T.C.

BURSA ULUDAĞ UNIVERSITY
INSTITUTE OF EDUCATIONAL SCIENCES
THE DEPARTMENT OF FOREIGN LANGUAGE EDUCATION
ENGLISH LANGUAGE TEACHING

ARTIFICIAL INTELLIGENCE-BASED LANGUAGE MODEL: THE EFFECT OF CHATGPT APPLICATION ON WRITING SKILLS IN THE CONTEXT OF TEACHING ENGLISH AS A FOREIGN LANGUAGE

MASTER'S THESIS

GIZEM CENGIZ KULAKSIZ
0009-0006-2085-0434

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2024

BİLİMSEL ETİĞE UYGUNLUK

Bu çalışmadaki tüm bilgilerin akademik ve etik kurallara uygun bir şekilde elde edildiğini beyan ederim.

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TEZ YAZIM KILAVUZU'NA UYGUNLUK ONAYI

"YAPAY ZEKÂ TABANLI DİL MODELİ: CHAT GPT UYGULAMASININ YABANCI DİL OLARAK İNGİLİZCE ÖĞRETİMİ KAPSAMINDA YAZMA BECERİLERİ ÜZERİNDEKİ ETKİSİ" adlı Yüksek Lisans Tezi, Bursa Uludağ Üniversitesi Eğitim Bilimleri Enstitüsü tez yazım kurallarına uygun olarak hazırlanmıştır.

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Tez Başlığı: "Artificial intelligence-based language model: the effect of chatgpt application on writing skills in the context of teaching English as a foreign language"

Yukarıda başlığı gösterilen tez çalışmamın a) Kapak sayfası, b) Giriş, c) Ana bölümler ve d) Sonuç kısımlarından oluşan toplam 85 sayfalık kısmına ilişkin, 21/10/2024 tarihinde şahsım tarafından Turnitin adlı intihal (benzerlik) tespit programından aşağıda belirtilen filtrelemeler uygulanarak alınmış olan özgünlük raporuna göre, tezimin benzerlik oranı %19 'dur.

Uygulanan filtrelemeler:

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3- 5 kelimeden daha az örtüşme içeren metin kısımları hariç

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YAPAY ZEKÂ TABANLI DİL MODELİ: CHATGPT UYGULAMASININ YABANCI DİL OLARAK İNGİLİZCE ÖĞRETİMİ KAPSAMINDA YAZMA BECERİLERİ ÜZERİNDEKİ ETKİSİ

Dil öğreniminde yapay zekanın (YZ) kullanımı hızla artmakta, ChatGPT gibi gelişmiş sistemler öğrencilere dil becerilerini geliştirmek için etkileşimli ortamlar sağlamaktadır. Bu çalışma, yapay zeka tabanlı bir dil modeli olan ChatGPT'nin İngilizce yazma becerileri üzerindeki etkisini, tutarlılık, uyum, kelime bilgisi ve dilbilgisi kullanımına odaklanarak araştırmaktadır. Bu çalışma yarı deneysel bir çalışma olarak tasarlanmıştır. Veriler, kolayda örnekleme yoluyla seçilen 101 katılımcıdan ön test, son test ve altı açık uçlu soru kullanılarak toplanmıştır. Çalışmanın katılımcıları Türkiye'de bir güzel sanatlar lisesinde okuyan 14-17 yaş arası lise öğrencileridir. Müdahaleden önce katılımcılara bir ön test uygulanmıştır. ChatGPT tarafından sağlanan geribildirimlerle 8 haftalık yoğun yazma uygulamasının ardından, çalışma son test ile tamamlanmıştır. Ayrıca, katılımcıların demografik bilgileri ile ChatGPT ve yazma uygulaması hakkındaki düşünceleri altı açık uçlu soru ile toplanmıştır. ChatGPT'nin yazma becerilerini geliştirmek için yararlı olduğu görülmüştür. Bulgular, ChatGPT gibi yapay zeka araçlarının yazma becerilerini geliştirme potansiyelini vurgulamaktadır. Dilbilgisi, tutarlılık ve uyum ve kelime bilgisi üzerinde orta ila güçlü etki büyüklüklerine sahip önemli gelişmeler bulunmuştur; bu da aracın öğrencileri yazma becerilerini geliştirmede etkili bir şekilde desteklediğini göstermektedir. Ayrıca, son test puanları ön test puanlarından önemli ölçüde yüksektir ve bu da müdahalenin öğrencilerin yazma yeterlilikleri üzerinde olumlu bir etkisi olduğunu göstermektedir. Ancak çalışma, bu tür teknolojilerin temel öğrenme süreçlerinin yerini almak yerine onlara yardımcı olmasını

sağlamak için eğitim süreçlerine dikkatli bir şekilde entegre edilmesi gerektiğinin altını çizmektedir. Bu çalışmanın sonuçları, yapay zeka tabanlı dil modellerinin dil öğrenme ve öğretme süreçleri üzerindeki etkisini daha iyi anlamamıza ve dil öğretiminde daha etkili stratejiler geliştirmemize yardımcı olabilir. Ayrıca İngilizce öğretimi alanındaki uygulayıcılar ve araştırmacılar için önemli bir kaynak olması umulmaktadır.

Anahtar Sözcükler: ChatGPT, Yabancı Dil Olarak İngilizce Öğretimi, Yapay Zeka, Yazma becerileri

ABSTRACT

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ARTIFICIAL INTELLIGENCE-BASED LANGUAGE MODEL: THE EFFECT OF CHATGPT APPLICATION ON WRITING SKILLS IN THE CONTEXT OF TEACHING ENGLISH AS A FOREIGN LANGUAGE

The use of artificial intelligence (AI) in language learning is rapidly growing, with advanced systems like ChatGPT providing learners with interactive environments to enhance their language skills. This study investigates the impact of ChatGPT, an AI-based language model, on English writing skills, focusing on coherence, cohesion, vocabulary, and grammar usage. This study was designed as a quasi-experimental study. Data were collected from 101 participants selected through convenience sampling using pre-test, post-test, and 6 open-ended questions. The participants of the study were high school students between the ages of 14-17 in a fine arts high school in Turkey. Before the intervention, a pre-test was administered to the participants. After 8 weeks of intensive writing practice with feedback provided by ChatGPT, the study was concluded with a post-test. In addition, demographic information of the participants and their thoughts about ChatGPT and the writing practice were collected with 6 open-ended questions. ChatGPT was found to be useful for improving writing skills. The findings highlight the potential for AI tools such as ChatGPT to improve writing skills. Significant improvements were found in grammar, coherence and cohesion, and vocabulary, with moderate to strong effect sizes, suggesting that the tool effectively supported students in improving writing skills. Additionally, the overall posttest scores were significantly higher than the pretest scores, indicating a positive impact of the intervention on students' writing proficiency. However, the study underlines the need for careful integration of such technologies in educational contexts to ensure that they assist, rather than replace,

fundamental learning processes. The results of this study can help us to better understand the impact of AI-based language models on language learning and teaching processes and to develop more effective strategies in language teaching. It is also hoped to be an important resource for practitioners and researchers in the field of English language teaching.

Keywords: ChatGPT, EFL Teaching, Artificial Intelligence, Writing Skills

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TABLE OF CONTENT

BİLİMSEL ETİĞE UYGUNLUK i
TEZ YAZIM KILAVUZU'NA UYGUNLUK ONAYI ii
BENZERLIK YAZILIM RAPORU iii
TEZ ONAY SAYFASI iv
ÖZET v
ABSTRACT vii
LIST OF TABLES xiii
LIST OF FIGURES xiv
LIST OF ABBREVIATIONS xv
CHAPTER I 1
INTRODUCTION 1
1.1. Statement of the Problem 1
1.2. Research Questions 3
1.3. Purpose of the Study 3
1.4. Importance of the Study 3
1.5. Limitations 4
1.6. Definitions 5
CHAPTER II 7
LITERATURE REVIEW 7
2.1. Introduction 7
2.2. Vygotsky's Sociocultural Theory 7
2.3. Self-regulated Learning 8
2.4. Application to Writing Skills 9
2.5. Technology and Language Learning 10
2.6. Generative AI 11
2.6.1. Context and History 11

2.7. Large Language Model Chatbots 13
2.8. ChatGPT and Artificial Intelligence Language Models 14
2.9. The Potential of The Use of AI-Based Chatbots In EFL 15
2.10. Generative AI in Writing Instructions 16
2.11. Personalized and Interactive Learning 17
2.12. Challenges associated with using Chatbots in EFL 18
2.12.1. Accuracy of Information and Biases 18
2.12.2. Cost 19
2.13. The Effect of ChatGPT on Writing Skills 19
2.13.1 Effects on Coherency and Cohesion 21
2.13.2 Effects on Vocabulary 22
2.13.3 Effects on the Use of Grammar 22
CHAPTER III 25
METHODOLOGY 25
3.1. Research Design 25
3.2. Participants 26
3.3. Data Analysis 29
CHAPTER IV 31
FINDINGS 31
4.1. Descriptive Characteristics of The Participants 31
4.2. Open-ended Questions 32
4.3. Pre-test and Post-test 35
CHAPTER V 39
DISCUSSION 39
CHAPTER VI 44
CONCLUSION 44
5.1. Summary of the Study 44
5.2. Suggestions 45

REFERENCES 47
APPENDICES 64

LIST OF TABLES

Table *Page*

1. Demographics of Participants.....29

2. Visual Arts: Paired Samples t-test of the Pre-test and Post-test.....33

3. TCM: Paired Samples t-test of the Pre-test and Post-test.....33

4. Theater: Paired Samples t-test of the Pre-test and Post-test.....34

5. Music: Paired Samples t-test of the Pre-test and Post-test.....34

6. Participants' Descriptive statistics.....35

LIST OF FIGURES

Figure *Page*

1. Zone of Proximal Development and Scaffolding Model.....7

2. Secondary Education English (Grades 9-12) Teaching Program Model.....26

LIST OF ABBREVIATIONS

AI	: Artificial Intelligence
AWCF	: Automated Written Corrective Feedback
CALL	: Computer-Assisted Language Learning
EFL	: English as a Foreign Language
GPT	: The Generative Pre-Trained Transformer
GenAI	: Generative Artificial Intelligence
LLM	: Large Language Model

CHAPTER I

INTRODUCTION

This chapter provides a statement of the problem, which highlights the uncertainties and challenges related to implementing Generative Artificial Intelligence (GenAI) into language learning environments. It then presents the research questions aimed at exploring the specific effects of ChatGPT on writing skills, focusing on coherence, cohesion, vocabulary, and grammar. Additionally, the purpose and significance of the study are explained throughout the introduction, offering a clear understanding of the objectives and relevance of the research.

1.1. Statement of the Problem

In this study, which examines the effect of the AI-based language model ChatGPT on the writing skills of learners of English as a foreign language, the primary issue is the uncertainty surrounding the potential effects of AI-assisted learning. Although educators have engaged in profound debates, there remains a substantial lack of empirical data on the implementation of AI-based tools in writing lessons (Yan, 2023). In addition, there are limited studies that thoroughly investigate the incorporation of generative GenAI into students' writing processes (Barrot, 2023).

Integrating digital technologies in educational settings enhance student motivation and involvement in the learning process (Golonka et al., 2012). In this context, innovative technologies, such as AI-based language models, could significantly develop students' language skills. To address this concern, it is essential that we understand the potential of GenAI (Zhai & Wibowo, 2023), particularly considering mixed results regarding the impact of chatbots on student motivation (Huang et al., 2021; Kumar, 2021; Ortega-Ochoa et al., 2024; Oker et al., 2020). While some studies revealed that chatbots can enhance elements like interest, intrinsic motivation, self-efficacy, and enjoyment, other studies have found no significant advantages in motivation, long-term interest, or confidence, suggesting that the impact of chatbots on motivation is more complex than initially thought (Huang et al., 2021; Kumar, 2021). However, certain aspects of motivation, such as self-efficacy, show positive effects from chatbot feedback (Ortega-Ochoa et al., 2024). Moreover, Guo and Li (2024) reveal that using self-made chatbots positively influences learners' writing motivation, leading to better-defined writing objectives, increase in confidence, and a positive approach toward the process of writing. Their research highlights that chatbots are potentially valuable teaching tools which helps personalizing language learning process and increases the learner motivation. This complexity emphasizes the need for further comprehensive exploration, especially considering that motivation,

described as an internal state or condition that activates behavior and guides it direction (Oker et al., 2020), is a crucial element in the learning setting.

The Language Model ChatGPT is a multipurpose conversational chatbot that uses the GPT-4 language model created by OpenAI. It can produce writing that resembles human language by using a provided prompt or discussion and can participate in unlimited, natural conversations about various topics (OpenAI, 2023). Furthermore, it can acquire knowledge from a specific conversation and integrate it into its responses (Aydın & Karaarslan, 2023), and provide instant feedback, enabling learners to engage in real-world contexts. Furthermore, AI-based language learning platforms can be customized and adjust to meet individual learners' needs, which allows the process of learning more productive. (Caldarini et al., 2022). GenAI and natural language processing tools drive the progress of technologies that offer instant feedback, and support writing (Kruse et al., 2023).

The study particularly focuses on the effect of GenAI language models such as ChatGPT on teaching EFL writing skills. The impact of these models on students' vocabulary, grammar usage and general writing skills is as yet under-researched. To illustrate, the risk of presenting false or misleading information may prevent learners from developing their language skills correctly. In this context, it is necessary to understand the advantages and disadvantages of using AI-based language models in foreign language teaching and to identify appropriate and applicable strategies for the effective integration of AI-based platforms. The potential effects could go beyond expectations at first thus, it is crucial to understand the possibilities and challenges associated with ChatGPT. This will also enable us to figure out the essential skills that students need to have to improve in their future language studies (Stokel-Walker, 2022; Zhai & Wibowo, 2023). There is also a need for more information on how AI-supported learning tools can be used to increase students' motivation and improve their learning experience while developing their language skills in self-directed learning.

On the other hand, chatbot practices for language learning and the studies in the related were focused on higher education (Huang et al., 2021; Chiu, 2023) and more research is needed at other levels of education to better understand the impact of AI-based language models on foreign language teaching and to use these technologies effectively in these levels. This research can contribute to the development of innovative approaches to improve high school-level students' language skills and enhance their learning experiences. Moreover, it may help educators to understand these systems better and lead further research.

1.2. Research Questions

1. What are the effects of ChatGPT as a feedback tool on EFL learners writing sub-skills?

a) what are the effects on coherence and cohesion?

b) what are the effects on vocabulary knowledge?

c) what are the effects on grammatical accuracy?

2. What are EFL learners' perceptions and attitudes towards ChatGPT?

a) what are their experiences of using ChatGPT for writing practice?

b) what are their experiences of using ChatGPT for feedback?

1.3. Purpose of the Study

This study aims to examine the impact of the generative AI-based language model ChatGPT on EFL learners' writing skills at the high school level, with a particular focus on the sub-skills of coherence and cohesion, lexical resource/vocabulary, and grammatical range and accuracy. Using an experimental design, the study included an 8-week intervention period during which the researcher investigated the potential impact of using ChatGPT as a feedback tool in writing classes on high school students' writing performance, specifically assessing coherence and cohesion, vocabulary and grammatical range and accuracy. By investigating the effects of ChatGPT on EFL learners' writing skills, the study aims to contribute existing and expanding literature to provide insights into the potential benefits and challenges of integrating AI-based technologies into foreign language education.

1.4. Importance of the Study

The significance of GAI-powered language models in language learning and teaching processes is steadily increasing. The latest progress in GenAI and language models, like ChatGPT, have robust and diversified language generation functions. The introduction and widespread adoption of ChatGPT forced educators and academics globally to confront the implications of GenAI in all areas of education. Nevertheless, educators are still in the early phases of recognizing how students use GenAI in their writing process (Wang, 2024). This study aims to examine the effects of ChatGPT on high school-level EFL learners' writing skills and their opinions regarding the opportunities and handicaps associated with GAI. ChatGPT and GenAI-writing tools might take language learners' attention away from important learning activities but avoiding them completely could mean missing out on great chances to learn how to use GenAI to improve their education and career prospects (Tseng & Warschauer, 2023). Instead, Tseng and Warschauer (2023) advise that teachers should not attempt to "avoid" but instead try to "collaborate" and "cooperate with" AI. Indeed, advanced systems like ChatGPT offer students the opportunity to develop their language skills in a real-time and interactive environment (Fryer et al., 2020; Kuhail et al., 2022) Such applications can have

positive effects on students' language abilities, including daily conversation practice, writing skills, and language comprehension(Chiu et al., 2023; Huang et al., 2021).

In the context of English language teaching, writing skills are crucial for students to develop their language abilities. However, improving writing skills can be a challenging process for many students. AI-based language models can serve as an ideal tool to ease this challenge and provide support for students in enhancing their writing skills. For instance, students can receive real-time feedback, correct grammar and spelling errors, and practice various types and styles of writing. On the other hand, while ChatGPT can function as a good teacher and provide language input, there are numerous worries over its effect on writing pedagogy and academic integrity (Barrot, 2023). Therefore, this study investigates the potential impacts of the use of ChatGPT on second-language writing. This research will evaluate whether it is possible for students to enhance their English writing skills through interaction with ChatGPT and will examine how ChatGPT contribute to student success and motivation. The results of this study could provide significant insights into the effectiveness of AI-based tools in English language teaching and may serve as a foundation for improving future language learning and teaching practices at the high school level. Additionally, this study could help us better understand the role of digital technologies in language learning and teaching, leading to the development of more effective strategies in language education. Hence, this study could make an important contribution to English language teaching and language education research.

1.5. Limitations

The limitations of this study are the factors that determine the scope of the research and affect the degree of generalization of the results. The limitations of the research consist of the following:

Sample Selection: Researching a specific sample may restrict the generalizability of the results. This study was conducted with students of a certain age group and language level and may not be valid for younger or older people or individuals with different language skill levels.

Technological Limitations: The technological infrastructure and access in the research setting may affect the way the study is conducted and the results. For example, the results of studies conducted in regions without internet access or with limited access to technology may be limited in terms of applicability to other regions.

Limitations of the Language Model and Platform Used: The limitations of the GAI-based language model and platform used in the research should also be considered. For example, ChatGPT may have limitations in certain grammatical areas or writing types, which may affect the generalizability of the results.

External influences in the research process: Failure to control external factors in the research process (e.g. student motivation, teacher involvement, etc.) may affect the results and reduce the internal validity of the research.

1.6. Definitions

Artificial Intelligence: Artificial intelligence (AI) refers to a technology replicating human cognitive functions, including learning, comprehension, decision-making, and problem-solving. AI systems are capable of object recognition, natural language processing, and adapting based on new information or experiences. These capabilities allow for autonomous operation, thereby minimizing the necessity for human intervention in various tasks.

Generative AI: Generative AI (GenAI) refers to a field within AI that specializes in producing original content, including written text, images, sound, and videos, by analyzing and learning from patterns in pre-existing data. GenAI uses deep learning techniques to generate content that resembles human creativity.

Large Language Models: GenAI systems that generate and infer human-like language using natural language processing (NLP) techniques. For example, large language models such as GPT-4 can be used for text generation, translation, meaning extraction and language-based tasks.

ChatGPT: An AI-based language model developed by OpenAI that generates text based largely on user input. It can be used for chatbots, language understanding and other text-based tasks**.** ChatGPT is an GenAI chatbot developed by OpenAI, a startup based in the United States. It stands for Chat Generative Pre-Trained Transformer. It uses computational techniques and a significant amount of data to establish connections between words and ideas, enabling it to comprehend prompts within their specific contexts. The platform is accessible on computers and mobile phones through various web browsers, such as Chrome, Firefox and Safari. It uses an advanced language model (LLM) that can comprehend and generate human-like responses covering a wide range of topics (OpenAI).

English Language Teaching: The process of learning and teaching the English language. It is carried out with goals such as developing language skills, learning grammar rules, expanding vocabulary and increasing communication skills.

Writing Skills: The ability to compose texts in a language. Writing skills can include different elements such as grammar, spelling, word choice, writing types and expression.

Real-Time Feedback: Feedback that the learner receives immediately after acting. For example, when a learner writes a sentence and then immediately receives feedback on grammar or spelling mistakes.

CHAPTER II

LITERATURE REVIEW

2.1. Introduction

The foundational theories on learning and teaching, including Self-Regulated Learning (SRL) and Vygotsky's Sociocultural Theory will be examined through the use of generative AI-based chatbots and large language models (LLMs) in the educational context. The literature review aims to show how these theoretical frameworks could guide the integration of GenAI technologies, such as ChatGPT, in language learning and writing instruction processes.

2.2. Vygotsky's Sociocultural Theory

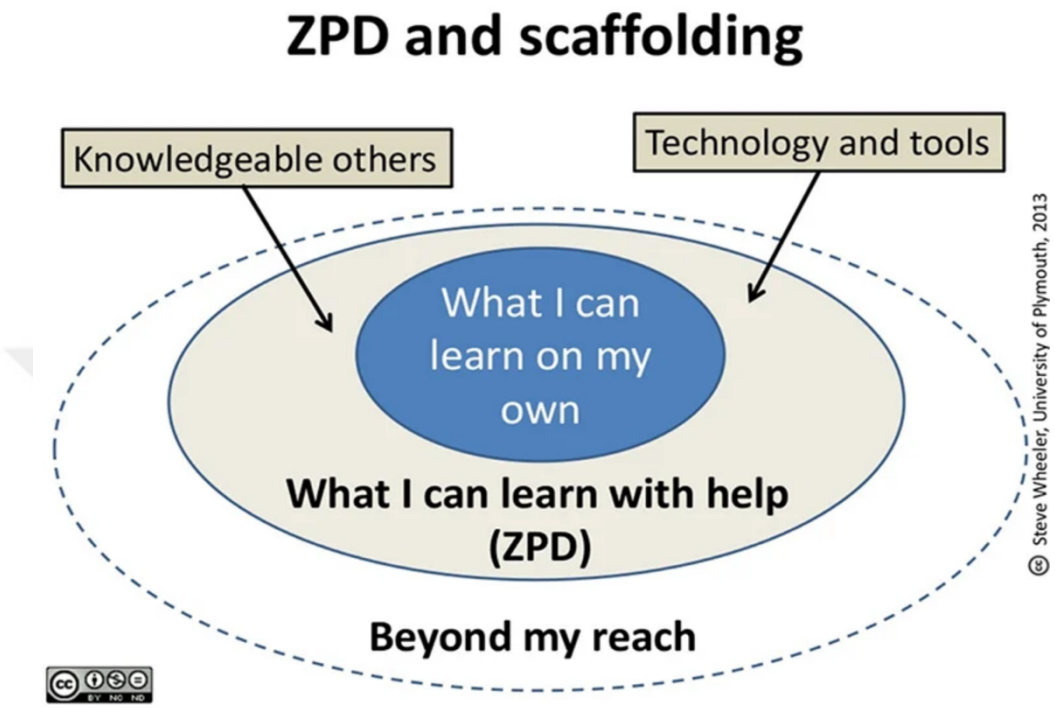
Integration of GenAI technologies, LLMs like ChatGPT, has added a new dimension to research and practices. These tools not only offer learners valuable practices but also align with established principles of communicative competence, meaningful learning, and intrinsic motivation, further enriching the foreign language learning process. By examining GenAI through the lens of SRL and Sociocultural Theory, this study aims to find a base to integrate GenAI tools in an educational context.

Vygotsky's Sociocultural Theory highlights the importance of social engagement and guided learning in the process of forming higher cognitive functions, particularly through the concepts of the Zone of Proximal Development (ZPD) and scaffolding. The ZPD represents the difference between a learner's independent abilities and their potential with guidance from a more knowledgeable other (MKO). Scaffolding refers to the transitory assistance the MKO provides to enable learners perform tasks within their ZPD (Shabani, 2016; Shooshtari & Mir, 2014; Walker, 2010). In traditional classroom settings, this scaffolding is provided by teachers; however, as the MKO could be a teacher, parent, or peer, it could also be a technological system capable of guiding learners. Accordingly, chatbots like ChatGPT have the ability to provide direct feedback to learners in real time and can serve as a form of technological scaffolding. This aligns with the ZPD concept, where students can perform tasks with assistance (scaffolding) that they would not manage without assistance. Over time, as learners interact more with chatbots and receive consistent feedback, they can improve their writing skills autonomously, gradually reducing their reliance on this assistance and eventually perform similar tasks independently. Through this process, learners internalize the strategies for completing the tasks, enabling future independent application. (McLeod, 2024). However, this does not suggest that educators may be substituted by artificial intelligence. While ChatGPT can be effectively applied in language teaching within properly structured learning environments, it cannot deliver the same level of scaffolding that a teacher offers. An algorithm

cannot entirely replicate the emotional support, encouragement, caring, warmth, and trust essential to the scaffolding relationship between educators and learners.

Figure 1

Zone of Proximal Development and Scaffolding Model



2.3. Self-regulated Learning

Studies propose frameworks and classification tools to foster self-regulated learning using GenAI, grounded in self-determination theory (SDT) (Chiu, 2024; Kong & Yang, 2024; Prasad & Sane, 2024). Zimmerman's (2000) model divides self-regulation into three stages: forethought (task analysis and self-motivation), performance (self-control and observation during the learning process), and self-reflection (self-evaluation and reaction). This method enables students to actively direct their learning process. (Zimmerman, 2002). A study by Wu et al. (2024) evaluates the effect of a system integrating ChatGPT on learners' motivation, engagement, and self-efficacy in blended learning, using these three phases as the framework for measuring self-regulation. The results show that the system significantly enhances cognitive engagement and self-efficacy, as real-time support improves learners' knowledge construction and engagement. Prasad and Sane (2024) propose an SRL framework incorporating GenAI tools in programming education, addressing challenges and opportunities for novice learners. Furthermore, Xia et al. (2022) demonstrate that a self-determination theory-based approach can enhance GenAI learning engagement across genders and achievement

levels in K-12 education. Lai (2024) adapts SRL models to understand student interactions with GenAI chatbots, using process mining to analyze learning actions and provide insights for various stakeholders. Wong and Viberg (2024) present ongoing studies examining the use of ChatGPT as a tool for peer-feedback to boost SRL has shown promise in improving academic performance in higher education, particularly in reading and writing tasks. The collective results of these studies emphasize the promising potential of GenAI to support personalized SRL strategies and improve learning outcomes across educational contexts. Moreover, these approaches aim to fulfill learners' psychological needs for relatedness, competence and autonomy (Du & Alm, 2024). GenAI tools like ChatGPT can support personalized learning, immediate feedback, and self-reflection (Kars, 2023; Kong & Yang, 2024).

By situating the current study within these theories, this research demonstrates how AI-based technologies pedagogically contribute to language learning. Chatbots in an educational context also impact learners' self-confidence. As learners receive real-time, constructive feedback on their writing, they can gradually build confidence in their language skills. This scaffolding process, supported by immediate feedback, helps learners navigate through their interlanguage stages, ultimately enhancing their communicative competence (Grauberg, 1997).

Furthermore, self-regulated learning is essential for preparing lifelong learners to manage the challenges of the 21st century. GenAI based chatbots allow learners to practice language skills outside the classroom, making it possible for them to engage in strategic investment, which refers the learner’s dedication and time, more flexibly. As language learning becomes increasingly individualized through technology, learners can control the pace of their learning while benefiting from targeted feedback that enhances both fluency and accuracy. Incorporating GenAI into the curriculum can enhance SRL by providing personalized educational content and real-time feedback, encouraging critical thinking about learning goals and strategies. By fostering SRL, GenAI offers valuable opportunities to improve the learning experience in K-12 education (Kong & Yang, 2024).

2.4. Application to Writing Skills

Based on Vygotsky's work, sociocultural theory emphasizes the social context in learning and language development (Barnard & Campbell, 2005). Vygotsky’s theory encourages collaborative and cooperative learning. Essential elements include the ZPD, scaffolding, and mediation (Baleghizadeh & Memar, 2010). In writing instruction, this perspective views this approach emphasizes writing as a joint effort instead of an individual task (Barnard & Campbell, 2005). Scaffolding, provided by teachers or peers, is crucial in developing writing skills (Thompson, 2013). Furthermore, low-structured scaffolding, which

allows for guided self-exploration, significantly improves learners' writing accuracy and fluency when applied within their ZPD (Baleghizadeh & Memar, 2010) The theory has significant implications for second language acquisition and writing pedagogy (Pathan et al., 2018).

Puntambekar and Hübscher (2005) expand the traditional concept of scaffolding to include not just individual interactions but also the use of software and other resources as scaffolding tools. Human-machine collaboration offers the social and motivational support that GenAI alone cannot yet provide. GenAI-based technologies can serve as scaffolds in learning environments; however, their effectiveness depends on how well they are integrated into classroom practices and supported by teacher involvement (Sætra, 2022). Future GenAI developments, including affective GenAI and intelligent tutoring systems (ITS), could further improve AI's ability to scaffold learning, but until then, human-AI partnerships remain ideal for teaching and skill development.

2.5. Technology and Language Learning

As technology develops and access to technology becomes easier, its use in foreign language teaching is becoming increasingly widespread. (Golonka et al. 2012). In today's educational environment, the use of technology plays a very important role in developing students' foreign language skills both inside and outside the classroom. According to Chapelle (2003), if students want to improve their communication skills in a foreign language, they need to practice outside the classroom. For students to be able to use computers, they need to use a foreign language for a limited period of time. Therefore, the use of technology allows students to spend more time on foreign language learning. Thus, the use of technology in foreign language classes has attracted the attention of researchers in the field of foreign language education. In recent years, rapid and radical technological developments have brought about major changes in the process of foreign language learning and teaching. Changes in both technology and foreign language education support each other by introducing new concepts into the relevant literature (Warschauer, 2000).

According to Zhang (2008), Computer assisted language learning (CALL) practices derived from technology-based approaches are commonly applied in language teaching. According to Al-Awidi and Ismail (2014), this is not only to improve teachers' language teaching but also to enable students to develop their language skills in a more communicative and realistic environment. Due to these positive features, CALL has been accepted in foreign language teaching and many studies have been conducted on the effectiveness of CALL in foreign language teaching (Muir-Herzig, 2004). CALL combines elements such as experiential

learning, motivation, increased learning success rates, use of authentic learning materials, greater interactivity, personalization and independence from a single source of information. It is a language tool for foreign languages, and it is important to use it in education by offering a broad understanding (Lee, 2000).

The use of CALL in foreign language teaching can be divided into three main stages: CALL with a behavioral approach, CALL with a communicative approach and CALL with a holistic approach. Each stage is associated with a certain level of technology use and educational theory. Rapid technological developments since the 1980s have made computers an important part of foreign language teaching (Warschauer & Healey, 1998). Educators state that the use of computer technology and the CALL program makes it possible to create both individual and collaborative learning environments, allowing students to gain experience at different stages of foreign language learning (Kung, 2002).

Golonka et al. (2014) stated that as technological innovations and the use of these technological tools in foreign language teaching increase, teachers need to change their teaching methods and organize their teaching activities to use these tools effectively. These innovations increase student interest and motivation and give students more opportunities to interact and receive feedback. Computers and related foreign language learning programs allow students to continue learning at any time, independent of the classroom. In addition, when CALL is implemented alongside teaching in the traditional classroom setting, students can work more independently and they have more time to learn pronunciation, oral dialogue, practice writing and more (Lai & Kritsonis, 2006).

Yet, the rapid growth of new technologies and digital change brings major challenges for society and all levels of the education system. GenAI is a new technological development that is drawing more interest in these challenges (Schmidt & Strassner, 2022). On the other hand, it is an innovation with the potential to greatly change education (Rawas, 2023)

2.6. Generative AI

GenAI is a subfield of AI that creates original output including text, audio, video and images by analyzing patterns from pre-existing data. (Batchu & Satya, 2024; Ramdurai & Adhithya, 2023). By applying deep learning techniques, it generates content that simulates human creativity (Kar et al., 2023). A similar definition of generative GenAI by Tzirides et al. (2023) refers to deep learning algorithms capable of producing realistic and coherent content based on learned patterns from training data. While the models themselves do not "understand" language, they can process and produce text, images, and other media based on learned patterns. While it offers significant potential in revolutionizing many fields and enhancing human

capabilities, it also raises concerns about copyright violation data privacy, and ethical considerations (Sidhu, 2024). In many instances, GenAI can match or even exceed certain aspects of human creativity, while there is still ongoing debate about whether its outputs can be considered truly original.

2.6.1. Context and History

GenAI and chatbot technology have achieved notable attention recently, especially following the launch of ChatGPT in November 2022. However, the technologies at the core of these systems, such as chatbots and LLMs, are not new. GenAI has evolved significantly since its beginning in the 1950s (Charles et al., 2023). The history of text-based GenAI dates back to the development of ELIZA in the 1960s by Joseph Weizenbaum at MIT, an early chatbot that engaged users by simulating a therapist's conversational style through pattern matching. ELIZA's simplicity limited its ability to hold meaningful conversations, but it still surprised users by evoking emotional responses (Weizenbaum, 1966; Zemčík, 2019). Like early systems, ELIZA's responses were entirely based on pre-programmed words and rules. When a user entered text, ELIZA identified key terms and used scripts to generate replies that mimicked human conversation (Lin et al., 2023).

The chatbot PARRY, created in 1972 by psychiatrist Kenneth Colby, was another early attempt, designed to mimic a paranoid schizophrenic. It became the first chatbot to undergo the Turing test, a test that examines the capacity of a machine to demonstrate cognitive behavior, marking a significant step in assessing chatbots' ability to replicate human conversation (Zumstein & Hundertmark, 2017).

In education, GenAI practices date back to the 1960s (Mello et al., 2023). Early developments in GenAI for education, known as Artificial Intelligence in Education (AIED), were primarily limited to domain-specific applications like expert systems and chatbots. With progress in machine learning, virtual reality, and NLP, AI's role in education has grown, supporting tasks like assessment, feedback, and skill development through adaptive learning platforms (Mello et al., 2023). These advancements highlight the potential for GenAI to serve as cognitive tools, providing narrative responses or guidance for various tasks, including educational and personal inquiries (Tzirides et al., 2023). Thus, while generative GenAI and chatbots have come a long way from their early forms, their foundational technologies have remained influential in shaping today's more sophisticated GenAI systems. As GenAI progresses, its potential impact on education continues to be subject of ongoing research and discussion.

On the other hand, while GenAI holds significant potential for driving innovation and enhancing productivity, it also introduces critical challenges around ethics, bias, and intellectual property (Feuerriegel et al., 2023; Leslie & Rossi, 2023). As technology advances, it becomes essential for researchers and educators to be mindful of both its strengths and limitations to ensure its responsible use (Batchu & Satya, 2024). The development of GenAI systems raises ethical issues that require careful consideration, emphasizing the need for balancing technological advancement with accountability, human responsibility, and respect for expertise (Sharples, 2023).

2.7. Large Language Model Chatbots

A "large language model" (LLM) refers to GenAI that can understand and create text in both human and computer languages. GenAI can be defined as a deep learning model capable of creating various forms of content such as text, images, video, audio or code and LLMs are a subset of GenAI specifically designed to generate text in response to user queries. Some popular examples of LLMs are ChatGPT (by OpenAI), Copilot (by Microsoft), Gemini (by Google), Claude (by Anthropic), Llama (by Meta), and Perplexity AI (Cloudflare). LLMs like ChatGPT are trained using large amounts of text and can generate outputs that resemble natural human language with high accuracy. LLMs are the most widely used examples of language-based generative models. They are used for a wide range of tasks, such as deciphering genetic sequences, translating languages, writing code, and creating essays. (Kasneci et al., 2023; Sidhu, 2024)

Recent advancements in LLMs have sparked both excitement and concern in education. Chatbots, although in existence for over 6 decades, have only recently become more prominent in language learning with the rise of widely available GenAI systems, like ChatGPT (Lin et al., 2023). LLMs have succeeded in understanding context, adapting to various domains, and generating human-like responses, with researchers exploring prompt design strategies for more effective data collection and natural conversations (Pappula & Allam, 2023; Prasad et al., 2024; Wei et al., 2024). These modern GenAI chatbots are built on advanced neural networks trained with billions of data points and can generate responses efficiently and intelligently in multiple languages (Lin et al., 2023). Furthermore, they present numerous potential benefits, such as personalized learning, improved student engagement, and enhanced content creation (Kasneci et al., 2023; Lambert & Stevens, 2023). For example, in language learning, LLMs can be used to complement teacher feedback and improve long-term writing accuracy (Link et al., 2020). In language learning, speech-recognition chatbots powered by LLMs have gained attention for their role in enhancing student practice (Jeon et al., 2023). However, they also introduce

challenges, including concerns over academic integrity, misinformation, ethical use and the potential for perpetuating biases (Lambert & Stevens, 2023; Pappula & Allam, 2023; Zielinski et al., 2023) Despite these advantages, integrating GenAI tools like machine translation and chatbots into language education requires a balanced approach, leveraging AI's strengths while addressing its limitations (Lambert & Stevens, 2023; Godwin-Jones et al., 2024; Tzirides et al., 2023).

2.8. ChatGPT and Artificial Intelligence Language Models

The GPT-series models developed by OpenAI, namely ChatGPT, have made significant progress in GenAI chatbot technology (Su et al., 2023). The field of GenAI is seeing remarkable advancements, continuous improvement in performance and the addition of upgraded capabilities in each version of ChatGPT and other GenAI systems. The GPT-series models created by OpenAI, ChatGPT, has the most recent advancements in chatbot technology. (Godwin-Jones, 2022). The Generative Pre-Trained Transformer (GPT) models were developed using a large set of tokenized language, learning the structures and patterns of the language by pre-training on a large text dataset. This process uses a deep-learning neural network that can interpret text and generate responses that are similar to human language by predicting the words that will come after one another in each sequence. Furthermore, ChatGPT has the ability to keep the context of a conversation by using prior interactions to guide its replies and answer users' inquiries for revisions or clarification (OpenAI, 2022). These models have shown successful results in text-based tasks, such as automatic text completion, translation, and summarization (Watanangura et al., 2023). They can perceive relationships between texts, word meanings, grammar rules and even cultural contexts. This contributes to making translation systems more accurate and fluent, text summarization tools more effective, and even speech recognition systems. Therefore, the potential of this technology to help with writing-related tasks involving learning a new language, such as correcting grammatical errors and paraphrasing sentences, appears to be positive. (Guo & Wang, 2023).

Regarding GenAI LLMs' impact on foreign language teaching, they can help students correctly apply grammar rules by providing feedback in real-time (Kim, 2019). As noted in the study by Guo & Wang (2023), ChatGPT gave feedback in greater amount and instantly compared to educators. Moreover, Barrot (2023), indicates that ChatGPT offers neutral and consistent evaluation of student writing. Even so, the function of GenAI language models in foreign language teaching is not limited to assistive tools. GenAI language models can be used flexibly in foreign language teaching to suit students' needs and learning styles that can provide personalized guidance to learners, enhance communication and cooperation and contribute to

better learning results for learners (Rawas, 2023). GenAI-powered chatbots may modify the level, deliver individualized learning resources, and offer tailored routes for learners (Kuhail et al., 2022). Recent research by Su et al. (2023) suggests that ChatGPT and similar GenAI technologies can be beneficial for supporting students in tasks like argumentative writing and multimodal L2 literacy (Kang & Yi, 2023). Yet, there are doubts over potential inaccuracies in responses and the possibility of too much dependence on AI by learners, which may hinder the learning process (Barrot, 2023). It is crucial for language educators to feel confident in using digital technologies to enhance student learning (Xiao & Zhi, 2023). However, to effectively integrate AI in L2 instruction, educators should adopt a critical and balanced approach that considers both AI's benefits and its potential drawbacks (Godwin-Jones et al., 2004). They also emphasize the crucial significance of empirical research in this effort.

In recent years, a significant portion of the research on the macro-level use of GenAI tools in foreign language teaching has frequently focused on specific applications or platforms (Abu Qub'a et al., 2024; Aluthman, 2016; Barrot et al., 2021; Chen et al., 2020; Dizon, 2017; Gao, 2021; Jeon, 202; Tai & Chen, 2020). It can be assumed that the platform or application in question is not intended for foreign language teaching and that preferences may be related to personal choices of access and experience. Although ChatGPT cannot directly address common foreign language teaching methods or improve listening and speaking skills, when used for inspiration rather than replacing human creativity, even with some drawbacks, it can support creativity in writing for both in-class and self-directed learning (Fiialka et al., 2024). On the other side, Kohnke et al. (2023) revealed that ChatGPT can effectively improve learners' language skills and prepare content for educational software, but also struggle with repetitive and irrelevant responses and perform poorly in low-resource languages that do not match current and 'real' knowledge. For example, it turns out that ChatGPT can only provide information about current events and cultural nuances until 2021. However, the update extends this date to April 2023, allowing ChatGPT to collect the latest information online. That is to say, our efforts to define knowledge, evaluate knowledge, store knowledge, share knowledge, and use knowledge are changing in different dimensions as today's technology accelerates and we are under time pressure. Another important point is that there is a tendency to evaluate GenAI technology in terms of foreign language education by reducing it to ChatGPT and its capabilities. Still, it will continue to learn and evolve as research findings are compiled and published and as research findings and results are entered into its database.

2.9. The Potential of the Use of AI-Based Chatbots In EFL

GenAI has emerged as a transformative force in English as a Foreign Language (EFL) education, offering innovative tools and methodologies to enhance teaching and learning (Tian, 2024; Law, 2024). Recent research shows the integration of GenAI applications in EFL includes automatic evaluation systems, neural machine translation, intelligent tutoring systems, chatbots, virtual environments, and affective computing (Jiang, 2022). These technologies offer personalized learning experiences, automated grading, and targeted feedback (Alghamdy, 2023).

Developments in AI and GPT technology offer both teachers and students new opportunities for customized language learning and practice the language in real-time (Nugroho et al., 2023). Customized language learning is one of the key elements of practical English language teaching. To illustrate, platforms such as Busuu and Duolingo employ artificial intelligence algorithms to identify students' strong and weak points and deliver exercises that precisely focus on areas needing improvement. (Vazquez et al. 2020). These AI technologies enable every learner to progress at their individual speed and achieve a more comprehensive understanding of the language. Language learners can now interact with AI-based chatbots, including those created with ChatGPT technology.

Chatbots deliver immediate feedback and encourage learners to practice their language skills in real-world settings. This interaction improves language proficiency and increases learners' confidence in using the language in practical situations (Klayklung et al., 2023). The ability of GenAI to give instant feedback on vocabulary, and grammar supports real-time language practice (Nugroho et al., 2023).

Conversational AI and GPT technology could support teachers in generating engaging and interactive activities, lesson plans, resources, and tasks aligning with students' individual needs and preferences. In addition, GenAI offers related reading content and practical examples that supports the learning process (Devedžić et al. 2020). By the help of these technologies teachers save time and ensures that their plans and resources stay relevant and updated. These tools allow educators to design tailored learning experiences, encourage using authentic language , refine lesson plans, and improve the effectiveness of language instruction (Mondal et al., 2023). Adopting these advancements in GenAI and chatbot capabilities helps teachers and learners experience new stages and gain insights into language learning (Kostka & Toncelli, 2023).

2.10. Generative AI in Writing Instructions

Recent studies have explored the impact of AI-based chatbots on EFL learners' writing skills, revealing both opportunities and challenges. ChatGPT can enhance writing proficiency by providing personalized feedback and improving organization, coherence, grammar, and vocabulary (Song & Song, 2023; Yang, 2024; Mahapatra, 2024). It offers scaffolding for writing fluency, content, and knowledge (Yuan et al., 2024) and can assist in lesson planning and material development (Meniado, 2023). However, challenges include potential over-reliance, academic dishonesty, and biases (Afiliani et al., 2023; Yuan et al., 2024). The effectiveness of ChatGPT may vary depending on learners' proficiency levels, with low-proficiency learners facing difficulties in utilizing feedback (Xiao & Zhi., 2023). Despite these concerns, studies generally report positive impacts on writing skills and motivation (Song & Song, 2023; Masoudi, 2024). Integration of ChatGPT in language learning requires careful consideration of ethical issues and effective implementation strategies (Afiliani et al., 2023; Meniado, 2023).

Chatbots can be used to assist students in the writing process in numerous ways. Students can use it to generate ideas and gain inspiration when starting their writing. They can input their drafts and receive preliminary feedback, focusing on grammar, transitional phrases, or advanced vocabulary suggestions. ChatGPT can also be used to compare writing samples, initiating discussions about their differences. Additionally, students can experiment with creative exercises, such as having ChatGPT transform their writing into alternative formats. Other potential uses include summarizing historical events, chapters, or primary texts, as well as fact-checking AI-generated content to build students' media literacy skills. Teachers can also provide AI-generated samples for students to critique and improve ((Dwivedi et al., 2023). Furthermore, GenAI tools can support students by planning, organizing, and providing feedback during the writing process. It is important to use GenAI tools in a supportive and supervised manner in the learning process. Suggested practices include report drafts, summarising, brainstorming, and compiling review sources (CU Committee Report: Generative Artificial Intelligence for Education and Pedagogy: Center for Teaching Innovation).

2.11. Personalized and Interactive Learning

GenAI tools can enhance student engagement, provide real-time feedback, and support self-regulated learning (Wong & Viberg, 2024; Albdrani & Al-shargabi, 2023). Furthermore, chatbots can be tailored to assist students with specific learning disorders, such as dyslexia (D'Urso & Sciarrone, 2024) and adapt to individual learning styles and interests to generate customized learning materials (Pesovski et al., 2024), and create tailored courses (Aftabi et al.,

2024). Benefits include promoting interactive learning, generating formative assessment activities, and offering personalized support (Baidoo-Anu & Ansah, 2023). Researchers emphasize the importance of understanding how students interact with these tools to maximise their benefits for self-regulated learning.

AI-based tools are transforming personalized learning by enabling educators to meet student needs. GPT-4-based Khanmigo is a tutor in the Khan World School platform, offering personalized feedback, especially in writing and reading. Likewise, Quizlet and Century are AI-based tools that create customized content, track progress, and adapt to students' learning styles, keeping them engaged and providing instant support for educators (Lambert & Stevens, 2023). Overall, GenAI chatbots show promise in transforming educational experiences, but careful consideration of ethical implications and pedagogical strategies is necessary.

On the other hand, novel interactions enabled by GenAI tools and their impact on educational practices have been explored by researchers (Bernstein et al., 2023; Bozkurt, 2023). AI-empowered chatbots are developed to provide information through conversation, with some employing active learning techniques (Guo & Li, 2024). GenAI is capable of simulating believable human behavior in interactive environments showing promise for various applications (Park et al., 2023). Additionally, ChatGPT can facilitate interactive learning by acting as a virtual tutor, enabling students to engage in conversations. A study reveals that generative conversational agents effectively support students learning English as a second language, helping to improve their language skills. The study also highlighted that these agents could understand students' queries and provide relevant, useful responses (Peng et al., 2019).

2.12. Challenges Associated with Using Chatbots in EFL

2.12.1. Accuracy of Information and Biases

ChatGPT lacks the ability to distinguish between facts and fiction. Although it can generate answers to many questions, it does not possess true understanding or knowledge. Its responses are only as reliable as the data it has been trained on, meaning it can replicate biases and inaccuracies present in the data. Furthermore, it struggles with common sense, paradoxes, and ambiguities (Lambert & Stevens, 2023; Su & Yang, 2023). For instance, for an GenAI model which is trained mainly on essays from a particular demographic, it becomes difficult to fairly evaluate essays from students of other demographic groups (Baidoo-anu & Ansah, 2023).

GenAI biases occur when generated content favors or discriminates against certain groups, often due to limitations in the training data (Ntoutsi et al., 2020). For example, biases arise when the data only reflects a portion of the population or is monolingual in multilingual contexts (Weidinger et al., 2021). To address disparities, GenAI models should be trained with

diverse and comprehensive data, including synthetic data (Gonzalez, 2023). Regular testing by diverse users and enhancing GenAI transparency are essential to identify and correct biases (Fui-Hoon Nah et al., 2023).

Another drawback of GenAI is that hallucination, which means the creation of illogical or inaccurate content, is also referred to as "fabrication of information" (Salvagno et al, 2023). This can lead to the spread of misinformation, where GenAI provides responses that are incorrect or entirely fabricated. This issue is particularly problematic in academic settings, where GenAI might generate false or non-existent references. As GenAI lacks genuine comprehension, it can only simulate human-like responses without truly understanding them, posing risks, especially in areas like healthcare, where expert analysis is essential (Fui-Hoon Nah et al., 2023). LLMs need to be trained and refined with diverse datasets to avoid societal biases and discrimination, which also affects the educational context. Regular updates and evaluation, expert oversight, and human supervision are crucial for ensuring that outputs remain unbiased, fair and transparent (Kasneci et al., 2023)

2.12.2. Cost

Implementing generative AI-based tools in education presents challenges, particularly regarding the high costs, which can be difficult for students and schools, especially in economically or socially disadvantaged regions. This creates a disparity in access, as some students may already be familiar with these tools while others lack exposure. Efforts should be made to improve the accessibility and affordability of such technologies (Su & Yang, 2023). For the current study researcher chose ChatGPT-4 due to its advanced features. With a cost of $20 per month, it may be affordable for some, however, it is not sustainable and cost-efficient in the educational context.

2.13. The Effect of ChatGPT on Writing Skills

The impact of ChatGPT in teaching English as a foreign language (EFL) has a particularly pronounced effect on writing skills. GenAI Language Models, especially LLMs such as ChatGPT, can be integrated into foreign language writing in or out of the classrooms. Several research have examined the usage of ChatGPT for written skills. Nevertheless, the results of their investigation appeared to be mixed. Research by Su et al. (2023) reported that students may employ ChatGPT to help them rewrite texts, write assignments, proofread, and form post-writing reflections. ChatGPT usage is positively accepted for completing or revising moderate levels of assignments (Yan, 2023). The possible aspect of ChatGPT is reported by Song & Song (2023) as helping the process of reorganizing writing, offering helpful feedback,

and identifying flaws. Moreover, ChatGPT can support students in creating digital multimodal text by offering a useful framework for their compositions. (Liu et al., 2024).

As the focal point of this research, LLMs like ChatGPT can help students improve their writing skills by providing real-time feedback to them. As students compose or translate texts, their natural language processing capabilities can identify errors and suggest corrections. This helps students make their writing more fluent and understand grammar rules better (Shidiq, 2023). Furthermore, LLMs such as ChatGPT can inspire students to create original texts. By studying example texts, students can learn the correct use of language and draw inspiration from these examples when creating their texts. This helps students develop their creative thinking skills and learn to express themselves in various areas of language if the platform is used correctly and responsibly. In addition, LLMs such as ChatGPT can support students in learning grammar rules and vocabulary development, addressing meaning, and spelling using word definitions in the student's native language, enhancing pronunciation through cooperation between the teacher and ChatGPT, and learning words in two languages. Mentioned ChatGPT capabilities can be harnessed leading to a thorough and successful learning experience (Alam & Asmawi, 2023). Students can expand their grammar and vocabulary by studying the grammatical structures and vocabulary they encounter when creating or translating texts. ChatGPT provides students with unique benefits not found in other writing tools or from teachers alone by offering diverse, customized translations of concepts. This allows students to better understand different rhetorical choices and their effects. This deeper comprehension was evident as students examined various opening statements generated by ChatGPT (Levine et al., 2024) This helps students to better comprehend the patterns of the language and apply them with a higher accuracy.

However, there are concerns regarding ethical issues, linguistic injustice and potentially biased information associated with ChatGPT (Lucy & Bamman, 2021; Uzun, 2023; Rawas, 2023). The other concern is that while these features can be supported when used responsibly if learners rely too much on the feedback provided by AI, their original thinking and critical thinking skills may diminish. Moreover, LLMS cannot fully reflect the emotional and cultural dimensions of language, which may prevent students from fully developing their communication skills (Shidiq, 2023).

In conclusion, LLMS such as ChatGPT can be a powerful tool for improving writing skills in teaching English as a foreign language. However, the use of this technology must be carefully managed and combined with a variety of teaching methods to ensure that students

understand the depths of the language. In this way, LLMs can help students improve their language skills and express themselves effectively.

2.13.1 Effects on Coherency and Cohesion

Coherence is when the language used in a text is appropriate for the target audience and the purpose of communication (McNamara et al., 1996). When the effects of LLMs such as ChatGPT on writing skills are examined, a significant effect is observed, especially on coherence and cohesion. A study by Ismail (2023) examined cohesion and coherence in writings that ChatGPT generated, using Halliday and Hasan's (1976) cohesion theory and van Dijk and Kintsch's (1983) cognitive situation model. The findings revealed that the essay created by ChatGPT in a Literature course received the highest score, and similarly, the essay revised by ChatGPT in a writing course also achieved the highest score. Such models have the ability to generate text by learning from a large database of languages. However, along with this ability, they can also affect the elements that provide coherence and cohesion in writing.

On the other hand, language models like ChatGPT can face some consistency challenges when generating text by learning from a large database. For example, they may use a statement that contradicts the information given in one sentence in the next sentence. This can reduce the comprehensibility and credibility of the text. LLMs as ChatGPT usually generate text using language patterns learned from a large and diverse database. However, they may face some challenges when it comes to adjusting the tone and style of discourse to the target audience. For example, they may use colloquial expressions that are not appropriate for a formal letter. Especially in interactive environments such as social media platforms or customer service, consistency and cohesion are crucial. LLMs should be carefully monitored for consistency and cohesion when used on such platforms (Amin, 2023).

However, LLMs are constantly being improved to increase their performance in consistency and coherence. In particular, by increasing the quality and diversity of the database used in text generation, it is aimed to produce more consistent and coherent texts. In addition, by adding certain rules and constraints in the training process of these models, a more effective way can be followed to ensure consistency and coherence. To summarize, LLMs have a significant impact on coherence and cohesion among the factors affecting writing skills. However, there are continuous efforts to improve the performance of these models in terms of coherence and cohesion. In this way, such language models are intended to produce more coherent, coherent and high-quality texts (Amin, 2023).

2.13.2 Effects on Vocabulary

LLMs are used as an important tool in teaching English as a foreign language. These models have the ability to generate text by learning from a large database of languages and therefore provide students with the potential to improve vocabulary knowledge (Karataş et al., 2024). Vocabulary knowledge is a key element in language learning and is an important factor affecting writing skills. LLMs can contribute to the learning of new words by providing learners with access to a large vocabulary. In particular, they can help expand vocabulary by providing different examples of words through the various texts that students are exposed to. In this way, students can be encouraged to use a more diverse and rich language when developing their English writing skills (Shidiq, 2023).

LLMs can also provide tools to reinforce vocabulary knowledge, such as interactive exercises and quizzes. For example, they can provide students with activities such as producing sentences related to the use of a particular word or identifying word meanings. Such interactive activities can strengthen students' vocabulary knowledge while also improving their writing skills. Instead of directly teaching vocabulary to students, LLMs can encourage learning through real-life texts. For example, they can enable students to analyze and understand real-world texts such as daily newspaper articles, blog posts or social media posts. Such texts enable learners to see and learn English words and expressions in real-world contexts. However, there are also some potential challenges related to the effects of LLMs on vocabulary. For example, while most of these models make use of a large database to learn word meanings and usages, they may sometimes encounter misinterpreted or erroneous examples. This can be misleading or prevent students from acquiring correct vocabulary knowledge (Shidiq, 2023).

In conclusion, LLMs such as ChatGPT can help improve students' vocabulary knowledge in teaching English as a foreign language. They can strengthen students' vocabulary knowledge by providing a variety of vocabulary examples by learning from a large language database, providing practice through interactive activities, and encouraging learning with real-life texts. However, care should be taken with potentially inaccurate or misleading examples of these models, and they should be carefully monitored to ensure that students acquire the correct vocabulary knowledge.

2.13.3 Effects on the Use of Grammar

LLMs can offer a variety of tools and resources for teaching grammar rules to learners. Such tools can strengthen students' grammar skills while also encouraging the correct use of grammar rules. A study by Barrot (2023) found that despite some challenges, such as overcorrection, cognitive overload, and limited explanations of language rules, automated

written corrective feedback (AWCF) positively affects the writing accuracy of L2 learners. The study's results indicate that students who received this type of feedback performed better than those in the control group, suggesting that AI-based AWCF could be a valuable tool in L2 writing classrooms. In addition to teaching students grammar rules, LLMs can also encourage the practical application of grammar rules by analyzing real-world texts. For instance, they can enable students to observe and understand grammar rules by analyzing texts such as daily newspaper articles, blog posts or literary works. Such texts can help students learn how to use grammar rules in real life (Hong, 2023). Other studies have shown that AI-based AWCF tools can significantly reduce errors in L2 learners' writing. AI-based AWCF tools are found to be effective in L2 writing classrooms for error correction, improving students' writing accuracy and enhancing their awareness of learner autonomy (Guo et al., 2021; Li et al., 2015; Liao, 2016; Ranalli, 2018; Rudolph et al, 2023; Wang et al., 2013)

However, there are also some challenges related to the effects of LLMs on grammar use including overcorrection, overwhelming information, and a lack of clear explanations of language rules (Barrot, 2022). This can be misleading or prevent students from acquiring correct grammar skills. Therefore, it is important to choose the right examples for using these models and emphasize the correct grammar rules.

Sebzecioğlu (2016) states that the process of language teaching is not a teaching process that only involves the monotonous memorization of grammar rules. Language needs to be taught to individuals through various methods and techniques. A study by Cocuk and Çekic (2020), which investigated students' attitudes towards Turkish courses and distance learning in a distance education system, concluded that developing distance learning will lead to positive student attitudes and improve the quality of education. In this context, integrating technology into the educational process and enriching this process with various Web 2. 0 tools will increase student motivation and creativity to higher levels (Baş & Yıldırım, 2018).

Focusing on GenAI in terms of its use in education and natural language processing, it has become clear that individuals can benefit from GenAI in a variety of ways. Many people now spend more time in virtual environments than in traditional classrooms and GenAI is particularly useful in educational contexts. According to Kushmar et al. (2022), GenAI has the potential to improve the quality of language learning by tailoring to the individual aspects and objectives of learners. Besides being customizable, it is affordable, timesaving, and designed to suit your interests and needs. At the same time, according to İşler and Kılıç (2021), it is also very effective in providing much-needed feedback in language learning. GenAI will address the fixed educational problems like student inattention, lack of motivation, and failure to

account for individual differences. It is also potent in increasing student success, positive attitudes towards learning , improving classroom interactions, and providing constructive feedback (Kushmar et al., 2022).

GenAI is expected to positively influence education, particularly in foreign language learning by improving grammar, vocabulary, and speaking skills. It can enhance the learning process through personalized feedback and diverse materials. However, it is noted that GenAI cannot substitute student-teacher interactions and should only be used to complement and support the teacher's role (Sumakul et al. 2022).

A research by Sumakul et al. (2022) at a university in Indonesia and found that teachers positively evaluated the use of GenAI in foreign language teaching. It was concluded that the use of GenAI in education benefits both student learning and teacher teaching. Perhaps the most important and popular GenAI technology is ChatGPT. Developed by OpenAI, ChatGPT is a chatbot. This chatbot is a language model that can communicate in multiple languages. It helps you speak like a human, answer questions, compose text, extract meaning from text, analyze, translate and more. ChatGPT is designed to make it easier for individuals to learn languages and interact in education. The value of ChatGPT in learning a foreign language should be assessed using a set of commands to measure its ease of use for improving vocabulary and learning and practising the grammar rules of the target language. According to İşler and Kılıç (2021), considering the research on the importance of GenAI in education, is very important and the earlier individuals start using GenAI, the more benefits can be obtained from it. According to Topsakal and Topsakal (2022), augmented reality, language robots and ChatGPT can be used to introduce foreign languages to children and contribute to the development of cognitive abilities. ChatGPT provides a motivating environment where people can feel more comfortable while learning a language (Şenyaman, 2023).

In conclusion, GenAI language models such as ChatGPT can have a significant impact on grammar usage. They can strengthen grammar skills by providing learners with various tools and resources for teaching, explaining and practising grammar rules. However, care should be taken with the use of these models to ensure that the correct grammar rules are emphasized.

CHAPTER III
METHODOLOGY

3.1. Research Design

This research uses a quasi-experimental, one-group pretest-posttest design to investigate the impact of using Chat GPT, an AI-based language model, as a feedback tool on the writing performance of students learning EFL. One-group pretest-posttest design is a type of quasi-experimental research where the researcher measures the same dependent variable in a single group of participants both before (pretest) and after (posttest) a specific intervention or treatment. In this design, participants act as their own control, meaning that their pretest scores serve as a baseline against which their posttest scores can be compared. Utilizing one-group design was based on the specific objectives of the study, which centered on analyzing the improvements fostered by ChatGPT's feedback. The study's purpose was to evaluate the direct impact of a GenAI tool on student performance and establish the direct connection between the feedback from ChatGPT and student improvement. Given the nature of feedback being personalized and comprehensive, it is anticipated that any form of feedback from ChatGPT would inherently contribute to positive development in writing skills of the students.

In this study, the researcher measured the participants' scores prior to the treatment and again after an 8-week treatment period. This allows the researcher to evaluate whether any changes in the scores occurred as a result of the intervention. The study focuses on three specific sub-skills: coherence and cohesion, lexical resource, and grammatical range and accuracy. The research was conducted over eight weeks.

The study proceeded in four phases:

1- A pretest at the A1-A2 level, consisting of two writing sections, was conducted. The test results were determined based on scores and CEFR levels, which is the Common European Framework of Reference for Languages, a system used to assess and reference language proficiency levels. The pretest results were further assessed based on three sub-skills: grammar accuracy, vocabulary usage, and coherence and cohesion. A detailed rubric was created to provide concrete guidance on how to grade the writing based on the CEFR framework, ensuring a standardized grading process. The points were calculated using an online automatic calculator for consistency and accuracy in scoring. (Appendix D)

2- For eight weeks of intervention, A1-A2 level writing activities, consisting of '8 Tasks,' were conducted with students, and feedback was provided using the ChatGPT application. In each lesson, students were assigned a writing task, which they

completed. The revised versions of these tasks—corrected, improved, and adjusted to A1-A2 levels using ChatGPT—were provided to students as feedback. The main goal was to conduct this activity in class and later allow students to receive their feedback independently at home. However, due to technical limitations, the feedback was provided by the teacher, who simply input the texts into ChatGPT and conveyed the feedback to the students without making any further interventions. During this time, the teacher introduced the students to the application in the classroom, allowing them to gain some experience with it. Students were also informed about the ChatGPT application's various uses. This process continued for eight weeks and was finalized in a final posttest. (Appendix B, Appendix C)

3- A posttest was conducted at the A1-A2 level, consisting of two writing sections. The test results were determined based on scores and CEFR levels, which is the Common European Framework of Reference for Languages, a standardized system for evaluating and referencing language proficiency levels. The posttest results were further assessed based on three sub-skills: grammar accuracy, vocabulary usage, and coherence and cohesion. A detailed rubric was created to provide concrete guidance on how to grade the writing based on the CEFR framework, ensuring a standardized grading process. The points were calculated using an online automatic calculator for consistency and accuracy in scoring. (Appendix D)

4- Open-ended questions about ChatGPT and writing practice: Through the questions to understand the perceptions regarding the positive and negative impact of using ChatGPT in learning foreign language writing skills, students' opinions and experiences on ChatGPT were collected with 6 open-ended questions. (Appendix A)

3.2. Participants

The participants of this study consist of 101 students learning EFL at a Fine Arts High School in Bursa. The age range of the participants is between 14 and 17 years. The gender distribution in the participant sample is balanced to represent the overall student population at the school. Equal representation of both male and female students is targeted. The selection of 9th and 10th-grade students is based on the assumption that their writing skills are in the developmental stage and that interventions aimed at improving English language proficiency may be more beneficial during this period. Consents were obtained from the participants' parents or legal guardians. The privacy and anonymity rights of the participants will be protected throughout the study, and all data will be securely stored and used solely for research purposes.

3.2.1. Data Collection Tools:

1- General English Reading and Writing Test (Pre-Test): The English proficiency levels of the students in reading and writing were assessed through a reading test and a general English usage test, along with two task-based English writing tests

MEB Secondary Education English Course Curriculum for grades 9-12 has been designed according to the descriptive and pedagogical principles of the Common European Framework of Reference for Languages (CEFR). Therefore, English proficiency levels are reflected in the curriculum as A1 and A2 (Basic User) and B1 and B2 (Independent User). It is also indicated that 9th and 10th grades are primarily at the A1 and A2 levels

According to the MEB Secondary Education English Course Curriculum, the Cambridge A2 Key exam, which is a standardized test, was administered as a pre-test and level assessment exam. This exam included a six-part reading section and a two-part writing section, aligned with the English proficiency levels of each grade.

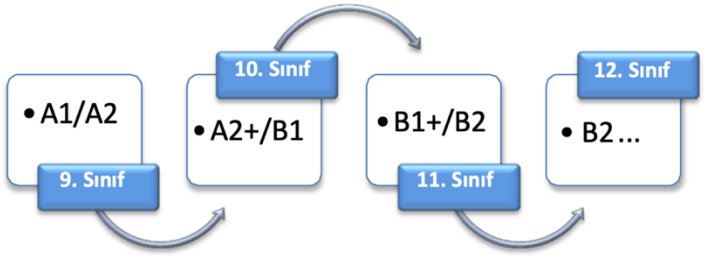
Figure 1

Secondary Education English (Grades 9-12) Teaching Program Model

Ortaöğretim İngilizce Dersi (9-12. Sınıflar) Öğretim Program Modeli

Seviyeler (CEFR*) Haftalık Ders Saati	Öğrenci Yaşı	Beceri/Dil Bilgisi/Kelime Bilgisi/Telaffuz Hedefi	Temel Aktiviteler (Tüm seviyelerde kullanılabilir.)
9 (A1/A2) 4	14-14.5	Dört temel beceri birbiri ile bütünleşik olarak, Dinleme ve Konuşma, Ders başına en fazla yedi yeni sözcük bilgisi, Sınırlı Seviyede Telaffuz pratiği.	Rol-yapma/Canlandırma Grafikler/Tablolar Paragraf Okuma ve Yazma
10 (A2+/B1) 4	15-15.5	Dört temel beceri birbiri ile bütünleşik olarak, Dinleme ve Konuşma, Sınırlı Seviyede Dil Bilgisi Yapısı, Ders başına en fazla yedi yeni sözcük bilgisi, Sınırlı Seviyede Telaffuz pratiği.	Bilgi Tamamlama Aktiviteleri/Rol-yapma Paragraf Okuma ve Yazma/Genel Anlamaya Yönelik Okuma/Belli Bir Bilgiyi Bulmaya Yönelik Okuma
11 (B1+/B2) 4	16-16.5	Dört temel beceri birbiri ile bütünleşik olarak, Dinleme ve Konuşma, Ders başına en fazla yedi yeni sözcük bilgisi, Sınırlı Seviyede Telaffuz pratiği.	Anketler/Kısa ve Sözlü Sunumlar Drama/Kısa Okuma Parçaları ve Paragraf Yazma
12 (B2+) 4	17-17.5	Dört temel beceri birbiri ile bütünleşik olarak, Dinleme ve Konuşma, Ders başına en fazla yedi yeni sözcük bilgisi, Sınırlı Seviyede Telaffuz pratiği.	Karşılıklı Konuşmalar/Sözlü Sunumlar/Projeler Görev-bazlı Aktiviteler Tartışmacı/Betimleyici Metin Yazma

*CEFR = Avrupa Dilleri Öğretimi Ortak Çerçeve Programı



2- General English Reading and Writing Test (Posttest): At the end of the 8-week study, the Cambridge A2 Key exam, including a reading and general English test, as well as a two-part

writing test, was administered again as a post-test. The English proficiency levels of students in reading and writing were assessed after the intervention. (Appendix D)

3- Open-ended questions about ChatGPT and writing practice: Through the questions to understand the perceptions regarding the positive and negative impact of using ChatGPT in learning foreign language writing skills, students' opinions and experiences on ChatGPT were collected with 6 open-ended questions. (Appendix A)

3.2.2. Writing Intervention and Writing Tasks

The intervention followed a structured 8-week to integrate the use of ChatGPT as a feedback tool for improving students' writing skills. Throughout the intervention, a total of eight writing tasks were completed, all at the A1-A2 levels, as determined by the MEB Secondary Education English Course Curriculum for grades 9 and 10. This timeline ensured that students received feedback consistently with the GenAI tool while working on their writing tasks in a controlled environment.

In the first week, students took a pretest to assess their initial levels of proficiency in writing. The test focused on three sub-skills: grammar accuracy, vocabulary usage, and coherence and cohesion, in alignment with the CEFR A1-A2 proficiency levels. These scores served as a baseline for comparison with posttest results later in the study.

During weeks 2 through 8, students participated in an in-class treatment integrated into their regular English lessons. Each week, students were assigned a writing task tailored to their A1-A2 proficiency level. After completing the writing tasks, the teacher submitted the students' texts to ChatGPT for feedback. The GenAI provided corrected and improved versions of the students' work, focusing on grammar corrections, vocabulary enhancements, and suggestions for better coherence. The feedback was handed back to students in the following lesson, allowing them to review and learn from their errors. The AI-generated feedback was consistent and objective, allowing students to recognize patterns in their mistakes and improve over time. Due to technical limitations—such as lack of internet access or devices—some students could not directly interact with ChatGPT. Thus, the teacher acted as a mediator by submitting the students' texts to the GenAI and returning the feedback in its original form without any intervention.

In the final week of the intervention, students completed a posttest. This test was identical in format to the pre-test, again assessing their proficiency in writing skills at the A1-A2 level. The same sub-skills—grammar accuracy, vocabulary usage, and coherence and cohesion—were evaluated to measure the progress made after the 8-week intervention.

The pretest and posttest results were compared to determine the effectiveness of the intervention. By comparing students' performance before and after the 8-week period, the study aimed to assess whether the ChatGPT-mediated feedback had a significant impact on their writing skills.

3.3. Data Analysis

The data analysis process for this study proceeded through several stages, each aimed at ensuring the accuracy, validity, and reliability of the results. In the first part of the study, the demographic characteristics of the participants were analyzed using descriptive statistics. This analysis included variables such as age, gender, and grade level to provide a clear overview of the participant sample. A reliability analysis was conducted on the assessment tools used for evaluating writing skills (grammar accuracy, vocabulary usage, and coherence and cohesion).

The primary analysis involved a comparison of pretest and posttest scores to determine the effectiveness of the intervention. A paired-samples t-test was conducted to assess whether the writing skills of the participants improved significantly following the 8-week intervention. The test compared mean scores in the three sub-skills (grammar accuracy, vocabulary usage, and coherence and cohesion) before and after the intervention. The pretest scores served as the baseline, indicating the initial proficiency level of the students. The posttest scores were analyzed to see if there was a statistically significant improvement in performance after receiving feedback from ChatGPT during the intervention. The paired t-test results were used to determine whether the differences in pretest and posttest scores were significant at a 95% confidence level. The p-values were analyzed, with $p < 0.05$ indicating a significant difference.

In addition to the t-test, the effect size was calculated using Cohen’s d to determine the magnitude of the intervention's impact on student writing skills. This metric helps to understand not just if there is a significant difference, but how meaningful that difference is in practical terms.

The open-ended responses from participants, collected through the six questions regarding their experiences with ChatGPT. Responses were categorized into positive and negative perceptions of the GenAI tool and analyzed summarize the overall student experience. The study was conducted with voluntary participants , and they could withdraw at any point without any consequences. Permission from the Ministry of National Education to conduct the research was obtained.

CHAPTER IV
FINDINGS

4.1. Descriptive Characteristics of The Participants

Table 1 presents a summary of the participants' demographic information and their experience with using ChatGPT. There are 101 respondents in total. The table aims to provide an overview of the participants' background and their familiarity with the ChatGPT tool.

Table 1

Demographics of Participants

		Frequency	Percent
Gender	Woman	66	65.3
	Man	35	34.7
Class	9	73	72.3
	10	28	27.7
Department	Music	28	27.7
	Visual Arts	32	31.7
	TCM	23	22.8
	Theater	18	17.8
I have used ChatGPT before.	Yes	44	43.6
	No	57	56.4

The current study included 101 participants, with a majority of them identifying as women (65.3%, n = 66), while 34.7% (n = 35) identified as men. Regarding the class level, most participants were in the 9th grade (72.3%, n = 73), and the remaining 27.7% (n = 28) were in the 10th grade. When it comes to the department of study, participants were distributed across four departments: Visual Arts (31.7%, n = 32), Music (27.7%, n = 28), Turkish Classical Music (TCM) (22.8%, n = 23), and Theater (17.8%, n = 18).

Additionally, when asked about their prior use of ChatGPT, 43.6% (n = 44) reported having used it before, whereas 56.4% (n = 57) had not.

4.2. Open-ended Questions

Six open-ended questions were asked of the participants. The summary of the answers given to the questions is as follows:

- **Positive Experiences While Using ChatGPT**

The responses include several instances of positive experiences users had while using ChatGPT. Here is a breakdown of the most frequently mentioned benefits:

- Correcting mistakes:
  "Yanlış kurduğum cümleleri düzeltti ve hatalarımı fark etmemi sağladı"
- Vocabulary improvement:
  "Daha fazla kelime öğrendim ve cümleleri doğru kullandım"
- Speed and ease of access:
  "Birçok veriye çok daha hızlı ve kolay ulaşmamı sağlıyor"
- Language and writing development:
  "Dilimi geliştirdi ve yazma düzeyimi yükseltti"

- **Challenges or Negative Experiences While Using ChatGPT**

  Here is a breakdown of the most frequently mentioned negative aspects:

  - Difficulty understanding:
    "Bazı cümleleri anlamakta zorlandım."
    "GPT'nin düzeyi benim düzeyimin çok üstünde olduğu için anlamakta güçlük çektim."
  - Complexity and detail:
    "Çok fazla detay veriyor."
  - Inaccuracy or misunderstandings:
    "Bazen saçma cevaplar veriyor."
    "Bazen sorduğum şeyi tam anlamıyor ve farklı sonuçlar veriyor.
    " "Bazen yanlış veya uydurma cevaplar üretiyor."
  - Cost:
    "Daha verim alabilmemiz için para vermemiz gerekiyor. Bu miktar çok fazla.
    "Paralı olması."

- **How Do You Think ChatGPT Has Affected Your Writing Skills?**

  Based on the analysis of responses, here's a breakdown of the most mentioned benefits on writing skills :

  - Improvement in Grammar and Sentence Structure:
    "Yazim kurallari kelimeleri doğru yazma gibi olumlu etkilendi"
    "Hatalarimi görmemi sağliyor böylece kendimi geliştirebiliyorum"
    "Daha düzgün cümleler kurmaya başladim"
  - Vocabulary Expansion:
    "İyi ve kelime dağarciğimizi genişletiyor"

"Kelime dağarciğimi artirdi"

"Yeni kelimeler öğrendim. İyi etkiledi"

"Sürekli farkli cümleler kurarak ve ayni zamanda farkli konular olduğu için yazma becerimi kelime dağarciğimi farkli hikayeler kurarak geliştirdim"

- Increased Ease and Fluency in Writing:

"Daha kolay cümle kuruyorum"

"Bize düzgün ve akici cümleler sunuyor"

"İyi yönde- cümle kurulumunda geliştim"

- **What Are Your Thoughts on Ethical Issues While Using ChatGPT?**
  - No ethical issues:

    "Bir sorun olursa bu kullanıcıdan kaynaklanır diye düşünüyorum"

    "Doğru kullanilirsa süper bir uygulama"

    "Bence bir sorun yok"

    "Etik sorunlar hakkında ChatGPT'nin kötü bir uygulama olduğunu düşünmüyorum. Yararlı ve ileride hayatimizi kolaylaştırabilecek bir uygulama."
  - Negative Opinions (Expressing Concerns or Ethical Doubts):

    "Öğrenciler için kolaylık ama bir yandan da öğrenmeye engel olabilir"

    "Kullanması kolay ve herkese açık olduğundan kötü niyetli kullanıma çok açık olduğunu düşünüyorum"

    "İnsanlar kendilerini geliştirmek yerine kopya olarak kullanabilir"

    "Kolaycılık olduğunu düşünüyorum ve doğru bulmuyorum"
  - *"Bazı durumlarda problemli olabilir"*
- **Would You Recommend Using ChatGPT in Writing Education?**

  The vast majority of respondents (n = 64) recommend using ChatGPT in writing education, citing benefits such as grammar correction, faster learning, and vocabulary enhancement. Only a small percentage (n = 5) do not recommend it, primarily due to a preference for human teachers over AI. A minority (n = 6) of respondents are neutral or uncertain, suggesting that the recommendation may depend on factors like the learner's level or how the tool is used in conjunction with other educational resources.
- **How Do You Think Using ChatGPT Could Benefit Students Learning a Foreign Language?**
  - Improving vocabulary:

    "Kelime dağarcığını artırır ve daha hızlı cümle kurmamıza yardımcı olur"

"Kelime dağarcığını geliştirebilir ve bağlaçları doğru kullanmamıza yardımcı olabilir"

"Kelime dağarcığını geliştirir cümle kurmayı sağlar"

- Faster Learning:

  "Öğrenimi hızlandırıyor ve ödevleri daha hızlı kolaylaştırıyor"

  "Daha hızlı şekilde sonuç alınacağı için kolay bir öğrenme olduğunu düşünüyorum"

  "Daha hızlı ve verimli olur diye düşünüyorum"

- Engagement and Motivation

  "Öğrencilerin ilgisini çekebileceğini bu sayede yabancı dil öğreniminin daha eğlenceli ve kolay olduğunu düşünüyorum"

  "Derse katilimin artması, motivasyon kaynağı"

  "Cümle kurmayı kolaylaştırıyor görsel desteği güzel eğlenceli hale geliyor ve öğrenimi kolaylaştırıyor"

ChatGPT has proven to be an effective tool for enhancing users' writing and language skills, with numerous positive experiences reported by its users. A significant 75.56% of respondents indicated that the tool has positively impacted their writing abilities, particularly in areas such as grammar (10 mentions), sentence structure (9 mentions), and vocabulary expansion (7 mentions). The speed and ease of accessing feedback and improving writing skills were also frequently highlighted benefits.

However, challenges were also noted. Among the responses analyzed, 77.42% mentioned negative experiences, including difficulties in understanding complex responses (16.13%) and issues with inaccuracies or misunderstandings (16.13%). Some users also expressed concerns about ChatGPT's complexity (19.35%), with minor technical issues affecting usability (12.90%).

Ethical considerations were mixed: 41.18% of users responded positively about ChatGPT’s role in writing education, while 32.35% expressed concerns, primarily about over-reliance on AI. Neutral or uncertain responses also made up 32.35%, indicating that ethical views on AI in education are still evolving.

Despite these concerns, 85.33% of respondents recommended using ChatGPT in writing education. Users praised its ability to correct grammar mistakes, enhance vocabulary, and facilitate faster learning, making it an ideal supplement to traditional teaching. Only

6.67% of respondents preferred not to recommend it, citing a preference for human instruction, while 8.00% remained neutral or uncertain.

When it comes to foreign language learning, ChatGPT's benefits are even more pronounced. Vocabulary expansion (15 mentions), improvements in sentence structure (12 mentions), and faster learning (9 mentions) were commonly noted as advantages. Additionally, the tool helped with correcting mistakes (8 mentions) and increased engagement and motivation among learners (7 mentions), making it a valuable aid in language acquisition.

4.3. Pre-test and Post-test

Table 2

Visual Arts: Paired Samples t-test of the Pre-test and Post-test

Class	Dep.		Mean	SD	S.E. Mean	t	df	Sig. (2 tailed)
9	Visual Arts	**Pretest Posttest**	-17.677	46.387	8.331	-2.122	30	**.042**

In the paired samples test conducted the following results were observed:

9th Grade – Visual Arts Department:

Pair 1 (Pre-writing – Post-writing): The mean difference was -17.677 with a standard deviation of 46.387. The t-value was -2.122, with 30 degrees of freedom, and a p-value of 0.042, indicating a statistically significant difference at the 0.05 level.

Pair 2 (Pre-writing level – post-writing level): The mean difference was -0.548 with a standard deviation of 0.888. The t-value was -3.437, with 30 degrees of freedom, and a p-value of 0.002, indicating a statistically significant difference at the 0.01 level.

Table 3

TCM: Paired Samples t-test of the Pre-test and Post-test

Class	Dep.		Mean	SD	S.E. Mean	t	df	Sig. (2 tailed)
9	TCM	**Pretest Posttest**	-10.143	29.215	7.808	-1.299	13	.217

In the paired samples test conducted the following results were observed:

9th Grade - TCM (Turkish Classical Music) Department:

Pair 1 (Pre-writing – Post-writing): The mean difference was -10.143 with a standard deviation of 29.215. The t-value was -1.299, with 13 degrees of freedom, and a p-value of 0.217, indicating no significant difference.

Pair 2 (Pre-writing level – post-writing level): The mean difference was 0.071 with a standard deviation of 1.072. The t-value was 0.249, with 13 degrees of freedom, and a p-value of 0.807, indicating no significant difference.

Table 4

Theater: Paired Samples t-test of the Pre-test and Post-test

Class	Dep.		Mean	SD	S.E. Mean	t	df	Sig. (2 tailed)
9	Theatre	**Pretest Posttest**	-38.722	50.645	11.937	-3.244	17	**.005**

In the paired samples test conducted the following results were observed:

9th Grade - Theater Department:

Pair 1 (Pre-writing – Post-writing): The mean difference was -38.722 with a standard deviation of 50.645. The t-value was -3.244, with 17 degrees of freedom, and a p-value of 0.005, indicating a statistically significant difference at the 0.01 level.

Pair 2 (Pre-writing level – post-writing level): The mean difference was -0.611 with a standard deviation of 0.778. The t-value was -3.335, with 17 degrees of freedom, and a p-value of 0.004, indicating a statistically significant difference at the 0.01 level.

Table 5

Music: Paired Samples t-test of the Pre-test and Post-test

Class	Dep.	Mean	SD	S.E. Mean	t	df	Sig. (2 tailed)

10	Music	**Pretest Posttest**	-42.179	55.602	10.508	-4.014	27	**.000**

In the paired samples test conducted the following results were observed:

10th Grade - Music Department:

Pair 1 (Pre-writing – post-writing): The mean difference was -42.179 with a standard deviation of 55.602. The t-value was -4.014, with 27 degrees of freedom, and a p-value of 0.000, indicating a statistically significant difference at the 0.001 level.

Pair 2 (Pre-writing level – post-writing level): The mean difference was -1.038 with a standard deviation of 0.916. The t-value was -5.783, with 25 degrees of freedom, and a p-value of 0.000, indicating a statistically significant difference at the 0.001 level.

4.4. Sub-skills: Grammar, Coherence & Cohesion, Vocabulary

The researcher used SPSS 26.0 for data analysis. Since the data violated the normality assumption in all its dimensions including grammar, coherence and cohesion, vocabulary, and overall ($p < .05$), the study utilized four Wilcoxon signed rank tests to see the effects of the intervention. Initially, the researcher calculated Cronbach's alpha values for all the dimensions. The values indicated that the test used was reliable in all its dimensions ($\alpha = .86$ for grammar, $\alpha = .86$ for coherence and cohesion, $\alpha = .83$ for vocabulary, and $\alpha = .95$ for overall). In calculating Cronbach's alpha values, the participant's pretest scores were used, meaning that for calculating grammar's Cronbach's alpha, two pretest scores were used, and the procedure was followed for all dimensions. In addition, the research used effect sizes to see the real effect of the intervention. Cohen's (1988) interpretation of effect sizes was used while interpreting the effect sizes.

Initially, the researcher calculated the descriptive statistics of the test. Table X shows the descriptive statistics of the participants.

Table 6

Participants' Descriptive statistics

	N	Mean	SD	Median
Pretest	101	14.40	8.74	16.00

Grammar Pretest	101	5.92	3.50	7.00
Cohesion and Coherence Pretest	101	3.69	2.52	4.00
Vocabulary Pretest	101	4.78	3.06	5.00
Posttest	101	20.43	6.88	21.00
Grammar Posttest	101	7.99	2.34	9.00
Cohesion and Coherence Posttest	101	6.05	2.37	6.00
Vocabulary Posttest	101	6.39	2.47	6.00

The first Wilcoxon signed rank test indicated that the grammar posttest scores (*Md* = 9.00, *n* = 101) were significantly higher than the grammar pretest (*Md* = 7.00, *n* = 101) scores ($z = -5.84$, $p < .001$) with a moderate effect size ($r = .41$).

The second Wilcoxon signed rank test indicated that the cohesion and coherence posttest scores (*Md* = 6.00, *n* = 101) were significantly higher than the cohesion and coherence pretest (*Md* = 4.00, *n* = 101) scores ($z = -7.38$, $p < .001$) with a strong effect size ($r = .52$).

The third Wilcoxon signed rank test indicated that the vocabulary posttest scores (*Md* = 6.00, *n* = 101) were significantly higher than the vocabulary pretest (*Md* = 5.00, *n* = 101) scores ($z = -5.48$, $p < .001$) with a moderate effect size ($r = .39$).

Finally, the last Wilcoxon signed rank test indicated that the overall posttest scores (*Md* = 21.00, *n* = 101) were significantly higher than the vocabulary pretest (*Md* = 16.00, *n* = 101) scores ($z = -6.83$, $p < .001$) with a moderate effect size ($r = .48$).

CHAPTER V
DISCUSSION

5.1. Introduction

The discussion chapter addresses the results of the research questions, interpreting the findings and referencing relevant literature. The first research question will be addressed by analyzing the quantitative results related to the improvement in writing skills in three sub-skills; coherence and cohesion, vocabulary knowledge and grammatical accuracy observed between the pretest and posttest. Following this, there will be an examination of the qualitative data gathered from the interview responses. The discussion will include arguments concerning the concepts of Scaffolding and the Zone of Proximal Development (ZPD) as demonstrated by the study. Additionally, the technological, pedagogical, and social benefits of employing GenAI chatbots in the educational context will be explored comprehensively.

Current study explores the impact of ChatGPT, a GenAI-based LLMs, on English writing skills, specifically focusing on coherence, cohesion, vocabulary, and grammar across different departments and grades at a fine arts high school in Turkiye. During the eight weeks of intense writing class intervention 8 writing tasks were completed by the participants and for each task they received improved and corrected feedback from ChatGPT. The researcher did not interfere in the feedback process. Data was collected through pretests and posttests before and after the intervention. The study aims to provide insights into the benefits and challenges of integrating GenAI tools like ChatGPT in education and their effects on different student groups.

5.2. What Are the Effects of Chatgpt, An Artificial Intelligence-Based Language Model, As A Feedback Tool on EFL Learners' Sub-Writing Skill Coherence And Cohesion?

The research question one aspired to reveal whether providing ChatGPT feedback on the writing tasks of the participants has any impact on their writing skills considering coherence, cohesion, vocabulary, and grammar usage sub-writing skills. To answer the question, the results from pretest and posttest analysis indicate a significant improvement in all the measured sub-writing skills, grammar, cohesion & coherence and vocabulary, as well as the overall writing performance of EFL learners after using ChatGPT as a feedback tool.

First of all, regarding overall writing pretest and post-est scores, the paired samples test showed that the use of ChatGPT indicated significant improvements in writing skills in certain departments and grades. For instance, in the 9th Grade Visual Arts Department, significant differences were observed between overall pre- and post-writing scores, suggesting that

ChatGPT had a positive impact on writing development. This finding is supported by the statistically significant improvements in overall writing scores observed in the 9th Grade Theater Department and the 10th Grade Music Department. These results support prior findings that GenAI tools can enhance students' ability to structure their writing and express ideas more clearly (Jiang & Yu, 2020).

Secondly, when it comes to sub-writing skills, cohesion and coherence in participants' writings showed the most significant improvement compared to other sub-skills. The result indicates a significant improvement in the participants' ability to organize their ideas clearly and coherently. The writings of the participants were improved in terms of relevance, being connected and coherent, using basic linking words and cohesive devices.

There are number of studies signifies that the GenAI based technologies and chatbots impacted writing skills of learners with a significant level of improvement particularly in coherency. In line with the findings of this research, other studies have indicated that ChatGPT usage in English writing lessons led to notable improvements in students' writing, particularly in coherence, vocabulary, grammar, and organization. Their analysis also revealed that participants showed increased academic performance and motivation, with the greatest progress seen in organizational skills, writing clarity and overall coherency. Moreover, GenAI tools such as ChatGPT have proven effective in improving the organization and coherence of students' essays, highlighting their potential in supporting (scaffolding) the writing process. (Barrot, 2023; Nugroho et al., 2024; Song and Song, 2023; Zhao, 2022). Further supporting this, studies suggest that LLMs and GenAI based chatbots can understand the syntax and semantics of natural language and consequently provide meaningful and coherent feedback that helps students enhance their learning, often surpassing human instructors in terms of fluency and clarity. Additionally, AI-generated reviews tend to show greater coherence than those produced by humans, demonstrating the potential of GenAI to create authentic and cohesive content. (Dai et al., 2023; Olmedilla et al., 2024).

However, some studies argue that while ChatGPT is helpful in generating coherent texts, summaries, and improving grammar and structure, it cannot fully replace human writers. Although it can detect advanced grammatical and syntactical errors and offer structural suggestions, it lacks the depth of understanding and expertise that human writing provides (Imran & Almusharraf, 2023)

5.3. What Are the Effects of Chatgpt, An Artificial Intelligence-Based Language Model, As a Feedback Tool on EFL Learners' Sub-Writing Skill, Grammatical Accuracy?

The second most significant effect size was related to using correct grammar. The grammar posttest scores were significantly higher than the pretest scores, with a moderate impact size. This shows that the intervention made a significant improvement in the grammatical accuracy of participants' writing skills. The writings of the participants improved in using simple grammatical forms with a good degree of control. Regardless of their errors, the texts produced by the participants were more comprehensible.

The improvement in students' grammar accuracy from the pretest to the posttest is consistent with studies that emphasize the advantages of GenAI tools in providing immediate grammar feedback. This is particularly beneficial for EFL students during the drafting and proofreading stages, significantly enhancing their writing proficiency. The results show that the participants improved their essays with ChatGPT's support. This included translating text, forming well-structured sentences and paragraphs, correcting grammar and syntax mistakes, finding suitable vocabulary, and generating ideas (Barrot, 2023; Lai &Lee, 2024; Mahapatra, 2024; Nugroho et al., 2024; Zhao, 2022). In EFL writing instruction, students need to reach a certain level of language proficiency to express their ideas clearly in writing. This can be especially difficult for beginners or those with limited exposure to English, as they must develop skills in vocabulary, grammar, syntax, and clarity of expression. GenAI tools like ChatGPT can assist learners by offering personalized feedback based on their specific strengths and weaknesses. This tailored guidance allows students to improve their writing, particularly in grammar, through regular practice and repetition, which gradually boosts their overall language proficiency (Baskara, 2023)

5.4. What Are the Effects of ChatGPT, An Artificial Intelligence-based Language Model, As a Feedback Tool on EFL Learners' Sub-Writing Skill Vocabulary Knowledge?

Similarly to grammar usage, vocabulary skills had a moderate impact size but showed the least significant difference of all three. Still, the results indicated a considerable increase in appropriate and diversified everyday vocabulary use. These findings resonate with the study that reveals the contribution of GenAI in improving vocabulary and comprehensive writing (Su et al., 2023). Aforementioned study by Song and Song (2023) demonstrated that AI-assisted language learning with ChatGPT also improved EFL students' writing skills in vocabulary usage. The experimental group using ChatGPT showed better vocabulary usage compared to the control group. ChatGPT's immediate feedback on vocabulary and suggestions for alternatives helped students expand their lexical range. Students also reported that the GenAI tool enhanced their vocabulary, enabling clearer and more effective expression, contributing to improved language fluency. The study by Nugroho et al. (2024) found that ChatGPT had a

similar impact on vocabulary as it had on grammar accuracy, and coherence. Participants improved their essays with the help of ChatGPT by translating, constructing well-organized sentences and paragraphs, correcting grammatical errors, and choosing the right vocabulary. ChatGPT provided alternative words, such as synonyms or antonyms, and introduced new vocabulary, helping students expand their word knowledge.

These findings are consistent with research indicating that GenAI tools can support writing and vocabulary development, correct grammar usage and producing more comprehensible texts. (Guo & Wang, 2023; Haggag, 2023; Karataş et al., 2024; Liu et al., 2024; Marzuki et al., 2023). The statistically significant improvements in writing scores suggest that ChatGPT can be a valuable tool in educational settings, helping students improve their sentence structure, vocabulary, and overall writing proficiency. (Baskara, 2023; Chen et al., 2020; Lai & Lee, 2024; Ruan et al., 2021; Song and Song, 2023; Yan, 2023;)

5.5. What are EFL learners' perceptions towards their experiences of using ChatGPT for writing practice and feedback?

Participants reported that ChatGPT was instrumental in improving their writing skills, particularly in correcting mistakes, expanding vocabulary, and providing fast feedback. These findings are consistent with previous research that has demonstrated the positive impact of AI-assisted tools in enhancing language learning and writing proficiency (Barrot, 2023; Yang et al., 2024; Zhao, 2022). However, some participants highlighted difficulties in understanding the complex language used by ChatGPT and expressed concerns about the AI's limitations in knowledge. This emphasizes the need for GenAI tools to be improved and tailored to provide clear directions at the learner's proficiency level and produce higher-quality texts (Steiss et al., 2024).

Participants' views on the ethical implications of using ChatGPT reflect a mixed understanding of the tool's potential risks and benefits. While some students did not perceive any ethical issues, others were concerned about the potential for over-reliance on AI, leading to student laziness. This concern repeats the broader debate in the literature about the ethical use of GenAI in education, where there is a risk that students might become too dependent on technology, potentially hindering the development of independent learning skills (Selwyn, 2020; Zhai et al., 2024).

The majority of participants recommended using ChatGPT in writing education, particularly as a supplemental tool to accelerate learning and improve accuracy. However, some suggested that it should be used only when necessary, indicating a cautious approach to integrating AI into the curriculum. This recommendation aligns with the literature, which

supports a balanced approach to using AI in education—one that optimizes its benefits while lightening potential drawbacks (Holmes et al., 2021; Tavares et al.; 2023).

However, the study also highlights the need for caution in the widespread adoption of AI tools like ChatGPT. The challenges reported by students, particularly regarding the complexity of responses and the risk of over-reliance, suggest that educators should carefully consider how these tools are integrated into the learning environment. It is essential to ensure that AI tools are used in a way that supports, rather than replaces, the improvement of critical thinking and independent learning skills.

Future research should explore the long-term impact of using AI tools on students' writing skills across a broader range of disciplines and educational levels on a bigger sample. Additionally, further studies are needed to investigate the ethical implications of AI in education, particularly concerning student dependence and the potential for reduced learning engagement.

CHAPTER VI
CONCLUSION

This final chapter offers a summary of the study and outlines its implications for EFL classrooms, language teachers and language learners. It also addresses the study's limitations and provides recommendations for future research. The implications of the findings are discussed, along with suggestions for future research.

5.1. Summary of the Study

This study aimed to explore the impact of the GenAI-based language model, ChatGPT, on the writing skills of high school-level EFL learners. The research focused specifically on three sub-skills: coherence and cohesion, lexical resource (vocabulary), and grammatical range and accuracy. Over an 8-week intervention period, the students were provided with feedback generated by ChatGPT on their writing tasks, and pretest and posttest results were compared to evaluate improvements in these areas.

The findings indicated a significant improvement in the writing skills of participants. Grammar posttest scores showed a noticeable increase, suggesting that AI-generated feedback helped students correct grammatical errors and apply proper sentence structures. Similarly, improvements in coherence and cohesion were observed, with students demonstrating better organization and logical flow in their writing. Vocabulary knowledge also showed enhancement, as participants expanded their lexicon and improved word choice and usage.

Qualitative data from open-ended questions revealed that students generally had a positive experience using ChatGPT, particularly noting the benefit of quick feedback and error correction. However, some students reported difficulties in fully understanding the feedback due to the complexity of the AI-generated responses. Ethical concerns were minimal, although some expressed the potential for over-reliance on AI, which could hinder the development of independent writing skills.

The study highlighted both the opportunities and challenges associated with integrating AI-based tools like ChatGPT into language learning. While the technology shows promise in supporting writing instruction and offering personalized, immediate feedback, careful implementation and continuous teacher involvement are necessary to ensure balanced learning outcomes. Future research should further investigate the long-term effects of AI on learner autonomy and motivation, as well as explore its potential at different levels of education.

5.2. Suggestions

This study aimed to explore how GenAI-based tool ChatGPT affect writing skills and whether it is helpful for students learning a second language. The current study's focus is the effects of ChatGPT on coherence, cohesion, vocabulary, grammar usage and general writing skills. While the research was done in a school setting, the results can also apply to independent learning. GenAI tools can be used in two main ways: with a teacher in the classroom or by students studying on their own. When teachers use GenAI the classroom to provide feedback or support learning, they need to keep a balance between using GenAI and their own teaching methods. The teacher's role is still very important, as they offer the critical thinking, creativity, and personal insights that GenAI cannot provide. While GenAI tools like ChatGPT can give quick feedback and help students improve specific areas, such as grammar and vocabulary, they cannot fully replace the deeper understanding and guidance that a teacher offers.

On the other hand, by encouraging students to explore ways to improve their language skills using AI-based tools and applications, English language education can become more personalized and self-paced. There are successful examples of GenAI integration in foreign language education other than ChatGPT, like Gemini, Alexa, Google Translate, Grammarly, and platforms such as Busuu and Duolingo, showing the practical applications and advantages of these technologies. Using GenAI and ChatGPT in EFL teaching has the potential to upgrade and offer many advantages to both teachers and students.

Additionally, for GenAI tools to be used effectively, teachers need to be well-prepared to integrate these technologies in their teaching. It is important for teachers to train themselves so they can make the most of GenAI while also understanding its limits. The current study shows that GenAI tools need to better match the language levels of students. One challenge learners faced was that some of the feedback from ChatGPT was too difficult for them to understand. By adjusting the complexity of the feedback, the technology will become easier to use and more helpful. This will allow students to benefit fully from the feedback without feeling confused or overwhelmed. Thus, teachers should have the knowledge to combine GenAI feedback with their own teaching, making sure that students get balanced guidance. This approach should help students improve both their technical skills and their deeper understanding of language learning.

Another point is that this study shows the short-term benefits of ChatGPT for improving writing, future research should investigate the long-term effects of using GenAI in language learning. More empirical studies are needed to understand how using GenAI tools over time affects student motivation, independence, and overall language skills. Future research should

also explore how GenAI tools impact different age groups and language levels to better understand how effective they are in various educational settings.

The study also raised ethical concerns, especially the risk of students becoming too dependent on GenAI tools. It is important to promote responsible use, with teachers playing a key role in making sure students see ChatGPT as a helpful tool, not something to rely on completely. GenAI should support learning, but students should still be encouraged to solve problems on their own and think critically. Teachers need to carefully use GenAI in a way that builds student independence, rather than creating dependency.

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APPENDICES

1. **Appendix A –** Open-ended Questions
2. **Appendix B-** Writing Tasks
3. **Appendix C-** Student Writing Samples & Feedback
4. **Appendix D-** Pre-Test and Post-Tests
5. **Appendix E:** The Official Approval of the Institute of Educational Sciences
6. **Appendix F:** Ethics Committee Approval
7. **Appendix G:** Informed Parental Consent Form
8. **Appendix H:** Writing Rubric
9. **Appendix I:** CV

Appendix A: Open-ended Questions

1. ChatGPT kullanırken yaşadığınız olumlu deneyimler nelerdir? (Örnekler verin)

2.ChatGPT kullanırken yaşadığınız zorluklar veya olumsuz deneyimler nelerdir? (Örnekler verin)

3. ChatGPT'nin kullanımının yazma becerilerinizi nasıl etkilediğini düşünüyorsunuz?

4. ChatGPT kullanırken etik sorunlar hakkında ne düşünüyorsunuz?

5. ChatGPT'nin yazma eğitiminde kullanımını önerir misiniz?

6.ChatGPT kullanımının yabancı dil öğreniminde öğrencilere nasıl fayda sağlayabileceğini düşünüyorsunuz?

Appendix B: Writing Tasks

Task 1:



Look at the three pictures. Write the story shown in the pictures.
Write **35 words** or more.

Task 2:

You want to buy some clothes in an English city. Write an email to your English friend, George.
In your email,
- Ask George where to buy cheap clothes
- Ask George how to get there
- Ask what time the stores stay open.

Write **25 words** or more.

Task 3:

You are going to stay with an English friend next week. Write an email to your English friend, Jo.
In your email,
- Tell Jo when you will arrive
- Ask Jo what you should bring
- Offer to bring some food with you

Write **25 words** or more.

Task 4:

You have just returned from visiting someone in another town. Write an email to your English friend Cris.

Say:

- how you travelled there
- who you stayed with
- what you did together

Write an email to Cris and answer the questions.
Write **25 - 35** words.
Write the email below.

Task 5:

Read the email from your English friend, Alex.

From:	Alex
To:	

It's great you can come to my house this evening to watch a DVD. What time can you come? Which DVD do you want to watch? What would you like to eat?

Write an email to Alex and answer the questions.
Write **25 – 35** words.
Write the email on your answer sheet.

Task 6:



Look at the three pictures. Write the story shown in the pictures.
Write **35 words** or more.

Task 7:

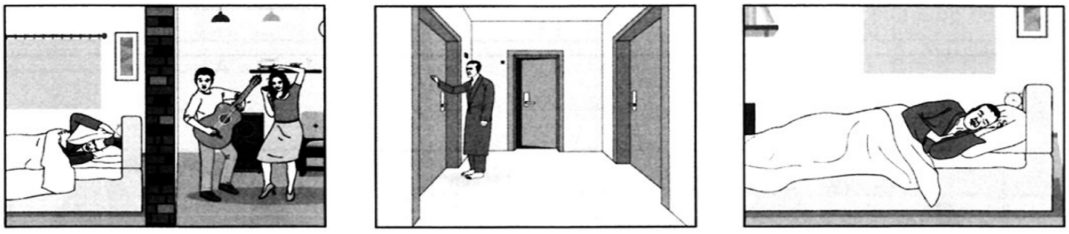
Look at the three pictures.
Write the story shown in the pictures.
Write 35 words or more.



Write the email/story on your answer sheet.

Task 8:

Look at the three pictures.
Write the story shown in the pictures.
Write **35 words** or more.



Write the story on your answer sheet.

Appendix C: Student Writing Samples & Feedback

Task 3:

You are going to stay with a friend next week. Write an e-mail to your friend, Jo.

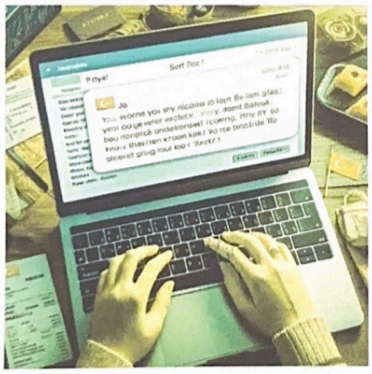
Hi Jo!, what was your day? I have a suprise for you :) I have a plane ticket to belgium. I will come to stay with you next week but , dont know to what to bring with me and I bring your favoritte disert Baklave. is there anything else you whould like me to

Hi Jo!

How was your day? I have some exciting news - I've got a plane ticket to Belgium and will be anything specific I should bring? Also, I was thinking of bringing some of your favorite dessert, Baklava, from Turkey. Is there anything else you'd like from here? Hope you're having a lovely evening!

Mistakes:

1. "what was your day?" should be "How was your day?"
2. "suprise" should be "surprise"
3. "I have a plane ticket to belgium." should have "Belgium" capitalized.
4. "but, I dont know to what to bring with me" should be "but I don't know what to bring with me"
5. "I bring your favouritte disert Baklava." should be "I'll bring your favorite dessert, Baklava."
6. "whould" should be "would"
7. Missing apostrophe in "don't"
8. Punctuation and capitalization issues in the greeting and closing.



TASK 6



Look at the three pictures. Write the story shown in the pictures.

Write **35 words** or more.

The man went to the airport. He had his ticket checked. And the man go a Bulgaria in Bansco and he put on his ski clothes and rented snowbord. But he see a steepness of mountains. He is scared. He thought about going home and boughet his ticket. He go to the airport and got on his plane. When you left, he went to the skate park near his house and He can skate, he wasn't scared.

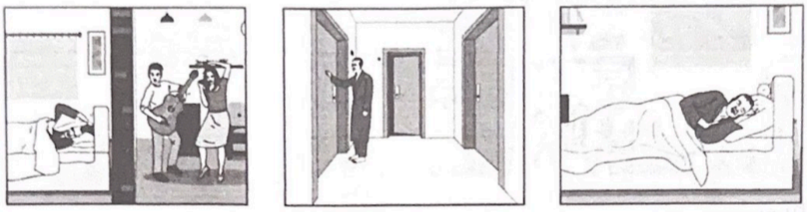
TASK 6:

The man went to the airport and had his ticket checked. Then he went to Bansko, Bulgaria, where he put on his ski clothes and rented a snowboard. However, when he saw the steepness of the mountains, he got scared and decided to go home. He bought a ticket and went back to the airport, where he boarded his plane. Once he arrived home, he went to the skate park near his house and felt comfortable skating there, without any fear.



TASK 8

Look at the three pictures.
Write the story shown in the pictures.
Write **35 words** or more.



Write the story on your answer sheet.

One day, after a tiring meeting, Johnny was sleeping peacefully. Then he woke up because his neighbours were too loud while singing and dancing. Johnny got mad and went to their place, knock the door and told them to be quiet. His neighbours understood him and stopped being too loud. Finally, Johnny had a nice and relaxing sleep.

"One day, after a long meeting, Johnny was sleeping. But he woke up because his neighbors were singing and dancing loudly. Johnny was upset and went to ask them to be quiet. They understood and stopped the noise. Then, Johnny could sleep well again."



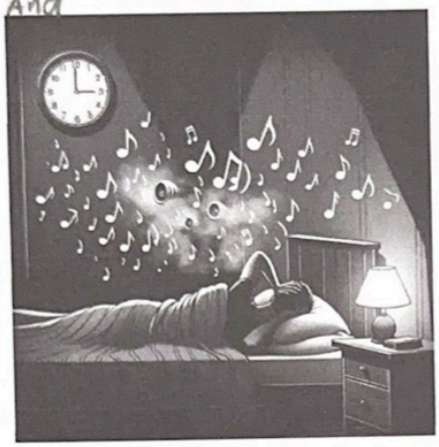
Look at the three pictures.
Write the story shown in the pictures.
Write **35 words** or more.



Write the story on your answer sheet.

Hi, I'm Elliot. I just moved and my floor neighbors are interested in music. They always play something, even it's day or night. One chilly night, when I'm trying to sleep, even tought it's 12 p.m. they still play something. I waited for them to stop but it went for hours. I get up and went to warn them. After that I go to sleep again and they didn't bothered me again...

Hi, I'm Elliot. I just moved in My floor Neighbours are interested in music. They always play something, even it's day or night. 1 chilly night when I'm trying to sleep. Even though it's 12:00 PM, they still play something. I waited for them to stop but it went for hours. I get up. ~~Anne~~ And went to warn them. After that I go to sleep again and they didn't bothered me again.



APPENDIX D: Pre-test and Post-test

Post-test

Cambridge Assessment English

KEY ENGLISH TEST
for Schools

Reading and Writing

Sample Test

Time 1 hour

INSTRUCTIONS TO CANDIDATES

Do not open this question paper until you are told to do so.

Write your name, centre number and candidate number on your answer sheet if they are not already there.

Read the instructions for each part of the paper carefully.

Answer all the questions.

Read the instructions on the answer sheet.

Write your answers on the answer sheet. Use a pencil.

You **must** complete the answer sheet within the time limit.

At the end of the test, hand in both this question paper and your answer sheet.

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Part 1

Questions 1 – 6

For each question, choose the correct answer.

1



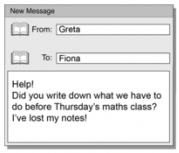
Go upstairs if you want to

A buy a dress for a party.

B pay less for something to read.

C find a game for a teenager.

2

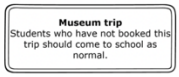


A Greta has forgotten when the next maths class is.

B Greta hopes Fiona will help her find her maths notes.

C Greta wants to know what the maths homework is.

3

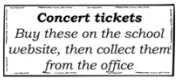


A Students not going on the trip cannot have a day off school.

B Students have to decide today if they would like to join the trip.

C Students going on the trip must come to school first.

4



A Pay for tickets online before picking them up at school.

B Check the website for information about when tickets will be available.

C Let the office know soon if you are planning to buy tickets.

5



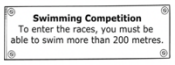
What should Andy do?

A invite some friends to play football

B tell Jake if he can join him later

C show Tom where Woodside School is

6



A Swimmers at all levels can enter this competition.

B This competition is for people who can swim over 200 metres.

C The races in the competition will be 200 metres long.

Part 2

Questions 7 – 13

For each question, choose the correct answer.

		Amy	Flora	Louisa
7	Whose class learnt about the garden competition from a TV programme?	**A**	**B**	**C**
8	Whose class grew some vegetables?	**A**	**B**	**C**
9	Whose class won a trip in the school garden competition?	**A**	**B**	**C**
10	Whose class painted flowers on their garden wall?	**A**	**B**	**C**
11	Whose class learnt about the insects in their garden?	**A**	**B**	**C**
12	Whose class got help from someone in a pupil's family?	**A**	**B**	**C**
13	Whose class chose flowers that were the same colour?	**A**	**B**	**C**

School gardens competition

Amy



Our class has just won a prize for our school garden in a competition – and they're going to make a TV film about it! The judges liked our garden because the flowers are all different colours – and we painted some more on the wall around it. My cousin gave us advice about what to grow – she's learning about gardening at college. We're planning to grow some vegetables next year. I just hope the insects don't eat them all!

Flora



Our teacher heard about the school garden competition on TV and told us about it. We decided to enter and won second prize! There's a high wall in our garden where many red and yellow climbing flowers grow and it looks as pretty as a painting! Our prize is a visit to a special garden where there are lots of butterflies and other insects. My aunt works there and she says it's amazing.

Louisa



The garden our class entered in the competition is very special. The flowers we've grown are all yellow! They look lovely on the video we made of the garden. We also grew lots of carrots and potatoes, and everyone says they taste fantastic. It was an interesting project. Our teacher taught us lots of things about the butterflies in our garden. We also watched a TV programme about them, and did some paintings to put on the classroom wall.

Part 3

Questions 14 – 18

For each question, choose the correct answer.

Starting at a new school

By Anna Gray, age 11

I've just finished my first week at a new school and I'd like to tell you about it. Like other children in my country, I went to primary school until I was eleven and then I had to go to a different school for older children. I loved my primary school but I was excited to move to a new school.

It was very strange on our first day. There were some kids from my primary school there, but most of the children in my year group were from different schools. But I soon started talking to the girl who was sitting beside me in maths. She lives near me so we walked home together. We're best friends now.

When I saw our timetable there were lots of subjects, some were quite new to me! Lessons are harder now. They're longer and the subjects are more difficult, but the teachers help us a lot.

At primary school we had all our lessons in one classroom. Now each subject is taught in a different room. It was difficult to find the classrooms at first because the school is so big. But the teachers gave us each a map of the school, so it's getting easier now.

The worst thing is that I have lots more homework to do now. Some of it is fun but I need to get better at remembering when I have to give different pieces of work to the teachers!

14 How did Anna feel about moving to a new school?

A worried about being with lots of older children

B happy about the idea of doing something different

C pleased because she was bored at her primary school

15 Who has become Anna's best friend at her new school?

A someone from her primary school

B someone she knew from her home area

C someone she met in her new class

16 What does Anna say about the timetable at her new school?

A It includes subjects she didn't do at primary school.

B She has shorter lessons than she had at her old school.

C It is quite difficult to understand.

17 Why couldn't Anna find her classrooms?

A She couldn't read a map.

B There was little time between lessons.

C The school building was very large.

18 What does Anna say about the homework she has now?

A She gets more help from some teachers than others.

B She thinks it is the hardest part of school life.

C She remembers everything she's told to do.

Part 4

Questions 19 – 24

For each question, choose the correct answer.

Wivenhoe hotel

Wivenhoe is a beautiful hotel in the countryside, with many rooms and an excellent restaurant. However, there is a big **(19)** ..... between Wivenhoe and other hotels. Firstly, Wivenhoe is part of a university, and secondly, its staff are all teenagers.

In fact, Wivenhoe is a hotel school for young people who are **(20)** ..... to get jobs in the hotel or restaurant **(21)** ..... . The students learn by helping staff in a real hotel, while their teachers **(22)** ..... them carefully. They do everything, from making beds and cleaning bathrooms to preparing menus and **(23)** ..... the telephone.

Some British people may think that a hotel run by students is a rather strange idea, but many visitors say that Wivenhoe is the best hotel they have ever **(24)** ..... at.

19	**A**	change	**B**	variety	**C**	difference
20	**A**	knowing	**B**	hoping	**C**	explaining
21	**A**	business	**B**	work	**C**	career
22	**A**	see	**B**	look	**C**	watch
23	**A**	calling	**B**	answering	**C**	speaking
24	**A**	entered	**B**	stayed	**C**	gone

Part 5

Questions 25 – 30

For each question, write the correct answer.
Write **one** word for each gap.

Example: 0 *for*

From: Anita
To: Sasha

Thank you **(0)** ..... your email. Living in Canada sounds really great! I'm glad that you like **(25)** ..... new house. What's the weather like? **(26)** ..... it very cold in Canada? Does it snow every day?

I heard that a **(27)** ..... of Canadians speak two languages – English and French.
Are you having French lessons? Do you watch programmes **(28)** ..... TV in French too?

How about the students in your new school? Are **(29)** ..... friendly? And send some photos too – I would like to know more about them.

I've got **(30)** ..... go now, but I'll write again soon.

Part 6

Question 31

You are going shopping with your English friend Pat tomorrow.
Write an email to Pat.

Say:

- where you want to meet
- what time you want to meet
- what you want to buy.

Write **25 words** or more.

Write the email on your answer sheet.

Part 7

Question 32

Look at the three pictures.
Write the story shown in the pictures.
Write **35 words** or more.



Write the story on your answer sheet.

Turn over ►

Post-test

CAMBRIDGE English

Key

Reading and Writing

Sample Test

Time 1 hour

INSTRUCTIONS TO CANDIDATES

Do not open this question paper until you are told to do so.

Write your name, centre number and candidate number on your answer sheet if they are not already there.

Read the instructions for each part of the paper carefully.

Answer all the questions.

Read the instructions on the answer sheet.

Write your answers on the answer sheet. Use a pencil.

You **must** complete the answer sheet within the time limit.

At the end of the test, hand in both this question paper and your answer sheet.

PV1
500/2416/4
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Cambridge English Entry Level Certificate in ESOL International (Entry 2)

Part 1

Questions 1 – 6

For each question, choose the correct answer.

1

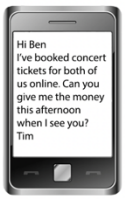


A The bicycle that's for sale was built for a child.

B Some parts of the bicycle must be changed.

C Debbie is selling the bike because she's too big for it now.

2



A Tim thinks Ben should look on the concert website.

B Tim hopes that Ben will be able to come with him.

C Tim wants to know if Ben can pay him back today.

3



A You get into the park by going this way.

B It is more expensive to go here alone.

C You will have fun if you come with friends.

4



A Emma knows that Lynne can't be at the party when it starts.

B Emma wants to go to the party a bit later than Lynne.

C Emma wants to go out with Lynne but not to the party.

5



A The ice cream shop is open for only 2 hours.

B Two ice creams will cost the same as one.

C You can get free ice creams all afternoon.

6



Why did Sophie write this message?

A to check if Anna has completed her homework

B to let Anna know what they did in class today

C to ask Anna to contact her about the homework

Part 2

Questions 7 – 13

For each question, choose the correct answer.

		Tasha	Danni	Chrissie
7	Who writes both a magazine and a blog?	**A**	**B**	**C**
8	Who says that studying and writing a blog at the same time can be hard?	**A**	**B**	**C**
9	Who answers questions from other people who read her blog?	**A**	**B**	**C**
10	Who plans to stop writing her blog soon?	**A**	**B**	**C**
11	Who didn't have many people reading her blog in the beginning?	**A**	**B**	**C**
12	Who asks a member of her family to help her write her blog?	**A**	**B**	**C**
13	Who says writing a blog is easier than some other types of writing?	**A**	**B**	**C**

Young blog writers

Tasha



Last year I wrote for my college magazine, which I found really difficult, but I don't think it's hard to write a good blog. Mine is about things from daily life that make me laugh. My older brother also has a blog, but we're writing about different subjects. We don't discuss what we're planning, but we read each other's blogs sometimes. I like giving advice to people who write in asking for it – it's good to know I've helped.

Danni



I started writing my popular film blog because I love movies. I like it when readers send me articles by email about a film they've seen, and I put these on my blog for everyone to read. I'm still at college, so I'm careful about spending too long on my blog, which is difficult as writing well takes time. I don't think I'll write it for much longer. I'm busy, and it's time to do something new.

Chrissie



I began writing on a school magazine. I stopped after a few years, but I missed it, so I started my own – I'm still writing it now! The blog's new for me, and I write about daily life. I get ideas from friends or my sister when I can't decide what to write about – we always think of something interesting, sad or serious. At first, almost nobody visited my site, but now more do, I've had some lovely comments.

Part 3

Questions 14 – 18

For each question, choose the correct answer.

A family of dancers



The women in the Watson family are all crazy about ballet. These days, Alice Watson gives ballet lessons, but for many years, she was a dancer with the National Ballet Company. Her mother, Hannah, also had a full-time job there, making costumes for the dancers.

Alice's daughter Demi started learning ballet as soon as she could walk. 'I never taught her,' says Alice, 'because she never let me.' Now aged sixteen, Demi is a member of the ballet company where her mother was the star dancer for many years.

Alice's husband, Jack, is an electrician. They met while he was working at a theatre where she was dancing and got married soon after. 'When Demi started dancing, the house was too small for her and Alice to practise in so I made the garage into a dance studio. Now the living room is nice and quiet when I'm watching television!' he says.

Last month, Demi was invited to dance in the ballet *Swan Lake*. Of course, Alice and Hannah were in the audience and even Jack was there, which made it very special for Demi. Jack says, 'I'm not that interested in ballet myself but it's fantastic seeing Demi taking her first steps with Alice's old company!' Demi was wearing a dress that Hannah made for Alice many years before.

'It was very exciting for all of us,' says Hannah. 'Demi's way of dancing is very like Alice's. I know I'm her grandmother, but I think she has a great future!'

14 What is Alice Watson's job now?

A dancer

B teacher

C dress-maker

15 Demi had her first ballet lessons

A at a very young age.

B at the National Ballet Company.

C from her mother.

16 Jack helped his wife and daughter by

A moving to a larger house.

B letting them use the living room for dancing.

C making a place for them to practise in.

17 What was the best thing about the *Swan Lake* show for Demi?

A It was her first show with the company.

B All her family were there.

C She was wearing a new dress.

18 Hannah says that Demi

A will be a star one day.

B is her favourite granddaughter.

C dances better than Alice did.

Part 4

Questions 19 – 24

For each question, choose the correct answer.

William Perkin

William Perkin was born in London in 1838. As a child he had many hobbies, including model making and photography. But it was the **(19)**..... of chemistry that really interested him. At the age of 15, he went to college to study it.

While he was there, he was **(20)** .....to make a medicine from coal. This didn't go well, but when he was working on the problem, he found a cheap **(21)** ..... to make the colour purple. At that **(22)**.....it was very expensive to make clothes in different colours. William knew he could make a business out of his new colour. Helped by his father and brother, William **(23)** .....his own factory to make the colour. It sold well, and soon purple clothes **(24)** .....very popular in England and the rest of the world.

19	**A**	class	**B**	subject	**C**	course
20	**A**	thinking	**B**	trying	**C**	deciding
21	**A**	way	**B**	path	**C**	plan
22	**A**	day	**B**	time	**C**	hour
23	**A**	brought	**B**	turned	**C**	opened
24	**A**	began	**B**	arrived	**C**	became

Part 5

Questions 25 – 30

For each question, write the correct answer.
Write **one** word for each gap.

Example: 0 you

From: Maria
To: John

I hope **(0)**.....are well. I'm having a great holiday here in Thailand. Our hotel is very nice and there are a lot of good restaurants near it.

Yesterday morning, we went to **(25)**..... lovely beach. We had to leave before lunch because it was very hot. We went to a party **(26)**.....the evening in the centre **(27)**.....the town. Everyone had a good time and we got back at midnight. Tomorrow, we want to **(28)** ..... on a boat trip or **(29)**..... tennis.

I'll show you my photos **(30)**..... I get back.

See you soon,

Maria

Part 6

Question 31

You want to go swimming on Saturday with your English friend, Toni.
Write an email to Toni.

In your email:

- ask Toni to go swimming with you on Saturday
- say where you want to go swimming
- say how you will travel there.

Write **25 words** or more.

Write the email on your answer sheet.

Part 7

Question 32

Look at the three pictures.
Write the story shown in the pictures.
Write **35 words** or more.



Write the story on your answer sheet.

Appendix E: The Official Approval of the Institute of Educational Sciences

T.C.
BURSA ULUDAĞ ÜNİVERSİTESİ
Eğitim Bilimleri Enstitüsü Müdürlüğü

Sayı: E-20585590-302.08.01-15645 31.03.2024
Konu: Gizem Cengiz KULAKSIZ'ın Araştırma İzni

YABANCI DİLLER EĞİTİMİ ANABİLİM DALI BAŞKANLIĞINA

İlgi : 09.01.2024 tarihli ve 56643073-300-14275 sayılı yazınız.

Enstitünüz İngiliz Dili Eğitimi Yüksek Lisans Programı öğrencisi Gizem Cengiz KULAKSIZ'ın "Yapay Zeka Tabanlı Dil Modeli: Chat GPT Uygulamasının Yabancı Dil Olarak İngilizce Öğretimi Kapsamında Yazma Becerileri Üzerindeki Etkisi" konulu tez çalışmasına ilişkin Bursa Valiliği İl Millî Eğitim Müdürlüğünden alınan yazı örneği ekte gönderilmiştir.

Bilgilerinizi ve konunun ilgili öğrenci ile danışmanı Prof. Dr. Ayşegül Amanda YEŞİLBURSA'ya tebliğ edilmesi hususunda gereğini rica ederim.

Prof. Dr. Kazım YOLDAŞ
Müdür

Ek:
1-Yazı Örneği
2-Ek1
3-Ek2

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Belge Doğrulama Kodu:fk9mSTSumEa-FbfdSIHMoA Belge Doğrulama Adresi: https://udos.uludag.edu.tr/Teyit/

BUÜ Eğitim Bilimleri Enstitüsü Görükle Kampüsü 16059 Nilüfer/BURSA
Telefon No: 02242942884 Faks No: 0(224)294 0975
e-Posta: fdemirci@uludag.edu.tr İnternet Adresi: uludag.edu.tr/egitimbilimleri
Kep Adresi: uludag.rektorluk@hs03.kep.tr

Bilgi için: Filiz DEMİRCİ
Memur
Telefon No: 02242942884

Bu belge UDOS ile hazırlanmıştır.

1/1

Appendix F: Ethics Committee Approval

BURSA ULUDAĞ ÜNİVERSİTESİ
ARAŞTIRMA VE YAYIN ETİK KURULLARI
(Sosyal ve Beşeri Bilimler Araştırma ve Yayın Etik Kurulu)
TOPLANTI TUTANAĞI

OTURUM TARİHİ	OTURUM SAYISI
26 OCAK 2024	2024-01

KARAR NO 34: Eğitim Bilimleri Enstitüsü Müdürlüğü'nden alınan Yabancı Diller Eğitimi Ana Bilim Dalı öğretim üyelerinden Prof. Dr. Ayşegül Amanda YEŞİLBURSA'ın DANIŞMANLIĞINDA İngiliz Dili Eğitimi Bilim Dalı yüksek lisans programı öğrencisi Gizem Cengiz KULAKSIZ'ın "Yapay Zeka Tabanlı Dil Modeli: Chat GPT Uygulamasının Yabancı Dil Olarak İngilizce Öğretimi Kapsamında Yazma Becerileri Üzerindeki Etkisi" konulu tez çalışması kapsamında uygulanacak ölçek ve test sorularının değerlendirilmesine geçildi.

Yapılan görüşmeler sonunda; Eğitim Bilimleri Enstitüsü, Yabancı Diller Eğitimi Ana Bilim Dalı öğretim üyelerinden Prof. Dr. Ayşegül Amanda YEŞİLBURSA'ın DANIŞMANLIĞINDA İngiliz Dili Eğitimi Bilim Dalı yüksek lisans programı öğrencisi Gizem Cengiz KULAKSIZ'ın "Yapay Zeka Tabanlı Dil Modeli: Chat GPT Uygulamasının Yabancı Dil Olarak İngilizce Öğretimi Kapsamında Yazma Becerileri Üzerindeki Etkisi" konulu tez çalışması kapsamında uygulanacak ölçek ve test sorularının fikri, hukuki cezai ve idari bakımından metot ve ölçeğine ilişkin sorumluluğu başvurucuya (sorulara verilecek cevaplar ceza kanunları bakımından suç teşkil etmesi durumunda ilgili makamlara bildirme yükümlülüğü ilgili sorumlu araştırmacı, yardımcı, danışman ve diğerleri) ait olmak üzere uygun olduğuna oybirliği ile karar verildi.

Appendix G: Informed Parental Consent Form

Sayın Veli;

Çocuğunuzun katılacağı bu çalışma, "Yapay zeka tabanlı dil modeli: Chat GPT uygulamasının yabancı dil olarak İngilizce öğretimi kapsamında yazma becerileri üzerindeki etkisi" adıyla, 01/03/2024 – 24/05/2024 tarihleri arasında yapılacak bir araştırma uygulamasıdır.

Araştırmanın Hedefi: Araştırma yarı deneysel bir tasarım ile, Chat GPT'yi İngilizce yazma derslerinde geri bildirim aracı olarak kullanmanın öğrencilerin yazma performansı üzerindeki potansiyel etkisini araştıracağı 8 haftalık bir uygulama dönemini içerecek ve özellikle tutarlılık ve uyum, kelime bilgisi ve doğru dil bilgisi kullanımını inceleyecektir.

Araştırma Uygulaması: Anket / Görüşme / Gözlem şeklindedir.

Araştırma T.C. Milli Eğitim Bakanlığı'nın ve okul yönetiminin de izni ile gerçekleşmektedir. Araştırma uygulamasına katılım tamamıyla gönüllülük esasına dayalı olmaktadır. Çocuğunuz çalışmaya katılıp katılmamakta özgürdür. Araştırma çocuğunuz için herhangi bir istenmeyen etki ya da risk taşımamaktadır. Çocuğunuzun katılımı **tamamen sizin isteğinize bağlıdır**, reddedebilir ya da herhangi bir aşamasında ayrılabilirsiniz. Araştırmaya katılmamama veya araştırmadan ayrılma durumunda öğrencilerin akademik başarıları, okul ve öğretmenleriyle olan ilişkileri etkilemeyecektir.

Çalışmada öğrencilerden kimlik belirleyici hiçbir bilgi istenmemektedir. Cevaplar tamamıyla gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir.

Uygulamalar, genel olarak kişisel rahatsızlık verecek sorular ve durumlar içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden çocuğunuz kendisini rahatsız hissederse cevaplama işini yarıda bırakıp çıkmakta özgürdür. Bu durumda rahatsızlığın giderilmesi için gereken yardım sağlanacaktır. Çocuğunuz çalışmaya katıldıktan sonra istediği an vazgeçebilir. Böyle bir durumda veri toplama aracını uygulayan kişiye, çalışmayı tamamlamayacağını söylemesi yeterli olacaktır. Anket çalışmasına katılmamak ya da katıldıktan sonra vazgeçmek çocuğunuza hiçbir sorumluluk getirmeyecektir.

Onay vermeden önce sormak istediğiniz herhangi bir konu varsa sormaktan çekinmeyiniz. Çalışma bittikten sonra bizlere telefon veya e-posta ile ulaşarak soru sorabilir, sonuçlar hakkında bilgi isteyebilirsiniz. Saygılarımızla,

Araştırmacı : Gizem CENGİZ KULAKSIZ

İletişim bilgileri :

Velisi bulunduğum ..... sınıfı ..... numaralı öğrencisi ..... ……..'in yukarıda açıklanan araştırmaya katılmasına izin veriyorum.
(Lütfen formu imzaladıktan sonra çocuğunuzla okula geri gönderiniz*).

..../...../.....

İsim-Soyisim İmza:

Veli Adı-Soyadı :

Telefon Numarası:

Appendix H: Writing Tasks Rubric

KEY 2 Writing Rubric

FEATURES	0	1	2	3	4	5
GRAMMAR	* The text doesn't include anything asked for. It includes irrelevant information, or the student hasn't understood what they had to write about.	* Irrelevances and misinterpretation of task may be present. * Target reader is minimally informed. * Produces few simple grammatical forms with only limited control.	Performance shares features of Band 1 and 3	* Minor irrelevances and/or omissions may be present. * Target reader is on the whole informed. * Uses simple grammatical forms with some degree of control.	Performance shares features of Band 3 and 5	* The text includes everything asked for in the task. * All content is relevant to the task. * Uses simple and grammatical forms with a good degree of control. * There are errors, but the reader can still understand the text.
COHERENCY	* The text is completely unconnected.	* Little or no use of punctuation and connectors, though punctuation and simple connectors (i.e. and) may on occasion be used.	Performance shares features of Band 1 and 3	* Text is connected using basic, high-frequency linking words. * Some use of punctuation (e.g. capital letters at the beginning of a sentence, full stops at the end) * Simple connectors may be used (e.g. and, but).	Performance shares features of Band 3 and 5	* Text is connected and coherent, using basic linking words (and, so, because etc.) and a limited number of cohesive devices.(For example, using pronouns she, theirs, or relative clauses ... which) * Text is easy to understand because the ideas and sentences are well connected. * Punctuation used correctly
VOCABULARY	* Unable to produce full sentences.	* Produces basic vocabulary of isolated words and phrases.	Performance shares features of Band 1 and 3	* Uses basic vocabulary reasonably appropriately. * Errors may impede meaning at times.	Performance shares features of Band 3 and 5	* Uses everyday vocabulary generally appropriately, while occasionally overusing certain lexis

Appendix I: CV

<table>
<tr><td colspan="4">ÖZGEÇMİŞ</td></tr>
<tr><td>Adı-Soyadı</td><td colspan="3">Gizem CENGİZ KULAKSIZ</td></tr>
<tr><td>Eğitim Durumu</td><td colspan="2">Başlama-Bitirme</td><td>Kurum Adı</td></tr>
<tr><td>Lisans</td><td>2005</td><td>2009</td><td>Bursa Uludağ Üniversitesi</td></tr>
<tr><td>Yüksek Lisans</td><td>2021</td><td>2024</td><td>Bursa Uludağ Üniversitesi</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="4">Çalışma Durumu</td><td colspan="2">Başlama-Ayrılma</td><td>Kurum Adı</td></tr>
<tr><td>2013</td><td>-</td><td>Milli Eğitim Bakanlığı</td></tr>
<tr><td>2010</td><td>2011</td><td>Özel 3 Mart İlkokulu</td></tr>
<tr><td>2009</td><td>2010</td><td>Şahinkaya Dershanesi</td></tr>
<tr><td>Gönüllü Çalışmalar</td><td>2018</td><td>2021</td><td>Bursa Gençlik ve Eğitim Derneği</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Bildiği Diller</td><td colspan="3">İngilizce (C2), Almanca (A2)</td></tr>
<tr><td rowspan="3">Sertifika ve Eğitimler</td><td colspan="3">N.Zahles Collage of Education / January-May 2008
Certificate of attendance as an exchange student and teaching internship
Kopenhag/Danimarka</td></tr>
<tr><td colspan="3">University College Copenhagen
Globalization and Professional Change
An international module in English for future teachers and social educators
Kopenhag/Danimarka</td></tr>
<tr><td colspan="3">N.Zahles Collage of Education/ August-December 2008
Certificate of attendance as an exchange student and teaching internship
Kopenhag/Danimarka</td></tr>
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