



**A STUDY TO EXPLORE EFL TEACHERS' INVOLVEMENT
IN 21ST CENTURY SKILLS AND ARTIFICIAL
INTELLIGENCE**

MA THESIS

LATİF KARAKILINÇ

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APPROVAL

Latif Karakılınç tarafından Dr. Öğretim Üyesi Dönercan Dönük danışmanlığında hazırlanan “A Study to Explore EFL Teachers’ Involvement in 21st Century Skills and Artificial Intelligence” başlıklı çalışma aşağıda imzaları bulunan jüri üyeleri tarafından 27/06/2025 tarihinde yapılan Tez Savunma Sınavı sonucunda oybirliği ile Yüksek Lisans olarak kabul edilmiştir.

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Bu tezde kullanılan özgün bilgiler, şekil, tablo ve fotoğraflardan kaynak göstermeden alıntı yapmak 5846 sayılı Fikir ve Sanat Eserleri Kanunu hükümlerine tabidir.

ÖZET

İNGİLİZCE ÖĞRETMENLERİNİN 21. YÜZYIL BECERİLERİ VE YAPAY ZEKA SÜREÇLERİNE KATILIMINI ARAŞTIRMAYA YÖNELİK BİR ÇALIŞMA

21. yüzyılda eğitimde, özellikle de İngilizce öğretim alanında sürekli olarak gelişmeler olmaktadır. Eleştirel düşünme, işbirliği, iletişim, yaratıcılık ve yenilikçilik, öz yönlendirme ve teknolojiyi öğrenme aracı olarak kullanma gibi bazı beceriler öne çıkmaktadır. Bu beceriler, öğrencilere modern dünyadaki zorluklarla başa çıkmalarına yardımcı oldukları için önemlidir. Benzer şekilde, yapay zeka da eğitimin önemli bir parçası haline gelmiştir. Yapay zeka sayesinde hem öğretim için hem de öğretmenlerin mesleki gelişimi için yeni yöntemler ortaya çıkmıştır. Bu çalışmanın amacı üç bölümde tanımlanabilir: (1) Öğretmenlerin, öğrencilerin 21. yüzyıl becerilerini geliştirme konusunda uygulamalarını ve algılarını incelemek; (2) Dil öğretimi derslerinde bu becerileri geliştirmek amacıyla yapay zekanın nasıl kullanılacağına dair öğretmenlerin görüşlerini araştırmak; (3) Andragoji ilkeleri temel alınarak, öğretmenlerin mesleki gelişimlerinde yapay zekanın rolünü nasıl algıladıklarını ortaya çıkarmak. Nitel ve nicel yöntemlerinin birlikte kullanımı çalışmaya kapsamlı sonuçlar sağlayacağı için karma yöntemli vaka çalışması tercih edilmiştir. Aynı zamanda, Türkiye'nin Mersin ilinde çalışan 50 İngilizce öğretmeni çalışmanın katılımcılarını oluşturmaktadır. 21. Yüzyıl Becerilerinin Öğretimi ve Öğrenimi Anketi'nin yanı sıra katılımcılara açık uçlu sorular verilmiştir. Ek olarak, 6 katılımcı ile odak grup görüşmesi gerçekleştirilmiştir. Nicel veriler SPSS programıyla analiz edilirken, nitel veriler tematik içerik analizi ile analiz edilmiştir. Sonuçlar, öğretmenlerin 21. yüzyıl becerilerini öğretebildiklerini kabul etmelerine karşın, eleştirel düşünme ve öz yönelim gibi bazı becerileri ihmal ettiklerini ortaya çıkarmıştır. Ayrıca öğretmenlerin yapay zekayı sınıflarında kullanımına istekli oldukları görülmektedir. Nitel sonuçlara göre, öğretmenler yapay zekanın bireyselleştirilmiş öğrenmeyi destekleyebileceği, kişiye özel öğrenme materyalleri sunabileceği ve her yerde-her zaman öğrenme ortamı sağlayabileceği konusunda ortak fikre sahiptirler. Ancak, öğretmenlerin yeterli eğitimle desteklenmesi de vurgulanmaktadır. Ek olarak yapay zeka araçları faydalı görülmektedir; çünkü bu araçlar kişisel gelişimi, esnek öğrenmeyi ve yaşam boyu öğrenmeyi desteklemektedir. Bunlar yetişkin eğitim ilkeleriyle örtüşmektedir. Ancak, mesleki gelişimlerini başarmak için öğretmenler uygun eğitim programlarıyla desteklenmelidir. Özetle, bu çalışma, İngilizce öğretimi alanına çeşitli katkılar sunmaktadır, çünkü 21. Yüzyıl becerilerini, yapay zekayı ve İngilizce öğretmenlerinin mesleki gelişimlerini birlikte ele almıştır. Özellikle öğretmenlerin bu unsurları kullanmaya teşvik etmek için hizmet içi öğretmen eğitime dikkat çekilmektedir. Ayrıca, bu çalışma, müfredat hazırlayıcıları, paydaşlar ve öğretmen yetiştiricileri için bakış açısı sunmaktadır.

Anahtar Kelimeler: 21. Yüzyıl Becerileri, Yapay Zeka, Yetişkin Eğitimi, İngilizce Öğretimi

ABSTRACT

A STUDY TO EXPLORE EFL TEACHERS' INVOLVEMENT IN 21ST CENTURY SKILLS AND ARTIFICIAL INTELLIGENCE

In the 21st century, education has been constantly evolving, especially in the field of English Language Teaching. There are some significant skills that stand out such as critical thinking, collaboration, communication, creativity and innovation, self-direction and using technology as a tool for learning. These skills are vital as they help students to overcome the challenges in the modern world. Likewise, Artificial Intelligence (AI) has become a vital part of education. Thanks to AI, new methods to teach and to support teachers' professional development have emerged. The aim of this study can be defined under three sections: (1) to investigate teachers' practice and perception to foster students' 21st century skills; (2) to explore their views on how to use AI to improve the skill in language teaching classrooms; (3) to reveal how teachers perceive the role of AI for their professional development, based on the principles of andragogy. In order to accomplish the aim of the study, a mixed-method case study design was adopted on the grounds that the employment of qualitative and quantitative analysis can provide comprehensive results for the study. Also, 50 English teachers who work in Mersin, Türkiye were the participants of the study. In addition to utilizing 21st Century Skills Teaching and Learning Survey, the participants were given open-ended questions. Also, the focus-group interview was conducted with 6 participants. While SPSS was used to analyse the quantitative data, thematic content analysis was utilized for the qualitative ones. The results reveal that whereas teachers agree they are able to teach 21st century skills, they can ignore some skills such as critical thinking and self-direction. In addition, teachers are willing to utilize AI tools in their lessons. On the basis of qualitative results, teachers agree that AI can support personalized learning by providing customized learning materials, and opportunities to learn anywhere and anytime. However, teachers need to be supported with sufficient training. Additionally, teachers agree that AI tools can support them as it provides personal growth, flexible learning conditions and lifelong education. These are compatible with the principles of andragogy. Yet, teachers should be encouraged with suitable training to improve professional developments. This study has various contributions to ELT field, as it combined 21st century skills, AI and professional development of English teachers. In-service teacher education is highlighted to motivate teachers to utilize these components. Also, this study provides an insight for the curriculum preparation, stakeholders, and teacher trainers.

Keywords: 21st century skills, Artificial Intelligence, Andragogy, ELT

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ABBREVIATIONS

AI: Artificial Intelligence

CLT: Communicative Language Teaching

EFL: English as a Foreign Language

ELT: English Language Teaching

P: Participant

F-P: Focus-Group Participant



CHAPTER 1

INTRODUCTION

In the introduction part, initially, the statement of the problem is explained. Then, it continues with the purpose and significance of the study, followed by the research questions. After that, assumptions of the study are stated; lastly, the limitation of the study is presented.

1.1. Statement of the Problem

“The only thing constant is change itself.”

As mentioned in the proverb, “change” in the life circle is inevitable, which also has appeared in language teaching settings. The on-going changes in language classrooms have been seen obviously for a few decades. In the first half of 20th century, traditional methods such as Grammar-Translation Method and Direct Method were prevalent in practice; however, with the advances on technology, education fields and the change of the perception towards learners’ psychology, new approaches have been highlighted. Although there may be conventional solutions for any kind of language problems, a systematically more appropriate approach should be implemented in a particular context (Cook, 2003). Regardless of their being based on the changing socio-political and economic context, the aim of all approaches is to promote the communication in a real life situation and produce better outcomes in the target language (Cummins & Davison, 2007). With the advent of communication and information technology, the nature of ELT field has paved into new paths, ranging from structural, situational and functional to communicative, notional and task based approaches (McGovern, 1995). Besides, Salih and Holi (2018) support that as well as technological developments, the role of English, which is crucial for many areas such as business, education and information technology has indispensably forced language teachers to come up with new ways and approaches to teach English more effectively.

With the changing of language teaching approaches on the ELT field, language teachers’ role has evolved from that of a strict authority to that of a guide, a facilitator, an orchestra conductor or a moderator (Richards & Rogers, 2014). English Language Teachers prove an excellent guide for forming their students' future by having various roles, such as learners, facilitators, assessors, managers and evaluators (Archana & Rani, 2017). The aim of language teachers is to provide appropriate conditions for language learners to attain success. To reach their aim, English language teachers do not just deal with language teaching but with the development of learners in a holistic way, which proves that language teachers could have

different roles in or beyond the language classrooms (Tiangco, 2020). All these roles are equally significant in order to boost language teachers' teaching skills and to help their students to learn or acquire the target language skills. In addition to teaching skills, the most prominent skills expected from language teachers to have are 21st century skills and the knowledge of Artificial Intelligence (AI), which can be seen as one of the most valuable aspects of technological developments in the 21st century. Without ignoring their conditions and expectations, language teachers should have technological skills and take part in researches on current approaches in order to catch up with the new ways of language teaching settings (Godwin-Johns, 2015). Moreover, what is expected from the language teachers of 21st century is that they should prepare their students for successes in learning, life and work (Handayani, 2017). In order to update their pedagogical knowledge, language teachers should be always willing to learn; in other words, learning should be an inevitable part of their practice.

As mentioned above, 21st century skills are emphasized in the modern world. In the constantly changing world, the new ways of adapting to various branches of life have become essential. The most prominent ones of these adaptations is the involvement in 21st century skills such as critical thinking, collaboration, communication, creativity and innovation, self-direction, and using technology as a tool for learning. It is a fact that not only students but also teachers should have these skills so that they can help their students adapt to the 21st century. Bouzid (2016) supports that with the advances around the world, the new challenges have occurred for the traditional teaching and learning which have forced students and teachers to acquire the 21st century skills. As long as teachers possess these skills, they can guide their students to acquire them. Furthermore, Bedir (2019) asserts that acquiring these essential skills to learn and maintain learning is a crucial part for 21st century education. In this context, language teachers should bring these skills into their language classrooms and present these skills as a part of their teaching activities. In a similar vein, Sahin and Han (2020) state that in order to adjust to new educational technologies, 21st century skills have been placed as an indispensable component for teaching and learning.

Another significant skill that language teachers should have is the knowledge of the way-technology should be used in language classrooms, particularly the use of Artificial Intelligence in the current technology era, which is an indispensable part of language teaching. As a result, language teachers are to be in favour of integrating technology into their language classrooms. The importance of technology has been so great that it is a very essential component of education (Taopan et al., 2020). Furthermore, the abundance of

internet resources has been quite prevalent in the current digital world; therefore, the will to fetch technological facilities into EFL teaching is greater than ever (Liu et al, 2014). In the field of ELT, there is a lack of an approach on the mode of integrating technology into language classrooms. As a consequence, the framework of Technological Pedagogical and Content Knowledge (TPACK) has gained importance for the implementation of technology in language classrooms (Taopan et al., 2020). In the light of these explanations, Koehler et al. (2013) define that the crucial components of teachers' knowledge, which are content, pedagogy and technology, have interactions: PCK (pedagogical content knowledge), TCK (technological content knowledge), TPK (technological pedagogical knowledge) and TPACK (technology, pedagogy, and content knowledge). With the help of TPACK, teachers could have more knowledge and awareness of the way for benefitting from technological developments.

As mentioned above, the use of communication technology, which is also a vital skill of 21st century skills in EFL classrooms has become a somehow obligatory tool for teaching English as a result of current developments in technology and ELT field. What is dominant in the technological field nowadays is the use of Artificial Intelligence in every aspect of life, including language teaching. Although there are some attempts to define AI, the elaboration of intelligence does not allow researchers to agree on a common definition of AI under the current conditions (Wang, 2019). However, Ninness and Ninness (2020, p. 100) scientifically describe AI as “learning algorithm used to approximate some form of intelligence operating within computing machines”. On the other hand, Gil de Zuniga et al. (2023, p. 4) emphasize AI for “the tangible real-world capability of non-human machines or artificial entities to perform task, solve, communicate, interact, and act logically as it occurs with biological humans”. More abstractly and informally, Dobrev (2004) explains that AI will be a computer system that is capable of dealing with any situation as well as a person. On the other hand, Kok et al. (2009, p. 271) have claimed a distinct view by categorizing AI: “Systems that think like humans, systems that act like humans, systems that think rationally and systems that act rationally.”

With the prevalence of Artificial Intelligence in every part of life, it has also become essential to adjust it to EFL classrooms. The benefits of AI have been so obvious that learning has been easier and individual attempts to improve English with the help of computer and mobile technologies have been standing out (Ghafar, 2023). Moreover, in order to promote students' fruitfulness in language classrooms, artificial intelligence is one of the major preferences of EFL teachers, and AI is also an effective way of motivating students for

language learning (Firdaus & Nawaz, 2024). In the same vein, Sharma et al. (2024) support the view by stating that AI is an influential innovation for language learning with the facilities it offers for language learners, such as instructing personally, providing extensive and efficient experiences and allowing practical access to education. Furthermore, the progress of digital platforms and AI provides opportunities for language learners to foster their language skills and their personalized learning (Fitria, 2021). These advantages of AI for EFL teaching are undeniable; however, there are some drawbacks for language classrooms: Although AI tools are utilized to boost language skills and give chances for EFL teachers to fetch new ways of teaching into language classrooms, there are some difficulties which are related to the availability of technology, the capacity of AI, learners' fears for AI and biases towards AI (Radhika, 2024).

In conclusion, teachers and learners alike are at a transitory period to adjust their background to the new systems of this era, which requires the improvement of the self on educational platforms.

1.2. The Purpose and Significance of the Study

The changing circumstances in the world of education force EFL teachers to adapt themselves to the recent developments in both educational and technological fields. Nowadays teachers are expected to acquire new skills in order to assist their students to go through the same experience. In this sense, the aim of the current study is comprised of two major aims: The first aim is to investigate how EFL teachers use 21st century skills and how they perceive their practices as for leading their students to acquire these skills in their classrooms. The other aim is to find out how EFL teachers utilize Artificial Intelligence in order to foster students' 21st century skills in language classrooms and to enhance their professional development. As a combination of both research parts, the study aims to explore how EFL teachers feel about the employment of AI within the framework of 21st century skills and andragogy; to be more specific, professional development of their own selves.

Teachers play a vital role in the development of societies. With the changing world, they are supposed to find new ways to improve their students' 21st century skills and the use of Artificial Intelligence as the modern worlds' recent skills which people should adopt. The research on 21st century skills and AI has been studied separately before. However, this study, which is theoretically based on andragogy, aims to investigate the relationship of 21st century skills and AI from the same point of view.

1.3. Research Questions

1. What are high school EFL teachers' practices and perceptions of their ability to lead students to acquire 21st century skills?
2. How do high school EFL teachers view Artificial Intelligence and its use in language classroom to foster students' 21st century skills?
3. Based on the components of Andragogy, how do high school EFL teachers improve their professional development with the help of Artificial Intelligence?

1.4. Assumptions

In this study, it is assumed that the participants answer the survey, open-ended questions, and interview questions sincerely and in a correct way.

1.5. Limitations

This study has some limitations. 50 English teachers were involved as participants of the study. Also, they are limited to the teachers who work in Mersin, Türkiye. Besides, as the data were collected from teachers' own responses, there may be some bias such as preferring to give acceptable answers, and they may not be aware of the aim of their activities. In addition, this study cannot be generalized for all English teachers because of the nature of case study research design. Instead, this study investigates the topic deeply in selected circumstances. On the other hand, the choice of employing both qualitative and quantitative methods helps the study to be more reliable despite all limitations that are mentioned.

CHAPTER 2

THEORETICAL BACKGROUND OF THE STUDY AND REVIEW OF LITERATURE

2.1. Theoretical Background of the Study

The developments of Artificial Intelligence and the emergence of 21st century skills have changed EFL teachers' roles in language classrooms. Therefore, teachers are expected to adopt some new roles in order to help their students to improve their skills in language classrooms. As a result, teachers are to be open to pursue recent developments and ready to improve their skills and knowledge. For this purpose, life-long education is crucial for EFL teachers' in-service education. As a different field from pedagogy, the education of youths and children, andragogy focuses on adult education. Because andragogy mainly invests on human lifelong learning, the methods and ways with which adults acquire the educational outcomes have a new view for adult education (Krajnc, 1989). According to the theory of Knowles et al. (2013) on Andragogy, there are four key aspects of adult learners that distinguish them from children in pedagogy:

1. Adults' transition from being dependent learners to becoming more self-directed individuals,
2. The development of experiences, which serves as a key resource for learning,
3. Their readiness to learn,
4. The perspective on time shifts from delaying the implementation of knowledge to applying it immediately, which results in subject-centred to problem-centred.

With the explanations aforementioned, this study is based on the framework of andragogy. For the purpose of professional development, EFL teachers should adjust to changes of the new world. In order to adapt themselves to these changes, in-service and lifelong education programs play key roles, which take their roots in the principles of andragogy.

2.2. Review of Literature

In this part of the study, a literature review on andragogy, 21st century skills and Artificial Intelligence will be presented. The skills of communication, creativity and

innovation, self-direction and using technology as a tool for learning will be highlighted. Furthermore, the related studies on 21st century skills and AI will be presented.

2.2.1. Andragogy

As mentioned in the theoretical background of the study, andragogy is a term to define ways and methods of how adults learn. Knowles (1980, p.43) defines andragogy as “the art and science of helping adults learn, in contrast to pedagogy as the art and science of teaching children”. Besides, as a result of shifts in the educational field, adult learners require to change their learning styles from being passive learners to more complicated, active learners. In other words, adult learners acquire their knowledge on their own, value meaningfulness of what they learn and practise what they learn in the real life situations (Chan, 2010). According to Knowles et al. (2005, p.3), there are six principles of andragogy: “(1) learner’s need to know, (2) self-concept of the learner, (3) prior experience of the learner, (4) readiness to learn, (5) orientation to learning, and (6) motivation to learn.”

Related Studies

There are various studies related to the implementation of the principles of andragogy and the impact of AI on professional development. In a study including the principles of andragogy, Akın (2010) investigated the principles of andragogy with the aim of implementing of problem based ESP training. After the implementation of the principles of andragogy to the experimental group, the study focused on the need for a common language, like English, for global communication. Therefore, the study introduced a new vocational English program for university students with career goals, and the results showed that students in this program improved their English capacity more than those in the regular course programs.

Similarly, Erdemir Sezer (2023) conducted a study to explore the use of differentiated instruction and andragogy in English preparatory classes. The study focused on how these methods are applied and how they impact teaching and learning. The results showed that both students and teachers agreed that these methods are important. However, teachers felt less confident in using them. Furthermore, they found out that several factors, such as the teacher, the students, and the course setup had an effect on their use.

Another study conducted by Ortactepe (2006) focused on the effect of an in-service teacher education program, which aimed at fostering teachers’ knowledge and skills in Communicative Language Teaching. The result of the study concludes that there was no relationship between Turkish EFL teachers’ self-efficacy and their self-reported practice of

CLT. However, as an outcome of in-service education, the teachers both developed their CLT practice and became more productive.

In the same vein, Sahin (2012) aimed to reveal the effect of a professional development program on primary school teachers and their classroom practices. According to the results, useful practices and useless practices were involved in the planning and implementation and assessment of the stages. Also, pedagogical beliefs, pedagogical content knowledge, actual classroom practices, personal and professional growth of teachers were impacted by the development program.

Another study by Canan (2021) explained that technology makes it easier to create, share, and access to information, which makes knowledge more valuable. These changes are shaping an information society. The study highlights the importance of lifelong learning for people with special needs and its connection to human rights.

Öner (2014) examined how public education centres promote lifelong learning in the information society. The study found that course participation and subject choices were influenced by factors such as gender, education level and income. Overall, participants were satisfied with the education, learning process, and facilities, and they found the courses helpful. Besides, older participants were generally more satisfied with their training.

Yang et al. (2024) searched for the impact of AI tools on 50 primary school teachers' confidence with a professional development program. The results reveal that the support of others and experiences can be effective for teachers to manage the classroom. However, it is suggested that further studies should be conducted in order to see the long-term effects of the programs.

Furthermore, Gupta and MacLellan (2025) investigated how the tutoring tool, Apprentice Tutor was used by adult students. It is asserted that as students who utilized this tool got higher results and improved their skills, smart tutoring tools can be useful for adult learning.

Nazaretsky et al. (2021) also conducted a study in order to unveil how K-12 teachers can get the confidence to use AI tools for their teaching. It is suggested that professional development trainings should support teachers to learn more about AI tools. As a result, when teachers comprehend how AI tools function, they can feel more confident to bring them into their classrooms as a supportive tool.

Copur-Gençtürk et al. (2024) created an online professional development program to support teachers to improve themselves anywhere and anytime. However, whereas teachers who got the program were able to have better results and clearer instruction, they could not

improve much in terms of selecting the tasks in their classes. This shows that online programs should be enhanced in order to help teachers adequately.

Olasehinde (2024) attempted to uncover how teacher training can be boosted with AI by providing personalized learning. It is suggested that AI can analyse the learners' past data, provide instant feedback and adjust the learning process for learners' needs. However, some challenges such as privacy problems can occur. In the end, it is claimed that AI tools can be helpful for all teachers' professional development.

In a similar vein, Teslim (2024) concluded that adult learners can be supported with AI tools by getting a learning process that is proper for their needs. As a result, AI can change adult learning more interesting and motivating. On the other hand, some concerns such as privacy and teachers' readiness have been raised as an implication of the study.

2.2.2. 21st Century Skills

The on-going progress of both technology and globalization has revolutionized the views on education in the 21st century. As a result of the developments on the field, it is highlighted that students should acquire 21st century skills. Critical thinking, creativity, collaboration, communication, information technology and technological proficiency are the skills that are embraced as 21st century skills (Partnership for 21st century skills, 2009). Furthermore, the will to acquire 21st century skills has led to dramatic changes in EFL classrooms. 21st century skills should be integrated into EFL classrooms so that students have the opportunity to be engaged in the skills. As the world has become more multicultural and multilingual, there are various reasons to learn a new language such as the purpose of studying or integrating to a new culture, which empowers cultural identities and communication with others (Johnson, 2017). Although the view of language learning has contributed to the social life in different ways, current changes in the social life have made it clear that new skills are necessary. Among these novelties, 21st century skills are the prominent skills that can assist people to prepare themselves for the future.

As the skills of the 21st century have been demanded in social and business life for a long time, the need to acquire these skills is obvious. As a result, the prominent people of the society have agreed on the view that 21st century skills are necessary for students (Rotherham & Willingham, 2009). Furthermore, there is a common point that the need of 21st century skills is inevitable; therefore, these skills should be integrated into professional development programmes and curricula (Voogt & Roblin, 2010). With this purpose, a variety of models have been put forward in order to integrate 21st century skills into the field of education.

Among these models, “Key Competences for Lifelong Learning” is one of them, which consists of critical thinking, digital competence, and social and civil competence (European Commission, 2018). Besides, 21st century skills are mainly classified into three sub-fields:

1. Learning Skills consisting of 4 Cs:
 - Critical thinking: Faciona (2011) defines it as the capability to critically assess and analyse information to deal with complex problems and assist decision-making.
 - Creativity: The capability to develop novel concepts, strategies, and solutions (Runco, 2004).
 - Collaboration: Working productively with others, appreciating different viewpoints, and actively contributing to collective attempts (Johnson & Johnson, 1987).
 - Communication: The proficiency in appropriate ideas clearly and effectively in various formats (Anderson et al, 2011).
2. Literacy Skills:
 - Information Literacy: The capacity to identify, assess, and apply information effectively (American Association of School Librarians, 2007).
 - Media Literacy: Understanding the influence of media on determining perceptions and the capacity to evaluate media content (Hobbs, 2010).
 - Technology Literacy: The ability in employing technology to boost communication, problem-solving, and develop products (Jenkins, 2009).
3. Life Skills:
 - These skills are a variety of essential competencies for personal and professional success, such as adaptability, leadership, initiative and interpersonal skills (Saavedra & Opfer, 2012).

As an additional definition by Wagner (2008), people should have seven vital skills in order to reshape themselves for 21st century life, work and citizenship:

1. Critical thinking and problem solving
2. Collaboration and leadership
3. Agility and adaptability
4. Initiative and entrepreneurialism
5. Effective oral and written communication
6. Accessing and analysing information

7. Curiosity and imagination

From another perspective, Hixson et al. (2012) put forward that people need eight skills for 21st century life. Due to the limitations in line with the content of this research, the six skills out of the given eight will be highlighted in this study.

1. Critical thinking skills
2. Collaboration skills
3. Communication skills
4. Creativity and innovation skills
5. Self-direction skills
6. Global connections
7. Local connections
8. Using technology as a tool for learning

In this study, critical thinking, collaboration, communication, creativity and innovation, self-direction and using technology as a tool for learning will be focused on as part of our study.

Critical Thinking Skills: The skill of critical thinking has been defined in various ways and its significance has been emphasized by many researchers. The cognitive skills and strategies are the components of critical thinking, and they also can lead to more favourable results over time compared to noncritical thinkers (Halpern, 1998). In another definition of critical thinking by Facione (2011), particular cognitive skills of interpretation, analysis, evaluation, inference, and explanation are emphasized. Also, it is highlighted that for the purpose of exploring ideas, both cognitive skills and attitudes are essential for critical thinking. In a similar vein, Paul and Elder (2006) support the importance of intellectual features that include clarity, accuracy, relevance, and logic. These frameworks suggest that critical thinking is beyond cognitive processes which cover necessary traits for thoughtful and analytical learning. Furthermore, the thinking skills of analysis, synthesis and evaluation are vital in order to promote critical thinking (Bloom, 1956). Rezai et al. (2011) view critical thinking as a significant component of language teaching. Also, it is added that it can be fostered with such methods as debating, problem-solving, discussion and self-assessment. Uribe-Enciso et al. (2017) express that teachers are essential to help students to foster critical thinking skills as this skill is crucial for students to become responsible citizens.

Collaboration Skills: Collaboration can be defined as the capability to productively work in various groups. Moreover, collaboration includes being eager and adaptive to reach mutual goals and being open to share the workloads and appreciating what others do for the

goal (Partnership for 21st Century Skills, 2009). Similarly, Scoular et al. (2020) agree that collaboration is related to the ability of people to become a productive member of a group, and adds that this skill contains determination, contribution to team work and respect what others do in a team. On the other hand, Lawson (2004) claims that collaboration may produce various advantages such as effectiveness gains, resource gains, capacity gains, legitimacy gains, and social development benefits.

Communication Skills: According to the definition by Partnership for 21st Century Skills (2009), the skill of communication consists of utilizing oral, written and nonverbal communication skills in order to express opinions. Furthermore, there are some critical components of communication skills. These are listening in an effective way, utilizing communication on different contexts, using technology for the goals properly, and interacting appropriately. Moreover, communication has the strength for fostering human relations, and also the goal of a powerful communication is to transmit opinions from one individual to another one fruitfully (Jacobson-Lundeberg, 2016).

Creativity and Innovation Skills: To foster creativity, individuals should conduct different techniques to generate, refine and assess their ideas to promote creativity. In addition, in collaborative settings, it's important to effectively share and implement new ideas, to be open to different viewpoints, integrate feedback, and understand the practical limitations of applying innovative ideas (Partnership for 21st Century Skills, 2009). Furthermore, Runco and Jaeger (2012) support that producing original, relevant, and valuable ideas that lead to significant contributions are crucial for creativity. Creativity includes the capacity to come up with various solutions to a problem and the ability to choose the most effective solution. On the other hand, innovation refers to the process of putting creative ideas into practice and applying them in real-world situations (West, 2002). Besides, Tushman and O'Reilly (1996) state that innovation is commonly viewed as the outcome of creative thinking, but there are factors to turn it into innovation like leadership, resource management, and strategic planning.

Self-direction Skills: Self-directed learning is a process where learners adopt responsibility for their educational journey. Learners identify their needs, establish goals, select strategies, and evaluate their progress (Knowles et al., 2005). In a similar vein, according to the definition by Bonham (1992), self-direction is seen as an intrinsic motivation and the motivation forces learners to take control of their own learning. Zimmerman and Lebeau (2000) express that the ability to manage behaviour, emotions, and decision-making are the key components of self-direction.

Using Technology as a Tool for Learning: Technology has become a vital part of education for a few decades. As a result, it has been embraced as a tool to foster students' learning skills. Trucano (2016) asserts that the goal of technology in education is to enhance learning outcomes. In addition, it covers to boost computer literacy, engagement, and access to educational materials. Furthermore, it promotes the development of 21st century skills. Besides, Berson et al. (2000) suggest that integrating technology into teaching should improve learning beyond traditional approaches. Also, this integration provides meaningful context, allows students to explore the connections between science, technology, and society, and fosters the development of skills for responsible citizenship. In the light of the explanations by Partnership for 21st Century Skills (2009), information, communications and technology literacy should be applied effectively in order to utilize technology to research, organize, evaluate, and communicate information. Learners should appropriately use digital tools and social networks to access, manage, integrate, assess, and create information for success in a knowledge economy.

Related Studies

As for the studies conducted in Türkiye, Çolak (2019) studied to investigate pre-service science teachers' self-confidence in 21st century skills, and the author aimed to reveal how university programs and teachers affect skill development. The research found average progress in information literacy, but there was not enough advancement for media literacy and life skills. Prominent problems included the limited use of student-centred methods, a lack of STEM focus, and also little use of technology. Also, the study shows that better teaching methods and more support are needed to improve 21st century skills. In a different study related to 21st century skills, Aydın (2019) studied English pre-service teachers' views on their competence in 21st century skills, how important they think these skills are, and how they are taught in their courses. The findings showed that the teachers were good at skills like intercultural, learning, innovation, career, and life skills, with a focus on learning and innovation. However, they felt their education didn't help them develop these skills well. Moreover, the study suggests that 21st century skills should be taught more effectively in teacher education programs. In a related study, Cavus (2021) studied the connection between primary and secondary school teachers' skills in using 21st century skills and the level of their preparedness for change. The results show that teachers are highly skilled in 21st century competencies and are ready for change. However, school administrators rated teachers' readiness as moderate. According to the results, there was a strong positive relationship between teachers' skills and their readiness for change. Similarly, Otlu (2016) studied on how

language teachers use and view 21st century skills, based on demographic factors. The study involved 106 teachers in Türkiye and 77 teachers abroad. The survey found that teachers use technology more for learning than for local connections. The country where teachers work affects how they use technology. Also, the type of school (private or public) affects how teachers use communication, creativity, and critical thinking. Furthermore, teacher education mostly affects how they make global connections, but it doesn't impact other skills or views. Additionally, Işık (2023) further explored the 21st century skills awareness of prospective teachers and teacher trainers in English Language Teaching. The study found moderate awareness in both groups. Fourth-year students are more aware than third-year ones. Also, it suggests that teacher trainers' awareness affects how prospective teachers see these skills, so improving teacher trainers' skills is important. Moreover, the results show that communication, critical thinking, and technology literacy are valued; however, the curriculum is only partly effective in teaching them. Therefore, teacher trainers try to include these skills in lessons, but their self-assessed competency levels vary. With a similar aim, Güzelel (2022) examined how well the 21st century skills are adjusted with the compulsory and elective courses in Turkish Primary Education Curriculum. The study finds that most courses include 21st century skills. It also highlights the importance of these skills within the National Qualifications Framework. Likewise, the study by Yilmaz Sengoz (2022) highlighted the success of an 11-week comprehensive teacher education program in improving pre-service EFL teachers' professional knowledge and 21st century skills. Participants could apply their skills in relevant contexts, and they could promote both cognitive and emotional growth. The program enhanced critical thinking, digital literacy, and collaboration. In addition, it aids in the development of a professional identity. In conclusion, the study offers a useful framework for teacher training to support long-term professional development. On the other hand, Ataberk (2022) aimed to assess how effective the new English Language Teaching (ELT) curricula in Turkey are in fostering 21st century skills. The results showed that the curricula include some aspects of these skills; however, they do not provide a fully integrated approach. Hence, this limits students' ability to apply them in real-life situations. Moreover, Kapkır (2024) emphasized the importance of 4C skills in English language teaching, both for instructors and students. Despite adequate knowledge, instructors faced challenges like curriculum limitations and low student motivation. Based on the findings, it is recommended to adjust the curriculum, enhance professional development, and incorporate project-based tasks to better integrate the 4C skills. Uka and Bedir (2023) carried out a study to examine English language teachers' perceptions of 21st century learning and innovation skills.

Although teachers showed familiarity with these skills, they identified a significant need for further professional development to effectively incorporate them into their teaching. Also, the study underlines the critical role of on-going professional training, institutional support, and curriculum adjustments. Lastly, although English Language Preparatory Program (ELPP) instructors are working to include 21st century skills in their curriculum, more progress is needed to fully prepare students for future success. Teachers' determination is important for consistently teaching these skills. However, a major challenge is the lack of standardized tools to assess 21st century skills (Bilben, 2022).

Furthermore, Almarfi (2021) conducted a study with the aim of exploring the 21st century skills of pre-service English language teachers, and examining whether there are significant differences in skill levels between freshmen/sophomores and juniors/seniors. The study focuses on evaluating the competency of students in five key 21st century skill areas. According to the findings of the study, there are challenges which occurred in contemporary teacher education.

In one of the studies related to critical thinking, Tosuncuoglu (2018) described critical thinking skill as a key skill that is helpful for students to solve problems, make up their minds and set their goals. In his study, it is revealed that the critical thinking skills of many university students cannot be improved during their studies. Also, while students recognize the significance of critical thinking skill, they do not comprehend it at a high level. As an extension to the given research, Walker and Finney (1999) conducted a study to explore how critical thinking can be enhanced in higher education. It was revealed that if students comprehend how to think and learn critically, they have more self-awareness and reflective thinking. Therefore, they become more independent, curious and aware of themselves in social and academic life.

In terms of the research based on collaborative skills, Viberg and Kukulska-Hulme (2022) investigated how people can learn English beyond the classroom. It is concluded that what is significant is learners' knowledge on how to learn independently and collaboratively. Furthermore, new technological developments can foster personalized learning. Likewise, Vega-Aburzua (2022) searched for the impact of collaborative learning on the involvement in English lessons. After 5 weeks of implementation, it has been stated that working collaboratively can encourage students to get involved in class activities. In the same line, Alzubi et al. (2024) examined how collaborative learning can support university students to foster their English proficiency and social skills. It is suggested that students who were involved in group tasks could improve English better and learn collaborative skills. As a

result, it can be expressed that using activities that include interactions can be effective for students to learn the language.

As for the communication skills, Khan et al. (2017) explored the views of students about how their teachers' communication skills can affect their academic studies. Studying with 428 students from 14 universities in Pakistan, the researchers explain that teachers who have good communication skills can be more helpful for students' studies. Moreover, Yıldırım (2021) studied on the effect of university instructors' communication skills on student teachers' confidence and perception on teaching. It has been asserted that as long as instructors can communicate well, students can have positive attitudes towards teaching. Therefore, it can be said that teachers' attitudes are important for students' confidence.

There is a lot of research on creativity skills, among which, a study conducted by Akyıldız and Çelik (2020) aimed to reveal the perceptions of EFL teachers on creativity and how to use it in their lessons. According to the results, most of the participant teachers did not realize what creativity actually means, yet they could apply some activities including creativity. Also, it is added that some challenges such as curriculum and time limitation can hinder to teach creativity. In line with this, Wang (2024) carried out a study to uncover teachers' and students' perceptions on creative teaching in English lessons. Apart from their common ideas on how creativity should be organized, it has been highlighted that if teachers have the confidence in their creativity, they tend more to implement creative activities in their classes. Similarly, Zhan et al. (2024) made a research on the impact of problem-solving methods on students' creativity. After studying with 19 studies, it has been found out that students can become more creative if they encounter problems and work in mixed-ability groups. On the other hand, it has been stated that there is no powerful effect of specific methods, tools and technology on creativity.

In terms of self-direction, in a study by Harrison et al. (2015), it was searched for how students could depend on their teachers because of Ireland's school system. It was revealed that integration of self- and peer assessment contributes to students' skills such as critical thinking, communication and self-reflection. It is underlined that traditional teacher-centred teaching methods should be replaced with student-centred methods. In a similar vein, Çetinkaya (2019) looked into teachers' perception on enhancing learner autonomy. Based on the results, it is stated that teachers have the common point in encouraging students to be more autonomous and track their progress. Also, teachers supported their students to take charge of their learning by selecting proper activities to make them independent learners. Besides, Nasri et al. (2021) aimed to explore the way teachers utilize feedback and assessment

to foster self-directed learning. It is highlighted that it is vital to mitigate anxiety, providing constant assessment and timely feedback and consider cultural norms. It is stated that there should be a better system for assessment and feedback to support self-directed learning.

As for the use of technology, Sert and Boynueğri (2016) made a deep research on finding out to reveal the relation of students' income and use of technology and self-directed learning. On the basis of the results, no relation has been found between students' income and technology use. In addition, there is no correlation between students' self-directed learning and use of technology. Likewise, Vatanartıran and Karadeniz (2015) purposed to comprehend the difficulties teachers encounter when using technology in their classrooms. Studying with 844 teachers, the authors unveiled the problems. They are expressed as lack of support from school management, lack of equipment and internet sources, the need for teachers' professional development. The need of teacher training and better school management plays important roles to use technology at schools. Also, Silvhiany (2021) investigated whether EFL students can decide on the credibility of online resources. It is discussed that students can judge in a wrong way on the things they face on the internet. The result of the study underscores the significance of digital literacy teaching at schools.

2.2.3. Artificial Intelligence

English is becoming more and more prevalent all around the world with the purpose of integration, communication, and maintaining cultural identities; consequently, teaching English requires new ways and methods to acquire the language. Technology, which is crucial for 21st century learning, is inevitably integrated into English language teaching (Dudeney & Hockly, 2015). In order to support students for improving language skills, technology has enabled new ways for teaching English. Furthermore, Gilakjani (2013) supported the view that language teaching methods are open to change as a result of the use of technology in language classrooms. Teaching with technology includes the implementation and integration of media tools as well as various kinds of media (Prayudi et al., 2021).

In the 21st century, a new way of technological tool stand out: Artificial Intelligence. Dobrev (2005, p. 277) stated, "AI will be such a program which in an arbitrary world will cope no worse than a human." According to Sheikh (2023), Artificial Intelligence is a technological tool that facilitates machines to copy different human skills. Another definition is given by the Council of Europe (2023): AI is a very new field. Different components of science and technology such as math, statistics and computer science are combined to enable

machines to think like humans. Based on these explanations, it can be concluded that AI is a machine or a program which has the ability of imitating human activities.

Artificial Intelligence has gained so much importance that the question of how to integrate AI in education draws the attention of researchers. Huang et al. (2021) asserted that with the development of AI, using AI in education has become obvious thanks to various applications of AI such as adaptive learning, teaching evaluation, virtual classroom, smart campus, and intelligent tutoring robots. Supporting the view, Chen et al. (2020) affirmed that the application of artificial intelligence tends to spread day by day, and it is preferred much more than traditional teaching methods. Furthermore, Huang et al. (2021) added that AI usage in education boosts personalized teaching and learning. In a similar vein, Thadphoothon (2022) introduced ELT 3.0, a framework to help the ELT professionals adapt to AI. While some ideas may seem alarmist, the paper argues that AI's role in ELT is inevitable and essential. If successful, it will foster further discussions on the future of ELT. AI is increasingly becoming prevalent due to the central role of language in communication.

Related Studies

It is a fact that AI has occupied a large space on the learning platforms, and this situation has led many researchers to display the current panorama of AI issues in all fields. In terms of a general sketch of language learning, Prabakaran (2023) stated that personalized learning is an element that stands out as a result of integrating AI into language classrooms. Also, individual needs and real-time feedback are provided by the proper use of AI. By fostering engagement with gamified elements, grammar and pronunciation are supported with AI-powered tools. Finally, constant access to learning resources provides quick practice and improvement. In a similar vein, Sütçü and Sütçü (2023) revealed that using AI in language teaching is seen positive by preparatory class, though they have limited knowledge of technology. They are in favour of the fact that AI can strengthen to plan a lesson, promote student engagement, and advance language skills. However, there are some concerns about dependency, cheating, and decreased research skills. As a result of the findings, the study suggests that professional development programs are needed to provide teachers with the necessary skills and knowledge to use the AI fruitfully. Furthermore, Gilakjani (2013) supported the view that language teaching methods are open to change as a result of the use of technology in language classrooms. Teaching with technology includes the implementation and integration of media tools as well as various kinds of media (Prayudi et al., 2021). Likewise, Ermağan and Ermağan (2022) carried a study to reveal how technology and internet have evolved the education and life. This change proves the traditional methods to be less

significant. Furthermore, it has been examined how AI tools can be effective for people to learn a language. The results show that there is a strong progress in using AI in Türkiye, which reveals the adoption of technology as a teaching tool.

From the teachers' perspective, Dilzhan (2024) studied on EFL teachers' views on the use of ChatGPT. The advantages and challenges in language teaching have been highlighted in the study. Many teachers are aware how effective AI can be used to improve lesson planning, reduce teacher workload, and increase student engagement. However, some teachers state that there are concerns that technology can cause a strict habit to use it constantly. The findings emphasize in-service education and the need for professional development to assist teachers to utilize AI tools effectively and ethically. Additionally, the study suggests that future AI developments could strengthen language learning experience. In a similar study on AI, Kaya (2023) aimed to reveal teachers' views on the use of AI in education. The study reveals that while AI tools are seen as beneficial to save time, there is much concern about their potential in terms of dependency and reducing social interaction. Teachers' lack of knowledge on AI highlights the need for professional development. Furthermore, the study concludes that there should be more awareness and in-service programs to encourage the integration of AI in education field.

Combining the both parties of education, Gücük (2022) claimed that AI is inevitably part of the daily life, but both students and teachers are still struggling to use it in language teaching appropriately. Teachers embrace AI for interactive lessons, while students need to learn how to use it effectively. AI offers instant feedback, but there are concerns about its reliability and plagiarism. Despite its advantages, AI cannot replace the human for language learning. Polak et al. (2022) discussed that teachers and students are eager to use AI in education, but they do not have specific knowledge of AI. It is vital for students and teachers to be motivated to benefit from AI. Moreover, the digital competence of teachers plays a key role for their own development and for supporting students. Also, the research suggests that a platform which is accessible, relevant and interactive will be helpful. Lastly, motivation can help remove hindrances like skill gaps, but more research and platform development are needed to have clear results. In a similar line, a research conducted by Guo et al. (2024) examined to see how students can give feedback to each other with AI tools. It has been displayed that AI tools allow students to improve their writing apart from giving constructive feedback to their peers. Also, AI tools can be effective for teachers to save time in crowded classes. Furthermore, Zhang et al. (2024) executed a research to find out how AI tool such as a chatbot and a tutoring system can enhance students' willingness to communicate. When

students used chatbots, they could feel more confident to express themselves. However, a tutoring system had an adverse effect on students. This shows that chatbots can foster students' willingness to communicate. Besides, Kovari (2025) studied on how students can foster their collaborative learning with AI tools. AI tools facilitate personalized learning, keep students interested, and support them for collaborative learning. It is also demonstrated that there is a need to design activities properly, to encourage for collaboration and pay attention to students' privacy when AI tools are used. In a study to explore how AI tools in group language learning can foster students' critical thinking, it has been concluded that AI tools can contribute to team work as they enable students to understand each other. Yet, it depends on how teachers utilize these tools in their classrooms (Sako, 2024). In addition, Ji et al. (2024) searched for how teachers can benefit from AI tool in language classes. The results showed that as long as integrated properly, AI tools are effective for language learning. On the other hand, it is stated that more studies are need to reveal the effects of AI tools. Zhang et al. (2024) attempted to uncover how Chinese students can utilize AI speaking assistant in order to learn English. Students can feel more confident, reduce anxiety, and become more willing to communicate thanks to the tool. Whereas the results seem pleasing, it is suggested to conduct more research with a large number of groups.

As for the potential need to get familiar with AI, the study by Lindner (2019) unveiled that computer science teachers who are interested in AI highlight the knowledge of social discussions, facing challenges and lack of resources. Additionally, it is stated that teachers need a thorough training to deal with AI's technical issues and effectively teaching it. However, further research is needed to explore the implementation of these findings with a larger group. Similarly, the study, which was carried out by Lindner and Berges (2020), showed that teachers have fundamentals of AI. However, they do not have deep knowledge on AI. Teachers see the importance of AI ethics. However, their general view is realistic. The research suggests that teacher training should focus on AI teaching for teachers to be more aware of how to use it in their classrooms. Furthermore, the training should include particularly ethical issues. Along these lines, Firdaus and Nawaz (2024) explored teachers' opinions on implementation of AI into English language classrooms in Pakistani colleges. They revealed that most teachers use AI and acknowledge that AI increases students' motivation and engagement. However, they may encounter problems such as classroom distractions when students use AI tools for personal purposes. Despite these challenges, teachers advocated the benefits of using AI in their teaching sections. Also, they suggest the

need of some back-ups such as professional development, improved resources, and encouragement to fully take advantages of AI in education.

In terms of the AI tools' positive contribution to human learning, Vasconcelos and Santos (2023) concluded that students can learn better with GenAIbots as they provide interactive personal and enjoyable learning. Students can ask questions, get immediate feedback, think critically, and learn collaboratively thanks to these tools. Students can find practical learning settings and enjoy the learning process. As an extension to the aforementioned study, Favero et al. (2024) investigated the impact of a new educational chat-bot. This tool is stated to support students' critical thinking skills and it enables them to ask reasonable questions rather than just answering simple questions. In the study, it is mentioned that this chat-bot is effective for students to think critically and learn independently. Furthermore, the AI tool generated by Long and Zhang (2024) aimed to comprehend classroom conversations with smart language models. The tool enables teachers to interact with their students faster and more effectively. As a result, it could enhance teaching and teacher training. Similarly, Chen et al. (2024) developed a new tool which is called MindScratch. As the authors think that available tools are not so compatible with teachers' expectation from their students, MindScratch was developed. Their aim was to help students to enjoy the learning progress while focusing on their goals. It has been stated that students can learn better with this tool. In a parallel line, Premkumar et al. (2024) studied with 30 research paper to uncover whether Generative AI tools can foster university students' critical thinking. According to the report, on the basis of half of the papers, AI can be helpful for students' critical thinking. However, more studies need to be conducted.

From a general perspective, Do et al. (2024) asserted that university students are into AI-supported podcasts instead of traditional materials as they find them more joyful. Personalized learning can help students to enhance their learning. It is suggested that students find AI-generated podcasts are more entertaining as well as being effective for their learning.

As for the other courses except English, there is considerable research conducted related to utilizing AI, from positive and negative aspects. Tatar (2023) looked at how positive English Language Art (ELA) teachers think about AI and their views on bringing it to their classrooms. It found that after a workshop, teachers felt more positive about integrating AI into their lessons. The study provides useful implications for creating AI curricula. Besides, it helps future research on how non-STEM teachers can teach AI concepts. In the same vein, Tsao and Nogues (2024) stated that when students utilize generative AI tools for their creativity, they can also foster their critical thinking skills. Additionally, students can

become more autonomous and see creativity as a result of collaborative work. However, the study highlights concerns about relying on AI tools too much, which can make students repetitive. In an aligned study, Baillifard et al. (2023) investigated whether students can improve their learning with AI tutor. Psychology students who were supported with the tutor could get higher results than the other ones. This clearly proves that if properly applied, AI tools can be helpful for the students' learning process. Similarly, Darayseh (2023) found that science teachers are eager to benefit from AI in their classrooms. That's because they see benefits, find it easy to use, and have a positive attitude toward it. As long as AI is easier, teachers prefer it as a useful source. Furthermore, training programs should help teachers learn how to use AI easily and understand its benefits. In the same line, Park et al. (2023) intended to explore how effective it is to integrate AI into science lessons. Also, the results of curriculum design, and the AI-integrated TPACK framework are studied. The findings highlight that the capacity of AI can foster science education. Additionally, the study suggests that AI can support the TPACK model in terms of a teaching tool and content. Moreover, it emphasizes that there is a need for educational innovations and AI literacy. In other words, this research contributes to comprehending how AI can be effectively utilized to boost students' engagement and AI knowledge.

CHAPTER 3

METHODOLOGY

In this study, a mixed methods design was utilized as part of a case study. Therefore, both qualitative and quantitative data were combined to comprehend the topic well. As well as focusing on high school English teachers in Mersin, Türkiye, the research included 50 English teachers in accordance with their availability, willingness and backgrounds. A survey, open-ended questions and a focus-group interview were used to collect data. These tools were helpful for the researcher to reflect more detailed information. While the survey presented the numerical results, the open-ended questions and focus group interview revealed teachers' feelings and opinions. The results on the basis of the survey were analyzed with "SPSS" computer program. Also, the responses from open-ended questions and interviews were studied to find common themes. With the use of various tools, this study aims to reach reliable results.

3.1. Research Design

This study employs mixed methods research design in a case study approach. Mixed methods research design is defined by Creswell and Creswell (2016) as that mixed method includes the basis of both quantitative research and qualitative research in a study. Furthermore, Fraenkel et al. (1993) explains the strengths of mixed methods: "(1) clarifying the explaining relationship found to exist between variables, (2) exploring relationships between variables in depth, (3) confirming and cross-validating relationships discovered between variables" (p. 558). In addition, the case study approach (Luck, Jackson, & Usher, 2006) is effective as the researcher can examine the issue thoroughly within real-life circumstances. Based on the explanations, the aim of selecting mixed-method is to make a comparison between the variables and reinforce the validation of the data. Also, the researcher employed surveys, open-ended questions and a focus group interview for the purpose of triangulation (Oliver-Hoyo & Allen, 2006) to ensure that the findings of the study are more reliable and valid for the proper interpretation of the data as well as providing a detailed insight.

3.1.1. Case Study as a Research Design

A case study is a qualitative research design that consists of detailed examination of a case with a small number of participants (Yin, 2018). It is especially effective for studying

complex situations in which it can be difficult to set a boundary between the main topic and the context (Stake, 1995). Also, Creswell and Poth (2018) state that case studies can include different types of sources of data such as interviews, observations, and documents to provide a detailed understanding. According to Baxter and Jack (2008), case studies are prevalent in the field of education, psychology, and social sciences.

3.2. Research Population and Sampling

The participants of the study are 50 English teachers who work at high schools in Mersin, Türkiye. Due to the nature of the research design, the participants were selected by means of purposive sampling procedure on the grounds of their direct relevance to research objectives, their knowledge, experience, involvement in the given issue and demographic background. Creswell and Creswell (2017) support that participants are selected to give meaningful insight and relevant information suitable for the aims of the research. As the research heavily relied on classroom applications in detail and the cognition and perceptions of the teachers on this issue instead of making generalizations, working with voluntary high school teachers necessitated a kind of filtering of the participants and limiting them to a certain number. Also, this study is grounded on the city of Mersin, with a view to exploring the current situation at a small-scale to give some idea which can be expanded to a large-scale nation-based research project at the next-coming times. Lastly, because of the fact that the research was conducted during the education term, other factors such as time and place variables, the programs of the participants for more comprehensive research in the focus-group interviews were the reasons for minimizing the number of the participants.

As for the focus group, 6 participants (will hereafter be cited within the text as F-P) took part in the focus-group interviews. In terms of teaching experience years of the focus-group interview participants, 2 of them (F-P-1 and F-P-4) have been teaching over 20 twenty years, 1 participant (F-P-2) has been in the field of education for about 10-15 years, and 3 of them (F-P-3, F-P-5 and F-P-6) have been teachers for 5-10 years. This group of participants were re-appointed on their volition to contribute to the first cycle research findings so that the researcher could resort to their experiences and views in a more elaborate fashion.

3.3. Research Instruments

In this study, the researcher aimed to obtain extensive data on EFL teachers' perception and practices related to 21st century skills, and additionally the use of Artificial

Intelligence in language teaching classrooms. For this purpose, three research instruments were utilized: a survey, an open-ended questionnaire and a focus group interview. These tools are used in order to empower the study through triangulation, and to enhance the reliability of the study (Carter et al., 2014).

3.3.1. 21st Century Teaching and Learning Survey

In order to collect data, 21st Century Teaching and Learning Survey developed by Hixon, Ravitz and Whisman (2012) was selected (standardized alpha > .90, inter-item correlations > .58). This survey was used because of its reliability in investigating EFL teachers' perceptions and practices of 21st century skills in language classrooms. The survey consists of 6 separated sections, each of which is related a particular skill and includes two parts for practice and perceptions. Although the original instrument includes eight skills, this study focuses on six of them. The tool is formed as 5-point Likert-type scale and includes three sections. These are instructional section, practice section and perception section. Such surveys are utilized to collect demographic information and opinions (Frankael et al., 1993), and similarly, in this study, it was aimed to examine EFL teachers' practices and perceptions.

3.3.2. Open-ended Questionnaire

As the second research tool, an open-ended questionnaire which was prepared by the researcher, based on the issues taking place on the abovementioned survey and the main principles of andragogy theory were used in order to investigate the relationship between 21st century skills and the usage of Artificial Intelligence from the teachers' point of view. Open-ended questions which give chances to assess higher levels of cognitive understanding have various advantages. These are designing easily, lack of problems in recognition, no possibility of guessing, supporting deep learning (Gharehbagh et al., 2022).

3.3.3. Focus Group Interview

Thirdly, for the purpose of triangulation, a focus study group including 6 participants was appointed in line with the participant responses. Carter et al. (2014) state that triangulation, which is helpful to empower the validity of study give chance for the researchers to make a comparison and the integration of the results. This research tool intended to make an in-depth data mining to reveal the feelings and views of the teachers on how to integrate AI to foster 21st century skills.

3.4. Data Collection

After required permissions were taken, the survey and open-ended questions were uploaded to Google Form platform. After that, EFL teachers who voluntarily supported the study were given the website link of the research tools. When teachers clicked the link, this meant that they had the consent to participate in the study. Teachers were expected to mark the relevant choice in the survey; afterwards, they were asked to respond to open-ended questions. Lastly, there was a focus group, with which the researcher had an interview to discuss the results (See Appendix-5).

3.5. Data Analysis

The data of this mixed-methods research came from two sources: The quantitative data collected through the survey was processed with help of a Statistical Package for the Social Sciences (SPSS). Descriptive statistics were made after the data collection procedure was over. On the basis of the study of De Pedro et al. (2022), Likert-scale mean interpretations were categorized as follows: 1.00-1.80 = Very Low, 1.81-2.60 = Low, 2.61-3.40 = Moderate, 3.41-4.20 High, 4.21-5.00 = Very High. On the other hand, the qualitative data was processed through thematic content analysis to acquire descriptive data about the topic (Fraenkel, Wallen & Hyun, 1993). Data analysis was based on mostly open-ended questions and the interviews which were conducted with the focus-group. With the aim of reaching a theory, the responses were analysed in detail and the data were divided into groups as codes, after which the themes were specified. On the last stage of the data analysis, the focus group participants contributed to the study through the interviews in accordance with the findings of the research in the first phase. The raw data obtained from these interviews were analysed with the content analysis method to further explore the issue on the grounds of the teachers' practices.

All in all, this study employed different types of applications for the purpose of triangulation, which facilitates the data mining; for all the data are not observable at one go.

CHAPTER 4

FINDINGS

In this section, the findings will be presented based on the analysis of the qualitative and the quantitative data. Also, the results related to each of the research questions will be discussed.

4.1. The Findings on Teachers' Practices and Perceptions of Their Ability to Lead Students to Acquire 21st Century Skills

With the research question 1, the researcher aims to reveal English teachers' practices and views on fostering 21st century skills in their classes. Initially, the overall results of teachers' practices and then their perceptions are given in Table 1 and Table 2. Afterwards, the data related to each skill has been displayed and analysed. After the analysis of each table, the data collected from the focus-group interview have been presented. In this part, teachers discuss each skill on the basis of their experiences.

Table 1 *Descriptive statistics of the overall results of teachers' practices to improve the skills*

<i>Skills</i>	<i>Mean</i>	<i>S.D.</i>
Using technology as a tool for learning	3.423	1.089
Creativity and innovation	3.268	1.0318
Communication	3.164	0.987
Collaboration	3.126	0.96
Critical Thinking	2.93	1.136
Self-direction	2.862	1.011

According to the distribution of teachers' practices to improve 21st century skills given in Table 1, "using technology as a tool for learning" has the highest mean score (3.423). This suggests that teachers are determined to integrate technology into their language classes. However, it seems that there is a variation between teachers' responses, based on the standard deviation score (1.089). This means that some teachers are keen to improve the skill, whereas some are not into improving the skill. The second skill with the highest mean is "creativity and innovation skills" (3.268). This indicates that teachers attempt to foster students'

creativity and innovation skills. Yet, the standard deviation implies that all teachers do not equally intend to improve this skill. The other skill with a high mean score is “communication skills” (3.164). The mean score is relatively high. Teachers seem to do their best to improve the skill. The standard deviation score is lower (0.987) compared to the skills mentioned above. This shows that there is a consistency between teachers’ practices to foster this skill. Similarly, “collaboration skill” is highlighted by teachers (3.126). Although the mean score is a bit lower, teachers try to boost students’ collaboration skill. Also, the standard deviation is low (0.96), which relates to the consistency. The last two skills are “critical thinking skill” (2.93) and “self-direction skill” (2.862). These results show that teachers may ignore to focus on these skills or they should be encouraged to foster them.

Table 2 *Descriptive statistics of the overall results of teachers’ perceptions on fostering the skills*

<i>Skills</i>	<i>Mean</i>	<i>S.D.</i>
Communication	3.646	0.554
Collaboration	3.413	0.704
Using technology as a tool for learning	3.4	0.752
Creativity and Innovation	3.383	0.724
Self-direction	3.053	0.891
Critical Thinking	3.04	0.850

The distribution of statistics of teachers’ perception on fostering 21st century skills in Table 2 uncovers that teachers think “communication skill” is the most improved skill (3.646). Also, the standard deviation score is low, which means there is an agreement among teachers. This is followed with “collaboration skill” (3.413). The next one is “using technology as a tool for learning” (3.4). The skills of “creativity and innovation” (3.383), “self-direction” (3.053), and “critical thinking” (3.04) are on the bottom of the list. The general standard deviation is low, which means there is consistency among the teachers’ perception.

4.1.1. Critical Thinking

In this part, the practices of teachers to foster critical thinking skills of students will be discussed. Then, the perceptions of teachers on the skill will be highlighted.

Table 3 *Descriptive statistics of the frequency of classroom activities that foster critical thinking*

<i>What teachers ask their students to do in class</i>	<i>Almost never (%)</i>	<i>A few times a semester (%)</i>	<i>1-3 times per month (%)</i>	<i>1-3 times per week (%)</i>	<i>Almost Daily (%)</i>	<i>M</i>	<i>S.D.</i>
Compare information from different sources before completing a task or assignment	0	40.0	28.0	18.0	14.0	3.06	1.077
Draw their own conclusions based on analysis of numbers, facts, or relevant information	6.0	38.0	32.0	16.0	8.0	2.82	1.044
Summarize or create their own interpretation of what they have read or been taught	8.0	24.0	34.0	20.0	14.0	3.08	1.158
Analyse competing arguments, perspectives or solutions to a problem	14.0	32.0	16.0	30.0	8.0	2.86	1.229
Develop a persuasive argument based on supporting evidence or reasoning	22.0	34.0	18.0	18.0	8.0	2.56	1.248
Try to solve complex problems or answer questions that have no single correct solution or answer	0	30.0	32.0	22.0	16.0	3.24	1.061

In Table 3, it can be seen that there are 6 different items that are set in order to find out the participants' practices for critical thinking skills. Table 3 gives information about what EFL teachers ask their students to do in class based on the frequency of each item. There are various activities that are asked to do by teachers. According the results given in Table 3, teachers most frequently ask their students to "try to solve complex problems or answer

questions that have no single correct solution or answer” (M=3.24). 32% of the participants ask to do these “once or three times per month”, consecutively 30% “a few times a semester”, 22% “once or three times per week”, 16% “almost daily”. Furthermore, the score of standard deviation (1.061) shows that the result is consistent. Following this activity, students are asked to “summarize or create their own interpretation” (M=3.08). Next, “comparing information from different sources” is chosen as the 3rd item (M=3.06). On the other hand, the lowest mean score belongs to “developing a persuasive argument based on supporting evidence or reasoning” (M=2.56). 34% of participants ask to do it “a few times a semester”, while % 22 states that they “almost never” ask for this task.

On the basis of the data from the focus-group interview, teachers discussed the general reasons why critical thinking cannot be improved as much as idealized. The further elaboration of the situation by the focus group participants displays that some outer conditions may be hindering the current practice. F-P-1 states, “There are some challenges such as limited classroom time and lack of knowledge on how to teach the skill.” Besides, F-P-4 adds, “Teachers prefer traditional methods, and this hinders the development of the skills, and students have very low levels of English.” Additionally, F-P-6 discusses, “There is a necessity to omit some of the workload from the curriculum.” Lastly, F-P-3 clarifies, “Students’ background education is an obstacle for the improvement of critical thinking.”

Table 4 *Descriptive statistics of the teachers’ perceptions in fostering students’ critical thinking*

<i>The statements that teachers agree</i>	<i>Not really (%)</i>	<i>To a minor extent (%)</i>	<i>To a moderate extent (%)</i>	<i>To a great extent (%)</i>	<i>To a very great extent (%)</i>	<i>M</i>	<i>S.D.</i>
I have tried to develop students’ critical thinking skills	0	24.0	28.0	48.0	0	3.24	.822
Most students have learned critical thinking skills while in my class	2.0	30.0	42.0	26.0	0	2.92	.804
I have been able to effectively assess students’ critical thinking skills	8.0	20.0	40.0	32.0	0	2.96	.925

The distribution of frequency of the perceptions of EFL teachers are shown in Table 4. 48% of the participants agree that they are in attempt to develop students' critical thinking "to a great extent", whereas 28% "to a moderate extent", and 24% "to a minor extent". On the other hand, 42% of the participants think that most students have acquired critical skills in their class "to a moderate extent", which is followed with 30% "to a minor extent" and 26% "to a great extent". Similarly, 40% of the participants approve that they have been able to assess students' critical thinking skills effectively "to a moderate extent". When the mean scores of each item are compared, it can be concluded that more than most of the participants agree that they have tried to develop students' critical thinking skills ($M=3.24$); however, the mean scores on whether students have learned critical thinking skills ($M=2.92$) and whether they can assess this skill (2.96) are not as high as the first item.

4.1.2. Collaboration

On the basis of the results, teachers' practices to improve collaboration will be presented in the first part of this section, followed by the perceptions of the teachers on whether they can help students to enhance the skill.

Table 5 *Descriptive statistics of the frequency of classroom activities that foster collaboration*

<i>What teachers ask their students to do in class</i>	<i>Almost never (%)</i>	<i>A few times a semester (%)</i>	<i>1-3 times per month (%)</i>	<i>1-3 times per week (%)</i>	<i>Almost Daily (%)</i>	<i>M</i>	<i>S.D.</i>
Work in pairs or small groups to complete a task together	0	14.0	34.0	34.0	18.0	3.56	.951
Work with other students to set goals and create a plan for their team	0	20.0	48.0	24.0	8.0	3.20	.857
Create joint products using contributions from each student	2.0	24.0	38.0	32.0	4.0	3.12	.895
Present their group work to the class, teacher or others	6.0	28.0	34.0	28.0	4.0	2.96	.989
Work as a team to	4.0	34.0	36.0	20.0	6.0	2.90	.974

incorporate feedback
on group tasks or
products

Give feedback to peers or assess other students' work	8.0	24.0	40.0	14.0	14.0	3.02	1.134
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Table 5 shows the distribution of the frequency of EFL teachers' practices to foster collaboration skills in language lessons. Comparing the mean scores of the items, it can be deduced that teachers mostly ask their students to "work in pairs or small groups to complete a task together" (M=3.56). The participants equally selected "1-3 times per month" and "per week" with the rate of 34%, which is followed by "almost daily" (18%) and "a few times a semester" (14%). Secondly, students are asked about the frequency of "working with other students to set goals and create a plan for their team" (M=3.20). In this item, the participants respond that they do this activity "1-3 times per month" (48%), "1-3 times per week" (24%), "a few times a semester" (20%) and "almost daily" (8%) respectively. Furthermore, the other items are as follows: the mean score of "creating joint products using contributions from each student" is 3.12; "giving feedback to peers or assess other students' work" is 3.02; "presenting their group works to the class, teacher or others" is 2.96; "working as a team to incorporate feedback on group tasks or products" is 2.90.

When it comes to the results of focus-group interviews, teachers agree that they attempt to select activities that support students to improve their collaboration skills. Especially, F-P-5 emphasizes the importance of collaboration, stating, "Collaborative learning is significant as language learning is based on interaction with others." Additionally, F-P-4 states, "Group works can empower language learning." On the other hand, F-P-1 partly disagrees by advocating, "Limited time of lessons prevents them from performing group works".

Table 6 *Descriptive statistics of the teachers' perceptions in fostering students' collaboration*

<i>The statements that teachers agree</i>	<i>Not really (%)</i>	<i>To a minor extent (%)</i>	<i>To a moderate extent (%)</i>	<i>To a great extent (%)</i>	<i>To a very great extent (%)</i>	<i>M</i>	<i>S.D.</i>
I have tried to develop students' collaboration skills	0	4.0	34.0	62.0	0	3.58	.575
Most students have learned collaboration skills while in my class	0	20.0	32.0	48.0	0	3.28	.784
I have been able to effectively assess students' collaboration skills	0	16.0	30.0	54.0	0	3.38	.753

In Table 6, the distribution statistics of the perceptions of the participants have been presented. According to the results, 62% of the participants acknowledged that they have tried to develop students' collaboration skills "to a great extent", 34% "to a moderate extent", and 4% "to a minor extent". Furthermore, a group of participants (48%) believe that most students have learned collaboration skill in their lessons "to a great extent". However, 20% of participants think that students have learned the skill "to a minor extent". Similarly, 54% of the participants state that they have been able to effectively assess students' collaboration skills "to a great extent", which is followed by 30% "to a moderate extent" and 16% "to a minor extent". The mean scores also show that more than half of the participants believe that they help their students improve their collaboration skills.

4.1.3. Communication

Communication plays a significant role in enhancing language proficiency as it enables students to interact with others effectively express their views properly. This section includes the practices of teachers to support students' communication and their perceptions on the improvement of the skill in English language teaching classes. While Table 7 presents the analysis on the frequency of the classroom activities to enhance communication, Table 8 presents teachers' perceptions of how well students improve the skill.

Table 7 *Descriptive statistics of the frequency of classroom activities that foster communication*

<i>What teachers ask their students to do in class</i>	<i>Almost never (%)</i>	<i>A few times a semester (%)</i>	<i>1-3 times per month (%)</i>	<i>1-3 times per week (%)</i>	<i>Almost Daily (%)</i>	<i>M</i>	<i>S.D.</i>
Structure data for use in written products or oral presentations (e.g., creating charts, tables or graphs)	6.0	20.0	38.0	32.0	4.0	3.08	.966
Convey their ideas using media other than a written paper (e.g., posters, video, blogs, etc.)	2.0	24.0	44.0	24.0	6.0	3.08	.900
Prepare and deliver an oral presentation to the teacher or others	4.0	30.0	38.0	22.0	6.0	2.96	.968
Answer questions in front of an audience	2.0	24.0	6.0	40.0	28.0	3.68	1.186
Decide how they will present their work or demonstrate their learning	0	34.0	36.0	24.0	6.0	3.02	.915

There are five items that investigate teachers' practices in order to boost students' communication skills in language classes as given in Table 7. Based on the mean scores, "answering questions in front of an audience" is the most common practice among others. More than 60% of the participants ask their students to do this practice "1-3 times per week" or "almost daily". However, 24% of the participants do this activity "a few times a semester". "Structuring data for use in written products or oral presentations (e.g., creating charts, tables, or graphs)", and "conveying their ideas using media other than a written paper (e.g., posters, video, blogs, etc.)" are the second mostly preferred practices ($M=3.08$). The other two activities are followed as: "Deciding how they will present their work or demonstrate their learning" ($M=3.02$), and "preparing and deliver an oral presentation to the teacher or others" (2.96).

In the focus-group interview, teachers associated communication with collaboration. All of them claimed that if students can collaborate with each other properly, they can also foster their communication. Furthermore, F-P-3 explains: “There are some reasons to improve the skill such as interactive language learning, speaking in front of other students, and making presentations in language lessons.” F-P-4 defends the reasons and adds, “Vocabulary learning and listening activities can contribute the skill.” However, F-P-5 expresses, “Some students have difficulty expressing themselves as they are shy and introvert. In order to help these students, teachers should help them to be active during the lessons.”

Table 8 *Descriptive statistics of the teachers’ perceptions in fostering students’ communication*

<i>The statements that teachers agree</i>	<i>Not really (%)</i>	<i>To a minor extent (%)</i>	<i>To a moderate extent (%)</i>	<i>To a great extent (%)</i>	<i>To a very great extent (%)</i>	<i>M</i>	<i>S.D.</i>
I have tried to develop students’ communication skills	0	0	28.0	72.0	0	3.72	.454
Most students have learned communication skills while in my class	0	6.0	28.0	66.0	0	3.60	.606
I have been able to effectively assess students’ communication skills	0	6.0	26.0	68.0	0	3.92	.602

The distribution of frequency of teachers’ perceptions on fostering communication skill is shown in Table 8. Most of the participants (72%) consider that they attempt to improve students’ communication skills “to a great extent”. Besides, 28% of them choose to “a moderate extent”. The mean score is 3.72 which show that most of the participants do their best to boost students’ communication skills. Likewise, the participants think that most students have gained communication skills (M=3.60). 66% of them are in this opinion “to a great extent”, 28% “to a moderate extent” while only 6% “to a minor extent”. Lastly, a great number of teachers claim that they can assess students’ communication skills (M=3.92). 68% of them state that they assess this skill “to a great extent”.

4.1.4. Creativity and Innovation

Creativity and innovation are important 21st century skills. These skills can help students to adapt to the modern world. In order to foster these skills, teachers should be more organized to practice with meaningful activities. This part investigates what practices teachers select to improve students' creativity and innovation skills and what teachers consider to help students to improve these skills. In Table 9, the distribution of the frequencies of activities is presented, while Table 10 clearly demonstrates teachers' views on the improvement of these skills.

Table 9 *Descriptive statistics of the frequency of classroom activities that foster creativity and innovation*

<i>What teachers ask their students to do in class</i>	<i>Almost never (%)</i>	<i>A few times a semester (%)</i>	<i>1-3 times per month (%)</i>	<i>1-3 times per week (%)</i>	<i>Almost Daily (%)</i>	<i>M</i>	<i>S.D.</i>
Use idea creation techniques such as brainstorming or concept mapping	4.0	12.0	36.0	34.0	14.0	3.42	1.012
Generate their own ideas about how to confront a problem or question	6.0	14.0	36.0	30.0	14.0	3.32	1.077
Test out different ideas and work to improve them	0	26.0	36.0	22.0	14.0	3.24	1.011
Invent a solution to a complex, open-ended question or problem	0	24.0	30.0	30.0	16.0	3.38	1.028
Create an original product or performance to express their ideas	0	42.0	26.0	20.0	10.0	2.98	1.031

In Table 9, the distribution of the frequency of practices of creativity and innovation skills is presented with 5 items. According to the results, teachers mostly prefer the activity of “using idea creation techniques such as brainstorming or concept mapping” (M=3.42). 36% of

the participants do this activity “1-3 times per month”, 34% “1-3 times per week”, 14% “almost daily”, 12% “a few times a semester”, and 4% “almost never”. The next activity, with a little difference, is “inventing a solution to a complex, open-ended question or problem” (M=3.38). In the same line, “generating their own ideas about how to confront a problem or question” (M=3.32) and “testing out different ideas and work to improve them” (M=3.24) are following successively. On the other hand, the activity of “creating an original product or performance to express their ideas” is the last one (M=2.98).

On the basis of the data from the focus-group interview, there are various reasons why teachers agree that they can improve students’ creativity and innovation skills. F-P-1 asserts, “We ask students to write creatively on a specific topic.” This activity was highlighted by all the participants as they think that in the limited classroom time, it can be practical. F-P-6 states, “I give students assignments to create something unique and ask them to present it to their friends. This can be a technological tool, or a character, based on the theme of the curriculum.” Also, F-P-5 expresses, “I expect students to make presentations with different materials such as PowerPoint, posters, or videos.” F-P-3 says, “With technological developments, students can have more engagement in creating something new.”

Table 10 *Descriptive statistics of the teachers’ perceptions in fostering students’ creativity and innovation*

<i>The statements that teachers agree</i>	<i>Not really (%)</i>	<i>To a minor extent (%)</i>	<i>To a moderate extent (%)</i>	<i>To a great extent (%)</i>	<i>To a very great extent (%)</i>	<i>M</i>	<i>S.D.</i>
I have tried to develop students’ creativity and innovation skills	0	10.0	34.0	54.0	0	3.45	.679
Most students have learned creativity and innovation skills while in my class	0	18.0	32.0	50.0	0	3.32	.768
I have been able to effectively assess students’ creativity and innovation skills	0	14.0	34.0	52.0	0	3.38	.725

Table 10 shares the results of the teachers’ perceptions on creativity and innovation skills. The participants commonly agree that they do their best to improve students’ creativity

and innovation skills, and that most of the students have gained the skills, and they are assessed effectively “to a great extent”. Only a few of the participants are against these statements. More than half of the participants accept these statements “to a great extent” (respectively 54%, 50%, and 52%).

4.1.5. Self-Direction

This section examines how frequently teachers use the activities to foster students’ self-direction and what teachers’ opinions are on supporting students. The analysis of the quantitative data is given in Table 11, and then, the views of the focus group interview are presented. Lastly, Table 12 shows teachers’ perceptions on fostering students’ self-direction.

Table 11 *Descriptive statistics of the frequency of classroom activities that foster self-direction*

<i>What teachers ask their students to do in class</i>	<i>Almost never (%)</i>	<i>A few times a semester (%)</i>	<i>1-3 times per month (%)</i>	<i>1-3 times per week (%)</i>	<i>Almost Daily (%)</i>	<i>M</i>	<i>S.D.</i>
Take initiative when confronted with a difficult problem or question	4.0	40.0	26.0	20.0	8.0	2.88	1.053
Choose their own topics of learning or questions to pursue	8.0	40.0	26.0	18.0	8.0	2.78	1.053
Plan the steps they will take to accomplish a complex task	0	48.0	30.0	14.0	8.0	2.82	.962
Choose for themselves what examples to study or resources to use	2.0	46.0	28.0	14.0	10.0	2.84	1.037
Monitor their own progress towards completion of a complex task and modify their work accordingly	4.0	34.0	38.0	16.0	8.0	2.90	.995
Use specific criteria to assess the quality	4.0	52.0	28.0	12.0	4.0	2.60	.904

of their work before it
is completed

Use peer, teacher or expert feedback to revise their work	0	30.0	32.0	24.0	14.0	3.22	1.036
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In Table 11, seven items are given to collect data on evaluating EFL teachers' practices with the aim of boosting students' self-direction skill in language classes. Of all the items, "using peer, teacher or expert feedback to revise their work" is the most selected activity ($M=3.22$). 32% of the participants prefer doing it "1-3 times per month", 30% "a few times a semester", 24% "1-3 times per week", and 14% "almost daily". On contrast, the other items' mean scores are fairly low. The results show that the activity of "using specific criteria to assess the quality of their work before it is completed" is the least one to be implemented in the class ($M=2.60$). More than half of the participants prefer it "a few times a semester" (52%) or "almost never" (4%). The other items are as following: "monitoring their own progress towards completion of a complex task and modify their work accordingly" ($M=2.90$), "taking initiative when confronted with a difficult problem or question" (2.88), "choosing for themselves what examples to study or resources to use" (2.84), "planning the steps they will take to accomplish a complex task" (2.82), and "choosing their own topics of learning or questions to pursue" (2.78).

According to the focus-group interview, there are various reasons why self-direction cannot be enhanced in the language teaching classrooms. Firstly, all teachers agree that students rely too much on their teachers for their learning process. F-P-2 expresses, "Students do not have enough knowledge about how to improve the skill." Besides, F-P-1 expresses, "We do not allow students to learn on their own. On the contrary, we present everything students need." At last, F-P-5 affirms, "Students have the lack of motivation."

Table 12 *Descriptive statistics of the teachers' perceptions in fostering students' self-direction*

<i>The statements that teachers agree</i>	<i>Not really (%)</i>	<i>To a minor extent (%)</i>	<i>To a moderate extent (%)</i>	<i>To a great extent (%)</i>	<i>To a very great extent (%)</i>	<i>M</i>	<i>S.D.</i>
I have tried to develop students' self- direction skills	0	28.0	34.0	38.0	0	3.10	.814

Most students have learned self-direction skills while in my class	2.0	32.0	28.0	38.0	0	3.02	.892
I have been able to effectively assess students' self-direction skills	6.0	26.0	26.0	42.0	0	4.04	.968

Table 12 reveals the data on the distribution of the frequency of teachers' perception about the skill of self-direction. The participants consider that they strive to foster students' self-direction "to a great extent" (38%), while 34% of the participants agree "to a moderate extent" and 28% "to a minor extent". In a similar vein, 38% of the participants agree that students have acquired this skill "to a great extent", whereas 32% "to a minor extent". Lastly, 42% of the participants think that they can assess students' self-direction skills "to a great extent", whereas 6% of them marked "not really".

4.1.6. Using Technology as a Tool for Learning

This section aims to uncover the frequencies of activities that are selected by teachers in order to enhance the skill of using technology as a learning tool as well as sharing the data from the focus group interviews. Besides, teachers' perceptions on fostering the target skill are presented in Table 13.

Table 13 *Descriptive statistics of the frequency of classroom activities that foster using technology as a tool for learning*

<i>What teachers ask their students to do in class</i>	<i>Almost never (%)</i>	<i>A few times a semester (%)</i>	<i>1-3 times per month (%)</i>	<i>1-3 times per week (%)</i>	<i>Almost Daily (%)</i>	<i>M</i>	<i>S.D.</i>
Use technology or the Internet for self-instruction (e.g., Kahn Academy or other videos, tutorials, self-instructional websites, etc.)	2.0	12.00	22.0	32.0	32.0	3.80	1.088
Select appropriate technology tools or resources for completing a task	0	10.0	24.0	34.0	30.0	3.86	.979

Evaluate the credibility and relevance of online resources	0	16.0	28.0	36.0	20.0	3.60	.990
Use technology to analyse information (e.g., databases, spreadsheets, graphic programs, etc.)	4.0	24.0	26.0	24.0	22.0	3.36	1.191
Use technology to help them share information (e.g., multi-media presentations using sound or video, presentation software, blogs, podcasts, etc.)	2.0	14.0	24.0	34.0	26.0	3.68	1.077
Use technology to support team work or collaboration (e.g., shared work spaces, email exchanges, giving and receiving feedback, etc.)	6.0	16.0	26.0	36.0	16.0	3.40	1.125
Use technology to interact directly with experts or members of local/global Communities	20.0	28.0	22.0	24.0	4.0	2.63	1.185
Use technology to keep track of their work on extended tasks or assignments	6.0	30.0	22.0	36.0	6.0	3.06	1.077

There are eight elements to uncover the teachers' practices related to "using technology as a learning tool". When the mean scores are compared, it can be inferred that teachers ask mainly their students to "select appropriate technology tools or resources for completing a task" (M=3.86). 34% of the participants prefer this activity "1-3 times per week", and %30 "almost daily". On the other hand, 24% of them do this activity "1-3 times per month", and 10% "a few times a semester". Secondly, teachers expect their students to

“use technology or the Internet for self-instruction (e.g., Kahn Academy or other videos, tutorials, self-instructional websites, etc.)” (M=3.80). For this item, 32% of the participants evenly mark “1-3 times per week” and “almost daily”. These are followed by “using technology to help them share information (e.g., multi-media presentations using sound or video, presentation software, blogs, podcasts, etc.)” (3.68), “evaluating the credibility and relevance of online resources” (3.60), “using technology to support team work or collaboration” (3.40), “using technology to analyse information” (3.36), “using technology to keep track of their work on extended tasks or assignments” (3.06), “using technology to interact directly with experts or members of local/global communities” (2.63) respectively.

On the basis of the general results, this skill is the most prominent one. Teachers agree that they can foster students using technology as a tool for learning. This has been supported with the focus group interview, as well. Initially, F-P-1, who had negative attitudes towards technology, states, “Students can easily access to the internet sources, and they can learn without any support of a teacher.” F-P-6 remarks, “Learning a language is not limited to the walls of classroom thanks to the development of technology.” F-P-2 explains, “Technological developments enable students to enjoy the learning process. As a result, students can be more willing to learn.” Lastly, F-P-4 says, “Students can make foreign friends on online platforms and this helps students to improve communication skills, as well. “

Table 14 *Descriptive statistics of the teachers' perceptions in fostering students' using technology as a tool for learning*

<i>The statements that teachers agree</i>	<i>Not really (%)</i>	<i>To a minor extent (%)</i>	<i>To a moderate extent (%)</i>	<i>To a great extent (%)</i>	<i>To a very great extent (%)</i>	<i>M</i>	<i>S.D.</i>
I have tried to develop students' skills in using technology as a tool for learning	0	12.0	28.0	60.0	0	3.48	.707
Most students have learned to use technology as a tool for learning while in my class	0	16.0	32.0	52.0	0	3.36	.749
I have been able to effectively assess students' skills in	2.0	14.0	30.0	54.0	0	3.36	.802

using technology for
learning

The distribution of the frequency of teachers' perceptions in "using technology as a learning tool" is shown in Table 14. 60% of the participants affirm that they have tried to develop students' skills in using technology as a learning tool "to a great extent", whereas 28% to "a moderate extent", and 12% "to a minor extent". Similarly, 52% of them believe that students have improved this skill "to a great extent". Lastly, teachers agree that students are assessed for this skill "to a great extent".

4.2. The Findings on the Views of High School English Teachers about Artificial Intelligence and Its Use in Language Classroom to Foster Students' 21st Century Skills

In this section, the results, based on the open-ended questions, will be presented. The responses of teachers are categorized with themes and codes. The themes will be explained in short, and the frequency of each theme will be given.

4.2.1. How can you improve your students' critical thinking skills with the help of AI while teaching English?

From the answers, it can be concluded that there are some themes in order to find out how AI can help students improve their critical skills. These themes are:

Table 15 *Distribution of the themes and codes to foster students' critical thinking skill by using AI*

<i>Themes</i>	<i>Recurrent Codes</i>	<i>Brief Summary</i>
Encouraging Discussions	- Talking about specific topics - Fostering debates - Creating questions/ asking peers - Interactive debates - Encouraging arguments	AI motivates students to talk about various topics, to initiate debates, to ask and answer question in order to foster students' critical thinking skills.
Analysing a Content	- Finding the right information and analyse it - Deep textual analysis	AI tools assist students to find the suitable content and analyse it for their own learning process. Also, they

	- Questions for deeper analysis	can analyse texts deeper with AI tools.
Personalized Learning	- Analysing arguments - Facilitating personalized learning - Providing personalized feedbacks	AI tools facilitate personalized learning and provide suitable feedbacks for each learner.
Searching for Proper Sources	- Searching for specific topics, and what is needed	With AI tools, students can search for what they need on a particular topic.
Peer Interaction	- Asking peers questions - Supporting peer feedbacks	AI tools give chance for students to ask question to their peers and get feedbacks from them.
Solving a Problem	- Finding solutions for puzzles - Analysing a problem - Creating problem-solving scenarios	AI presents various problem-solving circumstances and let students get engaged in these problems to reach a solution.
Not Using AI / Lack of Knowledge on AI	- No knowledge of AI - Rarely using it in classes.	There are some participants who think they do not use AI in their lessons.

The themes given above have been interpreted as follows from the researcher's point of view.

1. **Encouraging Discussions:** Artificial Intelligence provides students circumstances to discuss a topic, and reach a conclusion thanks to this discussion. Discussions help students to improve their critical thinking skills by forcing them to consider in different perspectives.
2. **Analysing Content:** In a language lesson, students learn the target language on a related themes. Students can find the right text for the specific learning, questions for deeper analysis and attain the right information.
3. **Personalized Learning:** AI supports personalized learning with facilitating suitable sources for each individual. Also, AI provides personalized instant feedbacks for learners.

4. **Searching for Proper Sources:** With the help of AI tools, learners can search what they need, and get the information instantly. Besides, they can do it with different types of AI tools.
5. **Peer Interaction:** AI tools encourage students to ask questions to their peers, support peer feedback on online platforms and facilitate peer review on their works.
6. **Solving a Problem:** AI tools can create problem-solving scenarios, let students analyse problems and find solutions for them.
7. **Not Using AI / Lack of Knowledge on AI:** AI sometimes is not preferred to use in language classrooms because of teachers' lack of knowledge and their choices.

Table 16 *Distribution of the frequency and percentages of themes to fostering students' critical thinking skills with AI*

<i>Theme</i>	<i>Frequency</i>	<i>Percentage</i>
Encouraging Discussions	14	28.57%
Analysing a Content	11	22.448%
Solving a Problem	7	14.285%
Personalized Learning	6	12.24%
Searching for Proper Sources	5	10.204%
Peer Interaction	3	6.122%
Not Using AI / Lack of Knowledge on AI	3	6.122%

“Encouraging discussions” is the most frequent theme with the rate of 28.57 %. This result shows that AI tools can foster critical thinking skills by providing appropriate conditions for discussions. As well as initiating debates, AI tools enable students to create questions and ask their friends on a specific topic, which support interactive debates. “Analysing content” is the second most common theme (22.448 %). With AI tools, students can find the proper information by analysing it. Furthermore, students can analyse texts more deeply, and prepare questions for a deeper analysis, which support students' critical thinking. The next theme is “solving a problem” (14.285 %). AI tools present problem-solving circumstances for students and students are expected to solve these problems with the help of AI tools. “Personalized learning” is the next theme that has been highlighted by the participants. AI tools provide proper sources for each student, and also give feedbacks

instantly for them. Similarly, “searching for proper sources” by using AI has been underlined (10.204%). On the other hand, “peer interaction” with AI tools is another theme that stand out to boost critical thinking skill (6.122%). Students can interact with their peers with AI tools, and exchange ideas on their works. Lastly, a minor amount of the participants (6.122%) think that they do “not use AI in their classrooms” for improving students’ critical thinking skill. To sum up, the themes, which are prominent in this study to boost students’ critical thinking skills in language classes are “encouraging discussions”, “analysing content”, “solving a problem”, “personalized learning”, “searching for proper sources”, “peer interaction”, and “not using AI / no knowledge on AI”. Through the implementation of these themes in language classes with AI tools, it can be asserted that students’ critical skills will be flourished.

When it comes to making a connection of qualitative and quantitative results, it is clear that critical thinking skill is one of the skills that cannot be improved in language classes compared to the others ($M=2.93$). In order to foster the skill, AI tools may play a key role. Firstly, it can be stated that according to the quantitative results, “solving complex problems” and “making their own interpretation” are distinctive items (3.24 and 3.08 respectively). On the other hand, the activity of “analysing competing arguments, perspectives or solutions to a problem” is less preferred (2.86). These activities can be supported with “solving problems” and “analysing content” with the help of AI tools. AI tools present proper content for students and encourage them to analyse it deeply. Also, AI tools create problem-solving scenarios for students to reach a solution for a problem. Similarly, “developing a persuasive argument based on supporting evidence or reasoning” has one of the lowest rates (2.56). To foster students’ skills, AI tools are expected to encourage students to be part of debates. Students can talk about specific topics, create questions and ask their peers, be part of interactive discussions and look from different perspectives thanks to AI tools. Lastly, students are asked to “compare information from different sources” as a part of critical thinking skills (3.06). It can be supported with the theme of “searching for proper sources”. AI tools allow students to search for what they need, and utilize them effectively. Students can make a comparison of information which is gathered with the help of AI tools before they complete a task.

4.2.2. How can you improve your students’ collaboration skills with the help of AI while teaching English?

On the basis of the responses from the participants, themes to improve students’ collaboration skills are presented.

Table 17 *Distribution of the themes and codes to foster students' collaboration skill by using AI*

<i>Themes</i>	<i>Recurrent Codes</i>	<i>Brief Summary</i>
Collaborative / Interactive Group Tasks	- Organizing group works - Manufacturing group works - Creating a product together	Students collaboratively can be organized, produce something new together, and can be assessed as a team with AI tools.
Peer Feedback	- Getting peer feedback - Encouraging peer feedbacks - Revising, their works together - Exchanging ideas	AI tools enable students to revise their works, and give feedback to improve their works.
Virtual Interactive Circumstances	- Creating simulations - Group works on virtual circumstances - Online meetings - Promoting peer interactions through AI-driven discussion platforms	AI tools create simulations and virtual classrooms for students to come together and work as a team. This team work in virtual classrooms can foster students' collaboration skills.
Confidence to Collaborate and Interact	- Students can be more social and self-confident. - They can exchange their ideas in a stress-free way.	AI tools facilitate circumstances to exchange their ideas confidently.
Not Using AI / Lack of Knowledge on AI	- Lack of knowledge on AI - AI is not effective to improve students collaboration skill	There are some views on not using AI in classes with the aim of improving collaboration skill.

The themes given above have been interpreted as follows from the researcher's point of view.

1. **Collaborative/ Interactive Group Tasks:** Students can be asked to work as a group, interact with each other and create a product with the help of AI tools. AI tools can facilitate group works with online platforms.

2. **Peer Feedback:** Students can be motivated to revise their works together, exchange their ideas to improve each other, give and get feedback instantly thanks to AI tools. These all are crucial to foster students collaboratively.
3. **Virtual Interactive Circumstances:** AI tools create virtual classrooms, simulations for the collaboration of students. Moreover, AI provides online meeting chances, and peer interaction through AI discussion platforms. These all can contribute to students' collaboration skills.
4. **Confidence to Collaborate and Interact:** Students can be more social and feel more self-confident on online platforms which are supported by AI. Students can exchange their ideas more courageously thanks to AI tools. These feelings enable to collaborate effectively and with no pressures.
5. **Not Using AI / Lack of Knowledge on AI:** Some teachers think that they do not know how to use AI in their classes. Similarly, there are some teachers who think that AI tools do not help students to improve their collaboration skill.

Table 18 *Distribution of the frequency and percentages of themes to fostering students' collaboration skills with AI*

<i>Theme</i>	<i>Frequency</i>	<i>Percentage</i>
Collaborative / Interactive Group Tasks	25	51.020
Peer Feedback	9	18.367
Virtual Interactive Circumstances	8	16.326
Confidence to Collaborate and Interact	4	8.163
Not Using AI / Lack of Knowledge on AI	3	6.122

The results in Table 18 show that more than half of the participants' responses (51.020 %) assert that AI tools will be very effective to boost students' collaboration skills by facilitating "collaborative / interactive tasks". Students, as a group or a pair, can be assigned group tasks and expected to work out on a common project together, and accomplish this project collaboratively by using AI tools. The next one is "peer feedback" (18.367%). With AI tools, students can review each other works, and discuss how to improve these works

together. Also, students are encouraged to give and get feedback by using AI tools. This interaction can enable students to improve their collaboration skills. The third theme is “virtual interactive circumstances” (16.326%). By providing simulations and virtual classrooms, AI tools help students come together on online platforms, and work collaboratively to reach a mutual goal. Also, AI tools support for virtual discussions, and promote peer interaction through AI-supported discussion platforms. Furthermore, AI tools make students “feel more self-confident to collaborate” with other students and let them more social (8.163%). Finally, there are some views “not to prefer using AI tools” in classes (6.122%). That may be either because some think that AI tools are not helpful to improve the skill or they have lack of knowledge to use AI. All in all, as result of the data which were collected from EFL teachers, there are some themes to foster students’ collaboration skills. These are “collaborative/interactive group tasks”, “peer feedback”, “virtual interactive circumstances”, “confidence to collaborate and interact”, and “not using AI / lack of knowledge on AI”. By taking these themes into account, EFL teachers can help their students improve their collaboration skills in language classes.

Examining the findings of the quantitative and qualitative research, it can be stated that teachers do their best to improve students’ collaboration skills. The results from the practice and perception are consistent. However, teachers think that they can improve the skill with AI tools. The item of “working in pairs and small groups” has the highest mean score (3.56). This finding shows that collaboration is seen crucial for teachers. In addition, teachers agree that this skill can be improved with AI tools. This is compatible with the theme “collaborative / interactive tasks”. Teachers claim that AI tools can assist students to foster their communication skills by organizing group works through online platforms, giving chance for them to accomplish a common goal, and supporting collaborative projects. The next activity is “giving feedback to peers or assess other students’ work” (3.02). It has been marked as moderately. This presents that there is a common point on giving feedback, but it is not very prevalent. However, peer feedback can be integrated into collaborative tasks. In this respect, teachers have a common opinion that AI tools can be utilized as a tool for facilitating peer feedback. This is overlapped with the theme of “peer feedback”. AI tools allow students to share their opinions on each other’s work and give feedback. This process contributes to the skills of collaboration meaningfully. The other prominent point is about “presenting group works to the class, teachers and others”, and “working as a team to incorporate on group tasks” (M=2.96 and 2.90 respectively). These two items are not preferred as much as other activities. However, teachers think that these can be encouraged with AI tools. Examining the

themes, these two items can be empowered with the theme of “virtual interactive circumstances”. The participants perceive that virtual classrooms can be created with AI tools to facilitate students to communicate, present their work, engage in group work, and interact with their peers. Similarly, teachers consider that AI tools increase students’ “confidence to collaborate”. Consequently, they can present their group work more confidently on AI-based platforms. This is also paralleled to the themes on improving collaboration skill with AI tools.

4.2.3. How can you improve your students’ communication skills with the help of AI while teaching English?

According to the data collected from EFL teachers, various themes have emerged from the responses of the teachers provided to the question, how they can improve their students’ communication skills with the help of AI. The main themes and recurrent codes are given below:

Table 19 *Distribution of the themes and codes to foster students’ communication skill by using AI*

<i>Themes</i>	<i>Recurrent Codes</i>	<i>Brief Summary</i>
Interaction for Language Learning	- Practising daily language - Using the language effectively - Practising with AI as if it was a human - Offering interactive platforms and applications	AI tools help students improve speaking skills. Also, they can practise with online platforms interactively. As a result, students can improve their communication skills.
Confidence to Express Themselves	- Expressing their opinions freely - Communicating when they are ready - Not feeling pressure when speaking in front of others - Communicating with AI tools confidently - Practising speaking skills without anxiety	AI tools let student communicate without hesitation. Also, students can communicate with AI tools more confidently.
Alternative Ways to Share Their Opinions	- Preparing posters - Creating different	Students can find new ways to express themselves thanks

	- materials - Expressing themselves with videos slides or online ways - Writing blogs to share their opinions	to AI tools. This helps students improve their communication skills.
Personalized Learning	- Practising with AI tools on their own - Learning something new individually, - Organizing their own thoughts by themselves with AI tools - Improving speaking skills by practising by themselves	AI tools encourage personalized learning by providing students to learn individually.
Instant Feedback	- Enabling real-time feedback - Providing feedback to foster communication	AI tools instantly give feedback for students to make correction in order to improve their communication skills.
Not Using AI / Lack of Knowledge	- Lack of Knowledge	There are some participants who are unwilling to utilize AI and have lack of knowledge of AI.

The themes given above have been interpreted as follows from the researcher's point of view.

- 1. Interaction for Language Learning:** Students can communicate and practice daily usage of the target language by using AI tools. Besides, AI tools provide interactive online platforms, conversation practices, and various speaking circumstances. Consequently, AI tools could be an effective way of fostering communication skill while acquiring language skills.
- 2. Confidence to Express Themselves:** AI tools allow students to express themselves freely and without pressure. Students can communicate when they feel ready, and are not worried about other students.
- 3. Alternative Ways to Share Their Opinions:** Students can find various ways to express themselves such as writing a blog, presenting a poster, preparing a video etc. thanks to AI tools.

4. **Personalized Learning:** Students can learn and practice on their own. AI tools let students communicate individually and improve language skills. Also, they can organize their own opinions with AI tools.
5. **Instant Feedback:** AI tools provide real-time feedback on their communication skills.
6. **Not Using AI / Lack of Knowledge:** There are some teachers who are reluctant to use AI in their classes.

Table 20 *Distribution of the frequency and percentages of themes to fostering students' communication skills with AI*

<i>Theme</i>	<i>Frequency</i>	<i>Percentage</i>
Interaction for Language Learning	13	32.5%
Confidence to Express Themselves	8	20%
Alternative Ways to Share Their Opinions	6	15%
Personalized Learning	6	15%
Instant Feedback	5	12.5%
Not Using AI / Lack of Knowledge	2	5%

Examining the distribution of the frequency results, it can clearly be stated that “interaction for language learning” is the most prominent theme (32.5%). Learners can benefit from AI tools to communicate easily, and practice daily language of the target language. Furthermore, AI tools offer interactive platforms to communicate and practice various types of conversation. With these facilities, students can improve their speaking skills. As a result, they can have a better communication skill. The next theme is “confidence to express themselves” (20%). Students feel more relaxed to communicate when they use AI tools. The fact that no one is around them decreases the level of anxiety, and students can improve their communication skills more confidently. The other one is “alternative ways to share their opinions” (15%). When students can find something creative to express themselves, they feel more confident to communicate. AI tools allow student to prepare videos, present creative posters, write blogs. These all can contribute to students' communication skills. Similarly,

“personalized learning” is highlighted as an important issue (15%). Students can practice with AI tools by themselves to improve communication skills. Furthermore, AI tools present individualized learning environments for students to communicate better. The following theme is the facility of “instant feedback” provision (12.5%). As students get instant feedback from AI tools, they can foster their communication in an appropriate way. Lastly, as a negative situation, some teachers are not eager to bring AI tools into their language classroom because they think AI adversely impact on students’ communication skills. Similarly, some participants think that they do not have enough knowledge on AI tool. In conclusion, the participants agree that there are some points to be focused on to utilize AI for fostering students’ communication skills. These points are related to “interaction of student to learn a language”, “feeling more confident”, “finding new ways to communicate”, “learning individually”, and “getting feedback quickly”. On the other hand, some participants object to using AI in their classrooms.

Comparing the results of quantitative and qualitative data, it is agreed that teachers attempt to improve students’ communication skills. In addition, they consider that AI tools will be effective for the improvement of the skill. Based on the results, teachers ask their students to do the activities such as “answering questions in front of an audience” ($M=3.63$) and “preparing and delivering oral presentation to the teacher or others” (2.96). These activities can be strengthened with the themes of “interaction for language learning” and “confidence to express themselves”. AI tools allow students to practice in different ways, and enable them to communicate fruitfully. Furthermore, it is asserted that students feel more confident when they do not feel pressure on themselves. AI tools help students to rehearse on their own, and feel less stressful. In addition, students are asked to “convey their ideas with media other than a written paper” (3.08). This activity is compatible with the theme, “alternative ways to share their opinions”. The participants think that AI tools help students to find express themselves with various way such as posters, videos, or blogs. As a result, students find various ways to improve their communication skills. Besides, teachers ask their students to “structure data for use in written products or oral presentation” (3.08). Teachers agree that this activity can be enhanced with the theme of “personalized learning”. AI tools present various ways for students to improve their skills individually. They can prepare their work in accordance with their learning pace. Lastly, teachers feel confident about assessing students’ communication skill ($M=3.92$). Teachers conclude that this finding can be empowered by “giving instant feedback” through AI-based tools. Giving instant feedback for

students can help teachers to point out the lack of students, and can contribute to the development of communication skill of students.

4.2.4. How can you improve your students' creativity and innovation skills with the help of AI while teaching English?

As a result of analysing data from the participants, there are particular themes which can help students to improve their creativity and innovation skills with the help of AI. The themes are:

Table 21 *Distribution of the themes and codes to foster students' creativity and innovation skills by using AI*

<i>Theme</i>	<i>Recurrent Codes</i>	<i>Brief Summary</i>
Creative Writing	- Producing stories - Improving writing skills - Creating dialogues or scripts	AI tools allow students to produce stories, create dialogues and improve writing skills. As a result, students can improve their creative and innovation skills.
Generating New Ideas	- Developing creation techniques - Generating story ideas - Inventing a topic - Testing their ideas - Inspiring new ideas	AI tools encourage students to generate various ideas to create something new. Also, students can test their ideas.
Creating Digital Materials	- Inventing new games - Visualizing their products - Creating multi-media contents - Preparing original videos - Creating different types of products	With AI tools, students create types of materials to develop their creativity.
Problem Solving Skills	- Finding a solution for a problem - Generating solutions for problems	AI tools can help students to generate solutions for a problem by allowing them create a new product.
Personalized Learning	- Creating their own materials	AI tools support individualized learning by

	- Improving their creative skills on their own - Preparing videos with their own voices to improve their speaking skills	allowing them to create their own materials. Furthermore, students can create materials to develop their language skills.
Raising Confidence for Creativity	- Creating a content to boost their confidence - Encouraging students to think in a unique way.	AI tools encourage students to see from their perspective, create something new, and raise students' confidence.
Lack of Knowledge	- Not having knowledge on AI	There is a lack of knowledge on how to use AI tools to foster creativity and innovation skills while teaching English.

The themes given above have been interpreted as follows from the researcher's point of view.

1. **Creative Writing:** Students can benefit from AI tools in order to improve their creative writing skills. They can write stories, paragraphs or dialogues.
2. **Generating New Ideas:** AI tools can help students to have a new perspective to produce something unique. Students can write story ideas, test and evaluate them.
3. **Creating Digital Materials:** Students can invent new games, visualize their tasks, or create multi-media contents thanks to AI tools. These all help students to have better creativity and innovation skills.
4. **Problem Solving Skills:** Students can find solutions for the problems while creating a new work with the help of AI tools.
5. **Personalized Learning:** AI tools can be effective for helping students to create their own materials, and improve their creative skills by themselves.
6. **Raising Confidence for Creativity:** Creating content with AI tools raises students' self-confidence, and they can feel more confident.
7. **Lack of Knowledge:** There is a view on lack of knowledge on how to use AI to foster creativity while teaching English.

Table 22 *Distribution of the frequency and percentages of themes to fostering students' creativity and innovation skills with AI*

<i>Themes</i>	<i>Frequency</i>	<i>Percentage</i>
Creative Writing	17	34.693 %
Creating Digital Materials	10	20.408 %
Generating New Ideas	8	16.326 %
Personalized Learning	8	16.326 %
Raising Confidence for Creativity	3	6.122 %
Problem Solving Skills	2	4.081 %
Lack of Knowledge	1	2.040 %

According to the results given in Table 22, the theme of “creative writing” is the most prominent one (34.693%). English teachers agree that AI tools will be supportive for improving students' creativity and innovation by providing students circumstances to create texts, produce stories and dialogues, and thereby encouraging writing skills. The next one is the theme about “creating digital materials” (20.408%). According to the views of the participants, students invent new games; prepare original products such as videos, blogs, posters etc. Moreover, students can visualize their tasks by creating multi-media contents. Another theme is related to “generating new ideas” (16.326%). These ideas can be about vocabulary learning, writing a story, inventing a topic and talking about it. In addition, students can test their ideas with the help of AI tools. Similarly, “personalized learning” is one of key themes (16.326%). Thanks to AI tools, students can create their own learning materials, and improve both their learning skills and their creativity and innovation skills. Besides, teachers consider that AI tools can support students' “confidence for creativity” (6.122%). Students can boost their confidence by creating new contents, and they can also feel more confident to come up with an innovative opinion. In addition, AI tools can be helpful for students to have better “problem solving skills” by improving their creativity and innovation skills (4.081%). By creating new ideas and products, students can generate solutions for newly-faced problems. Lastly, there is a view that teachers do not have enough knowledge on how to use AI tools for creativity and innovation skills. All in all, according to the responses of the participants of the study, there are various themes to foster students' creativity and innovation skills. These themes are about “creative writing”, “generating digital materials”, “generating new ideas”, “personalized learning”, “raising confidence for

creativity”, and “problem solving skills”. In addition to them, there is a lack of knowledge on how to utilize AI in language classrooms.

The results of quantitative and qualitative data show that students’ creativity skill can be enhanced with the help of AI tools. Teachers most frequently prefer the activities of “using brainstorming or concept mapping” (3.42). Teachers agree that the themes “creative writing” and “generating ideas” can overlap the activity. AI tools can support teachers to utilize brainstorming and generating ideas. This encourages students to think creatively and lead them to produce an original product. Similarly, students are asked to “create an original product or performance to express their ideas” (2.98). It can be concluded that teachers do not see this activity as significant as other activities for improving creativity and innovation. However, it is stated that AI tools can support this activity by allowing students to “create digital materials”. Students can express themselves better and foster their creativity and innovation skill by utilizing visual materials. In addition, teachers ask their students to “generate their own ideas about how to confront a problem or question” (3.32) and “to test different ideas and work to improve them” (3.24). This can be related to the theme of “personalized learning”. Students can create products which are proper for their interest. As a result, they can motivate themselves to study on their own and become more autonomous by taking the responsibility for learning on their own. Consequently, students are encouraged to be more creative during the learning process. Furthermore, teachers perceive that they are able to assess students’ creativity and innovation skill in their class (3.38). On the contrary, as mentioned above, “creating an original product” is not frequently preferred (2.98). Teachers consider that AI tools allow them to create unique products for assessing them. This can be coordinated with the assessment of the teacher with the help of an AI tool. Thus, students can feel more confident while they are assessed by their teachers. Finally, the activity of “reaching a solution of a question or problem” is one of the most frequent (3.38). Teachers think that this activity can be backed up with the theme of “problem solving skills”. This skill fosters students’ creativity by allowing them to have a different perspective on newly-encountered issues.

4.2.5. How can you improve your students’ self-direction skills with the help of AI while teaching English?

The responses of participants led different themes to emerge. These are ranging from personalized learning, assessing the progress to becoming autonomous and getting feedback.

There are totally 9 themes that are highlighted to improve students' self-direction skills with AI tools.

Table 23 *Distribution of the themes and codes to foster students' self-direction skills by using AI*

<i>Themes</i>	<i>Recurrent Codes</i>	<i>Brief Summary</i>
Becoming Autonomous	- Learning on their own - Being autonomous - Being responsible for the learning process - Learning without a teacher - Fostering independent learning	AI tools can foster autonomy by supporting students to learn on their own. Also, students take the responsibility for their own learning. Students learn to learn without a teacher.
Personalized Learning	- Enabling personalized learning - Presenting everything for students' interests - Suggesting resources for students - Providing individualized learning	AI tools offer personalized learning paths. Furthermore, they allow students to find the best way to learn.
Assessing Their Own Progress and Self-Evaluation	- Assessing and evaluating the progress - Review their own work - Self-assessment	AI tools enable students to assess and evaluate their own progress.
Getting Feedback	- Getting instant feedback - Checking the progress with proper feedbacks	Students can get instant feedbacks from AI tools, and they can check what they have learnt.
Flexibility While Learning	- Learning at appropriate speed - Learning when, where and how they want	AI tools provide flexibility for students learning. They can decide the place, the way, and the time they want to learn.
Accessing to Learning Resources	- Finding materials to learn - Suggesting resources	Students can access to numerous sources to learn. AI tools suggest proper materials and methods for

		students.
Identifying Realistic Goals	- Providing realistic goals - Allowing students to set their own goals	Students can decide their goals with AI tools.
Mitigating Anxiety Levels	- Decreasing anxiety levels - Empowering students to manage their learning	As students learn on their own, AI tools decrease anxiety levels of students.
Not Using AI / Lack of Knowledge	- Lack of knowledge	Some participants agree that they do not practice activities to improve self-direction with the help of AI tools.

The themes given above have been interpreted as follows from the researcher's point of view.

1. **Becoming Autonomous:** AI tools enable students to learn on their own. Also, students become responsible for their own learning. They find appropriate sources and utilize them to obtain information. As a result, they become autonomous and improve self-direction skills.
2. **Personalized Learning:** AI tools provide learning sources which are suitable for students' interest and learning levels. Hence, personalized learning is supported by AI tools, and learners can learn by themselves.
3. **Assessing Their Own Progress and Self-Evaluation:** AI tools give chance to students to assess their learning progress. Students can review their works, observe their levels, and evaluate what they have learnt.
4. **Getting Feedback:** AI tools allow students to check their progress by giving them instant feedback for their works, and learning activities.
5. **Flexibility While Learning:** AI tools enable students to learn wherever they are, however they ask, and whenever they want. They arrange learning progress suitable for their learning speed.
6. **Accessing to Learning Resources:** AI tools present countless learning sources for students. As a result, students themselves find proper materials to learn on their own.

7. **Identifying Realistic Goals:** AI tools are efficient for setting realistic goals for students.
8. **Mitigating Anxiety Levels:** AI tools decrease students' anxiety levels while they learn on their own. Even if students make mistakes, they do not have to be worried as they are all alone.
9. **Not Using AI / Lack of Knowledge:** There are views that teachers are reluctant to use AI in their classrooms.

Table 24 *Distribution of the frequency and percentages of themes to fostering students' self-direction skills with AI*

<i>Themes</i>	<i>Frequency</i>	<i>Percentage</i>
Becoming Autonomous	15	23.076%
Personalized Learning	15	23.076%
Assessing Their Own Progress and Self-Evaluation	10	15.384%
Getting Feedback	9	13.846%
Accessing to Learning Resources	6	9.230%
Flexibility While Learning	3	4.615%
Not Using AI / Lack of Knowledge	3	4.615%
Identifying Realistic Goals	2	3.076%
Mitigating Anxiety Levels	2	3.076%

The results in Table 24 show that teachers mostly agree on two themes. The first one is about “becoming autonomous” (23.076%). By using AI tools, students take responsibility of their learning. Also, they can organize their own learning, and foster autonomy. Students learn to learn without a teacher. The other theme is related “personalized learning” (23.076%). The participants claim that AI tools support individualized learning by offering students suitable materials and methods to learn. “Assessing the progress and self-evaluation” is the next prominent theme (15.384%). Students can observe their own progress, assess it, and evaluate what they learn with the help of AI tools. Furthermore, AI tools allow students to review their works and assess them. This is followed by the theme of “getting feedback” (13.846%). AI tools provide instant feedbacks, and thanks to these feedbacks, students check

their progress. Similarly, students can “access to learning sources” easily with the help of AI tools (9.230%). AI tools suggest suitable materials for students’ interest. In addition, the participants agree that AI tools enable students to “learn in a flexible way” (4.615). In other words, they can decide where, when and how they can learn. On the other hand, some participants seem unwilling to utilize AI tools for improving self-direction skill in language classes (4.615%). Some teachers think AI tools are not effective for the skill, while the others think they do not have enough knowledge how to use AI tools. Lastly, there are two themes to foster self-direction skills. One of them is “identifying realistic goals” (3.076%). Students can set their goals with AI tools easily. The other one is “mitigating anxiety levels” (3.076%). AI tools help students to have low level of anxiety while learning on their own. To conclude, the participants consider that AI tools can be fruitful for boosting students’ self-direction skills by fostering autonomy, supporting personalized learning, allowing students to assess their progress, giving feedback, providing learning resources, identifying realistic goals, lowering anxiety levels, and facilitating proper learning settings. However, some participants disagree that AI tools will be effective for self-direction skills.

Both the quantitative and the qualitative data obtained from this research unveil that there is persuasive connection between available self-direction activities and the usage of AI tools to foster skills. Self-direction is at the bottom of the overall list of the skills. However, it is agreed that AI tools can foster the self-direction skill in language classes. Firstly, teachers seldom ask their students to “choose their topics of learning or questions to pursue” (2.78) and to “plan the steps they will take to accomplish a complex text” (2.82). Teachers think that these activities can be empowered with AI tools. Also, these activities are linked to “becoming autonomous”. By increasing the autonomy of students, AI tools allow students take the responsibility for their learning. As a result, they can decide their topic to study and make a plan how they complete a text. In addition, students are asked to “choose for themselves what examples to study or resources to use” (2.84) on their own, and to “benefit from specific criteria for the assessment of their work” (2.60). These activities can be carried out in connection with the theme of “personalized learning”. AI tools provide students to find suitable materials and methods to learn individually. As a result, they learn independently, which contributes to self-direction skill. Furthermore, choosing their own learning materials can be associated with the theme “accessing to learning materials”. AI tools allow students to find numerous sources for learning, and students can decide on their own materials themselves, which foster the skill of self-direction. The next one is related to the assessment of the students’ own learning. The practice of “monitoring their own progress towards the

completion of a complex task and modifying their work accordingly” is not preferred very much by teachers (2.90). This finding means that teachers do not provide chances for students for assessment of their learning. However; teachers agree that AI tools enable students to assess their own progress and evaluate themselves. AI tools give instant feedback, and allow students to follow their progress. In addition, teachers relatively more frequently “ask their students to benefit from peer, teacher or expert feedback to revise their work” (3.22). This can be enhanced with the theme of “getting feedback”. Students can track their progress by getting instant feedback with AI tools. On the other hand, students are not free to choose their own learning (%8). If students are given chance, students can learn with their own pace. Also, learning process can be timeless and placeless. AI tools allow students to learn as they wish to learn.

4.2.6. How can you improve your students’ using technology as a tool for learning skills with the help of AI while teaching English?

After the data have been analysed, the following themes have been identified as an answer to how AI can help students’ using technology as a tool for learning skills.

Table 25 *Distribution of the themes and codes to foster students’ using technology as a tool for learning skills by using AI*

<i>Theme</i>	<i>Recurrent Codes</i>	<i>Brief Summary</i>
Attaining Online Resources	- Helping students to find materials, information and web pages - Introducing digital resources - Teaching how to search a topic on the internet	AI tools can teach students how to find proper materials on the Net.
Raising Students’ Digital Awareness	- Surfing the internet properly - Fostering digital literacy - Benefitting from AI tools effectively	AI tools raise students’ awareness of the way to utilize technology effectively.
Personalized Learning	- Supporting personalized learning - Presenting materials for individuals’	AI tools support students to learn individually by facilitating proper materials for each student.

	interests	
Getting Feedback and Online Assessment	- Students can follow their progress. - Instant feedback is crucial. - Presenting different kinds of assessment tools	AI tools provide feedback for what they do by using technology. These feedbacks allow students to evaluate their learning process.
Exchanging Opinions through Online Platforms	- Communicating on online platforms - Offering interactive tools - Exchanging their knowledge and experience	Student can communicate by using online platforms to share what they have learnt. Thus, they become aware of using technology as a learning tool.
Students' Becoming Autonomous	- Enabling students to learn on their own - Helping students manage their learning process - Facilitating self-study	AI tools enable students to take responsibility of their learning while utilizing technology.
Increasing Motivation	- Encouraging constantly	AI tools increase students' motivation by supporting constant improvement.

The themes given above have been interpreted as follows from the researcher's point of view.

1. **Attaining Online Resources:** AI tools provide numerous sources for students to learn a language. With this facility, students become more aware of technology as a learning tool.
2. **Raising Students' Digital Awareness:** Students can surf on the internet consciously with the help of AI tools. Also, AI tools encourage students to use technology wisely.
3. **Personalized Learning:** AI tools can be effective for students to find proper materials and methods to learn by utilizing technological sources.
4. **Getting Feedback and Online Assessment:** AI-supported technological learning platforms can provide instant feedback for students. As a result, students can get assessed with various assessment tools, and they can check their learning progress.

5. **Exchanging Opinions through Online Platforms:** AI tools enable students to communicate with each other and exchange what they have learnt through online platforms.
6. **Enhancing Autonomy:** By utilizing technological tools to learn, students become more autonomous. They take the responsibility of their learning process. AI tools help them to obtain this skill.
7. **Increasing Motivation:** AI tools help students to keep their motivation by shifting learning from an exhausting process to exciting one. Also, AI tools encourage students to keep their constant improvement.

Table 26 *Distribution of the frequency and percentages of themes to fostering students' using technology as a tool for learning skills with AI*

<i>Themes</i>	<i>Frequency</i>	<i>Percentage</i>
Attaining Online Resources	11	24.44%
Raising Digital Awareness	9	20%
Personalized Learning	7	15.55%
Getting Feedback and Online Assessment	6	13.33%
Exchanging Opinions through Online Platforms	5	11.11%
Enhancing Autonomy	4	8.88%
Increasing Motivation	3	6.66%

According to Table 26, teachers agree that AI tools support the skill of using technology as a tool for learning by allowing students to “attain online resources” (24.44%). AI tools can introduce a variety of digital resources for students. In addition, students can learn how to search a topic by using AI tools. As a result, students can find necessary materials to foster their learning process. In addition, it has been concluded that AI tools “raise digital awareness of students” (20%). Students can be encouraged to utilize technology effectively with the help of AI tools. This fosters digital literacy, and consequently students benefit from technology properly. As mentioned for other skills, “personalized learning” is highlighted also for the skills of using technology as a learning tool (15.55%). AI tools enable students to learn individually. The next theme is related to “getting feedback and online assessment” (13.33%). AI tools offer various assessment tools for students to follow their

progress. Also, students get instant feedback for the progress of their learning. The other prominent theme is “exchanging opinions through online platforms” (11.11%). Students can be in contact with other students with the support of AI tools. Also, AI tools offer interaction while learning. As a result, students find chances to share what they have learnt. Furthermore, the participants consider that AI tools “enhance autonomy”. Students become responsible for their learning process as AI tools facilitate self-study. Similarly, AI tools “increase motivation” by encouraging on-going improvement. To sum up, teachers think that AI tools will be fruitful to improve students’ skill for using technology as a tool for learning with proper activities.

Comparing the data, it is clearly seen that teachers encourage their students to “use technology as a tool for learning” (3.423). Of all the results of teachers’ practices, this skill is at the top, which means students are encouraged to foster the skill. Yet, this skill still can be improved with AI tools according to the views of teachers. Firstly, teachers most frequently ask their students to “select appropriate technology tools or resources for completing a task” (3.86). This activity is correlated with the theme “attaining online resources”. This means that AI tools enable students to find and choose proper technological resources, and benefit from them effectively. This process boosts students’ skill of benefitting from the technology for learning. The other connection is between “evaluating the credibility and relevance of online resources” and the theme of “raising digital awareness”. It is agreed that AI tools allow students to think about the sources critically, and to make a decision whether the source is effective and suitable for their learning process. Furthermore, students are expected to “utilize technology or the Internet for self-instruction” (3.80). This is related to the theme of “personalized learning”. AI tools provide various sources which are suitable for each student individually. Another point is related to the assessment of students. Teachers assert that they assess students’ skill “to a great extent” (54%). This is linked to “getting feedback and online assessment”. AI tools present instant feedback for students to follow their progress as well as suitable assessment tools to foster their learning. The next one is about collaboration through AI tools. Students are asked to use technology to “support team work or collaboration” (3.40). This finding can be matched with the theme of “exchanging opinions through online platforms”. AI tools allow students to communicate and work collaboratively. Lastly, students can “follow their progress by using technology to keep track of their work on extended tasks or assignments” (3.06). This ratio seems lower compared to other activities. This can be supported with the themes of “enhancing autonomy” and “increasing motivation”. With AI

tools, students can become responsible for their own learning and check their learning rate on their own.



Figure 1 A word cloud: The themes to foster 21st century skills with the help of AI tools

The word cloud given above is about the themes that are highlighted by the participants in order to foster 21st century skills of students with AI tools. According to the responses, AI tools mostly support personalized learning. Teachers agree that students can find appropriate learning materials and methods to learn individually. Personalized learning is emphasized for critical thinking, communication, creativity and innovation, self-direction and using technology as a tool for learning. Another significant theme is getting feedback. It has been concluded that AI tools support skills of collaboration, communication, self-direction and using technology as a tool for learning by giving instant feedback for students. The other themes that are prominent are collaborative/interactive group tasks, becoming autonomous, raising confidence, analysing a content, virtual classrooms, and creating digital materials.

4.3. The Findings on EFL Teachers' Views on Their Professional Development with The Help of Artificial Intelligence Based on the Components of Andragogy

In this section of the study, there is a content analysis about teachers' professional development and using AI tools. The findings are based on the principles of andragogy. Research findings related to the data obtained from the research question 4.3, based on the basic paradigms of andragogy, have produced the themes of "self-concept", "experience",

“learning something new”, “motivation”, “ the need to know as an internal mechanism”, and “problem-centred learning”.

4.3.1. Self-Concept:

According to the responses of the participants, AI tools are effective in improving teachers’ self-concept. AI tools support personalized learning; as a result, teachers can have chance to learn individually. These can be supported with the statements of the participants. For example, Participant 1 stated, “I can use it for learning as I am an independent learner.” This underlines the significance of AI in terms of personalized learning methods. Likewise, Participant 2 stated, “AI helps us to be responsible in our learning as independent learners. We may employ independent learning methods based on our experiences.” This indicates that AI enhances autonomy. Furthermore, AI tools present various learning sources for individuals. In addition, teachers can set goals and observe their progress on their own with the help of AI tools. They can learn independently. This is supported by Participant 5 who stated, “AI develops our self-concept by showing how to learn by ourselves.” This reveals that AI tools are helpful for self-awareness for learning. In addition, Participant 4 expressed, “AI presents personalized feedback, helping us strengthen for improvement.” Lastly, Participant 23 added, “AI can offer personalized feedback and growth opportunities, helping us build confidence in our skills.” With these statements, the role of feedback has been emphasized. These findings are further supported with the comments of the participants, who mention the notions of “confidence”, “independence”, “responsibility”, “personalized feedback” and “learning to learn”.

4.3.2. Teaching Experience:

Teachers agree that AI tools can be supportive for teachers, based on their teaching experience. AI tools can make a connection between past learning/teaching experience and current teaching practices. Teachers think that AI tools can bring what is needed for learning based on the experiences that are saved by tools. As a result, the learning process becomes like a pyramid. This means, every new learning process can be supported with the learning process in the past. This view was presented from the statement of Participant 7, “We learn new things based on our experiences.” This means that the learning is continuous and accumulative. Also, Participant 25 supported, “We can make a plan based on our past experiences of learning with AI tool.” The support of AI tools to make plan has been

underlined. Furthermore, Participant 43 stated, “Our experiences can be saved on AI, and when we need to learn something new, it show what is needed.” It has been suggested that AI tools can be effective for teachers to identify what they need apart from saving their learning background. Lastly, Participant 45 asserted, “We may employ independent learning methods based on our experiences.” The importance of independent learning has been expressed. All in all, in their words, participants also described the notions of “learning new things”, “making plans”, and “employing independent learning methods”:

4.3.3. Learning Something New When You are Ready For the Experience:

The responses that are gathered from the participants assert that AI tools present suitable sources when learners are ready for learning. Learners can choose how, when and where they learn. Also, AI tools provide instant feedback to foster learning process. These views have been backed up with the statements of the participants. Participant 45 underlined, “The readiness of adult learners in learning is also dependent on social and professional environment.” The willingness of adult learners can result from external components. Moreover, Participant 49 emphasized, “When AI provides proper sources that are needed, we keep motivated and become willing to learn something new.” The source of motivation and meaningful learning content are highlighted here. Lastly, Participant 1 stated, “I can use it to learn new things whenever I want.” The flexibility for learning can be appealing for adult learners. In shorts, participants elaborated on their experiences by stating the notions of “dependence on social and professional environment”, “willingness to learn something new”, and “personalized learning resources”.

4.3.4. Motivation:

The participants point out that AI tools can be utilized to keep teachers motivated enough to support their professional development. AI tools can offer which fields should be improved by giving instant feedback. Also, teachers are recalled for their aims by AI tools. Additionally, AI tools allow teachers to observe their learning progress. On the basis of the responses the participants stated, there are some notions that stand out. Participant 29 expressed, “We can find what we need and this increases our motivation. When we are motivated enough, we are ready to learn something new.” In this statement, the importance motivation with the support of AI tools has been highlighted. Similarly, Participant 45 added, “We motivate ourselves by setting goals with the use of AI.” This suggests the essential part

of setting goals for triggering motivation of the adult learners. By underlining the focus on the goals, learning process and the achievements, Participant 2 claimed, “AI can remind us of our goals and keep us motivated all the time. By giving proper materials, we can stay focused on our goals. Also, it boosts our achievements.” This proves the relations of goals and proper materials during the learning process. Finally, Participant 4 supported by stating, “AI can help us have clear goals, and these goals keep us motivated.” To sum up, these are related to “the need for learning”, “instant feedback”, “setting goals”, and “proper materials”.

4.3.5. The Need to Know As an Internal Mechanism:

Based on the responses, it can be concluded that the internal mechanism of “the need to know” can be activated by AI tools. Teachers claim that AI tools raise the interest of learning something new, and present engagement for teachers’ learning process. Also, AI tools can display what is needed to learn even if teachers are not aware of it. These all support that AI tools are crucial for the principle of “the need to know as an internal mechanism”. The responses of the participants highlighted some notions such as “triggering curiosity”, “personalized learning”, and “triggering learning mechanism”. For example, Participant 2 expressed, “AI can trigger our learning curiosity. With personalized learning, AI forces us to learn beyond our skills. Also, AI can present updated knowledge in our professional field.” Based on the statement, it can be revealed that AI tools help learners to have more knowledge on the particular field as well as providing personalized learning. Also, Participant 4 added, “Artificial intelligence can raise our curiosity with different kinds of activities and encourage us to search for deeper knowledge.” This proves the impact of AI tools in terms of motivation and activating curiosity of learners. Lastly, Participant 5 stated, “AI can ask questions and activate our learning mechanism.” The significance of initiating the learning process has been expressed with this statement.

4.3.6. Problem-centred Learning:

Teachers agree that AI tools are beneficial for problem-centred learning. AI tools can present complicated circumstances for learners to handle. These can be adjusted from simple ones to more complex ones. Besides, teachers can be supported by giving them problem-based scenarios and asking them working on them. Furthermore, AI tools boost creativity of teachers thanks to problem-based scenarios. All in all, all these contribute to teachers’ problem-centred learning and professional development. When asked about problem-centred

learning, participants remarked the notions of “problem-centred scenarios”, “different levels of problems”, “adaptation to the problems” and “feedback”. For instance, Participant 49 stated, “We find problem centred scenarios to overcome with AI, and improve our skills for our professional development.” This reveals that problem centred setting presented by AI can be effective for the development of this skill. Besides, Participant 2 shared, “AI can adapt problems to our levels. From easier to more complex ones, it can highlight what skills to be developed to handle with the problems.” This suggests that adult learners can find problems suitable for their levels. They can make it harder as time passes by. Finally, Participant 5 asserted, “AI gives us complicated situations and asks us to solve the problems and then gives us proper feedback.” This empowers the importance of constructive feedback to improve this skill.

Furthermore, according to the responses that were collected from the focus group interview, teachers agree that AI tools can be supportive for the professional development of English teachers. F-P-3 states, “Thanks to AI tools, we can follow the technological developments in educational field as well as reaching online sources easily.” In addition, F-P-5 and F-P-6 confirm, “AI tools can be effective to learn individually. Each teacher can identify her/his needs and find proper materials to improve herself/himself.” Also, F-P-4 expresses, “We can find online courses to contribute to our professional development.” Lastly, all teachers stated that they can find useful assessment tools to implement in their classes.

CHAPTER 5

DISCUSSION

5.1. The Practices and Perceptions of English Teachers to Improve 21st Century Skills

During the teaching process of English as a Foreign Language, it seems necessary to foster students' 21st century skills. Students should be ready when they encounter challenges of the technology-based era. The skills investigated to improve in this study are critical thinking, collaboration, communication, creativity and innovation, self-direction and using technology as a tool for learning. These skills are crucial both in and beyond the classroom environment. This study analyses the practices and perceptions of EFL teachers for the skills mentioned above. Furthermore, the results are linked to the studies in the literature on the field of education.

The findings from the teachers' practices and perceptions on 21st century skills provide significant interpretations related to what teachers do and how they perceive while improving the skills. The investigation of these practices and perceptions shed light on what teachers accomplish and what needs to be improved to foster 21st century skills. At the top of the list, there is the skill of using technology as a tool for learning. Teachers seem to successfully achieve this skill to teach in their classes. These all can contribute to students' problem-solving, reaching proper information, and better life conditions (Novia, et al. 2024). However, there is some gap among activities, which proves there is a need to support teachers with professional development. Furthermore, teachers' perceptions are compatible with their practices. Following this skill, teachers foster creativity and innovation skills of their students. This presents that teachers value teaching this skill. Like "using technology as a tool for learning", "the practices and perceptions on creativity and innovation" are also consistent. In terms of communication and collaboration, the practices and perceptions are fairly stable. This shows that teachers think they successfully promote both of these skills. On the contrary, the results of critical thinking and self-direction portray negative views. These two skills are the lowest-ranked skills according to the responses of the teachers. This shows that there is a field to be focused on to be prioritized by teachers.

5.1.1. Critical Thinking

The results indicate that teachers attempt to improve students' critical thinking skills moderately. However, the results show that teachers cannot improve the skill at an expected

rate as it is seen in Table 1 of overall comparison of the skills. The results also show that the activity of “trying to solve complex problems” is the mostly preferred one (3.24), while “developing a persuasive argument based on evidence or reasoning” is the least focused activity (2.56). The difference between these two activities can stem either from the curriculum or from the types of activities included in course books in language classes. Rezai et. al (2011) also support that presenting proper classroom circumstances to foster critical thinking is crucial for students. Furthermore, it is added that particular techniques like debates, problem-solving tasks, self-assessment, and peer assessment are playing significant roles for the skill improvement. Supporting this idea, the study of Uribe-Enciso et al. (2017), who study critical thinking and its importance on education, claim that critical thinking is crucial for the educational processes and practices. Engaging problem-solving activities is compatible with the view that teachers have a critical role in improving the skill. To sum up, although teachers struggle to foster students’ critical thinking, the results are not in line with the expectations. Teachers’ choices for problem-solving activities instead of persuasive arguments reveal that there can be a gap between the curriculum and the activities in language classrooms. This issue can be handled with more intensified activities to foster critical thinking. Lastly, teachers can have a key role in boosting critical thinking skills as they can decide on the activities to implement in classrooms.

Moreover, the mean score of teachers’ perception to improve the skill is fairly low. In addition, the inconsistent gap between mean scores of teachers’ practices ($M=2.93$) and their perceptions of students’ gaining the skill (3.04) underlines the difficulty of improving the target skill. Supporting this, Tosuncuoglu (2018) asserts that the critical thinking awareness of students is not at the ideal level. In order to handle this, teachers should struggle to understand the skill profoundly, and should support it with suitable applications. In a similar vein, Kumar (2024) claims that teachers’ role to foster critical thinking is vital, and adds that teachers should support learners’ critical thinking with proper activities. However, it is stated that questioning and open-mindedness should be prominent as opposed to the findings that highlight providing a solution for complex problems. However, there is a gap between teachers’ perceptions of their efforts and the actual outcomes of their practices. Although teachers believe that they do their best to improve students’ critical thinking skills (3.24), they state that they do not observe their students’ having acquired the skill (2.92) at the same level. This result can reveal that students’ lack of effort can be a vital factor which hampers the development of the skill. Similarly, Walker and Finney (2006) agree that students who have a high level of critical thinking skill can be more aware of themselves, and they can think

independently. As a result, they have a higher motivation for learning, and they become responsible for their own learning. Also, it is stated that students' mentality and autonomy have a great impact on acquiring the skills. Besides, teachers consider that they do not assess the skill "to a great extent". The findings show that there can be an imbalance between teachers' perceptions and their actual outcomes. Whereas teachers believe they do their best to improve the skill, the progresses of students are limited. This contradiction may result either from the students' lack of efforts or the teachers' ignorance of the importance of the skill.

Overall, involving problem-solving activities are significant for students, but improving the skill of critical thinking can be challenging both for the teachers and for the students. In order to foster the skill, there is a need for well-organized activities and understanding profoundly the extent which shows how well activities can support students for developing their critical thinking skills.

5.1.2. Collaboration:

The findings of the study reveal significant views on the practices and perceptions of English teachers with the aim of enhancing students' collaboration skills while teaching English. The results present that collaboration is a fundamental part of classroom activities, yet applications in classes can show variance depending on the type of activities.

One of the prominent results is that more than half of the teachers ask their students to "work in pair or small groups to complete a task" ($M=3.56$). The result shows that students can accomplish a task when they are a part of a group and they are supported by their peers. This is compatible with the results of a study which was conducted by Al Jawad (2023). Al Jawad claims that utilizing collaborative learning methods while teaching a language highly fosters students' speaking skills. Supporting this, Alzubi et. al (2024) state that there is a constructive effect of collaborative learning on students' English skills and social interaction. In other words, providing collaborative settings for students, which include team work and peer feedback empowers not only students' language learning process but also social communication. In addition, Vega-Abarzua et. al (2024), who studied on how collaborative tasks affect students in EFL classrooms, state that collaborative learning enables students to become more confident, proactive, and to develop social skills. The results identify that collaborative learning can be effective as teachers highlight the significance of working together. Students can improve both their language skills and social interactions by completing a task in a group.

Furthermore, “engaging students in deciding their purposes and making plans for their teams” is another common activity which has been preferred by teachers (3.20). The view which is based on the mentioned activity can boost students’ perception of being part of a group and their responsibility as well as the sense of ownership. As a result, they can be more autonomous. According to Viberg and Kukulska-Hulme (2021), students’ language development and commitment can be supported with collaborative activities which also help students’ self-regulation. Similarly, Alzubi et. al (2024) mention that collaborative learning is significant for improving 21st century skills. These skills also foster both the educational and the professional life of students. On the other hand, activities such as “giving feedback to others, assessing others’ work” and “incorporating feedback into group tasks” were marked as less frequent choices (3.02 and 2.90 respectively). This result discovers that there are some difficulties of integrating feedback components into working collaboratively though the teacher can be aware of the significance of these elements. Elsayed (2022), who studied on Jigsaw cooperative learning, asserts that collaboration is crucial for improving communication and learning skills. In addition, it is highlighted that the learning process can be boosted with suitable feedback. Although there are challenges to foster the collaboration skill, teachers have a powerful determination to improve it. Most teachers perceive that they are able to teach the skill in their classes ($M=3.58$). This finding is in line with the results of Ferreira et. al (2024) which support that the importance of identifying collaborative learning theories and practices should be focused on by teachers to reach a meaningful learning, which enables teachers to be ready for the modern teaching and learning methods. To summarize, as long as students are involved in setting goals and making plan for their learning, they can become more responsible and independent. On the other hand, teachers can have more difficulty in giving feedback in group work. In spite of this difficulty, teachers can realize the importance of collaborative learning, and motivate their students to work as a team.

To sum up, the research points to the significance of collaboration in English teaching classes and its supportive impact on students’ skill development. The significance of collaborative learning is valued by teachers especially for fostering language and social skills, and students’ autonomy. Although there are difficulties to integrate the target skill into classes, teachers do their best to handle with obstacles with the aim of fostering students’ collaboration skills. All in all, it is emphasized that it is crucial for teachers to apply collaborative learning methods and improve their way of teaching to comply with the changing needs of the world.

5.1.3. Communication:

The findings of this study enable convincing views on ways teachers should adopt to foster communication skills in language classrooms and their perceptions on their students' development. The results present an inventive frame of various activities to utilize for boosting students' verbal and non-verbal communication skills.

One of the main findings is that “answering questions in front of an audience” is the most common activity. This activity is preferred by more than half of the teachers “weekly” or “almost every day”. This reveals that it focuses on engaging students in communicating confidently in real-life situations. Also, teachers' choice to use this activity shows the changing methods into student-centred learning in language classrooms, where communication should be the fundamental component of the learning process. In addition, students not only acquire the skill of understanding new words but also the skill of interacting with others appropriately. These results are supported by various studies. Indrapurnama et. al (2022) point out that although students encounter difficulties like the lack of vocabulary, the fear of taking risks, and low confidence, the ability of speaking is crucial both for communication and for improving relationships. That's why; teachers can foster students' speaking skills and ultimately communication skills by utilizing student-centred learning methods. Similarly, Schmidt (2020), who studied interactive teaching methods such as audience response systems, claims that students prefer interactive systems which encourage their engagement and learning process. Supporting these, Nadile et al. (2021) highlight the significance of students' involvement in asking and answering questions in large classes because students view it as an effective way for learning. Although students with low confidence refrain from classroom activities, student-centred learning methods encourage students to be active for their learning process. On the basis of the results, it can be expressed that answering questions in front of an audience can raise confidence in communication. Also, it can support more student-centred teaching methods. Therefore, students can interact with each other freely. Furthermore, student-centred classroom environment can enable students to foster their ability to interact with others as well as enriching their vocabulary.

Besides, activities such as “making organizations for presentations” and “utilizing various media to share opinions including posters, blogs, and videos” are important for the teaching process, which are effective practices for enhancing communication skills. Additionally, the preferences of teachers to apply these activities present the idea of various kinds of communication. From this perspective, teachers expect their students to express

themselves in different ways creatively. With the current technology, students are encouraged to collect information and share it properly with videos, graphs, or blogs. These all help students to improve technology skills as well as communication skills. In a similar study, Colognesi et al. (2023) explore how to utilize videos to improve elementary school students' oral communication. Additionally, it is emphasized that video-supported teaching methods help students to foster verbal and non-verbal skills. Supporting this, Algouzi et al. (2023) point out that the Blackboard platform, which includes multimedia tools such as video recordings, enhances students' presentation skills. It is also stated that students can improve their skills like communication, organization, and enthusiasm thanks to these tools. The results make it clear that activities such as organizing presentations and preferring different media tools can enhance students' communication skills as students can express themselves more confidently and clearly. Besides, the use of multi-media tools can improve non-verbal communication apart from verbal communication.

On the other hand, "preparing and delivering oral presentations" are not preferred as frequently as other activities. Although teachers are aware of the significance of communicating publicly, this activity is not practised as often as other interactive activities. The reason underlying this can be that preparing these presentations needs time and effort as well as lowering the anxiety levels of students. Nonetheless, this is an important part of language education. That's because communication is getting more crucial as they become more active in academic, social and business circles. In a study conducted by Grieve et al. (2021), it is explained that many university students are concerned about speaking publicly as this situation has a negative effect on their experience and mental health. It is also highlighted that it is initially necessary to encourage students to express themselves in front of smaller groups to handle the negative feelings. In addition, Gürbüz and Cabaroglu (2021), who studied EFL students' views on oral presentations, concluded that some students mark their interests in presentations fairly high despite their negative experiences. However, there are still some students who feel oral presentations are too stressful as they have to be busy with other assignments and exams. To conclude, preparing and delivering oral presentations are not preferred as frequently as other activities. This may result from time limits, lack of effort and anxiety. However, speaking in front of a public can contribute to students' academic, social and professional development.

Another essential point is that teachers consider communication skills are very crucial in their classes. Therefore, most of them make a great deal of effort to strengthen students' communication skills. In addition, they think that their teaching can contribute to students'

acquiring the target skill. This is verified with the mean scores (3.71 and 3.60). These all can prove that teachers attempt to increase not only students' language skills but their communication skills as well. On the basis of the explanations, it can be concluded that teachers who prioritize communication and who have good communication skills become fruitful for students to foster their skills. Supporting these, Khan et al. (2017) state that teachers with better communication skills can help their students learn better. It is also concluded that communication is significant for both sides to improve academic success. Furthermore, teachers agree that they are able to assess students' communication skills effectively ($M=3.92$). This result proves that teachers feel confident in the assessment of the skill. Suhairom et al. (2024) assert that the assessment of communication skill in higher education is vital for preparing students for the workforce of the modern world. The results underline that teachers are aware of the importance of communication skills, so they try to improve the skill. Also, they agree that they can improve the target skill. If teachers value communication and have this skill, they can be more helpful for the students to develop these skills.

In conclusion, the significance of enhancing communication skills in language classrooms is emphasized. Fostering verbal and non-verbal communication is supported by the teachers who prefer activities such as answering questions, delivering presentations, and using media tools in an effective way. Although it seems over-demanding to prepare oral presentations, these kinds of activities play an important role for the academic and professional developments of students. Moreover, teachers with improved communication skills are more effective in helping their students.

5.1.4. Creativity and Innovation:

The findings reveal remarkable perspectives on how to foster creativity and innovation in the classroom. The results underline various ways teachers utilize to motivate students to improve the target skill. The activities can include problem-solving tasks and creativity.

One of the significant findings is that teachers employ "idea creation such as brainstorming and concept mapping" frequently in their classrooms. These activities are stated to be implemented "1-3 times a week" or sometimes "daily". Based on this, teachers are mostly focused on activating students' creativity with idea generations. As a support for this practice, Tolentino and Carvalho (2020) agree that concept mapping is a beneficial method that boosts teaching and learning process as well as enhancing team work, critical thinking, and meaningful learning. Similarly, Filgona et al. (2016) assert that students who

have engagement in concept mapping or brainstorming activities during their learning process attain better results academically than their peers who are taught in traditional ways. On the other hand, they further remark that students can lose their creativity if they constantly depend on these activities. In other words, the excessive use of these activities causes students to be repetitive and mechanical, which results in undesirable end-products for students' creativity and innovation. In addition, the activities such as "solving complex problems" (3.38) and "creating solutions" (3.24) are often used by teachers in order to improve ideas. This uncovers that teachers focus on leading students to think and solve problems creatively. A similar study conducted by Zhan et al. (2024) highlight that problem-solving has a positive impact on students' creativity as long as different teaching methods are implemented in classes. Also, flexible teaching tools and collaboration is crucial for improving students' creativity. All in all, teachers prefer activities like brainstorming and concept mapping to foster students' creativity and innovation. Additionally, problem-solving tasks are used to boost creativity. This shows that the integration of various activities can be beneficial for students to be more creative and innovative.

The activity of "creating an original product or performance to express their ideas" has the lowest mean score (2.98), which seems to be off the usual track. Although this activity can help students to express themselves profoundly, it appears that teachers do not prefer it probably due to time and efforts needed to generate an original work. This result makes it clear that teachers may skip some vital activities to foster students' creativity and innovation. Therefore, teachers should bring various activities which are more innovative into their classes to support the target skill. On the other hand, it is clear that teachers feel confident in fostering students' creativity and innovation. Most teachers agree that they actively enhance students' creativity and innovation; students are able to learn the skill; and that they can assess the skill effectively. Therefore, it can be stated that teachers are the dynamic components of the process. Supporting this finding, Wang (2024) states that teachers and students have agreed on the importance of creativity, which should be part of the teaching process. Also, it is highlighted that teachers who have more self-reliance in their creativity become more effective in improving students' skills, as well. Therefore, professional development plays a vital role for teachers to be more confident and competent for teaching creativity. However, Akyildiz and Celik (2020) put forward an opposing idea, mentioning that EFL teachers' understanding and use of creativity are limited although they are aware of the significance of the skill. Using creative teaching methods can be challenging due to the curriculum, exam focused teaching, and crowded classrooms. Similarly, Kettler et al. (2018) point out that

teachers have negative perceptions of fostering creativity in education. To overcome this, it is suggested that teachers should be trained effectively to improve students' creativity. According to the teachers' responses, it can be concluded that the activity to create original products and performances is not selected as often as other activities. This can be due to the need of extra time and effort. Hence, some important activities to foster creativity and innovation can be ignored by teachers.

To sum up, fostering creativity and innovation in classes is essential, yet there are some challenges for teachers to defy. Although activities such as brainstorming, problem-solving, and concept mapping are prominent to boost creativity, they can result in undesirable outcomes when used excessively. Moreover, teachers are aware of the significance of creativity and think that they are able to teach the skill effectively. However, professional development and innovative teaching strategies play key roles in overcoming the hurdles like time-constraints, exam-focused teaching methods, and negative perceptions of employing these methods.

5.1.5. Self-Direction:

The findings of the study present striking results on the practices and perceptions of teachers in order to foster students' self-direction. The results are expected to shed light onto teachers' classroom activities to improve the target skill in language teaching classes.

According to the results, it is clearly seen that feedback is very crucial for enhancing self-direction skills of students. The activity of "using feedback from peers, teachers or experts to revise the work" is the most common, which verifies that teachers perceive external factors as a key to improve the skill. Though feedback is vital for students to revise and improve their work, it may have negative results if exposed too frequently. Students can depend on external factors too much, which hinders their self-direction. In a similar study, Leung et al. (2022) assert that students can see what they should improve thanks to feedback. Also, feedback should provide constructive comments, self-reflection and praise. Furthermore, Hismanlioglu and Hismanlioglu (2009), who study on the significance of feedback on distance education, conclude that feedback empowers students' self-directed learning by allowing them to comprehend their strengths, and make correction on their work. Various methods of feedback improve students' work and boost their learning process as well as fostering autonomy. Additionally, it has been claimed that feedback encourages students to take the responsibility of their learning. Also, instant feedback should be provided for students to adjust themselves in the right way and to enable students to see their weaknesses and

strengths (Karakaya Özyer, 2024). All in all, it is clearly stated that feedback is an inevitable component of fostering students' self-direction. Feedback from teachers, experts and peers can contribute to students' performance as feedback is effective to construct the target skill. On the other hand, students can rely on too much feedback and cannot think on their own if they are given constant feedback. Thanks to proper feedback, students can track their progress and become more autonomous.

On the contrary, the activities of "monitoring the progress" and "choosing learning topics" which support autonomy are used less frequently. This reveals that despite the positive perceptions of teachers towards self-direction, the techniques and activities to foster the skill are not preferred for students' controlling their own learning. Furthermore, it is crucial to allow students to decide on their own topics and resources. Yet, teachers neglect to implement them in their classes, which can be a barrier for students' autonomy. In a study which highlights the importance of autonomy, Çetinkaya (2019) points out that students are given chances and provided conditions to take the responsibility for their own learning. However, it is added that teachers can find it challenging to implement the activities which foster autonomy. In addition, the least frequent activity used by teachers is "motivating students to assess their own work with particular criteria before completing it". Teachers should teach their students to decide their own standards to assess and evaluate their work. This can encourage students to become more self-directed. The preference of teachers to utilize this activity less than others may stem from the lack of time, resources or the concerns about students' access to appropriate assessment tools. Nasri et al. (2022) agree that assessment and feedback have an impact on self-directed learning, and it is stressed that proper methods can decrease students' anxiety. However, teacher-centred teaching methods hinder students to evaluate their own learning. Similarly, Harrison et al. (2015) claim that self-assessment and peer assessment can contribute to students' becoming independent learners. Also, self-assessment enables students to take control of their learning over time. While teachers realize the significance of self-direction, they are not in favour of using activities that promote students to take control of their learning. Limited time and resources can be underlying reasons. However, these activities can be essential for helping students to learn independently and in a self-directed way.

When it comes to the perceptions of teachers, a discrepancy occurs between teachers' perception and actual outcomes. Many of the teachers agree that both they can teach the skill (3.10) and students can learn the skill to a similar extent (3.02). This result reveals that teachers think that they support students' autonomy. However, they are not pleased with the

results students attain. The result of the gap can be traced back to the difficulty in fostering actual self-direction in the present classroom circumstances as well as the impact of teacher-centred teaching methods. In addition, teachers state that they are able to assess students' self-direction skill (4.04). This presents teachers' value on the assessment of the skill. However, teachers' practices are not compatible with teachers' confidence at this point. Therefore, a question comes out as to whether teachers are really assessing the skill in a correct way. This incompatibility may result from the curriculum, limited class times, lack of teachers' knowledge and ability, and lack of resources. In a similar study, Lai and Gardner (2013) explored the perceptions of teachers for self-directed learning. The research showed that the perceptions of teachers may increase, depending on the students' behaviour. Also, students who take the responsibility of their learning can change the perceptions of teachers in a positive way. To summarize, teachers think that they encourage and assess their students to reach their target. However, the results are not as good as expected. These may result from the challenges like time-constraints, teacher-centred methods and lack of resources.

To conclude, there is a difference between teachers' perceptions and real practices although they consider the significance of self-direction. Feedback is seen as an important part of self-direction; however, activities to foster autonomy like self-assessment and determining the topic are neglected in classes. This may be primarily owing to the limited time and teacher-centred methods. Accordingly, teachers should encourage students to take the responsibility of their learning if they aim to promote students' self-direction skills.

5.1.6. Using Technology As a Tool for Learning:

The data given underlines the increasing importance of technology in language classes. The implementation of technology-based teaching methods enhances both personalized and collaborative learning. Teachers are open to embrace these methods in order to adapt themselves to the modern world and to help their students to acquire the skill of utilizing technology for their learning. On the basis of responses of teachers, the results present clear and ground-breaking perspectives to see how-technology should be used, and to initiate new debates related to the future of education.

Firstly, teachers most often ask students to “benefit from technology for self-direction” (3.80) and “choose the suitable tools” (3.86). These display how education is changing in the modern era. This proves that teachers do not explain knowledge; on the contrary, they are guides for students to reach knowledge on their own. Also, this change unveils that learning has been becoming more personalized, and student-centred methods surpass the traditional

ones. Tools that support students' self-guidance enable students to determine their learning process, and help students to create knowledge and grasp it. As a result, students become active participants for their education. These all bring about the view that teachers' role in the modern world has begun to change. Teachers are not at the centre of the teaching process, but they are mentors to monitor students' progress. Similarly, Pan and Chen (2021) point out that teachers should support students' self-direction not only in classrooms but beyond the classrooms as well. At this point, teachers should be encouraged to utilize technology to reach their aims. However, Sert and Boynueğri (2016) claim the opposite that there is no correlation between students' self-directed learning and teachers' usage of technology. On the whole, teachers can utilize technology to allow students to take the responsibility of their learning. As a result, this can reveal that education is changing axis from traditional methods towards more student-centred ones. Teachers can guide students to learn on their own, which can help students to become more active participants in the learning process.

Upon examining other activities of technology, "evaluation of online resources" (3.60) and "sharing information through multimedia" (3.68) stand out as important ones. These emphasize critical thinking and collaboration. The former practice encourages students to evaluate the convenience of the materials. At this point, the importance of digital literacy occurs for education. More than using technology, this reveals that students acquire the skills related to making smart and ethical decisions. Supporting the idea, Sirlin et al. (2021) clearly express that digital literacy alerts people to distinguish what is good or what is bad. Digitally literate people can tell apart the facts from the fiction. However, the authors add that only digital literacy is not enough to share reliable content. Similarly, Carmichael (2012) explains that online resources can foster students' critical thinking skills. Students think that online learning is useful, and flexible learning is enjoyable. Therefore, connecting with other institutions and people through technology allow them to access to resources and support students' critical thinking. In a similar study, Silvhiany (2021) affirms that classes should be based on teaching critical thinking of online resources. In addition, the latter practice is related to the importance of collaboration while using technology. Activities to allow students to share information through multimedia enable them to work together and exchange feedback. Deschenes (2023) supportively states that digital literacy is an effective way for collaborative technologies, which fosters social interactions positively. Also, it is highlighted that digital skills, using technology and making contact with others are linked to each other. To wrap up, evaluating online resources and sharing information through multimedia can be

helpful for developing critical thinking and collaboration. Consequently, students can improve digital literacy, which can allow them to think smartly and work as a part of a team.

On the other hand, “analysing information” (3.36) and “managing long-term projects” (3.06) are used less frequently through technology. This result discloses teachers’ hesitation for using technology for profound learning activities. This can emerge from excessive burden for both teachers and students. Besides, students’ background knowledge may not be enough to implement the activities. Vatanartiran and Karadeniz (2015) confirm that teachers struggle with using technology as they not only have a lack of support from their head but also they need professional training. Furthermore, it is underlined that school circumstances need reinforcements, such as proper hardware, software, and maintenances to encourage students to use technology for their learning. In a similar vein, Dele-Ajayi et al. (2021) report that a lack of understanding the role of technology in education is an important issue; as a result, teachers have challenges to integrate it into their classes. Also, teaching experience, age and familiarity with technology are the probable obstacles for using technology. In short, teachers less frequently choose the activities like analysing information and managing long-term projects. This may be due to the hesitation of teachers to utilize technology, for not only students’ lack knowledge but also these activities can force them to have extra workload.

Lastly, the data presents that teachers think they are able to teach and assess the target skill effectively. However, the question is whether assessments tools are appropriate for the skill or not. Another point can be whether teachers are qualified enough to assess the skill properly. These questions arise from the consideration of traditional assessment applications of teachers. Similarly, Ata and Yıldırım (2019) conclude that pre-services teachers are not competent enough to use technology. Therefore, they have difficulty in evaluating and creating with technological tools. Overall, although teachers can be confident in assessing the skill, there can be concerns about the appropriateness of the assessment tools. Also, teachers can have difficulty in using technology properly for assessment and evaluation.

In conclusion, the growing integration of technology into language classrooms brings about both opportunities and difficulties. Technology promotes personalized learning and student-centred teaching methods as well as critical thinking and collaboration. However, there are some problems as to deep learning activities. Furthermore, appropriateness of assessment tools and teachers’ ability to evaluate the skill are prominent challenges related to technology usage in education. To cope with these issues, professional development and sufficient resources should be facilitated both for teachers and for students.

5.2. English Teachers' View on Artificial Intelligence and Its Use in Language Classroom to Foster Students' 21st Century Skills

In the changing modern era of education, Artificial Intelligence (AI) plays a crucial role for fostering students' 21st century skills. In language classes, teachers can utilize AI tools to back up students' critical thinking, collaboration, communication, creativity and innovation, self-direction and using technology as a tool for learning. The integration of AI tools facilitates students' personalized learning, getting instant feedback, and opportunities to reach the sources easily. Effective use of AI can stem from teachers' practices and attitudes; therefore, teachers should be provided with an on-going support for the integration of AI (Güneyli et al., 2024). Consequently, utilizing AI tools allows students to improve both their language skills and the skills that are necessary in the 21st century.

5.2.1. Improving Critical Thinking with AI Tools

The inflow of technology in language teaching classrooms, particularly Artificial Intelligence tools, presents important facilities for students to enhance their critical thinking skills. The results of the study point out that various prominent themes are supported with the proper usage of AI tools so as to foster critical thinking skills of students. These are encouraging discussion, analysing a text, personalized learning, searching for proper sources, peer interaction, and solving a problem. With these themes that are supported with constantly developing AI tools, students can ultimately improve their critical thinking skills.

Firstly, the theme of promoting discussions in language classrooms with AI tools stands out as an important issue. AI tools allow students to ignite debates or be part of others' debates. Being part of a discussion enables them to ask and answer questions, express themselves, defend what they think about a particular topic and accept others' rational views, which helps students to have different perspectives. Furthermore, these discussions empower students to evaluate different discussions. As a result, all these improve students' abilities to analyse and gain the skills of critical thinking consecutively. Therefore, it can be stated that AI tools present chances for students to take part in discussions and improve their critical thinking skills. Puente et al. (2024) highlights that students who are engaged in ChatGPT-based debate sessions can foster their argumentation skills, and as a result, critical thinking skills. The study also underlines the power of AI to support the learning process despite restricted sources. Furthermore, Lugini et al. (2021) who developed Discussion Tracker to analyse collaborative argumentations or arguments found out that this technology-based tool is effective for teachers to follow their students' discussions. In a similar study, Long and

Zhang (2024) produced a new way to work on classroom talks by using AI tools. It is emphasized that teachers can utilize it to acquire real-time feedback and promote their teaching to assist their students to learn better. In summary, promoting discussions that are supported with AI tools can be effective for students to foster critical thinking skills. Students can participate in debates, express themselves, and evaluate various views on a particular topic.

Similarly, based on the teachers' responses, analysing content is seen as another crucial theme to boost students' critical thinking skills with the help of AI tools. They help students to investigate texts meticulously by allowing them to find relevant sources and analyse them. Also, AI tools are capable of presenting proper sources, based on students' demand on a topic. Students are expected to decide on the appropriateness of the sources, which is helpful for their critical thinking skills. Furthermore, finding suitable sources can be associated with the theme of analysing content. Students can compare various views and evaluate the credibility of a source. This decision-making process can improve students' critical thinking skills. Favero et al. (2024) conducted a study on the effectiveness of Socratic, an AI tool on critical thinking. It has been stated that the tool is beneficial for students to think better. Besides, with easy access of the tool, students can utilize it to improve their thinking skills deeply and learn better. However, Premkumar et al. (2024) partly disagree with the effectiveness of AI tools to enhance high level of thinking skills such as evaluation and analysis. Also, it is added that too much usage of AI tools hampers creativity and originality, which consequently sets back the improvement of critical thinking. To sum up, AI tools can be essential for encouraging students to analyse content and improve critical thinking skills, as they enable students to find, evaluate and compare sources. Although it is clear that AI tools are significant for boosting the skill, there is a concern about the excessive use of them.

Another important theme is problem-solving with AI tools. Students are presented problem-solving scenarios which are prepared with AI tools, and they are expected to deal with them. This kind of activity encourages students to improve their decision-making mechanism, reasoning and thereby their critical thinking. In a study, Chen et al. (2024) who introduce MindScratch, an AI tool for fostering students' creativity, point out that this tool will be effective for students to create mind maps to support their learning as well as improving problem-solving skills. Supporting this, Vasconcelos and Santos (2023), who studied on GenAIBots, conclude that the tool is effective for students to foster thinking skills. Also, it supports the learning process by allowing them to ask and answer questions. As a result, students are encouraged to be more creative and solve problems more reasonably.

These all show that AI tools can empower students' problem-solving skills by presenting conditions that challenge students' decision making and critical thinking. Also, AI tools can encourage the learning process as they can allow students to be more active, to practice and to improve their thinking skills.

In addition, to foster critical thinking, personalized learning appears to be one of the key factors. AI tools are able to present sources and materials, which are suitable for each individual. Besides, students can get instant feedback individually. All these show that students can reach resources which are unique for their learning styles, thus practices to enhance their critical thinking skills. In a similar vein, Ermağan and Ermağan (2022) conducted a study to investigate how AI tools are utilized in language education. It has been concluded that AI tools change education in a modern way, which enables students to be more independent. As a result, students are presented more opportunities for personalized learning. In addition, Vasconcelos and Santos (2023) assert that AI tools such as GenAIBots are playing important roles for education as they present both interactive and individualized ways for students to learn. Likewise, AI can be effective for providing personalized learning and improving teaching, yet teachers need professional development to help students appropriately (Aghaziarati et al., 2023). Also, these tools enhance students' thinking skills by giving personalized materials and methods. AI tools can provide personalized learning and help students to improve critical thinking skills. Also, students can be given feedback that suits their needs. These enable the learning process to be more focused on students' interests and needs.

Peer interaction is another key theme to enhance critical thinking skills. Students can spend time with their peers on online platforms, exchange their opinions on various topics, and get feedback from them with the help of AI tools. Commenting on each other's works and questioning peers' views are vital practices presented by AI tools. As a result, students have a good collaboration, and this collaboration empowers students' critical thinking skills as well as improving language proficiency of students. Ruiz-Rojas et al. (2024) also affirm that critical thinking can be improved with the real-time collaboration and getting constructive feedback with the help of AI tools. These tools allow students to work together to analyse and evaluate information. Supporting these, Billings et al. (2024), who study on AI to support peer discussions, confirm that technology of AI is helpful for students' talks and sharing opinions online. Working with peers through AI tools can help students to think profoundly. Students can share ideas, give feedback and discuss topics on online platforms. AI can contribute to collaborative learning and understanding different views.

To summarize, the skill of critical thinking can be boosted with the proper usage of AI tools in language teaching. Particularly some activities such as having discussions, analysing texts, problem-solution, learning with personalized materials, and working with peers can be supported by these AI tools. Accordingly, all these activities enable students to think deeply from various aspects. However, teachers should be aware of the way to benefit from AI tools effectively. Although there are many advantages of these tools, they have some challenges like technical issues, lack of teachers' knowledge, and hesitation of the teacher to use them. With the right training, AI can be an inevitably powerful tool for students to enhance their critical thinking skills.

5.2.2. Improving Collaboration with AI Tools

The findings of the study indicate that AI can be effective considerably for EFL students' collaboration. Although collaboration has always been an essential component of language learning, AI presents various new ways for the implementation of collaboration; thus, it alters the way students collaborate.

The integration of AI in language teaching classes is not only a new technological step but also presents the power that changes the direction of collaborative learning. On the basis of the results, it can be highlighted that there is an important shift. Collaboration is not just bordered in the classrooms. On the contrary, it can be thrived with online platforms, which are supported especially by AI. Most of the participants underline the significance of collaborative and interactive group tasks. AI tools are seen important for encouraging teamwork, helping students to create together, and setting common goals to achieve. According to the study conducted by Sako (2024), AI tools can help students to work together effectively by enabling clear objectives, removing confusion, and supporting the exchange of ideas. This collaborative work enhances students' productivity. In addition, Msambwa et al. (2024) express that Artificial Intelligence has the great potential to create collaborative environment. Similar to this theme, the theme of virtual interactive circumstances are also the prominent one. This theme places emphasis on the common usages of virtual interactive environments. This reveals how effective AI is in terms of changing traditional classrooms. Virtual interactive environments allow students to participate in online discussion platforms. As a result, students are encouraged to collaborate with others regardless of wherever they are. Supporting this, Paulsen et al. (2024) conclude that immersive virtual reality provides students to collaborate fruitfully by focusing on common goals. Also, it is stated that it enhances students' participation in the learning process and social interaction. Furthermore,

Alazmi and Alemtairy (2024) claim that the immersive virtual setting is supportive for students to develop better social presence and peer interaction. This enables students to become more involved while learning collaboratively. In addition, Wang and Huang (2025) assert that AI and immersive technologies allow students to interact and collaborate in personalized learning environments. In short, using AI in language classes can change the way students learn and they learn together. Students can share ideas, set goals, and take part in group tasks outside the classrooms thanks to AI tools. Also, digital tools can make the learning process more meaningful as students can be the active participants of the process.

Based on the results, one of the most striking aspects is related to the students' confidence. Teachers think that students feel more confident thanks to AI tools when they have to collaborate with others. The findings display that students are given the chance to join and share their ideas on the platforms that are supported with AI tools. This is particularly beneficial for shy students who have difficulty expressing themselves in crowded classrooms. As a result, all students can be active in collaborative works. Zhang et al. (2024), who studied on the relation between AI and learners' willingness to communicate, point out that AI tools such as Chatbots are helpful for students as they can reduce students' anxiety in collaborative learning. In a similar vein, Kovari (2025) affirms that AI tools are effective in decreasing students' anxiety in collaborative learning as they present proper personalized feedback. Also, these tools make the learning process less stressful. It can be concluded that students can have more confidence in collaborative works thanks to AI tools. As AI tools provide supportive and motivating learning settings, all students, even the timid ones, can be encouraged to share their opinions and become active participants. This can mitigate the anxiety levels of students and enable comfortable learning environments for them.

All in all, it is highlighted that AI plays an important role in improving students' collaboration in EFL classrooms. AI tools facilitate many opportunities such as promoting teamwork, allowing students to have common goals, sharing ideas, collaborating effectively. AI tools also enable learners to do these practices both in and outside the classrooms. Besides, AI tools foster students' confidence, reduce the anxiety levels, and allow, especially shy students, to be part of collaborative learning. Overall, AI continues to empower education in various aspects. Collaboration is one of the aspects that are supported with AI tools.

5.2.3. Improving Communication with AI Tools

The use of Artificial Intelligence, which is one of the most striking breakthroughs of the modern world, is getting more prevalent in English teaching classrooms. AI tools allow

students to boost their communication skill. On the basis of teachers' responses, there are various ways that AI tools help to improve student communication. These are supporting interaction, raising confidence, providing personalized learning, and giving instant feedback. On the other hand, there are some concerns on the use of AI tools in classrooms.

One of the paramount themes is interaction for language learning. Teachers view this theme important to foster students' communication. Interactive platforms which include the simulation of real life are provided with the help of AI tools, and these tools allow students to practice for language learning. Different from traditional teaching methods, students can have access to these tools whenever they want and can get involved in dialogues. As a result, students can practice daily use of the language by interacting with AI as if it was a real-person. All in all, students can improve their fluency as well as raising their confidence to communicate. The flexibility of AI tools support students to learn regardless of the place and time. Ji et al. (2024) assert that AI tools which include conversations are very crucial in students' interactions with each other. Therefore, they can empower language learning experiences. Supporting this, Bahari et al. (2024) claim that students can be provided with personalized learning, important feedback, and tools that are supportive for interaction with the help of AI tools; consequently, AI-assisted language learning is beneficial for the students to improve their language skills. Therefore, students get motivated and enjoy their learning process. Similarly, Qiao and Zhao (2023) assume that using AI tools like Duolingo can be effective for students to foster their speaking skills and allow them to take control of their learning as the tools always enable students to interact on their own. Thus, students not only have fun but also feel more confident while learning. All these are also related to another important theme 'confidence to express themselves'. Many students are worried about expressing themselves in the classrooms as they do not want to make mistakes. Therefore, AI tools provide a safe setting for students practice language skills. As there is no classroom and nobody around them, students feel less anxious to express their opinions. Also, students become more eager to use various words and phrases without the concern of being judged by anybody. As a result, all these can contribute to students' communication skills. Zhang et al. (2024), who studied on the impact of AI-driven speaking tools on EFL learners' language proficiency, conclude that these tools enable students to be more self-controlled, raise students' willingness to communicate, and mitigate their anxiety for language learning thanks to AI tools' stress-free environment. Furthermore, Kittredge et al. (2025) agree that the AI traits of Duolingo increase students' confidence when using the target language. Also, it is stated that students benefit from real-life situations, which makes the learning process more

effective and practical. In summary, AI tools can have an important impact on fostering students' communication skills and confidence in language learning. With these tools, students can have more interactive practices that enable them to speak more fluently. Also, students can feel less anxious thanks to these tools. Additionally, AI tools present personalized learning and flexible access to the learning materials. As a result, students can enjoy the learning process and express themselves freely.

According to the teachers' answers, AI tools allow students to find alternative ways to share their opinion, which is also crucial for the development of communication. While expressing themselves, students do not have to prefer only traditional ways. On the contrary, AI tools enable students to make videos, write blogs, create posters, and benefit from other digital tools. Thus, communication can be more meaningful for students and audience. Students can select which way suits best for them, and thus they can feel more confident. This theme can also be connected with the theme of personalized learning. Communication can be fostered with personalized learning. This means students learn in a way that is appropriate for them and their needs. What's more, students can practise at their own paces, and focus on their needs. In addition, they can control how they learn without the interruption of anybody. Supporting this, Baillifard et al. (2023) aimed to explore the effect of an AI tutor on students' psychology. It has been concluded that the application which provides personalized learning helps students to learn better, increasing students' performance with more interaction. Also, Do et al. (2024) claim that AI-generated podcasts are much more preferred to traditional sources. That's because they are more entertaining, and personalization is supported with them. Saleem et al. (2025), as well, advocate the effectiveness of AI for personalized learning. It is added that AI tools can enhance students' performance, memory and thinking skills. To sum up, students can find new and creative ways to express themselves with AI tools. This can make communication more interesting and meaningful. Contrary to traditional methods, students can select various ways such as videos, blogs, or posters that suit their style. As a result, student can feel more confident. Besides, this facility can provide personalized learning. In other words, students utilize materials that are suitable for them and learn at their own pace. These can enhance communication and the learning process.

Another key theme is related to instant feedback. Students can get feedback quickly from AI tools, which are effective for them to find their mistakes and correct them. It is important for students to avoid repetitive mistakes while communicating. Therefore, students become more aware of how they should communicate in the real world. Also, they can realize what is good or what is bad for communication thanks to feedback provided by AI tools.

Yang et al. (2023), who study on Pigai, an automated writing evaluation tool, points out that this sort of tool is very beneficial for students' improvement of writing and autonomy. However, it is also expressed that integration of AI feedback with the input from teachers and peers can strengthen learning outcomes. In a similar study, Han and Sari (2024) agree on the positive effects of AI feedback for students' writing skills, as well. Overall, AI-supported instant feedback can foster students' communication skills. As students can identify their mistakes with the help of AI tools, they can realize how to share their opinions effectively in real life situations.

To sum up, the integration of AI tools into English language classrooms is crucial for fostering students' communication skills. On the basis of teachers' responses, these tools can be utilized for interactive learning, instant feedback, and personalized learning. Furthermore, they allow students to practice with authentic materials, increase confidence, and express themselves with various creative ways. Although there are some points to be enhanced, teachers agree on the value of AI to boost students' communication skills.

5.2.4. Improving Creativity and Innovation With AI Tools

Artificial Intelligence has started to dominate the education field by changing the way how students learn, especially in language teaching classrooms. Furthermore, AI-supported tools allow students to improve their creativity and innovation skills. Students can maintain their learning process by creating unique products with AI tools. In this part, how AI tools are utilized to foster students' creativity and innovation has been investigated. Based on the responses of teachers, there emerged some significant themes, which are "creative writing", "generating ideas", "creating digital materials", "problem solving skills", "personalized learning" and "raising confidence for creativity". However, under the theme of "reluctance", it can be seen that there are some teachers who are not in favour of using AI tools in their classrooms.

One of the significant findings of the study underlines the importance of AI tools for improving creative writing. Teachers confirm that students can produce original stories, dialogues, and various forms of writing. These enable students to improve their language proficiency in writing. Furthermore, students can use their imagination with the support of AI tools. Students can utilize AI tools as if these tools were real writing peers. They can have the chance to enhance their ideas, take risks to try various writing styles, and enrich vocabulary background. It can be concluded that creativity is not only related to producing something new but also learning how to improve the work reasonably. Tsao and Nogues (2024) clearly

present the importance of AI on creative writing as it allows students to take control of their own learning. Also, it is stated that AI tools can be used as a writing partner. In a similar vein, Susanto et al. (2023) reveal that students can be encouraged to find ideas and make up their own stories thanks to AI tools like ChatGPT. The use of these tools ranges from being simply an assistant to being an inspirer. Furthermore, Song and Song (2023) assume that as AI tools provide a motivating learning environment, they can considerably foster students' both academic and creative writing skills. Nguyen and Trinh (2024) claim that AI tools are helpful for students to be more creative and improve their writing. Also, students can enrich their works with pictures, which makes the learning process more enjoyable for them. All in all, it can be highlighted that students can foster their creative writing by using AI tools. Also, teachers believe that students can write original stories, make up new ideas, and improve language skill thanks to AI tools. AI tools can motivate students to take risks, try new styles, and enrich their vocabulary. As a result, students can improve their creativity and innovation.

Another paramount point is about idea generation. AI tools allow students to make up innovative ideas as well as improving writing skills. Students are encouraged to think not just in the classrooms, but beyond the classrooms. Also, these tools can be used for brainstorming. Furthermore, AI tools provide immediate feedback for students' works. Therefore, students can spot their needs and improve their ideas by correcting them. Supporting this, Youn et al. (2025), who studied on how feedback has changed writing with AI tools, state that the integration of AI with traditional teaching can be helpful for students to improve their writing. Additionally, Escalante et al. (2023) advocate the effectiveness of feedback both from human and from AI tools. Whereas some students prefer a tutor feedback as it is more personal, others prefer AI feedback because it is clearer. AI tools can encourage students to generate creative ideas, and improve writing skills. Students can benefit from brainstorming activities and think beyond the classrooms with AI tools. Furthermore, it can be stated that the integration of AI tools and traditional methods can boost students' learning process and creativity.

The theme of idea generation can be connected with another significant theme, 'creating digital content'. Based on the responses of teachers for fostering creativity and innovation, results show that AI tools can be utilized to create digital content as it is a powerful way for students to express themselves. Contrary to traditional learning methods where students just sit and learn, AI tools allow students to create new things such as videos, games, applications, and other products. As an applied learning, this helps students to improve technological skills and discover how to share their opinions in different ways. Ordinary,

traditional, and tedious school works are replaced with creative and entertaining projects. As a result, students can have important skills to use both at school and in daily life. Supporting these, Singh and Pathania (2024) conclude that with the integration of AI technology, creating content within digital marketing education has been transformed considerably, which enables teachers to design interactive materials. Apart from this, the quality of content and learning experience can be enhanced with AI technology. Furthermore, Chen (2024), who investigated how AI can foster creativity with digital storytelling, concludes that students have positive emotions when they use AI while creating stories. However, it is also stated that real creativity emerges from the students themselves. On the other hand, Habib et al. (2024) reveal that despite the positive impact of AI on creativity, it can hinder students' creativity if not used properly. It is added that teachers should integrate traditional methods with AI carefully to get better outcomes. Unlike traditional methods, students can express themselves by creating digital materials. This makes learning enjoyable and practical. Furthermore, students can improve skills that can be useful both for their academic and their social lives.

In addition, teachers underline the significance of personalized learning while fostering creativity as it allows students to learn in their own ways. Students can decide on the mode in which they want to learn by using AI tools. Besides, they can create materials that are suitable for their own learning, and improve language proficiency. AI tools enable students to learn at their own speed. This help of AI tools not only enhances students' creativity but also gives chances for students to take control of their own learning. Annamalai et al. (2025) investigated the sources of motivation for students to utilize ChatGPT to learn English. It has been stated that as long as students take control of their learning, they feel more motivated. Likewise, Lin and Chen (2024) assert that AI empowers learning as it can provide personalized feedback, increase motivation, and foster creativity. Additionally, Mohebbi (2025) indicates that AI presents personalized learning and allow students to take control of their learning; as a result, language learning is transforming. These all show that AI tools foster creativity and personalized learning as well as enabling students to take control of their learning. Consequently, students have a higher level of motivation, and attain better language learning outcomes.

The impact of AI tools is not confined to academic success. However, students can feel more confident by using AI tools for creating new products. There will be no judgement for students while they are engaged in learning and creating new outputs. In traditional classrooms, students may feel shy or excited to express themselves. However, AI tools allow them to try out new ideas, find the parts that are needed to change, and improve their work

before sharing them with others. Wand and Li (2024) clearly express that positive emotions, digital efficacy, and satisfaction are seen crucial for students' use of AI. Besides, students' willingness for autonomous learning is supported with the development of digital skills. Silitubun (2023) uncovers that AI helps students increase their self-confidence. As a result, their academic performance can improve. In other words, it is stated that the use of AI technology plays an important role in boosting students' self-confidence apart from providing assistance with the course content. All in all, it can be expressed that the use of AI tools has a crucial impact on students' creativity and raising self-confidence. Also, they can improve students' autonomy as a result their academic performance.

In conclusion, provided that AI tools are integrated into language teaching classrooms reasonably, they significantly improve students' creativity and innovation. This can be accomplished with the support of activities such as creative writing, idea generation, and digital content creation. Furthermore, students are provided with personalized learning settings, which help them boost their confidence.

5.2.5. Improving Self-direction with AI Tools

Artificial Intelligence has been evolving the ways of English language education. It is more than an ordinary tool as it reshapes the traditional methods. Furthermore, AI rearranges students' self-direction in language teaching classrooms. According to the teachers' responses, AI tools can be supportive for fostering students' self-direction by encouraging autonomy, providing personalized learning, giving chances for self-assessment, giving instant feedback, accessing to learning resources, offering flexible learning methods, allowing them to set their own goals, and reducing anxiety.

On the basis of teachers' responses, the themes mentioned above come out as the basic ones. Out of these themes, autonomy, personalized learning, accessing to learning resources and flexibility can be considered to be interrelated. Firstly, the main theme is about students' autonomy. 23.076 % of the participants agree that AI has shifted students' roles from passive learners to active ones. Also, students can explore, choose, and benefit from learning materials on their own even though they used to be dependent on teachers before. This change is compatible with the need of 21st century skills as lifelong learning skills. These skills underline the importance of the ability of learning to learn. Gotavade (2024) investigated whether AI tools can have an impact on personalized learning. It is stated that with the use of smart technology, individuals can benefit from them effectively as they allow students to avoid making mistakes, give reasonable answers, have chance to observe their improvement,

and find learning materials for their interests. Wang and Li (2024) also assert that personalized learning and autonomy among university students can be enhanced with generative AI tools. Also, it is added that students can be motivated to learn individually thanks to these tools. Another significant idea to foster self-direction is related to personalized learning (23.076%). AI tools can present learning experiences which are suitable for each individual. These can fit students' interests, skills, and objectives. Personalized learning helps students have higher motivation, and allows them to take control of their learning. They can choose what, how and when to learn. Rajja et al. (2024), studying on VirtualTA, an AI tool, conclude that it enhances personalized learning and learning experiences with advanced language technology. Moreover, Ballifard et al. (2023) support that with the help of personal AI tutors, students can utilize personalized learning as these tools can detect how students learn best and present the suitable materials and methods. Also, AI tools provide an important flexibility (4.615%), as students can learn anywhere, anytime and at their own pace. Students hold their learning control, and opt the learning process on their own. Unlike traditional methods, students do not have to be dependent on a sole coursebook. At this point, it can be concluded that students can access to various learning materials by using AI tools (9.230%). Bayly-Castaneda et al. (2024), similarly, advocate that people can learn in a more personalized and independent way thanks to AI. Besides, tools such as Chatbots can present materials which are suitable for their interests, and this can make learning flexible and effective. Fujii (2023) agrees that utilizing AI and digital technologies in flexible course planning can provide more personalized learning experiences as well as encouraging the learners to take control of their learning. All in all, AI tools can be used effectively to foster students' autonomy, personalized learning, flexibility to learn, and easy access to learning sources. Consequently, students can take the responsibility of their learning, select proper materials for their interests, and improve their self-direction.

Additionally, another crucial point is that AI tools enable students to assess their own progress and evaluate themselves (15.384%). AI tools can help students to observe their learning journey so that they can correct and improve themselves. Students can see how well they learn, and adjust their learning methods. Besides, getting instant feedback from AI tools can be effective (13.846%). This helps students to realize their mistakes immediately, and encourages their improvement. Supporting these, Hooda et al. (2022) demonstrate that utilizing AI for assessment and feedback plays a crucial role as they are more accurate and helpful. Also, AI allows students and teachers to get immediate and personalized feedback. In addition, Shum et al. (2023) investigated how automated feedback can enhance learning

provided that it is used properly. Teachers need to have the skills to use these tools. It is also stated that some tools can allow students to be in charge of their learning, yet unless they are implemented properly, students can be adversely affected by these tools. On the other hand, Meje et al. (2024) highlight that educational technological feedback should be more personalized as learners respond to feedback in different ways, based on their tailored learning needs. To sum up, students' self-direction can be enhanced with individualized assessment and instant feedback, provided by AI tools. These enable students to follow their learning progress and improvement. However, the effective outcome can be attained as long as AI tools are utilized properly.

Final themes are about "setting goals" and "mitigating anxiety" (each 3.076%). These results reveal that AI tools are beneficial for learners' emotions as well as making organizations for the learning process. Students can follow clear and attainable learning goals. Also, AI tools do not put pressure on students as they do not judge students even if they make mistakes. Students can have a chance to repeat until they reach ultimate goals. In a similar vein, Alsaiani and Baghaei (2024) emphasize that as long as AI generated feedback includes emotional components, students feel more confident. This can contribute to a positive and understanding learning environment. Likewise, Klimova and Pikhart (2025) indicate that students' well-being can be enhanced with AI tools as they provide personalized learning, improve mental health support and encourage inclusivity. To conclude, it can be clearly stated that AI is crucial for students' confidence by enabling them to determine realistic goals, and mitigating anxiety. Also, students can learn at their own pace, and this increases students' confidence, as well. Consequently, students' academic performance can be enhanced.

In conclusion, self-direction can be improved with the proper usage of AI tool as these tools encourage personalized learning, autonomy, and flexibility in the learning process. Furthermore, AI tools allow students to follow their learning progress, and enhance their learning strategies through self-assessment, instant feedback, and setting goals. Apart from academic issues, these tools also help students reduce their anxiety and boost confidence by offering a motivating learning environment. Eventually, it can be expressed that if used properly, AI tools aid students to take the responsibility of their learning, improve their academic performance, and increase students' well-being.

5.2.6. Improving the Skill of Using Technology As a Tool For Learning with AI Tools

The findings from the analysis show that AI tools have a significant role in boosting students' skills to use technology as a tool for learning, particularly for learning English. The identified themes underline various impacts of the tools on educational activities. The prominent themes that are emphasized by teachers are “reaching online resources”, “raising digital awareness”, “personalized learning”, “getting feedback” and “online assessment”, “exchanging opinion through online platforms”, “enhancing autonomy”, and “increasing motivation”. According to the participants, these practices can be interrelated to fostering the skill of using technology as a tool for learning.

The most significant theme is “attaining online resources” (24.44%). This theme offers that teachers agree that AI tools are vital for helping students find and utilize various digital learning materials. As AI tools have intelligent searching abilities, students can access to suitable and relevant materials that are customized for their learning. Thanks to this capacity of AI tools, the learning process can be more effective. Also, contrary to traditional methods, students can be more motivated to become more independent while using technology. Boubker (2024) concludes that as AI tools are helpful and easy to use along with giving good results, students might enjoy utilizing them. Also, it is stated that AI tools enhance students' self-learning. Furthermore, it is identified that students can speed their learning with generative AI. Also, AI teaching tools are effective in minimizing the learning time in education, which makes learning accessible for all students (Möller et al. 2024; Ward et al. 2024). Moreover, the theme of raising digital awareness, which can be related to attaining online resources, reveals the importance of AI tools for enhancing digital literacy. According to teachers, AI tools allow students to surf the internet more consciously and decide how credible the online sources are. This skill seems fairly significant in the world of technology as students can distinguish between reliable and inaccurate information. As a result, AI tools can contribute to more meaningful learning by enhancing students' critical thinking. In a similar study, Prastyo et al. (2024), who explore the impact of Differentiated Instruction method and an AI tool called ProProf.com on students' digital literacy, concludes that this tool has a positive effect on improving students' digital literacy. It is, also, suggested that teachers and schools should utilize more technology for teachers' training to implement these methods. Similarly, Meirbekov et al. (2022) highlight that it is crucial to utilize digital tools of teaching and integrate them into education field in order to keep up with the expectations of

the digital world. In a study related to the way digital media works, and how AI affects what students see, Olanipekun (2024) indicates that schools should help students to learn media literacy in order that they can use digital tools more wisely and ethically. All in all, the integration of AI tools into education is crucial for allowing students to have access to digital resources, learn independently and foster digital literacy. AI tools can provide personalized learning as well as promoting critical thinking and allowing students to decide on how online resources are effective. Integration of AI into language classrooms is essential as students can meet the demands of the modern world and learn more meaningfully.

Personalized learning is another significant theme. As AI tools have the capacity to provide customized content for each student, students can choose what, where and when to learn. This skill of AI tools can boost motivation as well as fostering comprehension. That's because students can enjoy the materials that are relevant and reasonable. Similarly, Huang et al. (2023) who, improved an AI-driven personalized recommendation system and investigated its effects on student motivation, concludes that personalized recommendations are effective in improving students' learning outcomes if students have moderate levels of motivation. Related to personalized learning, there are some other themes such as getting feedback and online assessment, exchanging opinions on online platforms and enhancing autonomy. AI tools can enable students to get immediate feedback and check their learning with various assessment tools. Therefore, teachers consider that this instant feedback allows students to realize their progress and identify the areas that need improvement. Also, getting instant feedback motivates students to learn meaningfully. Alamaki et al. (2024) state that students' learning choices like studying alone and remotely have an effect on the students' utilizing AI-based- assessment tools. It is also suggested that students' learning styles should be determined with AI tools in education. Furthermore, students can work together, and promote their learning thanks to AI tools. Additionally, students can become active participants of the learning process. Lastly, teachers agree that AI tools can foster students' autonomy and motivation for learning as they enable students to take the responsibility of their learning. Mohamed et al. (2024) demonstrate that motivation for language learning can be enhanced with AI language teaching tools. However, it is also stated that teachers need more training to get better results. On the other hand, Henze et al. (2024) claim that although AI tools can have positive effect on improving students' motivation, there is not a significant difference in the learning progress of students related to using AI tools. Supporting these, Imran and Khan (2025) assert that AI personalized learning has a constructive effect on students' motivation as it enables students to have a high level of intrinsic motivation. To sum up, AI-supported

personalized learning can help students to customize materials to their interests and needs. This can enhance students' motivation and understanding. Moreover, these tools can encourage students to be more autonomous, and provide immediate feedback. Although students' motivation and learning outcomes can be fostered with these tools, more studies need to be conducted to reach permanent impacts of AI.

In conclusion, for the students to utilize technology effectively in language classrooms, AI tools play paramount roles. These tools support personalized learning, access to online resources, and improve digital literacy. These all enable students to be more motivated, autonomous and able to think critically. Also, instant feedbacks which are provided by AI tools can allow students to check their learning progress.

5.2.7. Reluctance to Use AI in Language Classrooms

On the other hand, the results indicate that there is a small group of teachers who are not in favour of using AI to foster 21st century skills. Teachers' reluctance may result from either lack of knowledge or confidence in using AI tools effectively. Furthermore, some teachers are worried that AI tools may have a negative impact on improving students' skills, especially communication, as interpersonal interaction is essential for the skill. Furthermore, there is doubt about AI's capacity to improve some skills. Teachers think that AI tools cannot suffice to improve their students' linguistic capacity. These concerns can be handled with professional development, and clear guidance for the effective integration of AI into language classrooms. In studies dealing with using AI in language teaching and learning, Hınız (2024) and Karataş et al. (2024) state that although AI is acclaimed for providing a supportive tool, there are still concerns about depending on it too much. It is also asserted that AI tools are used only for particular skills even if they are effective for the improvement of various skills. Furthermore, it is added that there may be some issues such as technical problems and the tools' failure of identifying students' personal emotions. Furthermore, Walter (2024) asserts that AI tools in education fetch some difficulties such as bias, privacy and security as well as the lack of teachers' readiness to use them in classes. In addition, teachers have some challenges to foster students' 21st century skills such as lack of in-service education, and limited schools sources as well as students' focus on the university exams (Bolat & Deneme-Gençoğlu, 2024). Also, AI use in education can be ignored due to the limited data type and limited involvement of teachers apart from lack of technical resources (Celik et al., 2022). To wrap up, whereas most teachers see the importance of AI tools for the improvement of 21st century skills, there are some concerns among teachers. These can be due to limited

knowledge and the lack of confidence. To overcome these challenges, teachers can be trained well enough to utilize these tools in their classes.

5.3. Improving EFL Teachers' Professional Development with the Help of Artificial Intelligence Based on the Principles of Andragogy

In this study, it has been investigated how AI tools support EFL teachers' professional development, especially based on the principles of andragogy. A content analysis has been conducted in accordance with 6 key principles of self-concept, experience, learning something new when they are ready, motivation, the need to know as an internal mechanism, and problem-centred learning. The results aim to portray how effectively AI tools can be used to support meaningful professional development of teachers.

On the basis of teachers' responses, one of the key ideas emerging is that teachers can become more independent learners thanks to AI tools. Participants agree that AI tools provide personalized learning environments for teachers, which enables them to determine their goals, track their progress, and have more confidence. This is compatible with the idea that adults are more self-directed and willing to take control of their learning process. Furthermore, teachers can find modified resources for themselves and get feedback. These can contribute to teachers' professional development. Another key point is the significance of the teaching experience. This is essential for adult education, because adults can learn better if they can make a connection between the new information and what they already know. Teachers' responses reveal that AI tools can be helpful for using teachers' past experiences, and can offer learning materials and resources that are necessary for their needs. Besides, teachers can get constructive feedback from AI tools to build a bridge between new things and what they have in their schema. This feature of AI tools can make learning easier, more practical and more meaningful. In addition, the idea of learning something when ready can be encouraged by AI tools. English teachers are aware of the significance of the flexibility that AI tools provide. That's because AI tools allow teachers to learn at their own speed, and based on their personal readiness. Additionally, with the facility that AI tools give the right materials at the right time, learning can be neither too difficult nor too easy. Immediate feedback offered by AI tools help teachers to see the areas that need improvement. The capacity of AI tools to provide suitable learning settings for each individual makes learning more interesting and effective for teachers. Furthermore, motivation is one of the important components of professional development. Teachers can keep their motivation high with AI tools, as they can give regular feedback, show their progress, and recall their goals. They can provide clear steps

and demonstrate what can be improved. Thus, teachers can stay motivated and improve themselves. Furthermore, due to the ability of AI tools to provide personalized learning and save time, teachers can have more chance to develop their professional knowledge. These constant supports allow teachers to feel successful and motivate them to learn and grow. Also, with AI tools, teachers can be supported for “the need to know as an internal mechanism”. This results from their curiosity and finding topics meaningful. The responses of teachers underline how AI tools trigger teachers’ interests and motivation to learn because AI tools can present content that challenges what they already know and share new topic that teachers do not consider. With personalized clues and updated information, AI tools can keep teachers interested and involved in their professional development. This constant interest enables teachers to learn more deeply and motivate them to explore new fields. Lastly, one of the key components of adult education is problem-centred learning. This component can be supported with the proper use of AI tools. On the basis of responses, AI tools can provide problem-centred scenarios, ranging from easy to complex ones, in order to motivate teachers to think creatively and reach a solution. As well as enhancing creativity and encouraging making up new ideas, these activities can foster teachers’ critical thinking and problem-solving skills. With the AI’s ability to challenge teachers by presenting different levels of problems, teachers can feel that they should improve themselves constantly. This sort of learning plays an important role for teachers’ professional development, as it presents real problems that teachers may face in classes. Supporting these, Copur-Erturk et al. (2024), studied how effective AI-supported training program assisted teachers to learn in more personalized ways regardless of time and place. It has been concluded that teachers select more difficult tasks and teach more coherently if they are given the training. Additionally, Olasehinde (2024) asserts that AI has been altering teachers’ professional development by providing personalized learning and presenting customized content and feedback. As a result, teachers can learn with the methods that suit them. Furthermore, Mah and Groß (2024) state that teachers need special education to be able to comprehend and utilize AI with the aim of teaching better. Teachers can be supported with flexible learning options and encouraged to keep learning effectively. In a similar vein, Teslim (2024) alleges that AI can be highly helpful for adult learners, as they can provide personalized learning, feedback and learning methods. Also, teachers should be trained properly to benefit from AI tools effectively. Nazaretsky et al. (2022) express that training programs can be effective for teachers to comprehend how to utilize AI; consequently, they can feel more confident in the classroom. Likewise, Gupta and MacLellan (2025) assert that adult learners can utilize intelligent tutors

that suit adults' needs and learning backgrounds for their development. Additionally, Yang et al. (2024) clearly identifies that when teachers use AI-based tools supported by professional development programs, they can feel more confident. AI tools can empower teachers' application for teaching (Tammets & Ley, 2023). Although generative artificial intelligence can foster adult learning and professional development, teachers should comprehend its impacts and utilize it carefully (Adarkwah, 2024). To wrap up, teachers perceive AI as an important tool, for AI tools help them to become independent and self-directed learners. In addition, AI tools can provide personalized learning, goal setting, proper feedback, and flexibility to use resources. As a result, teachers can take the responsibility of their professional development. In order to take advantages of these facilities, teacher should be trained and supported constantly. AI tools can help teachers to have a high level of motivation as well as helping them to connect new knowledge with their past experiences and facilitating meaningful and intentional learning.

In conclusion, the result of this study reveals a powerful compatibility between AI tools and principles of andragogy, since AI tools can be effectively used for professional development. According to teachers, AI is a beneficial source for supporting independence, motivation, personalized content, quick feedback, and flexible learning circumstances. However, it is crucial to provide constant education for teachers to completely benefit from these tools. Under the proper circumstances, teachers can be eager to integrate AI tools into their professional development and teaching practices.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

In this part, a general panorama of the research findings will be shared in line with research questions. In addition, educational implications and recommendations for further research will be presented.

6.1. Conclusion

In this study, the researcher meticulously investigated EFL teachers' perceptions and practices related to 21st century skills and the integration of Artificial Intelligence (AI) into language classrooms, based on the principles of andragogy.

In a constantly developing world, education is also changing with new technologies, thus altering students' needs. As a consequence of these changes, language teachers should embrace recent teaching methods to support their students besides improving themselves on academic grounds. Thus, it is crucial to comprehend how teachers are adapting themselves and whether they get proper professional development. As education is going through significant changes, this study holds importance, for it reflects onto these changes through an in-depth analysis of the perceptions and practices of language teachers. As mentioned above, English teachers not only teach language skills but also they help students to acquire 21st century skills so as to adapt them to the new, dynamic world. Students are expected to have the potential to create such skills as being more creative, thinking critically, working as a team, communicating well, learning independently, and utilizing digital tools. Furthermore, with the integration of AI into the education field, teachers are faced both with the advantages and the difficulties of using new technological tools and taking up new pedagogical approaches and strategies.

Firstly, the results unveil that English teachers mostly reach their aims of improving 21st century skills, especially for fostering communication, collaboration, creativity and innovation, and technology use for learning. These skills were both underlined in classroom activities and perceived to be improved positively. However, skills such as critical thinking and self-direction were not practiced and perceived as much as expected. This reveals that there are some areas to be improved. This contradiction proves that although teachers partly embrace components of 21st century skills, there is still a need to highlight the skills that enable students think critically and independently. In the modern world, students are encouraged to foster critical thinking, creativity, communication, and collaboration. On the

basis of the results mentioned above, it can be stated that there is a gap between the improvements of these skills. This means teachers do not select a balanced method to foster all skills equally. Although critical thinking and self-direction are seen as significant skills, they are not taught as effectively as they should be. This can be stated as a vital problem, as students should think critically, ask questions, and learn independently to keep up with the modern world. These skills are crucial both for students' academic life and their social life. The data from the qualitative research reveals the underlying reasons as time limitation, the difficulty of curriculum and crowded classrooms. Besides, the lack of fostering these skills can result from the workload of the education system. Teachers may not have enough time, and classrooms can be very crowded as well as the heavy content of the curriculum. These difficulties can cause these skills to be ignored in language classrooms. These all prove that it is urgent to adopt a holistic way of teaching 21st century skills in the classroom. Teachers can prepare their lesson plans with the aim of enhancing all skills equally apart from teaching English.

Secondly, this study has investigated the perceptions of teachers on the use of AI tools to improve students' 21st century skills. It has been identified that most teachers view AI as an important tool, as it is effective for various parts of education. Many of them support that AI tools can be operational for personalized learning, analysing content, boosting peer interaction, and giving feedback. Also, according to teachers, AI tools help students to find proper materials for their learning, create new ideas, and have different perspectives. These all prove that teachers consider positively about the use of AI in their classes. Yet, whereas teachers agree on the benefits of AI tools, they do not use the tools as much as expected. This may result from the problems such as teachers' lack of training and knowledge on how to use AI tools as well as lack of technological sources at schools. However, it can be highlighted that teachers are still eager to employ AI tools in their classes. Also, it can be seen that teachers need training and support for the use of AI tools. As long as education administrators motivate teachers, it is obvious that teachers willingly implement AI-supported activities in their classrooms. This can enable a more entertaining and actual learning and teaching process.

Thirdly, the principles of andragogy are crucial in shaping the research and interpreting the results. According to the theory of Knowles (2013), adult learners prefer to be autonomous, have clear goals, and have inner motivation. These are valid for the teachers who participated in this study, as well. Based on the results, it can be stated that teachers' professional education should include past experiences, problem-solution skills, and

practicality in classroom settings. This way of teaching determines how adult learners learn best and make the professional development more meaningful and feasible for real life difficulties that are encountered in the classrooms.

Finally, professional development should be supported constantly and made adaptive to the changing education fields, particularly in the use of AI. Due to the rapid changes in technology, teachers should not only be supported to have technical skills but also guided to enhance their confidence to use AI tools properly. AI can support teachers to enhance thinking skills and pedagogical understanding. For example, teachers can use suitable methods of teaching, evaluate students' performance, and decide how to elaborate the teaching process. Based on the results, as long as teachers' professional development is compatible with the principles of andragogy, teachers can become more involved in the teaching process and can help their students more effectively. However, to achieve all these targets, teachers should be willing to improve themselves and to participate in professional development in-service programs.

To summarize, this study reveals that EFL teachers attempt to help their students to foster 21st century skills. Particularly, “collaboration”, “communication”, “creativity and innovation”, and “technology use” can be improved by teachers. On the other hand, more attempts are needed to boost “critical thinking” and “self-direction”. In addition, it is concluded that AI is seen significant as it is an effective tool for teaching and learning. However, teachers need more professional development to utilize AI properly. Teachers should be provided with continuous, drip-feed professional development programs and feasible applications to benefit from AI tools in an effective way.

6.2.Implications

The findings of the study pose paramount implications for the ELT field, especially in the framework of 21st century skills and the use of Artificial Intelligence in classrooms. The implications of this study can be presented with four parties in education: in terms of students, teachers, curriculum designers and decision makers as well as the academic field of ELT.

Firstly, it is vital for students to acquire 21st century skills in English teaching classrooms. These skills are “critical thinking”, “communication”, “collaboration”, “creativity and innovation”, “self-direction” and “using technology as a tool for learning”. Apart from supporting students to have better English language skills, integrating these skills into the teaching process can help students to be ready in other parts of one's environment such as social and business life. These skills play important roles in today's changing world. The

findings display that whereas students can improve communication and collaboration, they have difficulty in fostering critical thinking and self-direction skills. This shows that students can finish school without improving the abovementioned skills. However, these skills are important for the university and social life of the students. Thus, teachers should be more focused to foster all skills equally. Additionally, the study uncovers that students' learning can be supported with AI tools. These tools allow students to have personalized and interactive materials and methods, to get instant feedback, and to lessen their anxiety while learning a language. With all these facilities, students can become more interested, engaged and motivated. The results of the study present implications to be implemented for a better future for students, for they highlight the significance of life skills that are important for academic, social and business life of the students. Additionally, students can have the chance of personalized learning with the support of AI integration into language education. As a result, students can become ready for the future life and acquire the skills for lifelong learning.

Secondly, teachers should be educated for 21st century skills, and teacher education programs are to be reshaped in accordance with these skills. Teachers should find chances to practice these skills and use them in real life circumstances. Likewise, learning how to utilize AI tools should be an important component of teacher training. As AI is getting more prevalent in language education, teachers need to be guided for the use of these tools. However, teachers should realize AI's effects in terms of ethical issues. All in all, the study shows that teachers should learn how to use AI tools in order to help their students. Therefore, they should be encouraged with in-service education programs. In other words, teachers can prepare themselves for the constantly changing world, considering the results of the study. It can be stated that English teachers do not only teach the target language but also let their students encounter some technological tools. All these facts put forward that teachers should be supported with teacher training programs, and curricula should be geared towards the needs of the 21st century learning and teaching methods.

Another significant implication is related to the curriculum design. The results prove that 21st century skills and the use of AI should be included in English Language Teaching Programs. This can be conducted both for high school and university levels. Although these skills may be a part of the curriculum indirectly, the curriculum design should consist of them in order that students can practice these skills explicitly. Also, the curriculum may be designed not just for teaching grammar or vocabulary, but for enhancing thinking skills, social communication, utilizing technology, and learning independently as well. Moreover, AI tools can be integrated into activities to support communication, creativity and collaboration.

Finally, the curriculum for teacher education should be designed by considering 21st century skills and AI.

Lastly, this study contributes to ELT field to a large extent as it investigates the combination of 21st century skills, the use of AI in language classrooms, and the principles of andragogy, which is an unexplored field. Furthermore, since this study handles with both what teachers state and they do in their classrooms, it gives clues about the connection of teachers' practices and perceptions. Also, it must be underlined that ELT teachers can adapt themselves to the changes of the modern world. Finally, it can be stated that English language teachers do not teach only English. On the contrary, they can contribute to students' communication, collaboration, critical thinking, self-direction, creativity and innovation, and use of technology by using AI tools to prepare them for the ever evolving life cycle.

6.3.Recommendations

In the following studies, the limitations of this study can be elaborated. Firstly, the number of participants can be expanded by including teachers from various regions and types of schools. Also, researchers can conduct long-term studies in order to observe changes that result from 21st century skills and the use of AI. Lastly, teachers can be assessed for the knowledge of 21st century skills and AI.

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APPENDIX

APPENDIX-1 ETHIC DECLARATION

This thesis is prepared in accordance with the rules specified in Mersin University Graduate Education Regulation and I declare to comply with the following conditions:

- I have obtained all the information and the documents of the thesis in accordance with the academic rules.
- I presented all the visual, auditory and written informations and results in accordance with scientific ethics.
- I refer in accordance with the norms of scientific works about the case of exploitation of others' works.
- I used all of the referred works as the references.
- I did not do any tampering in the used data.
- I did not present any part of this thesis as another thesis at Mersin University or another university.
- I transfer all copyrights of this thesis to the Mersin University.

27/06/2025

(İmza)

Latif KARAKILINÇ

APPENDIX-2 ORIGINALITY REPORT



MERSIN UNIVERSITY GRADUATE SCHOOL OF EDUCATIONAL SCIENCES THESIS/DISSERTATION ORIGINALITY REPORT

MERSIN UNIVERSITY GRADUATE SCHOOL OF EDUCATIONAL SCIENCES TO THE DEPARTMENT OF FOREIGN LANGUAGE EDUCATION

Date: 04/06./2025

Thesis Title: A Study to Explore EFL Teachers' Involvement in 21st Century Skills and Artificial Intelligence

The whole thesis that includes the title page, introduction, main chapters, conclusions and bibliography section is checked by using **Turnitin** plagiarism detection software take into the consideration requested filtering options. According to the originality report obtained data are as below:

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I respectfully submit this for approval.

Signature

Name Surname: Latif KARAKILINÇ
Student No: _____
Department: Foreign Language Education
Program: English Language Teaching
Status: Masters

ADVISOR APPROVAL

APPROVED.

Asst. Prof. Dr. Dönercan DÖNÜK

(Title, Name Surname, Signature)

APPENDIX-3 CURRICULUM VITAE

Name and Surname : Latif KARAKILINÇ

Date of Birth :

E-mail :

Educational Background :

Degree	Department	University	Year

Professional Background :

Job Title	Place of Duty	Year

APPENDIX-4 ETHICAL COUNCIL APPROVAL

	T.C. MERSİN ÜNİVERSİTESİ REKTÖRLÜĞÜ Eğitim Bilimleri Etik Kurulu	Tarih: 26/11/2024 13:56 Sayı: E-10077440-050 04-2917523 EĞİTİM BİLİMLERİ ETİK KURULU  2917523
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Karar Tarihi	Toplantı Sayısı	Karar Sayısı
12.11.2024	1	27

Lisansüstü Öğrencisi Latif KARAKILINÇ'ın **21. Yüzyılda Değişen Öğretmen Rollerini: İngilizce Öğretmenlerinin 21. Yüzyıl Becerileri ve Yapay Zekâ Süreçlerine Katılımını Araştırmaya Yönelik Bir Çalışma** adlı çalışması kurulumuz tarafından incelenmiş ve oy birliğiyle etik yönden uygun bulunmuştur.

Prof. Dr. Hakan AKDAĞ Kurul Başkanı	Prof. Dr. Işıl TANRISEVEN Kurul Üyesi	Prof. Dr. Hikmet SÜRMELİ Kurul Üyesi	Prof. Dr. Burhan ÇAPRI Kurul Üyesi
Prof. Dr. Arzu UYSAL Kurul Üyesi	Prof. Dr. Cem Ali GİZİR Kurul Üyesi	Prof. Dr. Serkan ŞENDAĞ Kurul Üyesi	

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APPENDIX-5 SURVEY AND OPEN-ENDED QUESTIONS

A Survey for Measuring 21st Century Teaching and Learning: West Virginia 21st Century Teaching and Learning Survey

Instructions

The rest of this survey asks about your teaching practices that might support students' learning of the following 21st century skills.

Critical Thinking

Collaboration

Communication

Creativity & Innovation

Self-Direction

Using Technology as a Tool for Learning

For each of the above you will be asked about your general teaching of these skills, and about a few specific practices you may have used.

There are no correct or incorrect answers and all responses will be kept confidential.

CRITICAL THINKING SKILLS refer to students being able to analyze complex problems, investigate questions for which there are no clear-cut answers, evaluate different points of view or sources of information, and draw appropriate conclusions based on evidence and reasoning

1. Here are some examples of practices that may help students learn CRITICAL THINKING SKILLS.

In your teaching of your TARGET CLASS, how often have you asked students to do the following	Almost never	A few times a semester	1-3 times per month	1-3 times per week	Almost daily
a. Compare information from different sources before completing a task or assignment?	0	0	0	0	0
b. Draw their own conclusions based on analysis of numbers, facts, or relevant information?	0	0	0	0	0
c. Summarize or create their own interpretation of what they have read or been taught?	0	0	0	0	0
d. Analyze competing arguments, perspectives or solutions to a problem?	0	0	0	0	0
e. Develop a persuasive argument based on supporting evidence or reasoning?	0	0	0	0	0
f. Try to solve complex problems or answer questions that have no single correct solution or answer?	0	0	0	0	0
2. To what extent do you agree with these statements about your TARGET CLASS?	Not really	To a minor extent	To a moderate extent	To a great extent	To a very great extent
a. I have tried to develop students' critical thinking skills	0	0	0	0	0
b. Most students have learned critical thinking skills while in my class	0	0	0	0	0
c. I have been able to effectively assess students' critical thinking skills	0	0	0	0	0

COLLABORATION SKILLS refer to students being able to work together to solve problems or answer questions, to work effectively and respectfully in teams to accomplish a common goal and to assume shared responsibility for completing a task.

1. Here are some examples of practices that may help students learn COLLABORATION SKILLS.

In your teaching of your TARGET CLASS, how often have you asked students to do the following	Almost never	A few times a semester	1-3 times per month	1-3 times per week	Almost daily
a. Work in pairs or small groups to complete a task together?	0	0	0	0	0
b. Work with other students to set goals and create a plan for their team?	0	0	0	0	0
c. Create joint products using contributions from each student?	0	0	0	0	0
d. Present their group work to the class, teacher or others?	0	0	0	0	0
e. Work as a team to incorporate feedback on group tasks or products?	0	0	0	0	0
f. Give feedback to peers or assess other students' work	0	0	0	0	0

2. To what extent do you agree with these statements about your TARGET CLASS?	Not really	To a minor extent	To a moderate extent	To a great extent	To a very great extent
a. I have tried to develop students' collaboration skills	0	0	0	0	0
b. Most students have learned collaboration skills while in my class	0	0	0	0	0
c. I have been able to effectively assess students' collaboration skills	0	0	0	0	0

COMMUNICATION SKILLS refer to students being able to organize their thoughts, data and findings and share these effectively through a variety of media, as well as orally and in writing.

1. Here are some examples of practices that may help students learn COMMUNICATION SKILLS.

In your TARGET CLASS, how often have you asked students to do the following	Almost never	A few times a semester	1-3 times per month	1-3 times per week	Almost daily
a. Structure data for use in written products or oral presentations (e.g., creating charts, tables or graphs)?	0	0	0	0	0
b. Convey their ideas using media other than a written paper (e.g., posters, video, blogs, etc.)	0	0	0	0	0
c. Prepare and deliver an oral presentation to the teacher or others?	0	0	0	0	0
d. Answer questions in front of an audience?	0	0	0	0	0
e. Decide how they will present their work or demonstrate their learning?	0	0	0	0	0

2. To what extent do you agree with these statements about your TARGET CLASS?	Not really	To a minor extent	To a moderate extent	To a great extent	To a very great extent
a. I have tried to develop students' communication skills	0	0	0	0	0
b. Most students have learned communication skills while in my class	0	0	0	0	0
c. I have been able to effectively assess students' communication skills	0	0	0	0	0

CREATIVITY AND INNOVATION SKILLS refer to students being able to generate and refine solutions to complex problems or tasks based on synthesis, analysis and then combining or presenting what they have learned in new and original ways.

1. Here are some examples of practices that may help students learn CREATIVITY AND INNOVATION SKILLS.

In your teaching of your TARGET CLASS, how often have you asked students to do the following	Almost never	A few times a semester	1-3 times per month	1-3 times per week	Almost daily
a. Use idea creation techniques such as brainstorming or concept mapping?	0	0	0	0	0
b. Generate their own ideas about how to confront a problem or question?	0	0	0	0	0
c. Test out different ideas and work to improve them?	0	0	0	0	0
d. Invent a solution to a complex, open-ended question or problem?	0	0	0	0	0
e. Create an original product or performance to express their ideas?	0	0	0	0	0

2. To what extent do you agree with these statements about your TARGET CLASS?	Not really	To a minor extent	To a moderate extent	To a great extent	To a very great extent
a. I have tried to develop students' creativity and innovation skills	0	0	0	0	0
b. Most students have learned creativity and innovation skills while in my class	0	0	0	0	0
c. I have been able to effectively assess students' creativity and innovation skills	0	0	0	0	0

SELF-DIRECTION SKILLS refer to students being able to take responsibility for their learning by identifying topics to pursue and processes for their own learning, and being able to review their own work and respond to feedback.

1. Here are some examples of practices that may help students learn SELF-DIRECTION SKILLS.

In your teaching of your TARGET CLASS, how often have you asked students to do the following	Almost never	A few times a semester	1-3 times per month	1-3 times per week	Almost daily
a. Take initiative when confronted with a difficult problem or question?	0	0	0	0	0
b. Choose their own topics of learning or questions to pursue?	0	0	0	0	0
c. Plan the steps they will take to accomplish a complex task?	0	0	0	0	0
d. Choose for themselves what examples to study or resources to use?	0	0	0	0	0
e. Monitor their own progress towards completion of a complex task and modify their work accordingly?	0	0	0	0	0
f. Use specific criteria to assess the quality of their work before it is completed?	0	0	0	0	0
g. Use peer, teacher or expert feedback to revise their work?	0	0	0	0	0

2. To what extent do you agree with these statements about your TARGET CLASS?	Not really	To a minor extent	To a moderate extent	To a great extent	To a very great extent
a. I have tried to develop students' self-direction skills	0	0	0	0	0
b. Most students have learned self-direction skills while in my class	0	0	0	0	0
c. I have been able to effectively assess students' self-direction skills	0	0	0	0	0

USING TECHNOLOGY AS A TOOL FOR LEARNING refers to students being able to manage their learning and produce products using appropriate information and communication technologies

1. Here are some examples of practices that may help students learn to USE TECHNOLOGY as a TOOL FOR LEARNING.

In your teaching of your TARGET CLASS, how often have you asked students to do the following	Almost never	A few times a semester	1-3 times per month	1-3 times per week	Almost daily
a. Use technology or the Internet for self-instruction (e.g., Kahn Academy or other videos, tutorials, self-instructional websites, etc.)?	0	0	0	0	0
b. Select appropriate technology tools or resources for completing a task?	0	0	0	0	0
c. Evaluate the credibility and relevance of online resources?	0	0	0	0	0
d. Use technology to analyze information (e.g., databases, spreadsheets, graphic programs, etc.)?	0	0	0	0	0
e. Use technology to help them share information (e.g., multi-media presentations using sound or video, presentation software, blogs, podcasts, etc.)?	0	0	0	0	0
f. Use technology to support team work or collaboration (e.g., shared work spaces, email exchanges, giving and receiving feedback, etc.)?	0	0	0	0	0
g. Use technology to interact directly with experts or members of local/global communities?	0	0	0	0	0
h. Use technology to keep track of their work on extended tasks or assignments?	0	0	0	0	0

2. To what extent do you agree with these statements about your TARGET CLASS?	Not really	To a minor extent	To a moderate extent	To a great extent	To a very great extent
a. I have tried to develop students' skills in using technology as a tool for learning	0	0	0	0	0
b. Most students have learned to use technology as a tool for learning while in my class	0	0	0	0	0
c. I have been able to effectively assess students' skills in using technology for learning	0	0	0	0	0

Open-ended Questions to Collect Data on the usage of Artificial Intelligence

Part 1

Dear participant,

A. Please consider your target class and answer the following questions:

1. How can you improve your students' critical thinking skills with the help of AI while teaching English?
2. How can you improve your students' collaboration skills with the help of AI in language lessons?
3. How can you improve your students' communication skills with the help of AI in language lessons?

4. How can you improve your students' creativity and innovation skills with the help of AI in language lessons?
5. How can you improve your students' self-direction with the help of AI in language lessons?
6. How can you improve your students' using technology as a tool for learning skills with the help of AI in language lessons?

Part 2

Dear participants,

- A. Please think about your professional development, and state how you can benefit from AI in your teaching experience in terms of the principles of andragogy (Self-concept, experience, readiness to learn, motivation, need to know, problem centred learning)
1. How can you improve self-concept with the help of AI?
 2. How can AI contribute to your teaching experience?
 3. How can AI help you to learn something new when you are ready for this experience?
 4. How can AI support your motivation in your professional life?
 5. How can AI sparkle your need to know as an internal mechanism?
 6. How can AI help you improve your problem-centred learning skills?

Part 3

Open-ended Questions for the Focus-Group Interview, Based on the Results of Survey and Open-ended Questions

1. Can you talk about the reasons why “collaboration”, “communication”, “creativity and innovation” and “using technology as a tool for learning” can be enhanced whereas “critical thinking” and “self-direction” cannot be fostered in your classrooms?
2. How can AI tools contribute to your professional development as an English teacher?

APPENDIX-6 PERMISSION TO USE THE SURVEY

Jason Ravitz' permission to use 21st Century Teaching and Learning Survey

Re: Permission for the A Survey for Measuring 21st Century Teaching and Learning



Jason Ravitz <jason.ravitz@gmail.com>

Kime: Siz

Bilgi: Jason Ravitz

Yanıtla Tümünü yanıtla İlet ...

23.08.2024 Cum 19:52

Dear Latif, I am happy to give you permission to use the survey in your research, provided you cite the source when you present or publish the work. If possible, I would be very happy if you can share your results or let me know how it goes. There have been many uses in Turkey now, and someday maybe I can find someone to help organize the findings.

If you are interested, there is a project website here: <http://evaluationbydesign.com/survey21cs>
This includes some FAQs and a student version with teacher dashboards that my company has developed.

Please let me know if you have any additional questions.
Best of luck with your studies. ~ Jason

p.s. I am copying my work address, which I check more frequently: jason@evaluationbydesign.com

On Sat, Aug 17, 2024 at 10:07 AM Jason Ravitz <jason.ravitz@gmail.com> wrote:

