *practical knowledge*, *belief/attitude*, *the ability to associate*, and *theoretical knowledge*. The data was collected from 448 participants through an online survey; however, due to 11 incomplete responses, the analysis proceeded with 437 participants by using the SPSS 27.0 program. Besides, qualitative data was obtained through semi-structured interviews with 14 voluntary Turkish EFL teachers to provide deeper insights into the quantitative findings. The interview questions were prepared by the researcher by reviewing the relevant literature. Then it was consulted by an expert to ensure its validity and clarity. In the analysis of qualitative data, the content analysis method was employed. The audio recordings were uploaded to the MAXQDA 24 program and transcribed. According to the statistical analysis, it can be pointed out that Turkish EFL teachers have a high level of awareness related to AI technologies ($M=187.60$). Statistically significant differences were observed in their awareness levels based on gender and age variables. Moreover, the results from the independent sample t-test indicated that teachers holding master's or doctoral degrees scored higher on *AI practical knowledge* compared to those with bachelor's degrees, indicating a more advanced understanding of how to apply AI effectively. The study also revealed that teachers with various educational backgrounds had higher scores in the *theoretical knowledge* sub-dimension than those who graduated in English Language Teaching. However, there was no significant difference in AI awareness level among them based on the grade levels at which they teach and their teaching experience. The qualitative data highlighted advantages such as; enhancing language skills, saving time, increasing motivation, encouraging creativity, improving interaction, providing immediate feedback, cost efficiency, and boosting self-confidence. On the other hand, it revealed notable disadvantages: the potential for fostering laziness and over-reliance on AI, reducing human interaction, inhibiting creativity, fears of job loss, ethical concerns, spreading misinformation, and increasing inequality. In essence, most participants were aware of AI, understanding both its advantages and disadvantages in teaching English. To conclude, it is advised to use AI as a supportive tool while teachers maintain the primary role.

Keywords: Artificial Intelligence, Foreign language education, EFL teachers

CHAPTER 1

1. INTRODUCTION

This chapter initially addresses the statement of the problem and the purpose of the study. Following this, it presents the research questions and highlights the study's importance. Finally, it includes assumptions, limitations, and essential definitions and concepts relevant to the study.

1.1. Statement of the Problem

In this current era, the integration of technology is observed in numerous aspects of life, especially in the field of education. With the incorporation of information and communication technologies in education, teaching methods have started evolving away from traditional approaches into more dynamic processes. These technologies are also becoming widespread in Türkiye's education system. The most significant development that aims to integrate education with technology is the 'FATİH project', which started in 2010-2011. The most important transformation achieved through this project is the replacement of chalkboards with interactive boards. Furthermore, the project aims to provide each school with high-speed internet access, interactive boards, and multifunctional photocopy machines and to supply each student with tablet computers. The overall goal of the project is to keep up with technological advancements in education, expand and equalize opportunities, and increase efficiency and accessibility (Ekici & Yılmaz, 2013).

English language teaching and learning plays a prominent role in education as approximately 1.5 billion people speak English around the world in 2023 as reported in Statistica (Dyvik, 2024). It has already become essential to pursue a successful career, use technology efficiently, travel around the world, meet new people, study abroad, and understand films and music better (Ilyosovna, 2020). Furthermore, it is the language of international communication, business, diplomacy, tourism, mass media and social media, aviation, science, technology, and the internet globally (Crystal, 2003; Graddol, 2006). Crystal (2003) states that non-native English speakers who use it as a second or foreign language outnumbered native speakers (p. 69). As the world becomes more connected with the help of technological developments, the importance of learning and teaching English also increases.

Teaching and learning languages have also been transformed by the incorporation of technology. The focus has shifted from grammar and memorization to communication (Eaton,

2010). There are also several benefits of integrating technology into language education. Traditional language settings often restrict access to resources and exposure to the target language, but digital tools and online resources can reduce these limitations (Merzifonlu & Tulgar, 2023). Through computers and the internet, language learners have opportunities to interact with other speakers, which fosters communication skills and encourages cultural exchange (Chapelle, 2003). In this manner, learners can be exposed to language in meaningful contexts (Parvin & Salam, 2015).

Using technology also enables the creation of more flexible and accessible learning environments, enhancing learners' interest and involvement (Shyamlee & Phil, 2012). Online platforms facilitate language learning by allowing learners to progress at their own pace regardless of time or place and contribute to their self-awareness (Ahmadi, 2018). One of the most recent emerging technologies to influence education, particularly language education, is Artificial Intelligence (AI).

Some important AI technologies, which improve student performance and facilitate tailored instruction, are personalized learning platforms, automated grading tools, and intelligent tutoring systems. Personalized learning platforms can analyze large amounts of data on student performance and adjust lessons according to their learning style and pace (Hashim et al., 2022). Automated grading tools evaluate students' written and spoken work instantly. These immediate feedbacks help students identify and correct their mistakes quickly, which is essential for learning improvements. This type of feedback is often not possible in traditional classrooms due to time constraints and large class sizes (van der Vorst & Jelicic, 2019).

AI can be incorporated into education in various ways such as teaching, learning, administration, and assessment (Chiu et al., 2023). For instance, teachers can save a significant amount of time and raise students' motivation and engagement by using these technologies. These systems also help teachers keep track of students' academic progress, enabling them to intervene proactively (Guan et al., 2020). In brief, the ongoing advancements in AI revolutionize language education, making it more engaging, accessible, and effective for learners all over the world.

Considering these advantages, teachers should incorporate AI and the latest technologies into their instructional activities and professional skills. Yet, there are several challenges. One primary obstacle is teachers' lack of confidence and knowledge in using these

tools effectively (Hashemi & Kew, 2021). Teachers also face difficulties because both pre-service and in-service training programs do not sufficiently educate them on computer programs, and schools do not have the necessary technological equipment to integrate them into English lessons (Aydın, 2013). In essence, insufficient teacher confidence and training, their reluctance to accept changes, time limitations due to extensive administrative work, and lack of technical support are some of the barriers to implementing technology in language classes (Katemba, 2020).

On the other hand, teachers' perceptions and attitudes towards technology are directly related to integrating it into their instructions as they are the real practitioners. For instance, teachers who adopt a student-centered approach are often linked with the integration of technology in classroom environments (Ertmer, 2005). Additionally, when adopting new technologies, teachers are more likely to abandon using more complex technology compared to simpler options (Aldunate & Nussbaum, 2013). Nevertheless, little emphasis and research have been addressed to the EFL teachers' awareness and perspectives on AI integration in Türkiye. In this regard, it is important to investigate teachers' perceptions and attitudes towards AI to understand the incorporation of it into language classrooms as it is among the most recent technologies that have begun to significantly affect language teaching and learning.

1.2. Purpose of the Study

Considering the problem described earlier, the present study examines the Turkish EFL teachers' artificial intelligence awareness level and explores their perceptions regarding the integration of AI tools in the language classroom. Additionally, this study also investigates how EFL teachers' levels of artificial intelligence awareness differ by specific demographic variables. Therefore, it aims to answer the following questions in order to reach these purposes.

- 1) What is the AI awareness level of Turkish EFL teachers?
- 2) Do Turkish EFL teachers' levels of AI awareness significantly vary depending on their:
 - a) gender,
 - b) age,
 - c) level of education,
 - d) teaching experience,
 - e) program type of bachelor's degree graduation, and
 - f) grade level they teach

- 3) What are the perceptions of Turkish EFL teachers regarding the integration of AI into English language teaching?

1.3. Significance of the Study

This digital era has redefined educational paradigms, requiring teachers to effectively use and adopt the newest technologies in their teaching methods. The development of AI technologies is also reshaping ELT, shifting away from traditional approaches. For instance, Sharadgah and Sa'di (2022) reviewed the literature and discovered encouraging outcomes and promising potential of AI in the field of ELT. Their initial search yielded 734 articles, 64 of which were relevant to ELT, indicating a need for more focused research in this area. Another significant finding was the distribution of participants. The participants of 36 articles were students, while only 3 of the articles included teachers as samples.

This gap emphasized the requirement for more research on the perspectives of teachers in incorporating AI into their teaching and the possible challenges they might encounter. The effective integration of AI in English classrooms largely depends on the perceptions and attitudes of teachers, as they are the primary users of these technologies. Moreover, understanding their perceptions is crucial for resolving their concerns, enhancing their readiness, and promoting the efficient use of AI in language education.

Thus, it can be stated that research on AI in ELT is still at an early stage. As interest in AI increases, more studies are needed focusing on teachers' use of AI (Çelik et al., 2022). In conclusion, the purpose of the present study is to contribute to the existing literature by investigating Turkish EFL teachers' perspectives on AI. It is also aimed to examine and raise their AI awareness level. Furthermore, it is expected to provide new insights to make the integration of AI in English classes more effective.

1.4. Assumptions

- 1) Participants provided objective and sincere responses.
- 2) The selected samples represented the population effectively in terms of quality and quantity.

1.5. Limitations

While this study provides significant insights, it is important to recognize its limitations. First of all, its findings are limited to the responses of 437 Turkish EFL teachers on the

“Artificial Intelligence Awareness Level Scale”. Second, the qualitative data is restricted to the perspectives of 14 teachers, which limits the generalizability of these findings. These interviews provide depth but represent a small sample of perspectives of Turkish EFL teachers.

1.6. Definitions

Artificial Intelligence (AI): It is a computer science that develops devices that perform tasks and respond in a manner similar to human beings.

Machine Learning (ML): It describes the ability of computers to learn on their own, without requiring specific programming instructions and its main aim is to acquire knowledge from data. (Mahesh, 2020).

Teacher Cognition: It is a term that encompasses the beliefs, knowledge, and thought processes that impact teachers' perspectives and methods in their teaching practice.

CHAPTER 2

2. LITERATURE REVIEW

This chapter explains and exemplifies the definition and historical background of AI and its subsets. Then it focuses on Artificial Intelligence in Education (AIED) and particularly its usage in English Language Teaching.

2.1 Technology and English Language Teaching: A Retrospective

Rapid technological developments have led to a major shift within various fields across the globe. The use of digital methodologies and tools has reshaped the traditional ways of education, offering new opportunities. While technology has been part of education since the days of radio, television, video, and overhead projectors in classrooms, the major forces shaping the quality and progress of contemporary education are computers, the Internet, and related technologies (Aksoy, 2003). These tools are under the category of Information and Communication Technologies (ICT). They have been transforming education into dynamic learning environments, making lessons more interactive.

Through its engaging, dynamic, and interactive content, ICT enhances both teaching effectiveness and student learning outcomes, and it supports personalized learning experiences (Yusuf, 2005). Moreover, the integration of technologies such as interactive whiteboards has also transformed the classroom environment, making learning sessions more engaging and interactive (Beauchamp & Kennewell, 2013). Furthermore, technological advancements have made education increasingly flexible and more widely accessible as online learning platforms offer flexibility, allowing students to learn at their preferred pace and according to their own schedules (Haleem, 2022).

Technology is closely linked with English language education. The language laboratories, widely used in the 1960s, are an example of the integration of language teaching and modern technological advancements. These labs were equipped with a cassette player, a microphone, and headphones, and teachers could monitor students through a central control panel. The activities in the language labs were mainly designed in stimulus-response drills, based on behaviorism (Alexander, 2007). While this approach effectively linked technology with language education, the repetitiveness of the activities soon proved to be tedious and unstimulating for students (Singhal, 1997). Technology has also facilitated a shift from behavioral to constructivist methodologies, suggesting that languages are best learned in

dynamic, real-life interactions (Wang, 2005). Although constructivism does not necessarily involve technology, its principles influence the integration of technological tools into the language learning curriculum, as it emphasizes the learner's active role in constructing knowledge through experience. Constructivism highlights principles such as student autonomy, cooperative and contextual learning, and motivation. Since learning is a dynamic activity, learners should be at the center of their own understanding process (Can, 20019; Li, 2013; Aljohani, 2017). To facilitate this, students should be supported by visual-auditory and authentic materials through experiential activities within rich learning environments.

It is important to use multimedia and the internet to create real-life-like settings, foster cooperative learning, and encourage students to construct their own knowledge (Jin, 2011). For instance, English language learners can improve their language skills by using computers and software to check and correct their work (Kasapoğlu-Akyol, 2010). Computers provide context for students to use the language such as text reconstruction, e-mail exchanges, and language games. Additionally, they can communicate with others globally. Hence, the integration of ICT into language classrooms improves communication, boosts student autonomy, and supports their learning performance. It can also foster motivation, promote using language, enhance collaborative work, and help students feel more confident about learning English (Rivera Barreto, 2018). The effects of technology use in language education have been investigated by different researchers in a wide range of fields and ways. As an example, Liu et al. (2014) investigated the usage of iPod touch by English learners for two years. The study revealed that mobile devices, like the iPod, facilitated language learning, offered personalized instructional support, and expanded learning time beyond school hours.

Innovative technologies have been increasingly integrated into language teaching, contributing to the enhancement of essential language skills, such as vocabulary, writing, and pronunciation. Vurdien (2013) analyzed the effects of Weblogs in language class. For each task, students had two weeks to review, comment on, and respond to their partners' blogs and these blog interactions improved students' collaboration skills. Peer feedback helped them revise their work to improve their writing and produce error-free texts. As a result, it improved their writing quality and provided meaningful learning. In another example, Jafari & Chalak (2016) conducted mixed-method research with 60 Iranian high school EFL students to explore the influence of WhatsApp on enhancing vocabulary. The experimental group received their vocabulary training via WhatsApp four days a week for a month, in contrast to the control

group, which was taught vocabulary from their textbooks in the classroom setting. The post-test results showed a significant difference between the groups, revealing that the use of WhatsApp contributed to the students' vocabulary learning.

Mobile-assisted tools also provide opportunities for immersive, flexible, and personalized language learning experiences. These applications allow learners to access educational content anytime and anywhere. Fouz-González (2020) investigated the effectiveness of the English File Pronunciation App in helping foreign language learners. 54 Spanish EFL learners participated in the study. The training sessions lasted two weeks, during which experimental group participants used the application for about 20 minutes each day. To verify the completion of tasks, they were required to share screenshots of each progress screen. They were evaluated with sentence-reading, imitation, and picture-description tasks. Training had a positive impact on the learners' pronunciation of the target features, both in familiar and novel words. According to the results, the training positively affected learners' recognition of the target sounds in both known and new words.

In conclusion, technology has proven to be a vital tool in language learning and teaching, actively engaging and motivating learners, and making the process of language learning more interactive, enjoyable, and accessible. Looking ahead, the future of technology in ELT holds potential for innovation and transformation with advanced tools such as artificial intelligence (AI from now on).

2.2. What is Artificial Intelligence?

According to Edward Fredkin, who was a physicist and computer scientist at the Massachusetts Institute of Technology, there are three equally significant milestones throughout history: the evolution of the universe, the inception of life, and the development of AI (Arslan, 2020). At present, AI has sneaked into every dimension of our lives including face and speech recognition, digital personal assistants, navigation systems, language translation, spelling checkers, auto-correction, fraud detection, video games, e-mail filters, and social media recommendations.

AI-powered digital personal assistants like Siri, Amazon Alexa, or Google Assistant, can perform tasks such as taking notes, setting alarms, and calendars, scheduling reminders, making calls, typing messages, and much more. AI also has the capability to analyze our search history and give personalized suggestions with the help of algorithms. Similarly, social media

algorithms adapt content flow to our interests, preferences, and experiences. In transportation, it can identify real-time traffic and change our route to save time. In healthcare, AI can help with medicine discovery, clinical trials, diagnosis, and patient care (Shaheen, 2021). To conclude, it has changed how we communicate, shop, work, travel, and carry out tasks.

Despite being an integral part of today's world, there is not a commonly accepted definition of it due to its complexity and usage in many fields. It encompasses a wide range of application areas, and definitions may vary depending on specific fields. Nevertheless, each definition has theoretical and practical significance, making none of them incorrect (Wang, 2019). In the field of engineering, AI is utilized to puzzle out complex challenges that typically demand human intelligence (Pham & Pham, 1999). It is simply defined as the behavior of an intelligent machine that imitates that of a human being and the primary objective of AI is to create machines that act as if they were intelligent (Ertel, 2018). In other words, it is a discipline of creating computer-based artifacts capable of performing diverse human tasks (Pomerol, 1997). For instance, AI has the capability to manage complicated and time-consuming duties such as driving cars, playing chess, processing big data, calculating, translating, or diagnosing illnesses autonomously. It is also described as the system's capacity to understand and learn from external information and use that learning to accomplish some functions by means of dynamic adjustments (Kaplan & Haenlein, 2019). Moreover, narrow AI, artificial general intelligence, and artificial super intelligence are each defined separately.

Artificial Narrow Intelligence (ANI) is limited to one specific function such as face recognition. The predominant part of present AI applications originates from ANI. It is not adaptable to different tasks and lacks awareness so it cannot replicate human intelligence. However, artificial general intelligence can solve tasks automatically that it is not initially created for. It refers to the same level of intelligence, and ability to learn and transfer knowledge as humans. Artificial Super-intelligence (ASI) is the hypothesis that AI gains self-consciousness and surpasses the human mind and skills. Hassani et al. (2020) describe self-awareness as the ultimate phase of AI progress, which is currently just a theoretical concept, and cite the movie "The Terminator" as an illustration of ASI.

2.2.1. A Brief History of AI

The idea of creating thinking machines dates back to the ancient Greece, but with the development of programmable computers in the 1940s, scientists started to investigate deeply the possibility of creating electronic brains (Hao et al, 2016). While the roots of AI studies can

be linked to Al-Jazari's robot designs from the 12th century, it gained momentum during and after World War II (Coşkun & Gülleroğlu, 2021). Alan Turing, known for creating a code-breaking device named “The Bombe” to decode the Enigma used by the German military during World War II, is one of the most remarkable characters in the history of AI. His device, often regarded as the first functional electro-mechanical computer, successfully cracked the Enigma code, which was earlier considered unachievable by even the most skilled mathematicians. This led him to reconsider the abilities of such mechanical devices and he became more interested in their potential. Later, in 1950, Alan Turing published a groundbreaking article entitled as "Computing Machinery and Intelligence", outlining methods for developing intelligent machines. Additionally, he proposed the Turing test, also called “The Imitation Game”, to measure their intelligence in this article. Turing's discussion in this test was not about obtaining useful responses but about the possibility of modeling intelligence (Haenlein & Kaplan,2019).

According to Ginsberg (2012), AI as the creation of an artificial object capable of reliably passing the Turing test (p. 7). In fact, the credibility of AI has significantly increased since the introduction of the Turing test. This test, depicted in Figure 2.1., involves comparing the answers of a human interrogator with responses from both computer and human participants. The interrogator asks written questions to each participant and evaluates them. If the interrogator cannot distinguish whether the written responses are from a human or a computer, the computer passes the test successfully (Russell & Norvig, 2010). The outcome of the test is not based on the correctness of the machine's answers, but rather on how closely its responses mimic those of a human (Kuipers & Prasad, 2022).

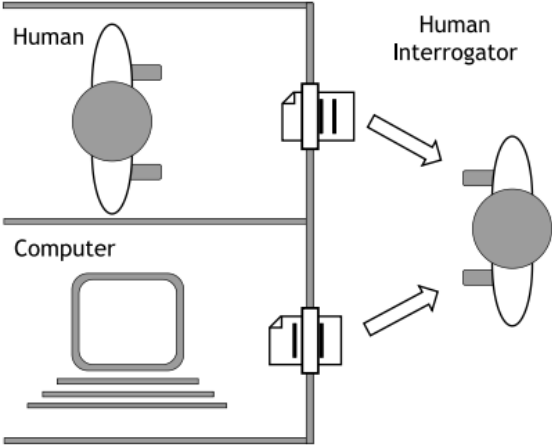


Figure 2.1. Turing test: Which one is the human?

Turing's main argument is that if a machine can convincingly imitate natural human conversation, it should be considered intelligent (French, 2000). Following that, he claims that it will remain a breaking point in the history of intelligent machines and will hold practical implications for future generations, especially in a world where machines' cognitive abilities are significantly advanced.

Then, the first AI programs were formulated and drafted between 1951 and 1952 in Britain. Nevertheless, they were mentioned as "machine intelligence" at that time (Copeland, 2000). In 1954, The Georgetown IBM experiment, one of the earliest examples of machine translation, was conducted. It was a demonstration of the Russian-English machine translation system, limited to 250 lexical items and six grammar rules. Despite its limitations, it underscored the potential of automatic systems in translation tasks (Hutchins, 2004).

John McCarthy officially introduced the term Artificial Intelligence about six years after the release of the Turing test, in 1956 in a workshop at Dartmouth College and it formed into a separate discipline. There were 10 participants in the conference and, there was notable progress in the area over the following two decades. In addition to this, the field was predominantly shaped by these participants and their associates from institutions like the Massachusetts Institute of Technology (MIT), International Business Machines Corporation (IBM), Carnegie Mellon University (CMU), and Stanford (Russell & Norvig, 2010). Notably, McCarthy co-founded MIT's AI laboratory with Marvin Minsky in 1957 and established Stanford's AI laboratory in 1963. Additionally, he introduced the LISP coding language in 1958, which became the predominant programming language for AI for the following 30 years (Hildmann & Hirsch, 2018).

Arthur Lee Samuel, also a pioneer in AI research, made remarkable contributions by developing a checker-playing program on the IBM 701 machine in 1959. He enabled the software to keep track of every game played, which was the earliest example of machine learning, and the term ML was coined. To speed up its learning, Samuel programmed it to play against itself and it rapidly mastered the game, outperforming its designer (Dutta, 2018).

According to Haenlein and Kaplan (2019), there are significant milestones in the evolution of AI, foregrounding the development of the NLP tool ELIZA by Joseph Weizenbaum at the MIT AI Laboratory between 1964 and 1966. It was the first chatbot and was designed to act as a Rogerian psychotherapist. The Rogerian therapy approach involves

rephrasing the patient's statements to encourage self-exploration of their thinking. In other words, Eliza's knowledge is limited, so it can only chat within a specific domain. It does not comprehend conversation but instead tries to find fitting responses by matching patterns and using clever wording. However, when it was initially released, numerous users were convinced they were conversing with a real person when interacting with Eliza, which was an essential requirement of the Turing test (Shum et al., 2018).

Naturally, the journey of AI has faced obstacles and there have been some periods when progress in AI research slowed down. These times were called "AI winters". Whereas the first winter occurred between 1974 and 1981, the second one took place between 1987 and 1993 (Shin, 2019). During these periods, there was a notable increase in skepticism and criticism of exaggerated claims made by AI research, contrasting with periods of enthusiasm and advancement. For instance, in 1966, the ALPAC report was published in the USA, criticizing the poor machine translation. This assessment resulted in a notable decrease in funding, constraining the progress, and leading to the beginning of "AI winter" (Toosi et al., 2021). A similar paper named "Lighthill Report" was printed in the UK in 1973. It expressed that machines would only reach the proficiency level at chess and could not understand common-sense logic. There were great expectations, yet the technology available at the time was unsatisfactory to achieve these goals. As a result, the British government also stopped funding AI research (Haenlein & Kaplan, 2019).

There are two different turning points in the history of AI: Deep Blue and AlphaGo (Bory, 2019). Deep Blue is a computer chess-playing system designed by IBM. Playing chess is undeniably a task that demands highly cognitive effort (Buchanan, 2005). Yet, the world chess champion Gary Kasparov was defeated by Deep Blue in six games in 1997 and it marked a historic moment, demonstrating the power of AI. Similarly, Go is a strategic board game played by two people on a grid, where randomness is not a factor. It is a traditional game invented in China over two thousand and fifty years ago and it has long been considered one of the most challenging games for AI to master due to its complexity and astronomical number of possible moves (Li & Du, 2018). However, in 2016, the world champion Lee Sedol holder of 18 international titles lost to the AlphaGo computer program with a score of 4-1 (Silver et al., 2017). AlphaGo applies "self-decision making" for optimal results through DL and neural networks. These methods employed by AlphaGo also have the capability to interpret data from

unstructured sources, indicating considerable potential in medical research, particularly for diagnosing and treating (Han & Han, 2021).

From the historical perspective, after 2015, AI has witnessed a significant journey with OpenAI and its NLP model, ChatGPT, being important markers in this progress. OpenAI is an organization dedicated to AI research and its ultimate aim is to develop "artificial general intelligence" (AGI) that benefits humanity collectively in the long term. As a non-profit institution, it was established in 2015 (OpenAI,2024). ChatGPT, created by OpenAI, is an advanced natural language processing model. To begin with, GPT-1 (Generative Pretrained Transformer) was released in 2018, followed by GPT-2 in 2019.

In 2020, OpenAI announced GPT-3, a novel language model that is over 100 times larger than the previous one (Dale, 2021). Then, in 2022, they introduced a trial of ChatGPT, constructed using GPT-3. Soon after its launch, it gained considerable attention due to its comprehensive answers, marking a milestone in chatbot development, and enabling more human-like interactions with AI (Rudolph et al., 2023). Its ability to produce coherent and cohesive text for various tasks, from composing essays to coding, attracted global interest. Finally, GPT-4 was released in March 2023, and in 2024, the text-to-video model Sora, capable of generating one-minute videos ensuring high quality and meeting user preferences, was introduced (Wu et al., 2023; Karaaslan & Aydın, 2024).

To sum up, each milestone moves us one step closer to a future where AI seamlessly becomes a part of our daily routines across various areas. Particularly, education stands to be significantly transformed by these advancements. As AI continues to evolve, its potential to revolutionize educational settings becomes more apparent.

2.2.2. Some Definitions and Technologies Related to AI

As AI is a multidisciplinary field and broad concept, it encompasses various subsets and definitions, each contributing to its advancement. The position of the umbrella term AI and its main subsets are illustrated in Figure 2.1.

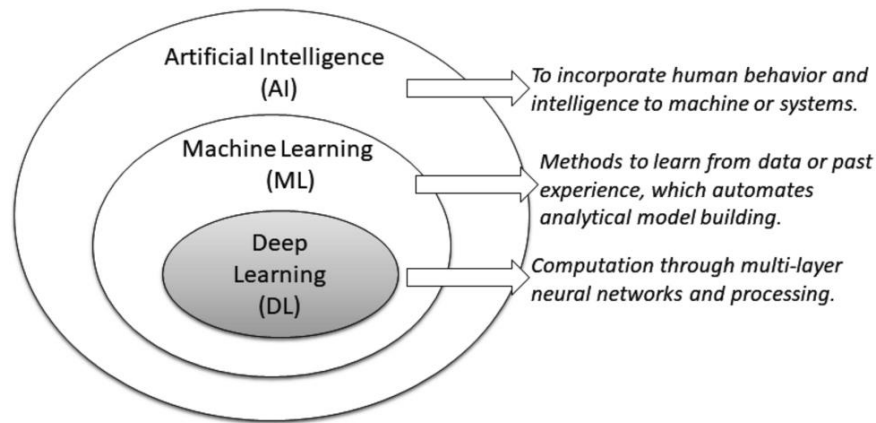


Figure 2.2. A diagram of AI and its subsets (Sarker, 2021)

Athanasopoulou et al. (2022) state that six general categories are noteworthy; Machine Learning, Deep Learning, Neural Networks (NN), Robotics, Computer Vision (CV), and Natural Language Processing (NLP). Kabbas et al. (2020) also present a similar classification as depicted in the diagram below:

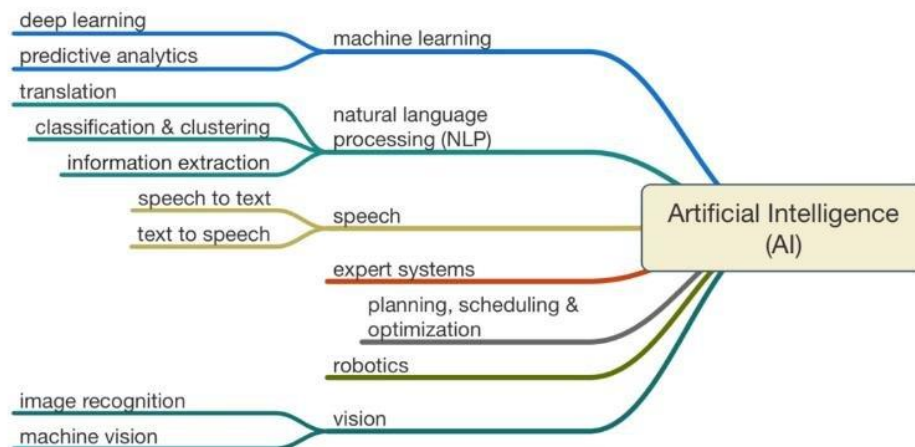


Figure 2.3. Areas of AI illustrated by Kabbas et al. (2020)

Machine Learning

In 1959, Arthur Samuel introduced the term 'Machine Learning' (ML), which is widely recognized as a subset of AI (Göçmez, 2023). Arthur Samuel, also well-known for his checkers game software, describes it as the feature -allowing computers to learn on their own, without requiring specific programming instructions and its main aim is to acquire knowledge from data. (Mahesh, 2020). Then, ML has become the favored method for creating systems such as computer vision, robot control, natural language processing, speech recognition, and some similar programs (Jordan & Mitchel, 2015). In the past, machines had to receive clear instructions on what tasks to perform, and the outputs were determined by the inputs they

received. However, the main determinant of ML is its capacity to learn from gathered input (El Naqa & Murphy., 2015). ML also encompasses engineering science elements such as algorithms, data, statistical analysis, and probability. Additionally, elements from social sciences such as psychology and philosophy are part of it. Similar to human learning, ML involves memorization, learning from extracting information and examples (Panesar, 2021).

Deep Learning

Deep learning (DP), a subset of ML, is a mathematical model that is stimulated by the organization of the brain. It functions using artificial neural networks (ANN) that mimic the behavior of neurons in the human brain. Normally, neurons are collected works of layers. Similarly, DL models are comprised of multiple processing layers to identify structures (Rusk, 2016). In this term, deep refers to the existence of numerous layers within a neural network (Shinde & Shah, 2018). Moreover, it points out that every layer grasps an idea from the dataset, which is then constructed by subsequent layers. In simpler terms, as the level of layer increases, the concepts become more advanced.

In his doctoral dissertation, Bataineh (2015) explains that an ANN is structured like human neurons, with three main components: 1) inputs, 2) hidden layers with multiple neurons, where the mathematical operations are conducted to the inputs and produce the relevant outputs, and 3) outputs. He illustrates that inputs are similar to dendrites, hidden neurons are analogous to cell bodies, and outputs resemble axons (Figure 2.4). Furthermore, ANNs have the capability to deduce conclusions from complex data, allowing them to solve complicated situations that are challenging for traditional technologies on the strength of their flexibility and adjustability (Göçmez, 2023).

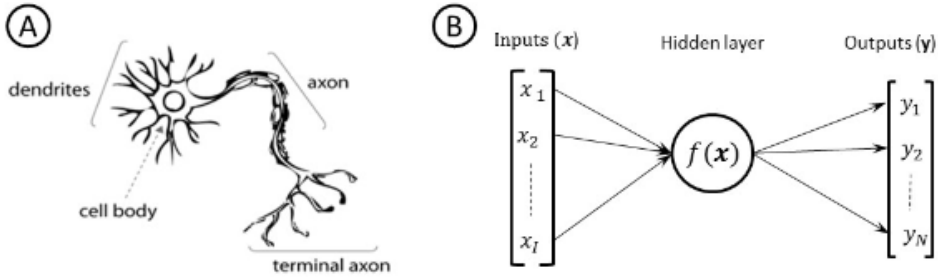


Figure 2.4. A biological human brain neuron and artificial neural network (Bataineh, 2015)

Machine learning and deep learning, despite being frequently used synonymously, are, in fact, separate subdivisions within the broader field of AI. In ML projects, formulating features crucial for the project's objectives requires considerable time and effort whereas DL

simplifies this by automatically acquiring these rules from the data meaning that big datasets are vital to upgrade (Kelleher, 2019). With the presence of such datasets, DL can generally outperform many other ML methods that are dependent on manually engineered procedures. Naturally, as data expands and computational capabilities improve, the potential of these technologies will advance.

In ML, statistical methods are employed to acquire knowledge from data, while DL utilizes neural networks (Sharifani and Amini, 2023). ML is particularly effective for structured data like financial and marketing analysis, whereas DL deals with unstructured data. ML is applied to tasks like image recognition and predictive analytics, while DL covers more complicated projects such as autonomous vehicles, machine translation, and speech recognition. DL is also specifically practiced in speech recognition, natural language processing, and computer vision (Hao et al, 2016). These distinctions highlight the different applications of ML and DL technologies.

Natural Language Processing

Language is fundamental to humanity, serving as the primary means of communication. It allows people to express their thoughts, ideas, and feelings effectively. Natural Language Processing (NLP) is an interdisciplinary subfield of AI that involves computer science and linguistics. It focuses on developing techniques for computers to recognize and understand human language. This implies that a machine must comprehend the meaning and context of natural language and respond similarly, requiring the machine to listen, understand, and reply using language in the same way humans do (Kumar, 2017). Briefly, the NLP system comprises two kinds of algorithms: input (natural language understanding) and output (natural language generation).

Before 1957, there was no method to integrate grammar into machines and make them comprehend language. However, Noam Chomsky's introduction of syntactic structures in the same year is a groundbreaking advancement in the field, signaling the onset of NLP research (Goel, 2017). It refers to the organization of words and phrases to create meaningful sentences. It is a mathematical theory of language that involves the rules and principles showing how sentences are formed including grammar, word order, and syntax. Initially, computer scientists focused on encoding the vocabulary and grammatical rules of natural human languages into computer systems. However, this was challenging due to the ambiguity, variability, and context-dependent nature of languages (Hirschberg & Manning, 2015). Chowdhary (2020)

particularly states that it is challenging to create software that understands human language on the grounds that most natural languages contain an infinite number of sentences and numerous words have multiple meanings like “bear”, “can” and “orange”. The interpretation of the same sentences and words may vary depending on the context in which they are used. Regarding the linguistic elements, in earlier times the focus was on lexicon, morphology, and syntax, but in the past decade, emphasis has shifted to meaning, discourse, and the extralinguistic context beyond the language (Meurers, 2012).

DL methods have begun to solve various challenges within NLP and now it is used in diverse areas such as speech recognition, summarization, language translation, and question-answering (Rebala et al., 2019). It has played a key role in NLP, leading to significant breakthroughs, notably in machine translation (Zhang & Zong, 2019). It is also used in applications such as personal assistants, chatbots, intelligent language tutoring systems, and error detection and correction (Meurers, 2012; Jusoh, 2018; Lu, 2018). Moreover, NLP facilitates the creation of written tasks like essays, emails, and articles. For instance, tools such as Grammarly can correct grammar errors, and offer suggestions for improving sentence structure (Johri et al, 2021). In conclusion, these diverse applications highlight the significance of NLP in today's digital world.

2.2.3. Artificial Intelligence in Education (AIEd)

Over the past several decades, there have been various advancements in educational technologies, and AI is one of the latest additions to this trend. AI in education, or AIEd, marks a groundbreaking shift in educational practices. Especially, due to the Coronavirus Pandemic affecting the world, the use of AI-based systems in education has become a necessity rather than a preference. It is evident that the destruction in education caused by the pandemic will have long-term challenges for future generations. Therefore, it is crucial to implement AI-based applications and student data analysis to weaken the interruptions in education (Coşkun & Gülleroğlu, 2021; Schiff, 2021). Traditional pen-and-paper tests, which have a significant place in the classical education system, are being replaced by the success achieved in virtual environments (Öğretir-Özçelik & Tuğluk, 2019). In the evolving education system, individuals need to understand, analyze, manage, transform, or synthesize knowledge. As AI technologies progress, they offer opportunities to transform traditional teaching methods, improving student engagement and performance. They can create flexible and engaging learning experiences,

accessible anytime and anywhere, across various subjects throughout their lifetimes (Underwood & Luckin, 2011; Chen et al., 2020; Çetin & Aktaş, 2021).

Sidney Leavitt Pressey and Skinner can be regarded as pioneers in using AI in education (Benjamin, 1988). Pressey developed an automatic intelligence testing machine based on Thorndike's law of effect and immediate feedback theory. The machine displayed multiple-choice questions, and the students had to answer each question correctly to progress to the next one, which made evaluation automated and reduced teachers' workload of grading (Holmes et al., 2019). Later, Skinner developed Pressey's machine and created his own device called "the Teaching Machine" in the late 1950s, which required students to generate a response by directly writing it within the machine rather than choosing the correct option (Benjamin, 1988). However, the significance of AIEd became evident with the emergence of the International Journal of AI in Education in 1989, followed by the establishment of the International AI in Education Society in 1993 (Holmes et al., 2022).

AIEd is implemented in various manners. Some of the benefits and usages of AI in education are personalized learning, learner autonomy, intelligent tutoring platforms, effective administrative management systems, higher academic success, immersed contexts, and automatic feedback (Karsenti, 2019). For personalized learning, in contrast to traditional methods, the system continually evaluates each student's learning progress, detecting weaknesses, and suggesting suitable courses for improvement (Ahmad et al., 2021). With the aid of these platforms, educators can conduct various administrative tasks, including the more efficient review and assessment of student assignments, leading to an enhancement in the quality of teaching activities (Chen et al., 2020). AI is also primarily observed to contribute to education through its application in e-learning systems.

Intelligent Tutoring Systems (ITSs), incorporating AI techniques with educational methodologies, are instructional systems known for customizing instructional activities according to the specific characteristics and needs of individual learners (Mousavinasab et al., 2021). These systems guide the students step by step based on their successes or mistakes to tailor learning materials and activities. It updates continuously with feedback to match each student's needs, aiming to ensure effective learning in the chosen topic (Arslan, 2020). They use AI methods to evaluate students and adjust learning materials, pace, sequencing, and difficulties accordingly (Akdeniz & Özdiñç, 2021).

Even though ITSs are frequently confused with computer-aided instruction (CAI) systems, there are some notable differences. While CAIs use conventional instruction to provide standard content to students, ITSs are designed to deliver personalized instructions based on an individual learner's strengths, weaknesses, and existing knowledge. The capability of ITSs to adjust and respond to unexpected circumstances is facilitated by the integration of AI (Sedlmeier, 2001). ITSs outperform CAIs and achieve better than various teaching methods including traditional classroom instruction, reading both print and digital materials, homework, and laboratory work, except for private person educators (Atun, 2020). When considering the increase in crowded class sizes and consequently the decrease in individualized education opportunities, the importance of ITSs becomes more apparent and it has been observed that using AI techniques to shape the content in ITSs increases the level of proficiency (Doğan & Kubat, 2008). They also provide opportunities for gaining knowledge from mistakes, interactive simulations, systematic, and detailed monitoring at each step (Conati, 2009). They offer students receiving the appropriate level of support.

“Scholar”, developed for reviewing students' geography comprehension in 1970, is regarded as the first ITS (Mousavinasab et al., 2021). Bradáč and Kostolányová (2017) discuss two other ITSs. One, the Passive Voice Tutor, was designed to instruct Greek students focusing on passive voice mastery. The other, the English Tutor, was developed to assist learners in mastering English tenses. In consequence, thanks to ITSs, students have the opportunity to access information regardless of time and location. Another benefit of AIED technologies is making difficult, expensive, or hazardous experiments and environments more affordable and accessible. Conducting some experiments manually can be risky and challenging. AI systems enable safer experimentation in various fields like chemistry and physics, reducing risks associated with manual trials. Additionally, they provide interactive learning experiences in medicine through virtual simulations (Ahmad et al., 2021). Furthermore, through educational data mining, student activities can be monitored. For instance, the data such as attendance, and assignment completion can be gathered to detect and assist students who may be at risk of dropping out of their studies (Luckin & Holmes, 2016).

There are numerous studies that emphasize both AI's positive and negative effects in education. For instance, Martin et al. (2023) reviewed 66 research studies on AI in K-12 education from 2017 to 2022 education. Their analysis highlighted that the predominant topics include the application of AI for predicting academic behavior or performance and designing

AI-based curricula. On the other hand, the less investigated areas are equity, ethics, and safety concerns regarding AI. They also express that teachers mostly use AI to engage students, receive assistance for automated evaluation, and monitor the learning process.

Similarly, Osetskyi et al. (2020) discuss the benefits and drawbacks of AI in education. They outlined several positive effects such as increasing accessibility of education for financially disadvantaged families, monitoring student performance, facilitating distance learning, integrating with new technologies effectively, and promoting better learning tools and educational resources. Additionally, they noted AI's supportive role for teachers in tracking progress, automating task and content creation, offering immediate feedback, and enhancing teaching activities. However, they identify some negative sides like limited teacher-student communication, potential dehumanization due to excessive interaction with bots, the inadequacy of AI in providing discipline and motivation in the classroom, risks of security, cyberattacks, and system failure. Moreover, the high expenses can limit their accessibility only to well-resourced educational institutions. Therefore, while they claim that AI cannot fully replace human educators, they recommend an optimal approach where teachers integrate AI tools to personalize the learning process more effectively.

Chiu et al. (2023) conducted a comprehensive review of 92 articles, categorizing the role of AI in learning into four primary components. The first involves personalized learning and tasks based on individual competencies. In the second role, chatbots, used in language learning, facilitate human-machine interactions, fostering their communication skills. The third dimension is evaluating their work, enabling timely feedback to support student learning. Finally, the fourth focuses on adaptability and engagement, promoting interactive experiences within digital environments. They have also identified three factors in teaching: supplying editable teaching methods, strengthening educators' instructional capacities, and offering professional development. Additionally, two roles in assessment were classified: automatic grading and deducing students' achievement. Furthermore, they have mentioned about ten critical barriers. Teachers' limited familiarity with AI technologies and the unsupportive perspectives of students and educators are some of them. For instance, some students and teachers have reported that they worry about the potential impact of AI on their future careers. Some of them have noted anxiety and reduced confidence when using AI in education. Moreover, it is stated that many educators lack comprehension of the inner workings of these technologies such as the underlying principles and algorithms behind them. Consequently, they

find themselves teaching without a clear understanding of these systems, leaving them unable to respond to student questioning.

In Türkiye, the objectives of the Ministry of National Education (MoNE) have concentrated on AI applications, and it has been included in elective courses for 7th and 8th grades of middle school. During their classes, students will receive theoretical and practical lessons in projects like converting text to speech, speech to text, image and sound processing, and security (Çakır et al., 2023). Additionally, The FEYZA Project, part of the National Artificial Intelligence Strategy 2021-2025, was launched by MoNE. This project aims to train AI experts and develop guidebooks, and educational materials within the framework of the curriculum. It also supports teachers' professional development and equips students with algorithmic thinking and AI skills. It prepares students for future careers, fostering 21st-century skills. After a pilot program, 160 ICT teachers in Ankara and Tokat received training and in-service training sessions began in other provinces (MoNE, 2024). In conclusion, as technology continues to advance, the potential of AI will reshape education and the field of language teaching will continue to evolve in this digital era.

2.2.4. Previous Studies on Artificial Intelligence in English Language Teaching

Because of its potential, using AI in language teaching has gained attention recently, particularly within the last five years (Kasımi & Fidan, 2023). Numerous benefits of incorporating AI into ELT have been highlighted. To start with, it can identify students' individual learning styles and needs, offering them personalized support (Zhai & Wibowo, 2023). This personalized approach is further enhanced by specific AI-driven tools. For instance, language learning tools such as Duolingo and Busuu, grammar assistance tools like Grammarly, and automated writing assessment Write & Improve can provide customized language learning experiences (Hockly, 2023). Additional technologies such as Google Translate, speech-to-text, text-to-speech, and game-based learning apps support learners' language development.

In EFL settings, learners often struggle with insufficient opportunities to practice English. Wang (2019) states that Chinese students face limited opportunities and learning environments while acquiring English, but AI offers a promising interactive learning environment for English education. Human-machine interaction through AI can enhance the authenticity and correct the errors immediately which creates a comfortable and enjoyable environment for students. Various studies indicate AI has primarily improved language skills. Lei (2022) conducted an experimental study with high school students to investigate the impact

of AI on word acquisition and concluded that it was more effective compared to the traditional word formation approach and its long-term memory effect was more powerful. Similarly, Rad et al. (2023) conducted research with 46 Persian EFL learners and the experimental group, consisting of 23 students, used the Wordtune App powered by AI. Because of the waiting time for the teacher's response, the control group students described the non-AI writing class as time-consuming and demotivating whereas the AI-supported class encouraged higher accomplishment and productivity.

The literature also highlights AI improves student motivation and engagement in ELT. As an example, Wei (2023) discusses the potential of AI-mediated Duolingo in language learning success, second language motivation, and self-directed learning. A mixed-method study was conducted with two intact classes, including 60 university students in China. During the 10-week intervention, students in the experimental cohort had interactive exercises, language games, and personalized real-time feedback whereas the control group students received conventional language instruction through textbooks, classroom activities, grammar drills, and lectures. Before the intervention, there were no notable distinctions between the two groups regarding their initial L2 achievement test (Experimental: $M=43.21$, Control: $M=44.39$). However, after the intervention, the experimental group had an average of 73.86 points while the control group had 61.11 points in their post-test L2 results. Consequently, the AI-based experimental group showed notably superior English learning scores across all areas assessed, along with increased motivation, and self-regulated learning strategies.

A highly popular AI-based technology within the realm of ELT is chatbots. Chatbots make it possible to communicate with AI that closely resembles human interactions and offer students the opportunity to practice their language skills through interactive dialogues. For example, Ebadi and Amini (2022) investigated 256 Iranian EFL learners' perspectives towards using an AI-based chatbot and findings revealed that students' motivation, self-confidence, enthusiasm, and participation in speaking English actively were increased by the AI-based chatbot teacher while learning English. In fact, one of the participants stated that he was able to use new phrases in conversations with actual people since he had already practiced alike dialogues with the chatbot. Likewise, in their experimental study, Chien et al. (2022) explored how 73 Taiwanese high school students may use the LINE chatbot to improve their English conversational skills. They also assessed the influence of competition on learning achievements and motivation. Contrary to the control group, the experimental group participated in LINE

chatbot activities with competition. The results supported the LINE chatbot's efficacy in enhancing English speaking and listening capabilities, and it was observed that the competition factor influenced the motivation of the learners. Anonymous conversation training with the help of AI-based chatbots can significantly lessen the negative effects of shyness when speaking English.

The use of AI chatbots enables language practice beyond classroom hours, supporting students' self-directed learning. In a similar study conducted in Malaysia, the usage of chatbots in learning English was examined. Annamalai et al. (2023) conducted the study with 360 university students. The participants practiced with different chatbots for three months and quantitative data was gathered using an online questionnaire and triangulated with semi-structured interviews with 20 students. According to the data analysis, chatbots have the potential to enhance motivation, autonomy, language performance, and ubiquitous learning. Yet, some participants were dissatisfied with the conversation flow and found some limitations. In contrast to chatbots, human teachers can enrich the topic by giving different responses, when the conversation is stuck.

As AI becomes increasingly integrated into educational practices, its impact on critical thinking and creativity in language teaching is a subject of growing interest. In his narrative inquiry, Kartal (2024) examined the impact of ChatGPT on fostering critical thinking skills and creativity during the practical training part of the ELT program, analyzing the views and experiences of 12 English student teachers. The data was collected through weekly written narratives and individual and group interviews. This study's findings highlight various advantages, including quick access to information, simplification of complex concepts, and generation of new ideas. However, the participants mentioned some disadvantages such as lacking authenticity and superficiality. They also voiced concerns about the potential decrease in creativity due to excessive reliance on ChatGPT and it might cause passive learning among students. They emphasized the importance of balance between human-machine collaboration and recommended the fifty-fifty method.

AI chatbots simulate natural language conversations, helping learners improve fluency and confidence in ELT. In the same way, Kim et al. (2021) carried out mixed-method research with 49 Korean university students at two different competency levels with the purpose of examining the impact of AI chatbots on their speaking abilities. Throughout the semester, the participants practiced with one of the 3 different chatbots for 15 minutes each lesson. The results

from the post-reading-aloud test showed a significant improvement in fluency, intonation, and stress patterns. The participants also stated that practicing without thinking about their mistakes was a great opportunity for them. Learners experienced a more relaxed speaking environment without pressure as chatbots did not get bored or impatient. Nevertheless, there were also some shortcomings. For instance, when AI struggled to comprehend their words, learners became discouraged.

In light of the rapid technological advancements, the integration of robots in educational environments has received considerable attention, notably in language learning. As an example, Chen et al. (2022) conducted a qualitative study to assess the impacts of using robots for training English-language tour guides with 2 volunteer students. The data was collected via self-reflection, interview, and observation. They designed an interactive robot, Robert, equipped with multi-sensors. Robert can convey expressions and gestures, enhancing the storytelling experience. Learners can interact with Robert as if they are part of the story. Both students stated that it facilitated their comprehension of the material. The training lasted for 10 weeks, and the students improved their speaking and vocabulary skills. They actively participated in the learning process and were enthusiastic to acquire the content and additional knowledge. Still, they believed that the platform could be further developed to become more human-like.

AI tools can also help learners assess themselves. Hapsari et al. (2023) explored how ELT university students at different proficiency levels participated in a cyclical self-assessment process. Their investigation focused on how the students interacted with Scribo, an AI-based platform that provides personalized feedback and scores to enhance academic writing assignments. Findings suggested that the trust level in AI and motivation impacted the self-assessment. The advanced-level student lacked trust in Scribo and sought active feedback from the instructor whereas the intermediate-level student was content with the AI's score and did not make improvements to his writing.

Writing in a foreign language is mostly seen as challenging by EFL learners. As a productive skill with a real output, writing requires substantial cognitive effort and attention. Therefore, it is challenging to motivate students for writing tasks and the use of AI can facilitate this. For instance, Syahnaz and Fithriani (2023) examined the views of 20 Indonesian university students using AI-based Quillbot in Academic Writing class. Since Quillbot helps students paraphrase their works, detect faults, and save time, it was discovered that incorporating AI paraphrasing tools improves the language used, reduces grammar mistakes,

and enhances the quality of the content. Rahman et al. (2022) found similar results in their study regarding the impact of AI software Grammarly on students' writing performance. He stated that the major advantages of automated writing evaluation tools are identifying grammar and spelling errors, providing formative assessment, and detecting plagiarism. Based on the findings, the writing score of the experimental group increased from 58 to 83, indicating that Grammarly could enhance students' writing abilities. Moreover, participants shared positive views as they can independently analyze and evaluate their papers, which is a source of motivation for writing.

Grammarly has been the focus of various studies aiming to assess its effectiveness in improving writing skills among EFL learners. Likewise, Dizon and Gayed (2021) examined the impact of Grammarly on 31 EFL Japanese university students. It took 8 weeks, and 248 pieces were written. Students made fewer correctable grammatical errors, such as verb tense, noun endings, articles, and when using Grammarly compared to the control group. The results also revealed that they exhibited greater lexical diversity. Contrary to grammatical correctness and lexical variety, there was not a significant difference in writing fluency. The total word numbers were comparable, regardless of whether Grammarly was used or not. Regarding syntactic complexity, participants showed stronger performance when writing without Grammarly. This finding indicates that AI tools may not stimulate L2 learners to write more complex sentence structures, encouraging more subordination.

AI technologies, particularly speech recognition, play a crucial role in analyzing pronunciation, fluency, and intonation. Along with personalized feedback, they can offer practice opportunities that are difficult to provide for each student in traditional classroom settings. In his mixed method study with 30 students, Noviyanti (2020) examined the effect of a pronunciation checker app based on AI. The students scored a substantial improvement from 56 to 90. The findings also indicated that the application could reduce their anxiety. Nevertheless, the students expressed a desire to communicate with native speakers as part of their language-learning process.

As can be seen from the examples above, AI presents various benefits for the field of ELT. However, teachers' perspectives towards technology, particularly AI, play a major role in how they integrate it into their teaching. For example, a teacher who appreciates new teaching methods may consider AI as a helpful addition to classroom activities. On the other hand, a teacher who strongly believes in conventional teaching methods may see it as a danger.

Therefore, the success of AI depends on how teachers accept and integrate it. As a result, it is crucial to understand the cognitive aspects of teachers in AI integration into language teaching.

2.3. Teacher Cognition

While teachers share similar educational backgrounds, textbooks, syllabi, professional training, and sources, they employ different teaching strategies. One fundamental factor contributing to this diversity is teacher cognition (Sugesti et al., 2020). It is a term that encompasses the beliefs, knowledge and thought processes that impact teachers' perspectives and methods in their teaching practice. Over the past decades, different terms have been used to describe it, including "teachers' beliefs," "teacher knowledge," "attitudes and knowledge of teachers," and "teachers' personal theories" (Ogalo et al., 2019). It depends on the underlying assumption that teachers are proactive decision-makers who rely on their understanding, perceptions, and values when making instructional choices (Borg, 2003). It significantly shapes teachers' teaching practices, thereby impacting students' academic achievement (Chen & Abdullah, 2022). In essence, it refers to the connection between teachers' beliefs and their teaching practices.

In her book named "Language Teacher Cognition", Li (2019) discusses it from different theoretical perspectives (p. 25). She asserts that the primary theory adopted in its research is the cognitive perspective as it examines teachers' fixed mental elements such as beliefs or assumptions, residing in their minds and shaping their choices and behaviors. On the other hand, the interactionist perspective suggests that teacher cognition is influenced by interactions with students, rather than solely by beliefs. This perspective emphasizes that teachers' interactions with students and teaching activities can significantly shape their behavior, even if it contradicts their accepted beliefs. She also highlights the sociocultural perspective and Vygotsky's socio-cultural theory. This approach asserts teaching as a social activity and underlines the importance of interaction in facilitating effective learning and teaching. In her work, she stresses the importance of the sociocultural perspective in illustrating how teachers acquire knowledge within professional groups and how their experiences impact their cognitive processes, conceptualizations, and beliefs.

Borg (2019) compares teaching to icebergs and suggests that similar to icebergs, where a significant portion remains unseen, teaching involves both observable and hidden aspects. Similarly, Öztürk and Yıldırım (2019) describe teaching with two primary aspects: cognition and action component. What teachers do in the classroom, like interacting with students, giving

tasks, creating materials, and assessing students is known as ‘teacher action’. Meanwhile, the invisible component comprises beliefs, values, perspectives, expectations, ethics, awareness, thoughts, attitudes, and more, collectively conceptualized as ‘teacher cognition.’

While there are some external influences such as school policies dictating learning and assessment methods, many others are internal to the teacher. These internal factors include beliefs, knowledge, emotions, perceptions, attitudes, and views. Borg (2003) also depicts a framework as a schematic conceptualization that places teacher cognition at the core, emphasizing its critical role in both teaching and the lives of teachers (Figure 2.5).

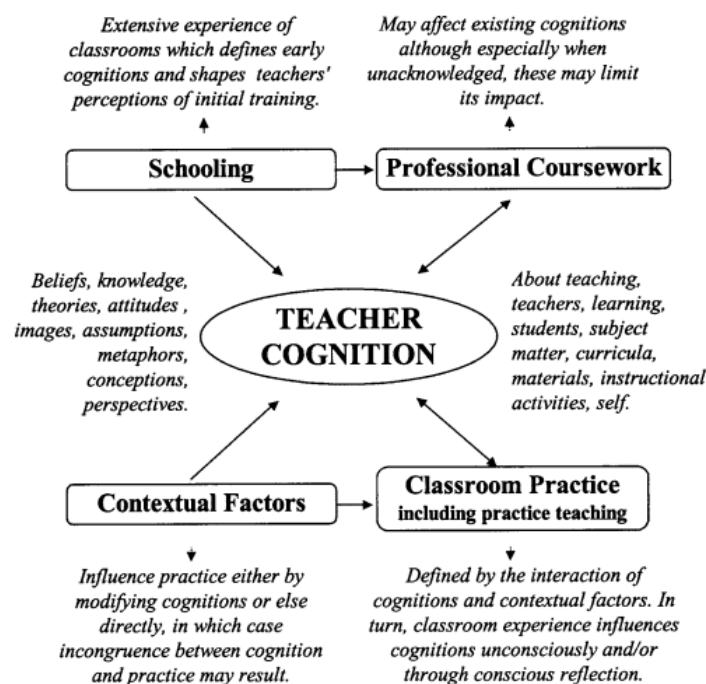


Figure 2.5. A framework of teacher cognition (Borg, 2003)

There are other factors influencing teacher cognition, including past experiences with language learning in school, formal pedagogical training at universities, and professional development opportunities within their workplace (Çetin, 2023). Beyond personal history, teacher cognition may be shaped by interactions with peers and supervisors, as well as their engagement with students. The teaching context, including school culture, colleagues, and parents, can also play a crucial role in shaping teachers' behavioral changes, highlighting the significant impact of the teaching environment on teacher cognition (Kang and Cheng, 2014).

The research on teacher cognition seeks to gain a deeper knowledge of how teachers' hidden factors influence their actions. Therefore, it is crucial to comprehend the complexities of teaching. In particular, Öztürk and Gürbüz (2017) conducted a grounded theory to examine

the primary sources of EFL teachers' cognition. The participants were 3 Turkish EFL educators working at the English preparatory programs at different universities. This study incorporated data from semi-structured interviews, reflective journals, classroom observations, and document analysis. The results indicated that early language learning phases, pre-service educational experiences, initial teaching years, institutional atmosphere, and interaction with experienced mentors emerged as the primary determinants of language teachers' cognition and their classroom practices. Additionally, their practices were shaped by factors such as the learner's profile, and institutional dynamics including the organizational climate, assessment, and curriculum protocols.

Teacher cognition research is also essential for comprehending teachers' perceptions, decision-making processes, classroom dynamics, and effective teaching strategies (Li, 2017). There are four primary motivations identified for studying it. Firstly, it offers insights into teacher behaviors. Secondly, it serves as a valuable resource for teacher training and professional development. Thirdly, it can guide curriculum policy and planning for educational innovations. Lastly, it can lead to the development of new teaching principles directly from classroom practice (Breen et al., 2001).

It can be stated that teachers' use of technology is consistent with their cognitions. Teachers' willingness to incorporate technology into their teaching can be based on their perceiving themselves as confident and skilled. Nevertheless, their beliefs about the uselessness of technology can be a barrier to its integration (Li, 2013). Attia (2014) carried out research to examine teacher cognition and technology integration in the language teaching context. The participants were three Arabic teachers working in higher education. The data were gathered using a questionnaire, semi-structured interviews, classroom observations, video-recorded stimulated recall sessions, and reflective writing by teachers. The findings indicated that teachers' cognitions influenced their use of technology, and their responses to perceived challenges, and highlighted discrepancies among practitioners in integrating technology into their teaching within the same educational setting. The research also revealed that teachers' early schooling experiences as learners significantly influence teacher cognition and practice, including the use of educational technologies.

The digital resources and online platforms present new opportunities for teachers. Saiful (2019) conducted a qualitative inquiry to uncover EFL teachers' cognition regarding the integration of YouTube into English language teaching with two participants. They used

YouTube Vlogs to teach words, expressions, and genre-based texts. The results of the open-ended questionnaire, baseline data, and stimulated recalled interview revealed that their decisions to incorporate YouTube Vlogs in English instruction are influenced by their beliefs, thinking, and knowledge. According to their perspective, YouTube Vlogs offer authentic and context-specific demonstrations of English. Additionally, the study indicated that their choices are shaped by their pedagogical knowledge and students' learning styles, and characteristics.

On the other hand, there is an ongoing debate on technology's role in education, highlighting the significance of interactions between teachers and students. Katemba (2020) investigated Indonesian English teachers' perspectives on technology integration in language teaching. It was found that teachers had a positive perspective regarding technology. The majority, approximately 84%, believe that technology has the potential to serve as advanced instructional resources in ELT and around 77% agreed that it can be integrated as instructional material within the school curriculum. The main inference was that teachers held the belief that technology could enhance their teaching methods in ELT classrooms. However, it could not supplant the role of the teacher considering that it cannot provide the same level of emotional support to students. It lacks the ability to comfort students when they feel upset. In conclusion, understanding teacher cognition in technology integration is crucial for educational practices.

2.3.1. Previous Studies on Teachers' Perceptions of Artificial Intelligence

AIEd has increased significantly over the past four years, indicating a potential rise in the adoption of AI-driven teaching approaches in the coming years (Çelik et al., 2022). Yet, if teachers fail to embrace these changes, they will never be able to keep up with these technologies. Therefore, exploring teachers' perspectives on AI is crucial to integrate AI technologies into teaching and learning environments, as their views significantly impact the adoption of AI in the classrooms. Teacher training is essential to facilitate teachers' adaptation to the world of AI and effective training prepares teachers for the AI era, allowing them to collaborate with technology and take advantage of the opportunities. Although AI is not expected to replace the role of the teacher, teachers who effectively incorporate AI into the teaching process are likely to replace those who do not (Yolcu, 2024).

Exploring teachers' perspectives on AI illuminates key considerations for fostering a technology-enhanced learning environment. In their qualitative study, Çelik and Aktaş (2021) assessed the views of 10 lecturers who were specialists in AI from different universities across Türkiye. 7 of them had Ph.D. degrees, while 3 had the title of associate professor. The

participants were chosen by snowball sampling technique and then interviewed. In the study, Çelik and Aktaş (2021) designed two scenarios: AI in the classroom and AI in school management. According to the findings of scenario 1, if AI were to become a teacher, it would avoid human-related issues such as forgetfulness, anger, impatience, and conflicts with administrators. It would provide a tailored curriculum, personalized teaching, individualized tracking, and objective evaluations, and always remain accessible. However, the participants did not seem possible for AI to take over classroom management as a teacher or school management as a principal. They outlined several reasons for that including lack of emotion and empathy, inability to motivate students, and limited psychological and pedagogical understanding. Another concern was data security and the risk of manipulation with fake data. One of the participants questioned, 'What if students generate false data to deceive the AI?' Nevertheless, taking into consideration the advantages of AI integration into education, it was recommended that it should take place in the role of assistant in both scenarios.

Understanding teachers' perspectives on AI can also reveal insights into its potential and challenges in educational settings, offering new recommendations for policy makers. To exemplify, Abdelatif and Siddiqui (2021) conducted a study with 71 members of the EFL faculty at King Khalid University and found no correlation between their perspective of AI's benefits and integrating it into teaching English. Whereas the participants found AI tools in ELT useful, their integration of AI into their instruction percentage was low because of insufficient personal training, class sizes, and time. Therefore, the findings indicated that universities should provide assistance for integrating AI into educational practices.

Exploring teachers' perspectives on AI also informs strategies for effective integration and professional development. In their mixed-method research, Belda-Medina and Calvo-Ferrer (2022) examined the viewpoints of 176 prospective language educators regarding 3 different AI conversational agents. The participants gave the highest score to Replika, appreciating its sentence length and vocabulary richness, while observing limited off-topic responses. However, they were concerned about personal data privacy, identifying it as a limitation when using chatbots with young learners. As a result, the study revealed a gap between their perspectives and implementation. Even though they perceived it useful and easy to use, they weren't interested in adopting it in the upcoming period which highlights the need for enhanced training integrated into their curricula.

Their viewpoints could provide valuable visions for developing educational AI tools. Specifically, Choi et al. (2022) examined 215 South Korean teachers' acceptance of educational AI tools using an online questionnaire. They figured out that teachers with constructivist beliefs are more likely to adopt AIEd compared to those with transmissive instructions. Moreover, factors such as perceived trust, usefulness, and ease of use play crucial roles in explaining teachers' acceptance of AIEd. Among these factors, the easiness of constructing educational AI tools was identified as the most influential determinant in their acceptance. This suggests that educational AI tools should be user-friendly, practical, and trustworthy to foster their adaptation.

In other words, their perceptions could hold the key to successful AI integration in education. Chounta et al. (2022) investigated 140 Estonian teachers' perceptions of AIEd. The survey results revealed that teachers had little knowledge about AI; however, they viewed it as an opportunity for education. The majority of teachers reported having either limited (47%) or moderate (35%) knowledge and none of them considered themselves experts in AI. Chounta et al. (2022) suggested that this might hinder the integration of AI in the classrooms, as the lack of knowledge and confidence restrict teachers from using these systems. However, Estonian teachers were optimistic about using AIEd, especially for administrative tasks and accessing learning materials. 67% of them believed that AI could assist them in checking assignments. 56% of them see AI as helpful for lesson planning in terms of time, or content (53%), as well as monitoring. Nevertheless, participants were concerned about AI's drawbacks in education, including its potential to disrupt interaction and its limitations in human qualities like creativity and empathy. They emphasized that AI cannot replace human-to-human communication, and students prefer interacting with human tutors. It is evident from the results that teachers require support to improve their efficiency.

In a similar case, Dülger and Gümüşeli (2023) investigated the perspectives of school principals and educators regarding the application of AI within educational settings. The data was gathered from 16 individuals, evenly divided between 8 principals and 8 educators from different specialties in Istanbul. The principals mentioned that they faced a considerable workload, indicating a need for assistance. They suggested that AI could fulfill this need in paperwork. However, they emphasized the significance of offering flexibility in certain administrative situations when needed, and they believed AI could not provide it. On the other hand, teachers stated that AI can save time and boost productivity, also serving as a teacher's

assistant to ease their workload. They pointed out its potential to enhance educational effectiveness as a resource, particularly in facilitating rapid access to information. They also reported that assessment is an integral part of the educational process and deficiencies can be readily identified through AI systems. When their responses were analyzed, the principals and educators both expressed similar beliefs that AI could never fully substitute for their professions because AI would lack in providing emotional satisfaction and empathy.

If teachers feel confident in their technology knowledge, they are more likely to use AI in their lessons. Belief in their technological capabilities encourages teachers to incorporate AI into their teaching. For instance, An et al. (2023) investigated the willingness of 219 Chinese EFL teachers working in middle schools to incorporate AI technology for educational purposes. The participants perceived AI technology as highly efficient and user-friendly and emphasized that the authorities should promote these valuable technologies. Moreover, a direct relationship between teachers' technological knowledge and their intention to use AI was found. They were more likely to include AI in their lessons when they believed they possessed enough technological pedagogical content knowledge (TPACK).

Despite the promise of AI, teachers also address concerns about its implementation, including potential over-reliance and reduced creativity and motivation among students. To cite an example, Bekou et al. (2024) carried out mixed-method research for an in-depth exploration of 62 Moroccan English language teachers' views on ChatGPT in ELT. 58% of them stated that they experienced it. In the context of ELT, only 6 respondents stated they were highly knowledgeable about using it in English instruction. 28 of them reported being quite acquainted. When asked about potential disadvantages, 26% of them claimed over-reliance on the tool, and 16% of participants expressed that it might diminish teachers' creativity and make learners lazy and less motivated. It was also revealed that knowing how to use it appropriately and having access to technologies such as laptops and internet connectivity in educational institutions are two key elements that affect the implementation of AI tools in education.

While AI's potential to enhance learning is widely recognized, teachers' fears about its impact on emotional connections cannot be ignored. Uygun (2024) analyzed 74 educators' perspectives on AI and 25 of them were English teachers. The data indicated that a considerable number of teachers had positive views on the benefits of AI personalized learning, and productivity. 90% of them considered it a valuable tool for acquiring knowledge. Additionally, they considered that it could reduce time consumption, observe learning progress, and

contribute to achieving educational objectives. On the other hand, 60% of them were worried that incorporating AI into the educational setting might weaken emotional connections and 51% believed that it could lead to passivity. Based on the independent sample t-test results, it was observed that teachers' perspectives on AI did not vary according to their experience and, length of service.

In brief, teachers' perspectives are essential for guiding the integration of AI in education. They provide practical insights that underpin both the potential benefits and challenges of AIEd. Future research should prioritize these perspectives to create a balanced integration. As a result, their perceptions and attitudes play a vital role in AI integration to foster a more supportive and innovative educational environment.



CHAPTER 3

3. METHODOLOGY

This chapter explains the research methodology, including research design, participants, data collection tools and the process, and data analysis. It includes details about the demographic characteristics of the participants. Furthermore, it specifies the tools and instruments used to gather and analyze data.

3.1. Research Design

The main purpose of this study is to examine the EFL teachers' AI awareness level and explore their viewpoints regarding the integration of AI in teaching. The study is based on a convergent mixed-method research design to accomplish this objective. Mixed-method research is an investigative approach that combines both quantitative and qualitative data to have a better insight and balance their pros and cons (Creswell and Creswell, 2018).

While the qualitative method is valuable for exploring in-depth cases, quantitative research is advantageous for generalizability (DeCuir-Gunby and Schutz, 2016). Thus, combining the positive sides of both methods is effective for researchers and it is commonly used in health research and social science, particularly due to the complex nature of human phenomena (Doyle et al., 2009). Oral and Çoban (2020) clarify that in the convergent parallel mixed-method design, researchers give equal importance to both data collection methods, and analyze them separately, in the interpretation part they combine the results as can be seen in Figure 3.1.

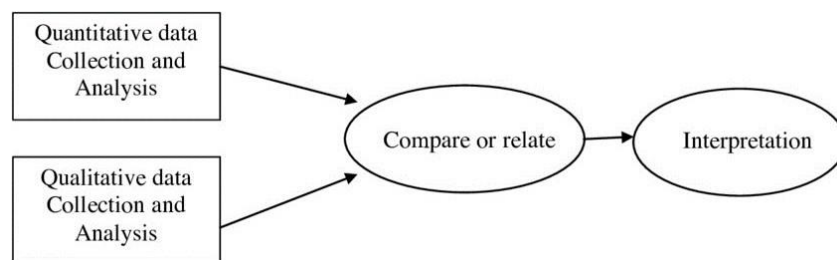


Figure 3.1. Convergent Parallel Mixed Methods Design (Adapted from Creswell and Creswell, 2018)

In the present study, firstly, Turkish EFL teachers' awareness levels regarding artificial intelligence were gathered through a scale and analyzed. Later, the relationship between demographic variables and their AI awareness level was explored. In the final stage, how the findings relate to the teachers' views on AI was further investigated through semi-structured interviews.

3.2. Sampling and Participants

The study is primarily designed to investigate the awareness level and perspectives of Turkish EFL teachers. Accordingly, the scope of the study encompasses Turkish EFL teachers working at different grade levels across Türkiye during the 2023–2024 academic year to obtain a broad overview. However, reaching the entire population is not feasible. Due to the challenges in forecasting the exact size of the research universe, it is regarded as infinite. Consequently, it is proposed to obtain a sample of approximately 384 individuals to ensure a confidence interval of 95% (Büyüköztürk et al., 2020; Ural and Kılıç,2006).

In the course of the present research, the quantitative data was gathered from 448 participants who completed the survey form. 11 surveys were excluded from the dataset for being incomplete, Therefore, the analyses were conducted with 437 participants. The participants' demographic information is detailed in Table 3.1 below.

Table 3.1. Demographic characteristics of the participants

Variable	Group	n	Percent (%)
Gender	Female	339	77.6
	Male	98	22.4
Age	20-30	126	28.8
	31-40	216	49.4
	41-50	84	19.2
	+51	11	2.5
Teaching Experience	0-5 years	99	22.7
	6-10 years	136	31.1
	11-15 years	98	22.4
	16-20 years	62	14.2
	+21 years	42	9.6
Educational Background	Bachelor	332	76.0
	Master	101	23.1
	PhD	4	0.9
Graduation Program	ELT	336	76.9
	ELL	86	19.7
	Other	15	3.3
Grade Level They Teach at	Primary	89	20.4
	Secondary	205	46.9
	High school	129	29.5
	Other	14	3.2

The demographic characteristics of the participants were broad, with variations in gender, age, education, teaching experience, and instructional levels. Analysis of Table 2.1 reveals that among the English teachers participating in the study, 339 (77.6%) are females and 98 (22.4%) are males, indicating a predominant female representation among the participants. When Table 2.1. is examined regarding the age distribution, it can be seen that the 31-40 age range comprises nearly half of the sample (49.4%). The smallest group, those aged 51 and over, accounts for only 2.5% of the total sample. The study included 99 teachers with 0-5 years of experience (22.7%), 136 teachers with 6-10 years (31.1%), 98 teachers with 11-15 years (22.4%), 62 teachers with 16-20 years (14.2%), and 42 teachers with over 21 years of experience (9.6%).

The distribution of educational background is as follows: 332 teachers have bachelor's degrees (76.0%), 101 have master's degrees (23.1%), and only a small number, 4 teachers have doctoral degrees (0.9%). Most of them, 336 teachers (76.9%), graduated from the English Language Teaching Program while 86 participants (19.7%) are English Language and Literature Department graduates. The remaining 15 participants (3.3%) come from diverse departments such as Linguistics or Translation and Interpretation.

As seen in Table 3.1., participants teach at different levels and educational settings. 89 primary school teachers make up 20.4% of the sample. The largest group consists of 205 participants from secondary schools, making up 46.9% of the total. Finally, 129 participants (29.5%) work in high schools, while 14 others (3.2%) work at diverse educational institutions such as universities, private language courses, or kindergartens.

Later, semi-structured interviews were carried out for the qualitative part of the study. At the final question of the quantitative survey, participants were asked about their willingness to attend further interviews. All volunteer teachers were then contacted via email and informed about the interviews. However, a total of 14 teachers replied to the email and consented to participate. Therefore, the convenience sampling technique was used to choose interviewees based on their willingness to participate in interview sessions. Table 3.2. below details of these participants' background information.

Table 3.2. Background information about the interviewees

Participant	Gender	Teaching Experience	Educational Background	Graduation Program	Grade Level They Teach at	Location
P1	Female	3 years	MA student	ELT	Secondary	Şanlıurfa
P2	Male	2 years	BA	ELT	High school	Batman
P3	Female	8 years	BA	ELL	Primary/ Secondary	Konya
P4	Female	6 years	MA student	ELL	Secondary	Konya
P5	Male	8 years	BA	ELL	Primary	Konya
P6	Male	9 years	BA	ELT	Secondary	Şanlıurfa
P7	Female	18 years	BA	ELT	Secondary/High School	İstanbul
P8	Female	12 years	MA student	ELT	Secondary	Konya
P9	Female	10 years	BA	ELL	High School	Düzce
P10	Female	4 years	BA	ELT	Primary/ Secondary	Ağrı
P11	Female	8 years	PhD student	ELT	High School	Kocaeli
P12	Female	9 years	BA	ELT	Secondary	Hatay
P13	Male	4 years	BA	ELT	High School	Van
P14	Female	5 years	MA	ELL	Primary	Bilecik

As seen in Table 3.2., there are 10 female and 4 male participants. Experience levels among these teachers vary significantly, with the least experienced having 2 years, and the most experienced teaching for 18 years. 9 of the 14 participants hold bachelor's degrees while one of them had a master's degree. Additionally, 3 of the participants are enrolled in master's degrees whereas one of them is pursuing in doctoral degree. Furthermore, 9 of the participants completed their bachelor's degree in the English Language Teaching Program and 5 of them were English Language and Literature Department graduates. These teachers work at different levels, mostly at secondary schools. It can be said that this demographic distribution enriches the data.

3.3. Data Collection Instruments

In this study, the quantitative data was gathered using the AI awareness level scale while the qualitative data was obtained through semi-structured interviews to enrich and triangulate the data. Bekhet and Zauszniewski (2012) find triangulation helpful in offering verification of findings, increasing validity, and improving a deeper understanding of the studied topic. Similarly, according to Oppermann (2000), triangulation primarily focuses on verifying results and can minimize methodological limitations, potential data, or researcher biases. Table 3.3. details the data collection instruments and their relations with research questions to have a better understanding.

Table 3.3. Data collection instruments

Instrument Number	Data Collection Instrument	Data Type	Addressed Research Questions
1	Artificial Intelligence Awareness Level Scale for Teachers	Quantitative Data	RQ1, RQ2
2	Semi-structured Interviews	Qualitative Data	RQ3

3.3.1. Artificial Intelligence Awareness Level Scale for Teachers

The quantitative data was gathered using the “Teachers' Artificial Intelligence Awareness Scale” developed by Ferikoğlu and Akgün (2022). While developing the scale, the suitability of the data for factor analysis was confirmed by the Kaiser-Meyer-Olkin (KMO) test, which indicated high reliability with a value of 0.983. Ferikoğlu and Akgün (2022) used Exploratory Factor Analysis (EFA) to assess the construct validity. According to the EFA results, the number of items decreased from 78 to 51. Then they conducted Confirmatory Factor Analysis to verify the findings of the EFA. The general reliability level of the scale was measured using Cronbach's Alpha, and it was found 0.986, revealing a high level of reliability.

The scale consists of two sections; the initial part focuses on demographic variables such as gender, age, educational background, teaching experience, and the grade levels that the teachers work with. In the second part, there are 51 items related to AI, grouped into four sub-dimensions. The first 16 items are related to *practical knowledge*, items 17 to 30 cover *beliefs and attitudes*, items 31 to 40 measure *the ability to associate*, and items 41 to 51 explore *theoretical knowledge*. Each item has a 5-point Likert-type ranking from strongly agree to strongly disagree: Strongly Agree (5) / Agree (4) / Neutral (3) / Disagree (2) / Strongly Disagree (1).

3.3.2. Semi-structured Interview

In this research, qualitative data was obtained from semi-structured interviews to support and provide deeper insight into the quantitative findings. Semi-structured interviews typically employ a flexible guide, where all participants answer the same set of predetermined questions that direct the interviewer. However, this framework does not require that questions be asked in a specific order or exactly as written, allowing interviewers the autonomy to change the order and progression of the interview. This flexibility enables interviewers to ask follow-

up questions that arise from the discussion, facilitating a deeper exploration of the responses. (Ocak, 2019; Dömbekci and Erişen, 2022).

Initially, the researcher prepared 7 interview questions by reviewing the relevant literature. Then, a pilot study involving three in-service EFL teachers was carried out to ensure clarity. Before the interview, it was consulted by an expert in the field to check the relevance of the questions to the research goals. Based on the feedback received from both the EFL teachers and the expert, the questions were revised to be clearer and more relevant.

The questions guided in the interview process are presented below:

1. What does AI mean to you?
2. Are there any examples of AI that you have experienced or encountered in the field of ELT?
3. In your opinion, what are the advantages of integrating AI into ELT?
4. From your perspective, what are the negative aspects of integrating AI into ELT?
5. What are your opinions about the future use of AI in education? Can it replace the teachers in the classroom?

3.4. Data Collection Procedure

The process of data collection started at the beginning of the spring semester of the 2023-2024 academic year. First of all, permission to use the scale was acquired from the designers via e-mail. Then, after obtaining approval from Necmettin Erbakan University Ethics Commission and MoNE, the online version of the data collection scale was created using Google Forms to acquire quantitative data. The survey link was sent to the groups dedicated to English teachers on WhatsApp and Facebook. Before starting the survey, all participants were informed about the purpose of the study.

Qualitative data was gathered through semi-structured interviews with 14 volunteer Turkish EFL teachers. These interviews enabled participants to share their viewpoints freely and without pressure. Participants were encouraged to share their opinions and experiences openly. To build rapport and avoid the language barrier, all interviews were conducted in Turkish. Drew (2014) notes that being interviewed in a non-native language can reduce an interviewee's ability to communicate openly and feel relaxed. Similarly, Tsang (1998) suggests that interviews should be conducted in the native language whenever it is possible. The interviews were audio-recorded after obtaining consent from the participants and lasted

approximately 10 to 15 minutes. The interviews continued until the data reached saturation. Saturation is reached when the collection of extra data does not produce new insights or expand on existing themes (Guest et al., 2006; Charmaz,2006). Subsequently, they were transcribed verbatim. The analysis of the data began soon after completing the scale and interview procedures.

3.5. Data Analysis

Both data sets were analyzed separately. The descriptive and inferential statistics of quantitative data were conducted with the help of the IBM Statistical Package for the Social Sciences (SPSS-27.0) software program. To identify differences between group means, the independent samples T-Test was used for variables with two groups, and one-way ANOVA was applied for those with three or more groups. When there was insufficient data for parametric tests in variables, the Kruskal Wallis-H, the non-parametric equivalence of one-way ANOVA (Karagöz,2010).

In the analysis of qualitative data gathered through semi-structured interviews, the descriptive content analysis method was employed. This approach primarily involves deeply analyzing the collected data and identifying key codes and themes to effectively make the findings meaningful (Büyüköztürk et al., 2020). Yıldırım and Şimşek (2021) state that direct quotes are commonly used to convey the perspectives of the interviewees accurately. They also outline 4 essential steps for this process:

- 1) Coding the data,
- 2) Finding the themes,
- 3) Organizing the data and themes,
- 4) Interpreting the results

As the first step of this process, data was uploaded to the MAXQDA 24 program and transcribed. In the coding process, all responses were thoroughly reviewed multiple times to understand the general overview and then identify relevant categories and themes. In the analysis, teachers were not identified by their real names but represented by individual codes such as P1, P2, P3, and so forth.

CHAPTER 4

4. FINDINGS

This research seeks to explore Turkish EFL teachers' level of artificial intelligence awareness, incorporating both quantitative and qualitative dimensions. This chapter presents the research results, categorized into quantitative and qualitative findings. The quantitative data is collected using a scale to examine Turkish EFL teachers' level of artificial intelligence awareness and demographic characteristics. By examining the qualitative data collected from interviews, it aims to provide insights into both the advantages and obstacles associated with incorporating AI in ELT practices.

4.1. Quantitative Findings

In this section of the study, findings regarding Turkish EFL teachers' level of artificial intelligence awareness are presented, and the relationship between AI awareness level and variables such as gender, age, educational background, teaching experience years, and teaching level are examined.

4.1.1. Findings Related to the First Research Question

Initially, the normality of the distribution was assessed using measurements such as skewness and kurtosis values and, the Kolmogorov-Smirnov test to determine the appropriate statistical tests (Table 4.1.).

Table 4.1. Normality and reliability test results

Variable	n	Mean	SD	Kolmogorov Smirnov (p)	Skewness	Kurtosis	Cronbach's Alpha
Practical Knowledge	437	62,63	6,410	,000	,151	,472	,836
Belief/Attitude	437	48,97	8,034	,000	-,231	1,429	,885
Ability to Associate	437	35,65	5,166	,000	,066	1,481	,810
Theoretical Knowledge	437	40,02	4,975	,001	,220	1,154	,787
AI Awareness Level	437	187,60	19,945	,000	,517	1,108	,939

*p>0,05

Table 4.1. details the normality and reliability checks. According to the Kolmogorov-Smirnov test, there was no significant result ($p>.05$). However, the kurtosis and skewness values of the scales and their sub-dimensions remain between -2 and +2, allowing for the use of parametric tests in the analysis (George and Mallery, 2011).

In response to the first research question about the AI awareness levels of Turkish EFL teachers, the study examined the arithmetic mean of their answers on the scale. This 51-item scale had a five-point Likert type. This implies that the scores that participants may receive vary between a minimum of 55 and a maximum of 255. Hence, AI awareness levels are segmented into very low (55-95), low (95-135), medium (135-175), high (175-215), and very high (215-255) categories. As seen in Table 4.1., statistical analysis revealed a mean score of 187.60 on the AI Awareness Level Scale, placing it between 175-215 and indicating a high level of awareness among Turkish EFL teachers.

4.1.2. Findings Related to the Second Research Question

The second research question aims to explore whether the awareness level of AI among Turkish EFL teachers varies based on demographic factors such as gender, age, educational background, teaching experience, and the grade level they teach.

Independent samples T-test results in terms of gender variable

The independent samples T-test was used to determine if there were differences in AI awareness levels between genders, with findings presented in Table 4.2.

Table 4.2. Independent samples t-test results of teachers' AI awareness scale in terms of gender variable

Variable	Group	n	Mean	SD	t	df	p
Practical Knowledge	Female	339	62,11	6,332	-3,222	435	,001*
	Male	98	64,45	6,375			
Belief/Attitude	Female	339	48,78	7,872	-,920	435	,358
	Male	98	49,63	8,578			
Ability to Associate	Female	339	35,13	5,187	-4,016	435	,000*
	Male	98	37,47	4,684			
Theoretical Knowledge	Female	339	39,80	4,916	-1,774	435	,077
	Male	98	40,81	5,123			
AI Awareness Level	Female	339	186,23	19,409	-2,697	435	,007*
	Male	98	192,36	21,120			

*p<0,05

According to Table 4.2., there is a statistically significant difference in the *practical knowledge* score between gender groups ($p=.001<0.05$). The *mean practical knowledge* score of males ($M=64.45$) is found to be notably higher than that of females ($M=62.11$). On the other hand, there is no statistically significant difference in the *belief/attitude* score between groups.

The findings also indicate that there is a meaningful difference in the *ability to associate* scores regarding gender groups ($p=0.000<0.05$). Specifically, Males' average score ($M=37.47$) is significantly different and higher compared to female's ($M=35.13$) in this sub-dimension. However, there is not a considerable difference in their *theoretical knowledge* scores ($p=0.077>0.05$). In conclusion, there is a statistically significant difference in the overall scores on the AI Awareness Scale regarding genders ($p=0.007<0.05$). Males ($M=192.36$) significantly outscored females ($M=186.23$) in terms of AI awareness.

Independent samples T-test results in terms of level of education

Independent samples T-test was applied to investigate whether Turkish EFL teachers' AI awareness levels differ depending on their level of education. The table below (Table 4.3.) illustrates the results.

Table 4.3. Independent samples t-test results in terms of level of education variable

Variable	Group	n	Mean	SD	t	df	p
Practical Knowledge	BA Degree	332	62,22	6,498	-2,367	435	,018*
	MA or Ph.D. Degree	105	63,91	5,971			
Belief/Attitude	BA Degree	332	48,60	8,207	-1,741	435	,082
	MA or Ph.D. Degree	105	50,16	7,370			
Ability to Associate	BA Degree	332	35,48	5,289	-1,286	435	,199
	MA or Ph.D. Degree	105	36,22	4,735			
Theoretical Knowledge	BA Degree	332	39,94	5,055	-,598	435	,550
	MA or Ph.D. Degree	105	40,28	4,726			
AI Awareness Level	BA Degree	332	186,67	20,216	-1,753	435	,080
	MA or Ph.D. Degree	105	190,57	18,849			

* $p<0,05$

As shown in Table 4.3., the *practical knowledge* score varies significantly between groups ($p=0.018<0.05$). Teachers with master's or doctoral degrees ($M=63.91$) were found to be significantly different and higher than that of teachers with only bachelor's degrees ($M=62.22$). In other words, it can be understood from the t-test results that teachers with

master's or doctoral degrees are more knowledgeable about how to apply AI compared to those with only bachelor's degrees.

On the contrary, there is no statistical difference in the scores of *belief/attitude* ($p=0.082$), *ability to associate* ($p=0.199$), *theoretical knowledge* ($p=0.550$), and AI awareness level scale ($p=0.080$) between groups, as all p -values are above 0.05.

One-way ANOVA results in terms of teaching experience variable

One-way ANOVA was conducted to find out whether there is a significant difference in the AI awareness level of Turkish EFL teachers based on their teaching experience. The results are shown in Table 4.4. below.

Table 4.4. One-way ANOVA results in terms of teaching experience

Variable	Group	n	Mean	SD	Source of Var.	Sum of Squares	df	Mean Square	F	p
Practical Knowledge	0-5 years	99	63,26	6,316	BG	174,578	4	43,644	1,063	,374
	6-10 years	136	63,02	6,441	WG	17738,970	432	41,062		
	11-15 years	98	61,76	6,758	Total	17913,548	436			
	16-20 years	62	61,90	6,307						
	+21 years	42	63,00	5,785						
	Total	437	62,63	6,410						
Belief/Attitude	0-5 years	99	50,38	7,777	BG	358,894	4	89,724	1,395	,235
	6-10 years	136	48,26	7,881	WG	27779,829	432	64,305		
	11-15 years	98	49,17	8,687	Total	28138,723	436			
	16-20 years	62	47,79	8,524						
	+21 years	42	49,24	6,469						
	Total	437	48,97	8,034						
Ability to Associate	0-5 years	99	36,75	5,528	BG	191,256	4	47,814	1,805	,127
	6-10 years	136	35,47	4,675	WG	11445,568	432	26,494		
	11-15 years	98	35,55	5,356	Total	11636,824	436			
	16-20 years	62	34,63	5,351						
	+21 years	42	35,43	4,870						
	Total	437	35,65	5,166						
Theoretical Knowledge	0-5 years	99	40,92	5,094	BG	146,575	4	36,644	1,487	,205
	6-10 years	136	39,40	4,730	WG	10643,195	432	24,637		
	11-15 years	98	39,93	5,255	Total	10789,771	436			
	16-20 years	62	39,79	4,760						
	+21 years	42	40,50	4,984						
	Total	437	40,02	4,975						
AI Awareness Level	0-5 years	99	191,31	20,725	BG	2033,033	4	508,258	1,281	,277
	6-10 years	136	186,79	18,118	WG	171410,958	432	396,785		
	11-15 years	98	186,41	22,531	Total	173443,991	436			
	16-20 years	62	184,98	19,067						
	+21 years	42	188,17	18,207						
	Total	437	187,60	19,945						

* $p<0.05$

As it can be seen in Table 4.4., no statistically significant differences were found in *practical knowledge* ($p=0.374$), *belief /attitude* ($p=0.235$), *ability to associate* ($p=0.127$),

theoretical knowledge ($p=0.205$), and AI awareness level scale scores ($p=0.277$) across various groups categorized by teaching experience. It can be indicated that teaching experience does not significantly affect their AI awareness levels.

Kruskal Wallis-H test results in terms of age variable

The Kruskal-Wallis-H test, the non-parametric equivalence of one-way ANOVA, is particularly useful when the required conditions for ANOVA are not fulfilled, such as in cases of non-normal data distribution or when sample sizes are insufficient for accurate variance calculations (Büyüköztürk, 2018). For instance, there are only 11 sample sizes for the 51 and over age group in this data set. Therefore, The Kruskal-Wallis-H test was conducted to examine the difference between age groups (See Table 4.5.). As the results showed significant differences, the Games-Howell post hoc test was carried out to determine which age groups differed significantly.

Table 4.5. Kruskal Wallis-H test results of teachers' AI awareness scale in terms of age variable

Variable	Group	n	Mean	SD	H	df	p
Practical Knowledge	20-30	126	63,44	6,174	3,722	3	,293
	31-40	216	62,21	6,481			
	41-50	84	62,40	6,754			
	51 and over	11	63,27	4,496			
	Total	437	62,63	6,410			
Belief/Attitude	20-30	126	50,95	7,446	13,531	3	,004*
	31-40	216	48,15	8,039			
	41-50	84	47,89	8,563			
	51 and over	11	50,82	6,720			
	Total	437	48,97	8,034			
Ability to Associate	20-30	126	36,99	5,259	11,493	3	,009*
	31-40	216	35,23	4,832			
	41-50	84	34,61	5,601			
	51 and over	11	36,73	4,315			
	Total	437	35,65	5,166			
Theoretical Knowledge	20-30	126	40,96	5,060	10,086	3	,018*
	31-40	216	39,45	4,880			
	41-50	84	39,88	5,064			
	51 and over	11	41,55	3,643			
	Total	437	40,02	4,975			
AI Awareness Level	20-30	126	192,35	19,883	12,962	3	,005*
	31-40	216	185,44	19,469			
	41-50	84	185,42	20,724			
	51 and over	11	192,36	15,455			
	Total	437	187,60	19,945			

* $p<0.05$

According to the result of the Kruskal Wallis-H, there are no statistically significant differences in the *practical knowledge* score across different age groups ($p=,293>0,05$). Yet,

there is a statistically significant difference in the belief and attitude subcategory ($p=0.004<0.05$). The post hoc results indicate that Turkish EFL teachers between the ages of 20-30 ($M=50.95$) have significantly higher belief and attitude scores than those in the 31-40 ($M=48.15$) and 41-50 ($M=47.89$) age groups. Similarly, in terms of age groups, there is a statistically significant difference in *ability to associate* scores ($p=0.009<0.05$). Statistical analysis shows that teachers aged 20-30 ($M=36.99$) have a higher *ability to associate* scores compared to teachers in the 31-40 ($M=35.23$) and 41-50 ($M=36.73$) age groups. In simpler terms, this can mean that the ability to connect with AI reduces with advancing age. Moreover, the findings indicate significant differences in *theoretical knowledge* among age groups ($p=0.018<0.05$), particularly showing that teachers aged 20-30 ($M=40.96$) have higher scores than those aged 31-40 ($M=39.45$). Consequently, a statistically significant difference is found in the AI awareness level scale score among age groups ($p=0.005<0.05$). The average score of teachers aged as teachers aged 20-30 ($M=192.35$) is notably higher than those aged 31-40 ($M=185.44$). As a result, it can be inferred that younger Turkish EFL teachers demonstrate higher levels of AI awareness and more effective skills in connecting with AI.

Kruskal Wallis-H test results in terms of the program of BA graduation

Table 4.6 details the results of the Kruskal Wallis-H regarding the BA graduation program such as English Language Teaching, and English Language and Literature.

Table 4.6. Kruskal Wallis-H test results in terms of the program of BA graduation

Variable	Group	n	Mean	SD	H	df	p
Practical Knowledge	ELT	336	62,32	6,432	3,418	2	,181
	ELL	86	63,33	6,097			
	Other	15	65,60	7,008			
	Total	437	62,63	6,410			
Belief Attitude	ELT	336	48,68	7,747	2,102	2	,350
	ELL	86	49,59	8,577			
	Other	15	52,07	10,600			
	Total	437	48,97	8,034			
Ability to Associate	ELT	336	35,43	4,816	3,873	2	,144
	ELL	86	36,05	6,118			
	Other	15	38,53	6,151			
	Total	437	35,65	5,166			
Theoretical Knowledge	ELT	336	39,70	4,829	6,715	2	,035*
	ELL	86	40,80	5,151			
	Other	15	42,87	6,058			
	Total	437	40,02	4,975			
AI Awareness Level	ELT	336	186,38	19,457	5,165	2	,076
	ELL	86	190,40	20,106			
	Other	15	199,07	25,508			
	Total	437	187,60	19,945			

* $p<0.05$

The findings derived from the Kruskal Wallis-H Analysis for the BA graduation program variable, as depicted in Table 4.5., indicate no significant differences among groups in *practical knowledge* ($p=0.181>0.05$), *belief and attitude* ($p=0.350>0.05$), or *ability to associate* ($p=0.144>0.05$) scores. Yet, a significant difference is identified in the *theoretical knowledge* subdimension ($p=0.035<0.05$), highlighting that teachers graduating from other programs ($M=42.87$) achieve higher scores than those graduating from English Language Teaching ($M=39.70$). Nevertheless, the statistical analysis does not reveal any significant difference in the AI awareness level scale score regarding the bachelor's degree graduation program group variable ($p=0.076>0.05$).

Kruskal Wallis-H results in terms of the grade level they work at

The results of the Kruskal Wallis-H test regarding the grade level the teachers work at such as primary school, secondary school, or high school are provided in Table 4.7.

Table 4.7. Kruskal Wallis-H results in terms of the grade level they work at

Variable	Group	n	Mean	SD	H	df	p
Practical Knowledge	Primary	89	62,40	6,686	2,460	3	,483
	Secondary	205	62,42	6,685			
	High school	129	62,92	5,977			
	Other	14	64,43	4,127			
	Total	437	62,63	6,410			
Belief Attitude	Primary	89	48,65	8,441	6,121	3	,106
	Secondary	205	48,40	8,315			
	High school	129	49,93	7,190			
	Other	14	50,57	8,401			
	Total	437	48,97	8,034			
Ability to Associate	Primary	89	35,19	5,300	2,989	3	,393
	Secondary	205	35,62	5,392			
	High school	129	35,88	4,762			
	Other	14	37,00	4,641			
	Total	437	35,65	5,166			
Theoretical Knowledge	Primary	89	39,87	5,279	,278	3	,964
	Secondary	205	40,12	4,910			
	High school	129	39,99	5,077			
	Other	14	39,86	2,983			
	Total	437	40,02	4,975			
AI Awareness Level	Primary	89	187,09	19,991	3,821	3	,281
	Secondary	205	186,84	20,780			
	High school	129	188,72	19,290			
	Other	14	191,86	12,390			
	Total	437	187,60	19,945			

* $p<0.05$

According to Table 4.7, there is no statistically notable difference observed in *practical knowledge* ($p=0.483>0.05$), *belief and attitude* ($p=0.106>0.05$), *ability to associate*

($p=0.393>0.05$), *theoretical knowledge* ($p=0.964>0.05$), or AI Awareness Level Scale Score ($p=0.281>0.05$) based on the grade level teachers work at. Consequently, it can be said that the grade levels at which teachers work do not have a significant impact on their awareness of AI.

4.2. Qualitative Findings

In this section, the findings obtained from the semi-structured interviews are presented. This section provides more insight into the perspectives of Turkish EFL teachers on the integration of AI into English language teaching.

4.2.1. Findings Related to the Third Research Question

The participants were asked 5 questions in total. The first question was asked to understand the general views of Turkish EFL teachers on AI and the second question was related to their experiences and perspectives about the integration of AI into ELT.

Findings of Turkish EFL teachers' definition of AI and their experiences with AI in their teaching

The first interview question was “What does AI mean to you?”.

Table 4.8. AI definition according to the participants

Code	<i>f</i>	Participants
Making life easier	5	P1, P7, P8, P12, P14
Saving time	4	P4, P6, P9, P11
Future	2	P3, P13
Algorithm	2	P5, P10
Unemployment	1	P2

f= frequency

When table 4.8. is examined, it can be revealed that most of the participants think AI makes life easier for them ($f=5$). The opinions of the participants on the definition of AI are depicted below.

P1 and P3 depict how AI makes their life easy by focusing on its task simplification:

“Actually, today’s popular technology comes to my mind. I mean it is like a tool that makes life easier for people and simplifies our tasks.” (P1)

“To me, it is a developing technology that will be extremely helpful in the future. Even now, it reduces our workload on simple tasks.” (P3)

P5 and P9 mention the ease of information accessibility:

“AI is an algorithm that searches the internet to find information and creates solutions for the problems.” (P5)

“The first thing that comes to my mind is to access information more quickly...” (P9)

P2 relates AI with unemployment, emphasizing how automation affects job losses:

“AI, from a general perspective, marks the end of jobs that rely heavily on human effort. It certainly facilitates our lives but also leads to unemployment.” (P2)

The second interview question was “Are there any examples of AI that you have experienced or encountered in the field of ELT?” 6 of the 14 participants had no experience with AI. The others used it in their teaching and personal life for various purposes. The participants’ integration of AI into ELT is exemplified below.

P1 expresses how she adjusts the presentation of her educational content through AI:

“I get help to prepare a resource or to present something to the students. For example, yesterday I used it to prepare a slide. I gave the topic to AI and asked it to simplify it for A1 level eleven years old children. It successfully prepared the material. Of course, small adjustments were needed.” (P1)

P2 exemplifies how to use AI to improve the writing skills of students with dyslexia:

“We planned to use a speech recognition program to support dyslexic students who struggle with writing. As far as I remember, the name of the program was Dragon. However, we didn't see much success. Students quickly lost interest and had pronunciation problems with the system.” (P2)

P7 asks ChatGPT for daily language use:

“I see many resources. There are apps for lesson planning, organizing, and more, but I can't recall any specific names right now. I actually paid for ChatGPT and bought its premium version. You know, language constantly changes, right? The grammar and usage we learned 18 years ago are very different now. Often, I ask ChatGPT for help with modern and everyday life language usage.” (P7)

P9 gets help from ChatGPT about project ideas:

“For example, I usually use it to brainstorm project ideas. I ask ChatGPT specifically for suggestions on E-twinning or Erasmus project topics.” (P9)

P11 integrates AI into her lessons to enhance her students’ language skills:

“We carried out a debate on ‘Climate Change’ in the class. My students first prepared their drafts and then adapted their speeches using AI. Let me give you an example. A student acting as an activist modified and corrected his draft according to his role. Another student took on the role of the Minister of Climate Change. Naturally, a more formal tone was necessary, which he achieved using AI. With time, the children mastered its use, no longer needing my prompts. After a while, the students began to use it not merely as a search engine, but in a more innovative way. They used it in a manner that would enhance their English learning.” (P11)

To sum up, the integration of AI into ELT by the participants is demonstrated through various applications both in their educational settings and personal lives. For instance, some participants employed AI tools to deliver content and provide feedback to students, while others used these technologies for personal development.

Turkish EFL teachers' perspectives of AI regarding its advantages

For the third interview question, EFL teachers were asked about the advantages of using AI. Responses were coded and organized into themes by the researcher and a colleague. Table 4.9. below presents how frequently each advantage was mentioned and then the most noted ones were exemplified through quotations.

Table 4.9. Turkish EFL teachers' perspectives of AI regarding its advantages

Code	<i>f</i>	Participants
Improving language skills	6	P2, P4, P7, P8, P12, P13
Practical in terms of time	5	P2, P4, P5, P9, P10
Motivation	4	P4, P6, P7, P14
Fosters imagination and creativity	2	P1, P10
Interaction	2	P1, P14
Immediate Feedback	1	P3
Economic	1	P1
Improving self-confidence	1	P12

f= frequency

As seen in Table 4.9., the most frequent advantage of AI is to improve language skills (f=6). The participants reported various examples in terms of different language skills such as speaking, writing, and grammar. Some relevant quotations regarding language skills are provided below.

P2 exemplifies how AI can be used for speaking and classroom discussions:

“A colleague of mine in Kocaeli has integrated a project into his lessons using ChatGPT and Dall-E. For instance, during speaking lessons, his students create pictures using Dall-E by entering prompts, which are then displayed on the board. Then, the class analyzes the picture to discuss the story behind the picture and determine the prompts used to generate it” (P2)

The answers from P7, P8, and P13 highlight the effectiveness of AI in improving language skills such as grammar, pronunciation, writing, and speaking:

“It is effective in improving grammar and writing skills.” (P7)

“Several AI tools are particularly useful in pronunciation and writing. They provide personalized guidance to students who prefer to learn independently.” (P8)

“In my opinion, AI is especially useful for improving speaking and writing skills.” (P13)

Teachers often associate AI in ELT with practicality. They also highlight that it saves time by reducing some of their paperwork. Some of the quotations regarding these advantages are as follows:

“Its most distinct advantage is making practical decisions.” (P4)

P3 and P10 see AI as practically useful for providing feedback and detecting deficiencies:

“It could save time and provide immediate feedback, which is a student-focused evaluation” (P3)

“AI can identify language learning deficiencies faster than us” (P5)

P2 notes that AI is effective in providing different writing topics regarding students' levels:

“... Besides, such as when I find myself stuck in assigning writing topics, I emphasize my students' level considering their age group and I prompt ‘Give thirty-five different writing topics for me’. To be honest, accessing them within 10 seconds truly facilitates my work.” (P2)

In terms of increasing motivation, creativity, interaction, and self-confidence, EFL teachers regard AI as useful. The following quotations are relevant to these advantages.

P4 and P7 focus on the motivation to improve student engagement:

“I think AI makes language learning more enjoyable and effective by increasing students' motivation and attention...” (P4)

“It motivates students, enabling them to focus and have fun during their classes. As you know, today's generation is very familiar with computers and technology, and these tools grab their interest. It helps them enjoy their lessons. It increases the participation and makes lessons feel more like a fun game than a chore.” (P7)

P2 and P14 have identified AI as a key tool for enhancing interaction in the language learning process where EFL students often lack opportunities to practice:

“Two of my students mentioned that they felt like they were having an interaction with a real person. Of course, they had high language proficiency levels. However, I observed that their positive experience changed to frustration when their language proficiency decreased with complaints about not understanding...Here, I linked it to the student's proficiency.” (P2)

“AI provides interaction for language learning, especially in our country where few people speak foreign languages.” (P14)

P1 and P10 believe integrating AI can broaden students' imagination and perspective:

“Considering we live in a technology-driven era, I think we should teach students to use technological tools effectively. These skills should be part of the curriculum because they are helpful... I believe AI expands the student's imagination” (P1)

“This technology can broaden the perspective of both students and teachers.” (P10)

P1 claims that AI can be economic in language learning and P12 expresses that AI improves her students' self-confidence in speaking:

“I think AI will reduce many costs, like the expenses for private lessons and tutoring. I also recommend to my students these tools and suggest them to practice on them.” (P1)

“I am not sure about their success, but their confidence in speaking has definitely increased. I have been actively supporting their confidence too.” (P12)

As a result, the perspectives of EFL teachers on AI in language education highlight various advantages. Primarily, the participants mostly believed that it could improve language skills, especially writing, speaking, grammar, and pronunciation ($f=6$). Furthermore, they regarded it as efficient and practical in time-saving ($f=5$). The motivational aspect is also emphasized ($f=4$). Other advantages include fostering imagination and creativity ($f=2$), enhancing interaction ($f=2$), providing immediate feedback ($f=1$), economic benefits ($f=1$), and improving self-confidence ($f=1$). They also mentioned that they could adjust teaching materials according to students’ levels and brainstorm with AI before starting their educational projects.

Turkish EFL teachers' perspectives of AI regarding its disadvantages

While examining the use of AI, it is important to recognize both its advantages and the possible disadvantages. For the fourth interview question, EFL teachers were asked about the disadvantages of using AI. The coded responses are presented in Table 4.10 below.

Table 4.10. Turkish EFL teachers' perspectives of AI regarding its disadvantages

Code	<i>f</i>	Participants
Causing laziness and over-dependence	9	P1, P2, P4, P7, P9, P10, P12, P14
Lack of human interaction	3	P6, P10, P13
Inhibiting creativity	2	P2, P7, P10
Fear of job loss	2	P4, P8
Ethical concerns	2	P5, P11
Misinformation	1	P3
Inequality	1	P3

f= frequency

Among these disadvantages, the most frequently cited concern, highlighted by 9 teachers, is the potential for AI to cause laziness and over-dependence on technology. 3 of them mentioned the lack of human interaction, while some of the teachers reflected worries about creativity. Here are some relevant quotations on these concerns.

Several participants, specifically P1, P4, P10, P13, and P14, hold the view that AI might limit students' creativity by providing them with ready-made solutions:

“I haven't specifically thought about it for English, but generally it reduces people's thinking processes and encourages laziness because everything is easily accessible from one tool.” (P1)

“As with many technologies, this also makes people lazy and dependent on machines. When information is readily available and accessible, people do not make an effort. Naturally, as I said, it results in laziness. It seems like a disadvantage to me.” (P4)

“A disadvantage might be that it causes both students and teachers to become lazy, pushing them towards easier, ready solutions dependent on technology.” (P10)

“...It results in complete mental laziness, which is exactly what we experience.” (P13)

“... However, it can also cause laziness, providing an easy way out for uninterested students. Overly depending on it disconnects students from the class.” (P14)

P10 perceives AI as a potential barrier to social interaction, specifically referencing concerns raised during the coronavirus pandemic:

“Human interaction and eye contact are necessary for teaching. We experienced this during the pandemic as well... We need to engage in social interactions and environments including tea or coffee breaks. Without these elements, teaching and learning fail to reach their potential.” (P10)

Other disadvantages mentioned include fears of unemployment, ethical issues, misinformation, and inequality. Some of the teachers were also concerned that AI could do assignments instead of students.

P8 expresses concern that AI can replace her role as a teacher:

“Disadvantage. I'm worried about losing my job to AI. Actually, it is not so much fear, but I wonder, ‘What is my role if AI takes over? What will I do?’ ... If people weren't social and emotional beings, I believe AI could replace teachers in language teaching. This might be a disadvantage.” (P8)

P11 reports her ethical concerns regarding assignments:

“... Additionally, there is also an ethical dimension to consider. Let me clarify. For example, when assigning homework to students, I permit them to use ChatGPT. However, I emphasize the importance of citing appropriately. It is crucial for me to know which prompts they used. They must use it as a source... It is our significant responsibility to inform and instruct students on proper usage. I believe the assignments will change as they can easily be done with ChatGPT. In the future, assignments will require more analytical and creative skills, measuring synthesis capabilities.” (P11)

P3 also highlights ethical concerns, noting that it can be misused to create misleading videos and might not be equally accessible to all students.

“With AI-generated tools, extremely realistic videos about anyone can be produced, potentially leading to misinformation. I believe that these tools could be used against someone.” (P3)

“I think it could be used in the following years, but not everyone might have access to it. Only certain students might be able to participate.” (P3) (Inequality)

The fifth interview question was about the possibility of AI to replace human teachers. Most of the teachers ($f=10$) believe that AI, with its current abilities, cannot replace a teacher in the classroom because of lacking social interaction. They have expressed their opinions as follows:

P1, P2, P8, and P9 point out that AI is incapable of replacing teachers because it lacks essential human interaction and communication:

“Teaching requires interaction. That is, children must have social interaction with teachers, which AI cannot offer. It cannot succeed at being a teacher as teaching is more than just simply asking and answering questions.” (P1)

“... So, it may replace in European and Western countries because they have a more individualistic and personal approach... However, in societies like ours, we are more emotional, and when our communication with students becomes rigid and lacks emotion, the children feel distanced from us.” (P2)

“Even though I fear that AI might take our jobs in the future, I do not believe that it will completely replace the role of a teacher or the advantages of face-to-face communication.” (P8)

“I view teaching as a social interaction, and therefore, I firmly believe that nothing can take the place of a teacher.” (P10)

P7 and P11 note that the absence of school concept in AI prevents it from replacing teachers:

“AI cannot take over a classroom instead of a teacher but might help students individually. For example, if a student does not learn something at school, AI can serve as a supplementary tool at home. It can meet some learning needs, but it cannot replace the social roles of teachers in classes. We don't just teach math, Turkish, or English. The school concept has many different aspects such as social development and peer learning. We definitely contribute to these aspects.” (P7)

“AI cannot and will not be able to fulfill the socialization role of schools. For this reason, I do not believe it can replace.” (P11)

P13 and P14 argue that AI is inadequate for acting as a role model and empathizing with students:

“I do not think AI can replace teachers. Teaching is about understanding and empathizing with students and helping each child based on their needs. It also involves shaping them, preparing them for life, and helping them become social beings.” (P13)

“It cannot provide empathy, emotional support and understanding that students need. Teachers often influence students. AI simply cannot replicate that and be a role model for them.” (P14)

P6 indicates that AI cannot substitute teachers because it is not ready for unexpected educational situations and cannot distinguish regional accents in Türkiye:

“I do not think it is possible with the current technology. AI works mostly in a question-and-answer format and is not effective in dealing with unexpected educational situations or unfamiliar problems. It also lacks understanding of our country's diversity, which can cause

misunderstandings and misinformation. For a simple example, we all have different accents and regional words, which it will struggle to understand for a long time.” (P6)

On the other hand, some participants, namely P3, P5, P9, and P12, were skeptical but still considered it a potential possibility for the future:

“This is discussed in our English coursebook, and we are supposed to ask our students their opinions. I think it might be possible in about 100 years. Still, I believe the decision should be up to the individual choices.” (P3)

“Of course, it might be possible in the future, but not in the 15 years. Maybe in 45 or 50 years.” (P5)

“There might be a possibility. But I'm not saying it's 100% certain. After all, humans are emotional beings, and teaching should also address emotions.” (P9)

“They may not replace us emotionally, but is it possible for them to bring changes to the educational system? Probably, yes.” (P12)

In conclusion, when the disadvantages are evaluated, the participants mostly report that it can promote laziness and over-reliance on technology ($f=9$). Other notable concerns include the lack of human interaction ($f=3$), which is the social aspect of language learning, and the possibility that AI can inhibit creativity ($f=3$). On the other hand, fears related to job loss, ethical concerns, risks of misinformation, and inequality are less frequent.

CHAPTER 5

5. DISCUSSION, CONCLUSION AND SUGGESTIONS

This chapter discusses the findings of quantitative and qualitative data, referencing prior studies similar to the research topic. Furthermore, it provides suggestions for further studies.

5.1. Discussion on the Quantitative Data

The quantitative part of the study aimed to find out Turkish EFL teachers' AI awareness levels and how their AI awareness level varies according to some demographic factors. The first research question was 'What is the AI awareness level of Turkish EFL teachers?' For this question, the Artificial Intelligence Awareness Level Scale for Teachers developed by Ferikoğlu and Akgün (2022) was employed. It was a 5-point Likert-type scale with 4 sub-dimensions and 51 items. The participants could receive a minimum of 55 and a maximum of 255 points. Based on these scores, teachers' AI awareness was classified into five levels from very low to very high. The mean score was found 187.60. According to this, it is possible to say that Turkish EFL teachers have a high level of AI awareness. Luckin et al. (2022) suggest that teachers who are highly ready for AI are likely to use AI technologies more effectively in their teaching methods.

This finding is consistent with several different studies in the literature (Zhao et al., 2022; Nazaretsky, 2022; An et al., 2023; Wang et al., 2023; Kaplan-Rakowski et al., 2023). For instance, An et al. (2023) investigated the EFL teachers' intention to use AI through a scale. The findings revealed that all evaluated factors score over midpoint 3, meaning that EFL teachers had positive perspectives on AI, sufficient knowledge of it for teaching, and a strong intent to use AI in their classrooms. In a similar vein, Zhao et al. (2022) investigated 1013 Chinese teachers' levels of AI literacy. Their study revealed that the majority of teachers had moderate to high levels of AI literacy and a deep understanding of how to use AI in the classroom.

In their study, Nazaretsky et al. (2022) developed an instrument to measure teachers' trust in AI-based education. They observed that teachers viewed AI-based tools as useful for helping students' independent learning and assisting teachers. They also had high confidence levels ($M=3.8$) and believed they could use AI very effectively. Likewise, Wang et al. (2023) investigated 3164 Chinese teachers' AI readiness. The predominant group among the participants was EFL teachers, with 2236 members. The teachers were grouped into three

according to their AI readiness, showing 859 teachers at a high level (27.15%), 1301 at an intermediate level (41.12%), and 1004 at a low level (31.73%). Additionally, they reported that teachers with higher readiness for AI perceived it as less threatening, used it in more creative ways, and experienced more job satisfaction. Kaplan-Rakowski et al. (2023) investigated teachers' perspectives on generative AI using a Likert scale with 15 items. Their study indicated that teachers were quite positive about AI implementation in education as they agreed with most of the statements, 14 out of 15.

Yet, this finding of the present study conflicts with the study of Chounta et al. (2022). In their study, most Estonian teachers reported having either limited (47%) or moderate (35%) AI knowledge. Only 6% of them considered themselves well-informed about AI. Still, when tested on AI's fundamental concepts, 60% answered the questions correctly.

The second research question aimed at investigating how demographic variables such as gender, age, educational background, teaching experience, and grade level they teach affect their awareness of AI. As for the gender variable, the results of the t-test indicated that male teachers have significantly higher AI awareness, practical knowledge, and associative abilities compared to female teachers. For instance, Hopcan et al. (2023) examined the AI anxiety of teacher candidates and revealed that female students have higher anxiety levels compared to male students. Likewise, research by Nyaaba et al. (2024) showed that male pre-service teachers tend to use AI tools more often. This finding is also in line with Demiröz and Türker (2020) who found that male EFL teachers were more proficient with these technological tools in the classroom and had higher computer skills. Moreover, Mahdi and Al-Dera (2013) noted that female EFL teachers used information and communication technologies less frequently in their instruction compared to male teachers. In contrast, Wang et al. (2023) reported that Chinese teachers' AI readiness was similar across genders, showing no significant differences.

In the current study, the analysis of the independent sample t-test demonstrated a significant difference in *practical knowledge of AI* scores between educational level groups; specifically, teachers with master's or doctoral degrees had higher scores than those with bachelor's degrees, implying that they have a better understanding of how to apply AI. There might be several reasons for this particular finding. Master's and doctoral programs often include more advanced courses covering emerging technologies and these programs offer more opportunities for conferences and seminars focused on the latest developments. They encourage students to explore new educational methods, tools, and technologies by focusing on the latest

research and current issues including AI. They all contribute to the higher AI awareness among teachers with master's or doctoral degrees. Likewise, in the process of the development of the scale, Ferikoğlu and Akgün (2022) observed that as the educational level increased, AI awareness improved, indicating that education level enhances proficiency in following technological developments.

Moreover, a statistically significant difference in AI awareness scores was found among age groups. Teachers aged 20-30 scored higher than those aged 31-40, suggesting that younger Turkish EFL teachers have higher AI awareness and more effective AI integration skills due to several key factors. To start with, younger teachers are typically more acquainted with technology in general. They are more exposed to technological advancements from an early age, enhancing their readiness to adopt new educational tools. Besides, they often receive more recent and updated training as part of their educational curriculum. Lastly, younger teachers might tend to accept technological changes more readily. As a result, their familiarity with technology might enable them to integrate AI tools into their teaching strategies more effectively. This finding is also parallels with those of Demiröz and Türker (2020), Ferikoğlu and Akgün (2022), and Chan and Tsi (2023). They highlight that younger generations are more familiar with integrating digital tools and technology into their daily lives. Deniz (2022) also reports that young people experience lower AI anxiety.

Another finding showed that the *theoretical knowledge* score of teachers from other academic backgrounds was notably higher than those who graduated from English Language Teaching programs. This might be due to the different academic trainings. On the other hand, no statistical differences were observed based on the grade levels at which teachers work and their teaching experience as stated in Uygun (2024). Similarly, Demiröz and Türker (2020) state that the perceptions of EFL teachers towards technology-enhanced language learning do not differ regarding their years of experience. Mahdi and Al-Dera (2013) also found no significant differences in using technology in language teaching between teachers who have more than ten years of experience and those with less.

5.2. Discussion on the Qualitative Data

In the present study, semi-structured interviews were conducted with 14 Turkish EFL teachers to provide deeper insight into the quantitative results. These teachers mostly found AI in ELT useful for improving language skills, saving time, boosting motivation, fostering creativity, facilitating interaction, and providing immediate feedback. These viewpoints can be

based on various reasons. For instance, teachers can use AI to personalize lesson plans and materials according to their students' proficiency levels, learning styles, and progress. AI-powered automated grading and task-generation can save significant time for teachers. It can provide creative ideas in the educational process and enhance the accessibility of educational materials. Moreover, interactive AI applications make learning more dynamic and enjoyable, motivating students to actively participate in lessons. It can enable students to interact and collaborate regardless of their physical location.

These identified themes are quite similar to the studies of Adıgüzel et al. (2023), Özdemir-Çağatay (2023), Zulkarnain and Yunus (2023), Firdaus and Nawaz (2024). In their systematic review, Zulkarnain and Yunus (2023) revealed that teachers' perspectives of AI are mostly based on effectiveness, convenience, motivation, and challenges. In her study, Özdemir-Çağatay (2023) investigated the perspectives of 110 EFL teachers on the use of ChatGPT in their lessons. Participants highlighted saving time as the main advantage. They also found it helpful for offering immediate feedback, designing learning materials, and assisting in assessment and lesson planning. Moreover, Serbian teachers mostly believe that AI can save time in preparing teaching materials and activities (Kuleto et al., 2022).

The findings and identified themes revealed that the participants were aware of the positive effects of integrating AI into language instruction, consistent with the findings of Firdaus and Nawaz (2024). They examined the opinions of 110 teachers in Pakistan about using AI for teaching English. Most of the teachers reported that it can enhance students' language learning, classroom engagement and raise motivation, interest, and creativity. The majority of the participants stated that they incorporated it into their teaching in classrooms and approximately 84% of them agreed that it had a positive effect on students' participation. They also highlighted the increased availability of educational materials. Moreover, they emphasized that in Pakistan, where students have limited opportunities to use English, AI technology can be beneficial in enhancing their communication skills through interactions with chatbots.

In a similar way, Adıgüzel et al. (2023) stated that AI-based chatbots could be used to improve students' communication skills in language learning education. They also reported that AI could increase learning effectiveness, productivity, and student participation through personalized education, feedback, and support, which is in line with the findings of the present study.

In the present study, the identified themes related to its disadvantages were laziness and over-dependence, lack of human interaction, inhibiting creativity, fear of job loss, ethical issues, misinformation, and inequality. As an example, AI-driven tools that provide instant answers could discourage critical thinking and problem-solving skills. Over-reliance on AI may diminish collaboration among students and hinder their social skills. There is also a concern about job loss as AI technologies can automate certain aspects of teaching, such as grading and designing materials. From their perspective, it could deepen existing educational inequities as the availability of AI technologies varies significantly across different regions and socio-economic backgrounds.

While recognizing the positive effects of integrating AI into language instruction, participants in this study raised concerns related to its integration, which was found by several researchers (Chounta, 2022; Huertas-Abril and Palacios-Hidalgo, 2023; Baidoo-Anu and Ansah, 2023; Bekou et al., 2024; Cong-Lem et al., 2024). For instance, Chounta (2022) pointed out that Estonian teachers were worried about AI limiting human interaction, minimizing the importance of human traits, and lacking empathy. They also mentioned that human communication is irreplaceable, and students prefer human teachers over machines. According to the participants in the study of Bekou et al. (2024), an over-reliance on AI applications is a significant drawback, which might result in distraction from critical language learning practices such as face-to-face conversations, interactive tasks, and real-world language practice. In a similar study, Cong-Lem et al. (2024) reported that teachers conveyed negative opinions about using ChatGPT, highlighting that it could hinder actual learning and academic development and lead to an unhealthy reliance on AI tools. Baidoo-Anu and Ansah (2023) noted that AI, especially ChatGPT, cannot offer the same human interaction level as actual teachers do. In the study of Huertas-Abril and Palacios-Hidalgo (2023), it was highlighted that AI in education could hinder students' and teachers' ability to think creatively and critically, which is parallel to the findings of the present study.

The last interview question of the present study was “Can AI replace the teachers in the classroom?”. A significant number of teachers ($f=10$) believed that, with its current capabilities, AI is unable to substitute for a teacher in the classroom, mainly due to a lack of social interaction. That might be because the fundamental human aspects of teaching such as emotional support, adaptability, and cultural understanding are irreplaceable.

This finding is in agreement with some previous studies (Katemba, 2020; Çetin and Aktaş, 2021; Chounta, 2022, Sumakul et al., 2022, Chan and Tsi, 2023, and Dülger and Gümüşeli, 2023). For instance, Chan and Tsi (2023) revealed that teachers believe AI cannot replace the emotional and social learning that human teachers provide. They also argue that AI lacks the ability to build cultural values and traditional norms that humans acquire through experiences and diverse social interactions. Despite its ability to provide information, AI does not have the emotional intelligence, cultural sensitivity, or the ability to build trust, which are crucial for the personal development of students. Nonetheless, it can facilitate teachers' duties, but the teachers remain a central role in the language classrooms, guiding students towards success (Sumakul et al., 2022). Similarly, Çetin and Aktaş (2021) indicate that AI yet cannot take over the complete role of a teacher due to its lack of emotional and empathetic abilities and data security concerns. However, it could significantly improve education as an assistant. According to Fitria (2021), teachers have a unique natural intelligence. Despite being a product of the human mind, AI cannot equal natural intelligence but can be combined with it to give a better outcome. It can manage routine educational tasks including exams, attendance, and reporting. This enables teachers to focus on developing students' character and quality, which cannot be achieved by AI. Yolcu (2024) asserts that although AI is not predicted to replace teachers completely, eventually, those who successfully integrate it into their lessons will replace those who don't.

On the other hand, the present study conflicts with the study of Edwards and Cheok (2018) concerning the role of AI replacing human teachers in the future. They predict that autonomous robot teachers will revolutionize the educational sector, leading to the loss of teaching jobs. They indicate that it is challenging to maintain a satisfied team of teachers, but with AI, using robot teachers could be a less costly option, implying that they could substitute for human teachers. However, they expect that new roles will emerge to replace them.

5.3. Conclusion

As AI technology advances, it redefines the traditional roles and methodologies within ELT, offering new tools that can enhance teaching efficiency and learning outcomes. The main purpose of the present study was to examine the Turkish EFL teachers' AI awareness levels and their perspectives on AI integration into language teaching. For the purpose of the study, a mixed-method research design was implemented by using scale and semi-structured interviews. The collected data were used to systematically answer the research questions.

According to the findings, it can be pointed out that Turkish EFL teachers have a high level of awareness related to AI technologies ($M=187.60$). Besides, statistically significant differences were observed in their awareness levels based on gender and age variables. The independent sample t-test results also revealed that higher-educated teachers, with master's or doctoral degrees, had better AI *practical knowledge* scores than those with just bachelor's degrees, pointing to a more advanced understanding of how to apply AI effectively. Another finding indicated that teachers from various academic backgrounds scored significantly better in the *theoretical knowledge* sub-dimension than English Language Teaching graduates. Yet, the findings identified no difference in the AI awareness level of Turkish EFL teachers based on the grade levels at which they teach and their teaching experience.

The qualitative data identified 8 codes in terms of the advantages of integrating AI into ELT: improving language skills, saving time, increasing motivation, fostering creativity, facilitating interaction, providing immediate feedback, saving cost, and boosting self-confidence. On the other hand, 7 codes emerged concerning the disadvantages: promoting laziness and over-reliance, reducing human interaction, inhibiting creativity, fears of job loss, ethical concerns, misinformation, and increasing inequality. In addition to highlighting the positive effects of AI integration, the participants in this study stated possible challenges that might arise.

The findings highlighted that AI integration into language instruction should be designed meticulously. Therefore, there might be a need for guidelines and standards for the ethical use of AI. Furthermore, since teachers are key players in the integration of AI, their perceptions should be taken into account when designing educational policies.

In conclusion, most of the participants had high levels of AI awareness. Both the positive potentials and the negative risks of integrating AI into language teaching are noted impartially. It is indicated that AI currently cannot manage classrooms. Therefore, it is recommended that AI should assist rather than lead, with human teachers retaining control. For this reason, it is essential for teachers to advance their technological skills, gain a better understanding of AI and its advantages, and effectively incorporate it into their teaching for future developments. In this context, it can be suggested to offer in-service teacher training programs to enhance their AI awareness and skills.

5.4. Implications for Future Research

The current study has revealed significant insights into Turkish EFL teachers' awareness and perspectives on AI and its incorporation into language instruction. It also provides several recommendations for further research that could enrich the field. To start with, despite the large number of participants completed the scale, the current study does not include all EFL teachers in Türkiye. It might be replicated using a larger sample to verify the consistency of the findings. Additionally, investigating the readiness of teachers and students to integrate AI into their learning environments is essential. The same study might also be expanded to include pre-service EFL teachers to examine the differences between in-service and pre-service teachers. It is also necessary to conduct research to understand the perspectives of all educational stakeholders, including students, teachers, administrators, and parents. It is important to investigate how AI reshapes the roles and responsibilities within each of these groups. Further studies can include students to examine the effect of AI on language skills. The present study lacked students' perspectives. Their perspectives should be included to provide deeper insights.

In the light of the being new research area in ELT, longitudinal studies can be conducted to assess the long-term effects of AI on ELT outcomes. These studies can monitor changes over time and evaluate the sustainability and evolution of AI integration in ELT. Furthermore, it is possible to periodically assess changes in AI awareness levels that are linked to time and technological developments.

As the research on AI in ELT is still at an early stage, a thorough investigation into future challenges and practical solutions is necessary. By examining these issues closely, researchers and educators can gain a clearer insight into the barriers that could hinder the effective use of AI in ELT. Considering the concerns of participants, ethical issues, particularly concerning data privacy, bias in algorithms, and the potential for increased educational inequality, it can be recommended to create a guideline for teachers to benefit from AI effectively in their classroom instruction.

Another significant recommendation for further research would be to investigate the factors that promote or hinder EFL teachers' AI incorporation into their classrooms in detail. It could reveal the underlying causes and propose solutions to reduce barriers. Finally, directly observing teachers' in-class practices regarding AI implementations would lead to more accurate and reliable results.

GENİŞLETİLMİŞ TÜRKÇE ÖZET

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İNGİLİZCE ÖĞRETMENLERİNİN YAPAY ZEKANIN DİL ÖĞRETİMİNE DAHİL EDİLMESİNE İLİŞKİN FARKINDALIKLARI VE BAKIŞ AÇILARI

Seher ÜRETMEN

Yabancı dil eğitimde bilgi iletişim teknolojilerinin kullanılmasıyla, öğretim yöntemleri geleneksel yaklaşımlardan daha dinamik süreçlere dönüşmeye başlamıştır. Bu dönüşüm, eğitim yöntemlerini yeniden şekillendirerek öğretmenlerin yeni teknolojileri etkin bir şekilde kullanmasını zorunlu kılmaktadır. Bu alanda özellikle son dönemde öne çıkan teknolojik gelişmelerden biri yapay zekadır.

Alandaki çalışmalar göstermiştir ki yapay zeka dil öğrenimi sürecini kolay erişilebilir ve daha motive edici hale getirebilir. Aynı zamanda öğrencilerin eksik yönlerini belirleyerek onlara uygun öğrenme yöntemleri sunar ve böylece dil öğreniminde devamlılığı sağlar. Öğrenme ortamlarını görsel ve işitsel materyallerle destekleyerek zenginleştirir. Öğrencilerin dil becerilerini geliştirmeleri için daha fazla pratik imkanı sağlar. Bu bağlamda hızla etkisi artan yapay zekanın dil öğretimine dahil edilmesini anlamak için öğretmenlerin bu teknolojiye karşı algılarını ve tutumlarını araştırmak büyük önem taşımaktadır.

Bu amaç doğrultusunda bu çalışma Türkiye’deki İngilizce öğretmenlerinin yapay zeka entegrasyonuna ilişkin farkındalıklarını ve görüşlerini incelemek için aşağıdaki araştırma sorularının cevabını aramaktadır:

- 1) Türkiye’deki İngilizce öğretmenlerinin yapay zeka farkındalık düzeyi nedir?
- 2) Türkiye’deki İngilizce öğretmenlerinin yapay zeka farkındalık düzeyleri, onların cinsiyet, yaş, eğitim düzeyi, öğretmenlik tecrübesi, mezun olunan lisans programı türü ve görev yaptıkları kademeye göre farklılık gösteriyor mu?
- 3) Türkiye’deki İngilizce öğretmenleri yapay zekanın İngilizce öğretimine entegre edilmesine ilişkin ne düşünüyorlar?

Karma yöntem ile yönetilen bu çalışmada, nicel veri toplama aracı olarak Ferikoğlu ve Akgün (2022) tarafından geliştirilen ‘Öğretmenler için Yapay Zeka Farkındalık Düzeyi Ölçeği’

kullanılmıştır. Bu ölçek 51 madde ve pratik bilgi, inanç/tutum, ilişkilendirme yeteneği ve teorik bilgi olmak üzere dört alt boyuttan oluşmaktadır. Ölçeğin güvenirlik düzeyi Cronbach's Alpha ile değerlendirilmiş ve 0.986 değeri ile ölçeğin oldukça güvenilir olduğu tespit edilmiştir. Nicel veriler, Google Formlar kullanılarak oluşturulan çevrimiçi bir form aracılığıyla toplanmıştır. 448 katılımcıdan veri toplanmıştır. Ancak eksik cevaplar nedeniyle, 437 katılımcının verileri SPSS 27.0 paket programı kullanılarak analiz edilmiştir. Bu katılımcılar arasında kadın İngilizce öğretmenleri 339 kişi ile çoğunluğu oluştururken, erkek öğretmen sayısı 98'dir. Katılımcıların yaş dağılımı incelendiğinde, 31-40 yaş aralığı grubu örneklemin neredeyse yarısını oluşturmaktadır. Çalışma tecrübeleri incelendiğinde, en çok 6-10 yıl aralığında öğretmenler temsil edilmiştir. Eğitim düzeyleri bakımından, 332 öğretmen lisans, 101 öğretmen yüksek lisans derecesine sahiptir ve doktora derecesine sahip sadece 4 öğretmen bulunmaktadır. Mezuniyet olunan lisans programlarına göre ise, 336 öğretmen İngilizce Öğretmenliği, 86 öğretmen İngiliz Dili ve Edebiyatı ve 15 öğretmen ise çeşitli diğer bölümlerden mezun olmuştur. Katılımcıların büyük bir kısmı farklı eğitim kademelerinde görev yapmaktadır: 89 öğretmen ilkokulda, 205 öğretmen ortaokulda, 129 öğretmen lisede ve 14 öğretmen ise üniversiteler, özel dil kursları veya anaokulları gibi çeşitli eğitim kurumlarında çalışmaktadır. Verilerin normallik dağılımları incelendiğinde Kolmogorov-Smirnov testinde anlamlı bir sonuç bulunamamıştır. Ancak, ölçekler ve bunların alt boyutlarının çarpıklık ve basıklık değerleri -2 ile +2 arasında yer aldığı için, analizlerde parametrik testler kullanılabilir (George ve Mallery, 2011).

Bu verileri daha iyi anlamak amacıyla, 14 öğretmenle yarı yapılandırılmış görüşmeler yapılmış ve bu süreçte nitel veriler toplanmıştır. Görüşme soruları, konuyla ilgili literatürden yararlanılarak araştırmacı tarafından oluşturulmuş ve daha sonra uzman görüşü alınarak değerlendirilmiştir. Elde edilen ses kayıtları MAXQDA 24 programına aktarılarak içerik analizi yöntemiyle değerlendirilmiştir. Bu yöntem toplanan verileri derinlemesine analiz etmeyi ve bulguları anlamlandırmak için temalar ve kodlar belirlemeyi gerektirir (Büyüköztürk vd., 2020).

İlk araştırma sorusuna yanıt olarak yapılan analizde, öğretmenlerin ölçek üzerindeki cevaplarının aritmetik ortalaması incelenmiştir. Katılımcıların 55'ten 255'e kadar puan alabileceği 51 maddelik beş puanlık Likert tipi ölçekte, farkındalık düzeyleri çok düşük (55-95), düşük (95-135), orta (135-175), yüksek (175-215) ve çok yüksek (215-255) olarak gruplandırılmıştır. İstatistiksel analize göre, elde edilen 187.60 ortalama puan ile Türkiye'deki

İngilizce öğretmenlerinin yapay zeka konusunda yüksek bir farkındalığa sahip olduğu gözlemlenmiştir. Bağımsız örneklem t-testi sonuçlarına göre, öğretmenlerin yapay zeka farkındalık düzeyinde cinsiyete göre istatistiksel olarak anlamlı bir fark bulunmuştur ($p=0.007<0.05$). Erkek İngilizce öğretmenleri ($P=192.36$), yapay zeka farkındalığı düzeyinde kadın öğretmenlerden ($P=186.23$) önemli ölçüde daha yüksek puan almıştır. Ayrıca yaş grupları arasında yapılan Krushal Wallis-H testi sonuçlarına göre, 20-30 yaş grubundaki öğretmenlerin ($P=192.35$), 31-40 yaş grubundakilere ($P=185.44$) göre daha yüksek düzeyde yapay zeka farkındalığına sahip olduğu saptanmıştır. Buna göre, Türkiye'deki genç İngilizce öğretmenlerinin yapay zeka konusunda daha fazla bilinçli ve bu konuda daha etkili becerilere sahip oldukları söylenebilir. Mevcut araştırmada, eğitim düzeylerine göre yapılan bağımsız örneklem t-testi, AI konusunda pratik bilgi puanları arasında önemli bir fark olduğunu ortaya koymuştur. Yüksek lisans veya doktora derecesi olan öğretmenlerin ($P=63.91$), lisans derecesine sahip öğretmenlere kıyasla daha yüksek puanlar aldıkları belirlenmiş ($P=62.22$), bu da onların yapay zekayı uygulama konusunda daha yüksek bir anlayışa sahip olduklarını düşündürmektedir. Ayrıca farklı lisans mezuniyetlerine sahip öğretmenlerin ($P=42.87$), İngilizce Öğretmenliği bölümü mezunlarından ($P=39.70$) daha yüksek teorik bilgi puanlarına sahip olduğu tespit edilmiştir. Ancak öğretmenlerin görev yaptıkları kademe türü ve öğretim deneyim yıllarına göre aralarında anlamlı bir farklılık bulunmamıştır.

Nitel analiz sonuçları, yapay zekanın dil becerilerini artırma, zaman tasarrufu ve motivasyon artışı sağlama, yaratıcılığı teşvik etme, etkileşimi artırma, anında geri bildirim sağlama, maliyetleri düşürme ve özgüveni artırma gibi sekiz avantajını ortaya koymuştur. Diğer yandan, tembelliği ve yapay zekaya aşırı bağımlılığı destekleme, insanlar arası etkileşimi kısıtlama, yaratıcılığı olumsuz etkileme, iş kaybı korkuları, etik sorunlar, yanlış bilgi yayma ve eşitsizliği artırma gibi yedi dezavantajı da vurgulamıştır. Sonuç olarak, katılımcıların çoğunun yapay zekanın ve İngilizce öğretimindeki avantajları ve dezavantajlarının farkında olduğu söylenebilir. Buna göre, yapay zekanın eğitimi destekleyici bir araç olarak kullanılması önerilmektedir.

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APPENDICES

Appendix 1: Permission to Use “Teachers’ Artificial Intelligence Awareness” Scale

Sayın Deren Hocam,

Merhaba. Ben Necmettin Erbakan Üniversitesi İngiliz Dili Eğitimi Yüksek Lisans öğrencisi Seher Üretmen. Yüksek lisans tez çalışmamda İngilizce öğretmenlerinin yapay zeka kullanımına yönelik tutum ve davranışlarını değerlendirmek istiyorum. Literatür taraması yaparken “Öğretmenler İçin Yapay Zeka Farkındalık Düzeyi Ölçeği” isimli tezinizi görünce çok heyecanlandım çünkü çok değerli ve özgün bir çalışma olduğunu düşünüyorum. Aynı zamanda benim çalışmam için de çok uygun olacağına ve alanıma da önemli bir katkı sağlayacağına inanıyorum. Eğer ölçeğinizi tezimde veri toplama aracı olarak kullanmama izin verirseniz ve varsa alt boyutlarını benimle paylaşabilirseniz çok müteşekkirim olurum.

Tekrar teşekkür ederim
Saygılarımla,

Seher Üretmen

Menekşe Deren

8 Ağustos Sal 14:16



Alıcı: ben ▾

Seher Hocam Merhaba;

<https://toad.halileksi.net/> Adresinden ölçeğin tam metnine ulaşabilir ve orada gösterilen şekilde referans göstermek kaydıyla ölçeği kullanabilirsiniz. Teşekkür ederim. Başarılar dilerim.

Deren Ferikoğlu

Sayın Ergün Hocam,

Merhaba. Ben Necmettin Erbakan Üniversitesi İngiliz Dili Eğitimi Yüksek Lisans öğrencisi Seher Üretmen. Yüksek lisans tez çalışmamda İngilizce öğretmenlerinin yapay zeka kullanımına yönelik tutum ve davranışlarını değerlendirmek istiyorum. Literatür taraması yaparken Derek Ferikoğlu ile birlikte geliştirdiğiniz ve 2022 yılında Malaysian Online Journal of Educational Technology dergisinde yayımlanan Öğretmenler İçin Yapay Zeka Farkındalık Düzeyi Ölçeğininin çalışmam için çok uygun olduğunu gördüm ve alanıma önemli bir katkı sağlayacağını düşünüyorum.. Eğer ölçeği tezimde veri toplama aracı olarak kullanmama izin verirseniz ve varsa alt boyutlarını benimle paylaşabilirseniz çok müteşekkirim olurum.

Tekrar teşekkür ederim
Saygılarımla,

Seher Üretmen

Ergun AKGUN

23 Ağu 2023 21:58 (8 gün önce)



Seher Merhaba:

Kusura bakma mailin spama düşmüş. Yarın tezi sana göndereceğim

Appendix 2: Artificial Intelligence Awareness Level Scale for Teachers (Ferikoğlu and Akgün, 2022)

	Lütfen her cümleye ne kadar katıldığınızı sorunun yanındaki seçenekleri işaretleyerek belirtiniz.	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
1	Makine öğrenimi sayesinde kendi kendine öğrenen akıllı uygulamaları geliştirmek oldukça kolaylaşmıştır	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Derin sinir ağları yazılım dünyasında beynin ve sinir sisteminin işlevini taklit etmek için geliştirilmiştir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Makinelere ve programlara, yüksek miktarda veri kullanarak makine öğrenimi veya derin sinir ağları yöntemleriyle anlama ve problem çözüme yetenekleri verilir	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Yapay zeka teknolojileri, veriyi işleyerek bundan anlamlar ve öneriler çıkarır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Makine öğrenimi bilgisayar destekli istatistikle alakalıdır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Dünyada yaygın olarak kullanılan yapay zekaya dayalı kişisel asistan uygulamalarını tanıyorum.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Veri, yüzyılımızın yeni hammaddesidir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Makine öğrenimiyle yazılan bir programın algoritması zamanla değişir ve gelişir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Bulut teknolojileri veri depolamada kullanılır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Makine öğrenimi, yeni verileri eskilerle karşılaştırıp aralarındaki benzerlik ve farklılıkları (örüntüleri) bulabilen sistemlerdir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11	Yapay zeka sistemler otonom öğrenme gerçekleştirebilir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Yapay zeka sistemleri öğrencilerin kişisel ihtiyaçlarına göre özel olarak planlanmış interaktif eğitim deneyimleri sunmakta kullanılır	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	Yapay zekada başarılı olmak için büyük veri setine ihtiyaç vardır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Yapay zeka sistemlerinin geliştirilmesinde, yine yapay zeka sistemleri kullanılır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	Özgür irade insanlarda olup makinelerde olmayan bir şeydir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	Yapay zekalı akıllı ürünlerin kullanımı, veri toplamayı da beraberinde getirir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	Yapay zeka sayesinde öğrencilerin kişisel ihtiyaçlarını daha iyi öğrenebiliriz.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	Yapay zeka teknolojileri sayesinde, en iyi kalitede eğitimi tüm dünyadaki çocuklara kişiselleştirilmiş bir biçimde verebilmek mümkündür.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	Yapay zeka sistemleri, eğitimde hata yapma riskini azaltır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	Yapay zeka sistemleri öğrencilerin kişiliklerini, güçlü ve güçsüz oldukları alanları iyi saptar.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21	Veriye dayalı karar verme yeteneği sayesinde robot öğretmenler eğitimde etkin rol alır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	Yapay zeka sistemleriyle, özel ders programları oluşturulabilecek ve çocuklar başarılı bireylere dönüştürülebilecektir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

23	Yapay zeka teknolojileri, öğrenmeyi ve kariyerler arasında geçişliliği kolaylaştıracaktır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24	Yapay zeka inovasyonu tetikler.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25	Gelişen yapay zeka sistemleriyle birlikte, öğretmenin rolü çocuklara sadece bilgi vermek olmayacaktır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26	Yapay zeka sayesinde kas gücüne, matematiksel hesaplamalara ve veri analizine dayalı işler robotlara bırakılacaktır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27	Derslerde yapay zeka kullanımıyla, sınıf içi problemler çözülür	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28	Endüstri 4.0 senaryolarının hepsinin genelinde yapay zeka teknolojileri vardır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29	Yapay zeka gelişimi sayesinde, sanal kişisel asistanlar yaygınlaşacak ve günlük deneyimlerimizi zenginleştirecektir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30	Derslerde yapay zeka kullanmak verimliliği artırır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31	Derin öğrenmeyle, makine öğrenme arasındaki farkı bilirim.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32	Bazı yapay zeka sistemleri, duygusal reaksiyon ölçer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33	Genel kültür düzeyinde yapay zekanın ne olduğunu anlatırım	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34	Yapay zeka insan hayatını kurtarır	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35	Doğal dil işleme kütüphanelerine yapılan yatırım, yapay zekaya katkıda bulunur.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36	Yapay zekanın varlığı, yeni duruma uyumlanabilme zorunluluğu ile mümkündür.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37	Eğitimde yapay zeka ile ilgili gelişmeleri takip ederim.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

38	Doğal dil işleme yapay zekanın gelişimi için temel bileşenlerdendir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39	Yapay zeka sistemleri için "algoritmik sorumluluk" hukuki hale getirilmelidir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40	Yapay zeka eğitimi bireyselleştirir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41	Yapay zeka; doğal sistemlerin yapabildiği her bilişsel etkinliği yapay sistemlerle daha yüksek başarımlı düzeylerde nasıl yaptırabileceğimizi inceleyen bilim dalıdır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42	Yapay zeka çalışmaları "Makineler düşünebilir mi?" sorusunu ele alarak başlamıştır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43	Yapay zeka tanımını bilirim.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44	Yapay zeka, kullanıldığı alanların bazılarında gelmiş geçmiş en zeki insandan daha üstün bir performans sergilerken bazı alanlarda ise erişkin bir bireyin zekasına yetişememektedir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45	Yapay öğrenme yönteminin en büyük ihtiyacı, veridir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46	Yapay zeka insanlık tarihinin en büyük mühendislik projesidir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47	Yapay zeka sistemleri, savunma sanayisinde Soğuk Savaş sırasında kullanılmıştır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48	Yapay zeka sebebiyle birçok meslek yok olacaktır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49	Doğal dilde iletişim kurabilen yapay zeka sistemlerinin geliştirilmesi, yapay zeka araştırmacılarının en çok uğraştığı alanlardan biridir.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50	Günümüzde sınıflandırma içeren birçok karar, yapay öğrenme ürünü algoritmalara bırakılmaktadır	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51	İnsanın nasıl davranacağını, önceden tahmin eden yapay zeka sistemleri vardır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix 3: Ministry of National Education Approval



T.C.
MİLLÎ EĞİTİM BAKANLIĞI
Strateji Geliştirme Başkanlığı



Sayı : E-49614598-605.01-95435631
Konu : Araştırma Uygulama İzni

30.01.2024

DAĞITIM YERLERİNE

- İlgi : a) Yenilik ve Eğitim Teknolojileri Genel Müdürlüğünün 21/01/2020 tarihli ve 81576613-10.06.02-E.1563890 sayılı yazısı (Genelge No:2020/2).
b) Necmettin Erbakan Üniversitesi Rektörlüğünün 19/12/2023 tarihli ve E-48178250-300-4413 88 sayılı yazısı.

Necmettin Erbakan Üniversitesi Eğitim Bilimleri Enstitüsü Yabancı Diller Eğitimi Anabilim Dalı Yüksek Lisans Programı öğrencisi Seher ÜRETMEN'in "Turkish EFL Teachers' Awareness and Perspectives on Artificial Intelligence Incorporation into Language Instruction (İngilizce Öğretmenlerinin Yapay Zekânın Dil Öğretimine Dahil Edilmesine İlişkin Farkındalıkları ve Bakış Açıları)" konulu çalışmasına veri sağlamak amacıyla görüşme ve anket yapma izin talebine ilişkin İlgili (b) yazı ve ekleri incelenmiştir.

Bakanlığımıza bağlı resmi/özel okul ve kurumlarda öğretmenlerin katılımıyla yapılması planlanan uygulamanın denetimi il/ilçe millî eğitim müdürlükleri ve okul/kurum idaresinde olmak üzere, kurum faaliyetlerini aksatmadan, gönüllülük esasına göre; onaylı bir örneği Bakanlığımızda muhafaza edilen ve uygulama sırasında da mühürlü ve imzalı örnekten çoğaltılan, veri toplama araçlarının <http://meb.ai/UeHNOAV> adresinden online olarak uygulanmasına İlgili (a) Genelge doğrultusunda izin verilmiştir.

Bilgilerinizi rica ederim.

Ercan TÜRK
Bakan a.
Strateji Geliştirme Başkanı

Ek:

- 1-Onaylı Veri Toplama Araçları (22 Sayfa)
2-AYSE Başvurusu (2 Sayfa)

Dağıtım:

Gereği:

B Planı

Bilgi:

Necmettin Erbakan Üniversitesi Rektörlüğüne

Bu belge güvenli elektronik imza ile kullanılmaktadır.

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Belge Doğrulama Adresi : <https://www.meb.gov.tr/meh-ebys>

Tel/Fax No : 0 (312) 403 56 17

Bilgi için: Şule BAKIR

E-Posta: meb@meb.gov.tr

Ünvan : Millî Eğitim Uzmanı

Kayıt Adresi : meb.gov.tr

İnternet Adresi: www.meb.gov.tr

Faks:3124106401

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