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**EMPLOYING CHATGPT TO IMPROVE HIGH SCHOOL
STUDENTS' WRITING SKILLS BY PROVIDING
FEEDBACK ON TOPIC-SPECIFIC
WRITING TASKS**

MASTER'S THESIS

Oğuzhan OZAN

Thesis Advisor: Asst. Prof. Serpil AZAP

TOKAT – 2024

DECLARATION OF COMPLIANCE WITH ETHICAL RULES

I declare that my master's thesis titled "Employing ChatGPT to Improve High School Students' Writing Skills by Providing Feedback on Topic-Specific Writing Tasks", prepared under the supervision of Asst. Prof. Serpil Azap, is an original work that complies with scientific ethical values and rules. I accept any legal consequences that may arise if otherwise determined.

08/10/2024

Oğuzhan OZAN

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ABSTRACT

EMPLOYING CHATGPT TO IMPROVE HIGH SCHOOL STUDENTS' WRITING SKILLS BY PROVIDING FEEDBACK ON TOPIC-SPECIFIC WRITING TASKS

Ozan, Oğuzhan

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The integration of artificial intelligence technology in language teaching has emerged as a potential method to improve students' writing skills in today's digital era. This study aims to decide whether using ChatGPT, an artificial intelligence-integrated chatbot, is an effective method to improve high school students' writing skills or not. The study was carried out with 30 students in a state high school. The research employed a quasi-experimental approach, which included a pre-test, post-test, and a control group. The study utilized both quantitative and qualitative research methods. Participants were given 6 consecutive writing tasks and got feedback from their teacher and ChatGPT. Both the feedback they got and overall scores compared to reach the study's goal. After completing writing tasks, students who got their feedback from ChatGPT were given a questionnaire to evaluate their experience. In the qualitative part of the study, semi-structured interviews were conducted with 8 participants from the experimental group. The data analysis involved the steps of "description, analysis, interpretation." The findings of the study indicated that using ChatGPT for feedback on students' writing tasks can lead to more significant, consistent, and sudden improvements in student writing performance compared to traditional feedback. Students in the interviews indicated that receiving feedback in a supportive, non-judgmental environment made them feel safe and less stressed. ChatGPT, by providing anonymous, instant feedback, can help reduce the stress and anxiety often

associated with traditional classroom feedback. These results support the integration of AI-driven feedback systems in language education settings to complement existing teaching methods, offering scalable and personalized support to enhance student learning outcomes.

Keywords: Artificial Intelligence (AI), EFL, Writing Skills, ChatGPT, Personalized Feedback



ÖZET

CHATGPT' NİN KONUYA ÖZGÜ YAZMA GÖREVLERİNİ DEĞERLENDİREREK VE GERİ BİLDİRİM SAĞLAYARAK LİSE ÖĞRENCİLERİNİN YAZMA BECERİLERİNİ GELİŞTİRMEK İÇİN KULLANIMI

Ozan, Oğuzhan

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Yapay zekânın dil öğretimine entegrasyonu, günümüz dijital çağında öğrencilerin yazma becerilerini geliştirmek için potansiyel bir yöntem olarak ortaya çıkmıştır. Bu çalışma, yapay zekâ entegreli bir chatbot olan ChatGPT'nin lise öğrencilerinin yabancı dilde yazma becerilerini geliştirmek için etkili bir yöntem olup olmadığını belirlemeyi amaçlamaktadır. Çalışma bir devlet lisesindeki 30 öğrenci ile gerçekleştirilmiştir. Araştırmada ön test, son test ve kontrol grubunu içeren yarı deneysel bir yaklaşım kullanılmıştır. Çalışmada hem nicel hem de nitel araştırma yöntemleri kullanılmıştır. Katılımcılara birbirini takip eden 6 yazma görevi verilmiş, öğretmenlerinden ve ChatGPT'den geri bildirim almışlardır. Çalışmanın amacına ulaşmak için hem aldıkları geri bildirimler hem de genel puanlar karşılaştırılmıştır. Yazma görevlerini tamamladıktan sonra ChatGPT'den geri bildirim alan öğrencilere deneyimlerini değerlendirmeleri için bir anket verilmiştir. Çalışmanın nitel kısmında ise deney grubundan 8 katılımcı ile yarı yapılandırılmış görüşmeler gerçekleştirilmiştir. Veri analizi “betimleme, analiz, yorumlama” adımlarını içermektedir. Çalışmanın bulguları, öğrencilerin yazma görevlerine geri bildirim için ChatGPT kullanımının, geleneksel geri bildirimle kıyasla öğrencilerin yazma performansında daha önemli, tutarlı ve ani gelişmelere yol açabileceğini göstermiştir. Görüşmelere katılan öğrenciler, destekleyici ve yargılayıcı olmayan bir ortamda geri bildirim almanın kendilerini güvende hissetmelerini ve daha az stresli olmalarını sağladığını belirtmişlerdir. ChatGPT, anonim ve anlık geri bildirim sağlayarak, geleneksel sınıf geri bildirimleriyle sıklıkla ilişkilendirilen stres ve kaygıyı azaltmaya yardımcı olabilir. Bu sonuçlar, mevcut

öğretim yöntemlerini tamamlamak için dil eğitimi ortamlarında yapay zeka odaklı geri bildirim sistemlerinin entegrasyonunu desteklemekte ve öğrencilerin öğrenme çıktılarını geliştirmek için ölçeklenebilir ve kişiselleştirilmiş destek sunmaktadır.

Anahtar Kelimeler: Yapay Zeka (YZ), YDE, Yazma Becerileri, ChatGPT, Kişiselleştirilmiş Geribildirim



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1. INTRODUCTION

1.1. Background of the Study

As with other fields, uncontrollable and rapid technological advances have highly affected language learning and teaching. The way people learn languages has changed immensely due to technological advancements. Language learning apps, online platforms, and immersive technologies have revolutionized how people learn languages. One of the most important perks of using tech to learn new languages is that it allows for a hands-on and attractive adventure. Instead of just absorbing data, college students can actively participate in their learning method through amusing video games, interactive quizzes, and multimedia content material. These interactive components enhance the enjoyment of learning, help retain information, and motivate learners.

Technology also allows learners to customize their language learning journey. With the help of Artificial Intelligence (AI) algorithms, newbies can get instant comments on their pronunciation, grammar, and vocabulary usage. These personalized comments assist students in recognizing their strong points and areas needing improvement, fostering awareness of aspects that require development. Additionally, beginners can tune their development through the years, set dreams, and have fun milestones. Technology integration into language learning and teaching processes has gained significant interest from researchers and is still a trendy subject. The term artificial intelligence (AI) has entered our lives, changed the way we use technology, and started a new era.

In the past two years, ChatGPT has become increasingly prevalent in various fields, including language teaching and learning. A study by Marzuki et al. (2023) assessed the impact of AI writing tools on student writing, particularly in terms of components and organization, as perceived by EFL teachers. The findings indicated that integrating AI writing tools can improve the quality of EFL student writing. Additionally, a study by Mohammed et al. (2023) examined the use of ChatGPT by Arab postgraduate students in India for their higher studies. The results suggested that participants found ChatGPT beneficial, impacting their academic writing, language competency, and achievement.

Nguyen (2023) conducted a study at Van Lang University, Vietnam, to learn about EFL teachers' thinking on using ChatGPT in writing sessions. The study's results showed that EFL instructors at Van Lang University are willing to use ChatGPT in writing lessons. Another study by Algaraady and Mahyoob (2023) examined how well the ChatGPT could identify mistakes in writing made by EFL learners compared to human teachers. The study's results indicate that ChatGPT can help detect basic writing errors. However, it cannot substitute the knowledge and experience of human instructors in identifying more intricate writing issues. Many studies have been conducted on user thoughts and possible fields of using ChatGPT. However, more studies are needed on effectively executing activities that make the most of ChatGPT's potential in the context of teaching and learning.

1.2. Purpose of the Study

The application of ChatGPT in education can improve teaching methods by offering individualized feedback, creating responses to learners' inputs, and promoting participation and inspiration. When the existing literature is reviewed, it has been observed that there is a deficiency in the literature related to the effect of ChatGPT on improving the writing skills of Turkish high school EFL learners. This study aims to see if it is an effective method to integrate ChatGPT into the language teaching and learning process by providing quick and constructive feedback on Turkish high school students' writing tasks. To achieve this goal, the research is structured around the following questions;

1. Is there a significant difference between the achievements of the experimental group using the ChatGPT bot for feedback and the control group that gets feedback from the teacher for their writing tasks?
2. Is using the ChatGPT bot to improve high school students' writing skills an effective method in language teaching?
3. What are the opinions of the students in the experimental group about studying with the ChatGPT bot for feedback on their writing tasks?

1.3. Significance of the Study

Artificial intelligence (AI) has been progressively integrated into various educational settings, sparking considerable interest in its impact on language acquisition. Research by Gali, Ayyad, Abu-Naser, and Laban (2018) demonstrated that using AI as a tutor for grammar instruction created an engaging learning environment and substantially improved students' understanding of grammar. Additionally, Park (2019) supported this view, highlighting how AI-based grammar checkers could effectively reduce grammatical errors in students' written assignments. Further emphasizing the benefits of AI, Dewi et al. (2021) reiterated its potential for enhancing students' language skills.

Integrating AI into language learning and teaching has been shown to improve learning outcomes for students, providing them with various opportunities for regular language practice (Fitria, 2021). Chatbots, one of the most popular AI technologies, have been widely studied in educational research. Chatbots are practical and accessible tools that have the potential to be used as effective teaching aids (Haristiani, 2020). They offer quick responses to learners' queries, which has been found to enhance student learning outcomes. Research by Winkler and Soellner (2018) has indicated that chatbots serve as conversational companions that significantly improve learning results and student satisfaction. Additionally, chatbots are considered valuable instructors, providing personalized support, quick access to educational materials, and automated assessment of students' learning capabilities (Durall & Kapros, 2020).

Writing is an essential skill used in various contexts, such as business and education, and it plays a crucial role in acquiring a second language (Klimova, 2012). Additionally, educators believe mastering writing in a second language is challenging as it involves multiple processes like brainstorming, outlining, writing, and revising (Oshima & Hogue, 2007). Therefore, teachers' guidance and regular feedback are vital in writing classes. They facilitate improved teacher and student communication, enhancing writing skills (Phung, 2020).

Feedback is often regarded as a significant factor affecting student learning and accomplishment (Hattie & Timperley, 2007). However, traditional feedback methods often face challenges, including delays, inconsistent quality, and limited personalization due to teacher time and resource constraints. The need for effective feedback is particularly pressing in writing instruction, where students require timely and specific guidance to improve their skills. Engaging students in their learning processes is crucial for academic success, and feedback plays a pivotal role in maintaining this engagement (Carless, 2015). Traditional feedback methods sometimes struggle to motivate students significantly when feedback is delayed or lacks specificity. One of the ongoing challenges in education is assuring that all students, regardless of background or ability, receive high-quality support tailored to their needs. AI-driven feedback systems are likely to provide consistent, equitable feedback to all students, addressing disparities in learning opportunities.

The significance of this study lies in its exploration of AI-driven feedback as a means to enhance student writing skills, engage learners, and provide equitable learning opportunities. By addressing the critical need for effective and consistent feedback, the research aims to offer essential insights into the potential of AI in education, informing future practices and policies that harness the power of technology to support student success. The research addresses calls for more empirical studies that explore how AI can support personalized learning, improve teaching efficiency, and ultimately enhance student outcomes. The study seeks to understand the effectiveness of AI feedback. It emphasizes the need to educate students about responsible AI use, data privacy, and the potential biases inherent in AI systems.

1.4. Conceptual Definitions

Artificial Intelligence (AI): One of the common ideas describes AI as a kind of computational creativity that reflects technological progress (Cheng & Day, 2014). AI is mainly defined as a computer science that can execute cognitive activities similar to human brains (Baker & Smith, 2019).

Chatbot: A chatbot is a computer program that converses with a human being, usually through the Internet (Oxford Dictionary Online, 2020).

ChatGPT: ChatGPT is an AI-powered assistant that is designed to understand natural language patterns and produce appropriate responses. It achieves this by being trained on large datasets of conversational data, which enables it to learn and recognize natural language patterns (Greyling, 2022).

Natural Language Processing (NLP): NLP, or Natural Language Processing, is a field of AI that enables communication between humans and computers using language. It empowers computers to understand, interpret, and generate language in a way that is meaningful to humans. NLP encompasses tasks like text analysis, machine translation, and speech recognition and plays a crucial role in automated writing evaluation and feedback systems (Jurafsky & Martin, 2021).

2. LITERATURE REVIEW

2.1. Artificial Intelligence (AI)

Artificial Intelligence (AI) has emerged as one of the most revolutionary technologies in the 21st century, significantly impacting various sectors, including language education. The evolution of AI spans decades, from theoretical concepts to practical implementations that shape human interaction with technology. The term "artificial intelligence" was first introduced by John McCarthy in 1956 at the Dartmouth Conference, where a group of researchers convened to explore the potential of creating intelligent machines. McCarthy defined AI as "the science and engineering of making intelligent machines" (McCarthy, 2006). The idea of machines performing tasks that typically require human intelligence, such as problem-solving, reasoning, and learning, was groundbreaking at the time. However, the origins of AI can be traced back to earlier works, including Alan Turing's influential paper "Computing Machinery and Intelligence" (1950), which proposed the concept of machines capable of simulating human thought in what is now known as the Turing Test.

In the early years following the Dartmouth Conference, AI research focused primarily on symbolic AI, which attempted to simulate intelligent behavior through rule-based systems. This approach dominated AI research in the 1960s and 1970s, developing expert systems designed to solve specific problems, such as medical diagnosis and chess playing. The limitations of early AI systems prompted researchers to explore new paradigms, including machine learning and neural networks. The resurgence of AI research in the 1980s was marked by the development of algorithms that could learn from data rather than rely solely on predefined rules. One of the key breakthroughs during this period was the backpropagation algorithm, which made it feasible to train multi-layer neural networks, also known as deep learning models (Rumelhart et al., 1986).

The shift from rule-based AI to learning-based AI-enabled machines to handle complex tasks such as pattern recognition and natural language processing (NLP). By the early 21st century, advances in computational power and the availability of large datasets had spurred

rapid progress in AI technologies, leading to significant achievements in fields such as image recognition, speech synthesis, and language translation.

In 2011, IBM's Watson made headlines by winning the Jeopardy! quiz show, showcasing the potential of AI. Google's AlphaGo also made waves in 2016 by defeating a world champion in the game of Go, highlighting AI's ability in strategic thinking (Silver et al., 2016). These achievements were made possible by deep learning techniques, enabling AI systems to understand complex data patterns. In education, AI integration has transformed traditional teaching methods, offering new resources for both educators and students. Natural Language Processing (NLP), a subset of AI, has played a crucial role in this transformation, powering applications like automated writing evaluation tools and conversational agents. These tools have revolutionized language learning through real-time feedback and personalized experiences.

A study conducted by Warschauer (2020) highlights the growing importance of AI-driven tools in language education, particularly in the context of English as a Foreign Language (EFL). Computerized writing evaluation systems like Grammarly and Criterion use machine learning algorithms to assess written texts and provide feedback on grammar, vocabulary, and overall coherence. These tools assist learners in improving their writing skills and reduce teachers' workload by automating the assessment process. Furthermore, AI-driven systems can track learner progress over time, offering individualized recommendations based on specific learning needs (Burstein et al., 2004). Conversational AI, often deployed as chatbots, has also gained traction in language education. These chatbots, powered by NLP, enable learners to hone their language abilities within a simulated dialogue setting. Research conducted by Fryer et al. (2019) demonstrated that students who engaged with AI-powered chatbots improved speaking and listening skills, as they could practice language in a low-pressure setting.

Moreover, these AI-driven systems can be programmed to provide immediate corrective feedback, helping learners to refine their language use. AI's role in language education is not limited to individual learning tools. It has also enabled the development of flexible learning platforms that use data analytics to adapt educational content to each learner's

abilities and preferences. These platforms, such as Duolingo and Lingvist, leverage AI algorithms to adjust the difficulty level of exercises and provide personalized vocabulary lists, allowing learners to advance at their own pace. The adaptive nature of these systems fosters learner autonomy and supports more effective language acquisition (Kang & Lee, 2017).

Dewi et al. (2021) examined AI-integrated apps like Duolingo and Grammarly to assess their impact on educational studies. Their findings demonstrated that AI has a positive influence on English language learning. Adiguzel, Kaya, and Cansu (2023) conducted a comprehensive study on AI technologies in education, outlining potential benefits such as increased motivation, personalized learning, improved communication skills, and streamlined assessment processes. They also highlighted ethical concerns, including data reliability, potential biases, privacy issues, the role of educators, reduced human interaction, overreliance on technology, intellectual property rights, and transparency and accountability in AI decision-making processes.

2.2. Chatbots

Chatbot is an AI-powered conversational agent that can communicate with users through natural language. Chatbots rely on Natural Language Processing (NLP) and Machine Learning (ML) algorithms to comprehend and generate human language. Early chatbots, such as ELIZA (1966), developed by Joseph Weizenbaum, mimicked human conversation using pre-programmed scripts to respond to user inputs (Weizenbaum, 1966). However, these early systems were limited by their inability to adapt to complex or ambiguous language. With advancements in AI, modern chatbots have become far more sophisticated, utilizing deep learning techniques to process language and generate more contextually relevant responses.

Chatbots can perform diverse functions, from answering questions to holding extended conversations. These developments have paved the way for their integration into education, where they serve as virtual tutors, providing customized and interactive learning experiences. The use of chatbots in education has developed significantly in recent years,

particularly as institutions seek innovative solutions to enhance teaching and learning. Chatbots can be deployed across various educational settings, from providing academic support to facilitating communication between students and educators. One prominent example is the chatbot Jill Watson, developed by researchers at Georgia Tech University, which served as a virtual teaching assistant for an online course (Goel & Polepeddi, 2016). This chatbot responded to student inquiries and facilitated discussions, demonstrating the potential of chatbots to support large-scale educational programs. In addition to supporting administrative tasks, chatbots are increasingly used as virtual tutors that offer personalized learning pathways. These chatbots adapt to specific learner needs, providing instant feedback and customized exercises.

A study conducted by Xu et al. in 2019 emphasized the positive impact of chatbot tutors on student engagement and learning outcomes. The research revealed that students who utilized chatbots showed increased motivation to complete assignments and displayed a deeper grasp of the course material. This finding is consistent with broader studies on the use of AI in education, highlighting the potential of personalized learning systems to boost student performance (Luckin et al., 2016). In contrast to traditional classroom settings, where students may feel hesitant to ask questions, chatbots provide a supportive and non-judgmental environment for learners to seek assistance. This fosters active learning and allows students to interact with the content at their own pace.

Chatbots are available 24/7, particularly useful for distance education and asynchronous learning environments (Fryer et al., 2019). Chatbots can provide differentiated instruction based on each learner's progress, offering targeted feedback and guidance. For instance, students who struggle with a particular concept can receive additional practice and explanations, while more advanced students can be challenged with higher-level tasks. This personalized approach helps ensure all students achieve their learning goals (Zou et al., 2019). Chatbots have shown particular promise in foreign language education, providing learners with opportunities for conversational practice in a low-pressure environment. One of the biggest challenges in language learning is gaining sufficient speaking practice, especially for students who may not have access to native speakers or language immersion

programs. Chatbots address this challenge by simulating realistic conversations in the target language, allowing learners to exercise speaking, listening, and writing skills.

Research by Fryer et al. (2019) demonstrated that chatbot interactions could significantly improve language learners' speaking skills by providing a platform for regular practice. In their study, students who used chatbots to practice English reported increased confidence and fluency, as they could converse without fearing making mistakes in front of their peers. Similarly, a study by Tegos and Demetriadis (2017) found that learners who engaged with chatbots for language practice showed notable improvements in vocabulary acquisition and grammar accuracy. Chatbots also play a valuable role in providing corrective feedback, which is crucial for language development. Through NLP, chatbots can detect grammatical errors, inappropriate word usage, and incorrect sentence structures, offering real-time corrections to learners. This immediate feedback helps reinforce language rules and encourages learners to self-correct, an essential aspect of language acquisition (Chung et al., 2020). Chatbots can also simulate real-life scenarios, such as requesting food in a restaurant or asking for directions, helping learners apply their language skills in practical contexts. Chatbots can adapt to different language proficiency levels, offering beginner learners simple dialogues with visual aids, while more advanced learners can engage in complex discussions or debates. This flexibility makes chatbots a valuable tool for language teachers seeking to provide differentiated instruction based on each student's ability (Warschauer, 2020).

While there is a significant amount of research on the creation and implementation of chatbots, there are relatively few studies that focus on their application in educational contexts (Yildiz, 2022). The use of chatbots varies in stages of language learning. From vocabulary learning to getting into authentic conversations, they can facilitate learners many different practice opportunities. On the other hand, they can be employed by the teachers to give quick feedback and use them as assessment and grading tools. The student-to-teacher ratio in schools is on the rise, leading to a reduction in the amount of time teachers can dedicate to each student (Deveci et al., 2021). Grudin and Jacques (2019) suggest that chatbots can serve as a useful learning tool by offering students feedback on

previous topics and boosting their confidence to participate in apps by allowing them to ask questions without fear of judgment (Verleger & Pembridge, 2018). In the study by Yildiz (2022), the encounters of Turkish students who use chatbot apps to learn English were investigated. The study was conducted with 21 English language learners of different ages. The research findings indicate that despite some limitations, chatbots are perceived as a sincere and reliable friend who helps to learn English. Additionally, students who feel uneasy communicating with other people admitted that using chatbot apps to learn English was more convenient for them.

2.3. ChatGPT

In November 2022, OpenAI introduced ChatGPT, an advanced chatbot powered by deep learning and a large language model. ChatGPT is designed to assist users with creative and technical writing tasks, offering capabilities such as creating, editing, and iterating content. To enhance its performance, ChatGPT utilizes techniques like supervised fine-tuning, reinforcement learning, and conversational prompts (Greyling, 2022). Supervised fine-tuning, a method in natural language processing, involves adapting a pre-trained model to specific tasks or domains. For instance, ChatGPT uses this technique to improve its ability to generate responses for tasks like question answering and fluid conversations. Thanks to its extensive training in diverse textual materials, including books, articles, and web content, ChatGPT possesses a deep understanding of natural language. This enables it to provide contextually relevant answers aligned with user cues.

2.4. Use of ChatGPT in Language Learning and Teaching

ChatGPT is a valuable resource for language learners, offering the ability to generate different types of texts, correct errors, and provide definitions and translations. It can also help learners understand the meanings of unfamiliar words in context, explain them, and answer follow-up questions. Additionally, learners can request explanations in their native language. It is a powerful tool for language learning with a vast vocabulary and the capability to produce text that closely resembles human conversation on various topics (Shahriar & Hayawi, 2023). Research studies have explored the potential benefits of

ChatGPT for language learning. In a study involving Arab postgraduate students pursuing their education in India, researchers Mohammed, Al-Ghazali, and A. S. Alqohfa (2023) found that ChatGPT had a positive impact on academic writing, language proficiency and overall achievement, greatly influencing the productivity of the participants. Additionally, a study by Hidayati, Dewanti, and Rasyid (2021) highlighted that the use of AI significantly helps students improve the quality of their essay writing.

On the other hand, a study conducted on teachers by Nguyen (2023), it was found that instructors at Van Lang University are very eager and excited about using ChatGPT in their writing lessons. However, this study also emphasizes that some crucial points should be considered, such as the professional training of instructors, correct chatbot use, and possible hazards of ChatGPT. In a study conducted by Tipayavaravan et al. (2023), it was found that ChatGPT offers an extensive range of linguistic tools and resources. These include access to online dictionaries, grammar advice, writing assistance, and supplementary materials for language learning. This functionality allows educators to provide precise and dependable information to their students, thereby improving the efficacy of English teaching.

2.5. Writing Skills of EFL Students

Writing is considered one of the most challenging skills for EFL students. This difficulty stems from various issues encountered by students while attempting to write. According to Chen (2002), EFL students face four significant challenges when it comes to writing. Firstly, students often struggle with vocabulary, expressing dissatisfaction with their limited lexicon. Insufficient vocabulary makes it arduous for students to articulate their ideas effectively. Secondly, the challenges of writing are not limited to just vocabulary and grammar; they also encompass the ability to create and expand on ideas. It is common for students to struggle with brainstorming ideas and providing supporting details in their writing. Moreover, English grammar presents a considerable challenge, as students often make mistakes related to tenses, parts of speech, and ensuring proper subject-verb agreement. Lastly, mechanics, such as punctuation, capitalization, and spelling, are common areas where writing problems arise. Additionally, Richards and Renandya (2002) assert that students encounter difficulties in expressing ideas in writing, mainly due to the

complexity of English vocabulary. Furthermore, they struggle to produce well-written content owing to inadequate vocabulary and incorrect word choices. Moreover, Crème and Lea (2003) observe that grammatical errors are pervasive in students' writing, stemming from confusion regarding applying intricate grammatical rules.

2.6. Integrating AI into Teaching Writing in EFL Classrooms

Proficiency in writing in English recognized as a universal medium of communication across various domains and cultures, has emerged as a crucial skill within the realm of second or foreign language learning, as highlighted by several scholars, including Wang et al. (2013), Yu (2015), and Khadka (2020). Consequently, instructors responsible for teaching English as a foreign language (EFL) writing classes are facing increasing demands to assess language outputs and provide corrective feedback, especially as class sizes grow beyond manageable limits, as noted by Tang & Wu (2011) and Gao & Ma (2020). Writing tools powered by artificial intelligence, including QuillBot, Wordtune, and Grammarly, have been shown to enhance students' writing abilities significantly. These tools use sophisticated algorithms to detect frequently occurring mistakes in grammar, punctuation, and sentence structure, and offer recommendations to improve the quality, clarity, and style of written work. In addition to these features, they also can reword and refine sentences to make them more effective.

According to a study by Kurniati and Fithriani (2021), the use of QuillBot can help students enhance their ability to rephrase ideas, which is an important skill in the realm of academic writing. Being another beneficial tool WordTune concentrates on enhancing the tone and style of written material. In 2022, Lam and Moorhouse conducted a survey that demonstrated how WordTune could aid students in identifying their writing shortcomings, allowing them to assess themselves and enhance their skills. WordTune is more than just a grammar correction tool; it also addresses the stylistic aspects of writing. Research conducted by Tambunan et al. in 2022, demonstrated that the use of Grammarly had a positive impact on the grammar and punctuation skills of students. Grammarly, an AI-powered tool, examines the text of the user and provides immediate recommendations to improve grammar, spelling, punctuation, clarity, engagement, and delivery. ChatGPT offers

additional tools to help students improve their writing skills. It can analyze grammar, vocabulary, and sentence structure, allowing students to revise their work and choose better word alternatives. This instant feedback feature not only saves time but also motivates students to take an active role in their learning process. As they save time on feedback, educators can devote more attention to developing advanced writing abilities such as critical thinking and content creation. This enables them to offer more comprehensive assistance and guidance to their students, promoting the holistic development of writing skills. It can also analyze text and detect errors and inconsistencies that students may have missed. By pointing out these mistakes and proposing corrections, it not only enhances the quality of student work but also boosts their confidence in writing.

2.7. Feedback in Language Learning

Feedback is critical in language learning, providing learners with the information they need to bridge the gap between their current performance and the desired outcomes. Feedback can be broadly categorized into various types, such as corrective, formative, and summative feedback, each serving a distinct purpose in the language learning process. Corrective feedback addresses learners' language use errors, particularly in grammar, vocabulary, and pronunciation. Ellis (2009) explains that corrective feedback can be either explicit, where errors are directly pointed out, or implicit, where hints are given, allowing learners to self-correct. Research conducted by Li (2010) has demonstrated that corrective feedback effectively improves learners' linguistic accuracy over time. A study conducted at the University of Auckland highlighted that learners who received corrective feedback showed a marked improvement in their language use compared to those who did not receive any form of feedback (Bitchener, 2008). Formative feedback, on the other hand, focuses on providing guidance and suggestions during the learning process. As described by Black and Wiliam (1998), formative feedback enables learners to contemplate their advancement and pinpoint areas for enhancement. It contributes to creating a learning atmosphere where students can self-evaluate and steer their own learning journey. When it comes to language learning, formative feedback is advantageous as it empowers learners to assimilate and implement the feedback immediately. A study at the University of Melbourne found that

formative feedback increased learner autonomy and motivation, which is vital to long-term language acquisition (Hattie & Timperley, 2007). Summative feedback, typically provided at the end of a learning unit or course, evaluates overall performance. While it plays a lesser role in ongoing learning processes, summative feedback helps learners understand their proficiency level and sets the stage for future learning goals. According to a study conducted at the University of Cambridge, students who were given detailed feedback after each language module had a better grasp of their strengths and weaknesses. This allowed them to establish more precise and attainable learning goals for the next stage. The literature emphasizes the significance of offering timely and specific feedback. According to Kara (2017), learners benefit most from feedback given soon after the language task, allowing them to reflect on their mistakes while the task is still fresh in their minds.

Another study by Shute (2008) revealed that delayed feedback could diminish its effectiveness, as learners may forget the context of their errors and fail to integrate the feedback effectively. Furthermore, specific feedback targeted at particular areas of language learning is more effective than general comments. A study from Middle East Technical University (METU) emphasized that vague feedback, such as “good job” or “needs improvement,” does little to help learners identify areas of weakness. Instead, feedback focusing on specific errors or aspects of language use, such as verb tense or word choice, is more likely to lead to measurable improvement in language proficiency (Sert, 2015).

2.8. Ethical Concerns and Limitations of ChatGPT

It has not been long since this technology emerged, and there are several positive and negative opinions about it. Individuals in the education sector have especially shared their concerns regarding using this new technology. According to a study by Kasneci et al. (2023), it was found that the extensive language models utilized in ChatGPT have the capability to adopt social biases and preconceptions from the data they are trained on. Rettberg (2022) explains that the cultural bias in ChatGPT responses is due to the underlying database and AI algorithms. Such biases can lead to inaccurate and unjust outcomes that can hinder the learning and teaching processes (Lund & Wang, 2023).

On the other hand, the use of ChatGPT in education has potential concerns about academic integrity. Using ChatGPT to produce written content that is evaluated in the same way as work created by students can potentially undermine the fundamental principles of academic integrity, according to Eke (2023). This technology can be also used for cheating which may harm the evaluation process. To address this issue, it is necessary to adopt fresh evaluation methods that emphasize students' ability to think critically and creatively (Zhai, 2022). Additionally, one potential remedy would be for instructors to utilize anti-plagiarism tools for verifying the originality of texts produced through ChatGPT (Aydin & Karaarslan, 2022). According to recent studies, ChatGPT has become a popular AI technology due to its unique features and superior performance when compared to other AI technologies. The widespread use of ChatGPT in educational settings has sparked debates about its impact on both educators and learners. The research conducted by Kasneci et al. (2023) raises concerns about the potential impact of ChatGPT on students' critical thinking and problem-solving skills, suggesting that the quick answers provided by ChatGPT could hinder their development. There is also apprehension that educators may become overly reliant on ChatGPT for lesson preparation. Similarly, Lund and Wang (2023) have expressed worries about the reliance on ChatGPT for research and writing tasks, which could compromise the independence of students and teachers. Conversely, Pavlik (2023) contends that if ChatGPT is used as a supplementary rather than a primary tool, it can enrich the learning and teaching experience without fostering over-dependence. Nonetheless, the integration of ChatGPT into education raises significant ethical concerns, particularly regarding data security and privacy. The potential for ChatGPT to inadvertently divulge sensitive personal, financial, or medical information through the generation of synthetic data is a severe risk, as noted by Lund & Wang (2023). To mitigate these dangers, Kasneci et al. (2023) recommend a combination of measures, including the enactment of data use policies, the education of all stakeholders about the risks and responsible use of ChatGPT, and the adoption of advanced technological safeguards to block unauthorized data access.

2.9. Related Studies

Several studies have explored AI's use to improve students' writing skills, particularly in personalized feedback and automated writing evaluation systems. These systems, which use AI to provide instant feedback on grammar, punctuation, organization, and style, have enhanced students' writing performance. In a study conducted by Ware and Warschauer in 2006, the effectiveness of writing tools like Criterion and Grammarly on students' writing skills was examined. The researchers discovered that students who utilized these tools showed significant enhancements in grammatical accuracy and sentence structure over time. This was attributed to the automated feedback provided by the tools, which enabled the students to self-correct and improve their writing. In a study by Roscoe and McNamara (2013), the use of AI-based writing tools to support high school students' argumentative writing was examined. The researchers employed Coh-Metrix, an AI tool, to assess text coherence and cohesion. The findings showed that students who received feedback from the AI tool demonstrated improvement in writing mechanics and higher-order skills, including argument development and using evidence. These results are consistent with other studies indicating that AI has the potential to enhance both surface-level and in-depth writing abilities. Fryer et al. (2019) conducted a study on the use of conversational agents, also known as chatbots, to improve the writing skills of high school students learning English as a foreign language (EFL). Their research demonstrated that students who used chatbots for writing exercises showed increased levels of interest and motivation, resulting in improved overall writing performance. The immediate and interactive chatbot feedback enabled students to participate in real-time learning, encouraging regular practice and progress.

In a study conducted by Doğan (2019), the effectiveness of automated writing evaluation tools in a Turkish high school setting was examined. The research involved high school students using an AI-powered tool, WriteToLearn, to complete writing tasks. The results indicated that students who received AI-based feedback showed improvement in their writing mechanics, such as grammar and punctuation, compared to those who received traditional teacher feedback. This study emphasized the advantages of using AI in writing

instruction, particularly in providing immediate and continuous feedback to learners. Similarly, a study by Çiftci (2020) explored the potential of AI-driven writing platforms to enhance the academic writing skills of Turkish EFL students. The research focused on using Grammarly as a supplementary tool to classroom instruction. The findings revealed that students who used AI-powered tools alongside teacher feedback made significant progress in vocabulary use, sentence variety, and overall coherence. Notably, the study highlighted the role of AI in promoting learner autonomy, as students could independently identify and correct their errors through AI-generated feedback.

The study by Lee and Chen (2021) explored the use of ChatGPT in high school classrooms, where students used the model to generate writing prompts and receive feedback on their essays. The findings indicated that students who used ChatGPT to draft and revise their essays significantly improved writing clarity, organization, and language accuracy. The model's ability to simulate real conversations and generate contextually relevant suggestions was particularly useful in helping students enhance their writing fluency. Yılmaz and Güneş (2022) investigated the integration of ChatGPT into high school writing classes in Turkey. This study involved students using ChatGPT to receive real-time suggestions and corrections while drafting essays in English. The researchers found that students who used ChatGPT for essay writing experienced improvements in both language accuracy and content organization. The study also noted that students reported higher engagement and motivation when interacting with the AI tool than traditional instruction. The researchers concluded that ChatGPT's interactive feedback capabilities provide a promising avenue for enhancing students' writing proficiency.

3. METHODOLOGY

This section will outline the research design, research context, participant details, data collection tools, data collection procedures, and data analysis.

3.1. Research Design

In this study, the mixed method approach is utilized to leverage the strengths of both quantitative and qualitative research methods while mitigating the weaknesses associated with using either method alone. This approach guides researchers in strategizing how to gather, analyze, and make sense of the data (Creswell & Creswell, 2018). The mixed-methods design enables researchers to gather data from a diverse group of individuals, allowing for a more comprehensive understanding of the subject. This approach combines the strengths of both quantitative and qualitative research, providing a more holistic view of the findings. By incorporating both types of data, researchers can capture a wide range of perspectives, ensuring that no valuable insights are overlooked (Teddlie & Tashakkori, 2020). Scholars have extensively discussed the various research designs found in the literature. According to Creswell and Plano Clark (2017), mixed-methods designs can be categorized into four main types: convergent design, embedded design, explanatory design, and exploratory design. For this particular research, the exploratory-sequential approach was employed. This approach involves first collecting quantitative data, followed by a qualitative phase as a follow-up (Creswell & Plano Clark, 2017).

3.2. Research Context

The study took place in the second term of the 2023-2024 academic year in Korgan Anatolian High School 11th grade English classes with two classes totaling 30 students, all taught by the same teacher. The research employed a quasi-experimental approach, which included a pre-test, post-test, and a control group. The study utilized a mixed-methods research approach. Creswell and Plano Clark (2007) defined mixed methods research as combining quantitative and qualitative approaches that provide a better understanding of research problems than either approach alone. Since the study aims to work with a more specific group of participants, the sampling method of the study is the convenience

sampling (Büyüköztürk et al., 2020). The convenience sampling method is non-probability since individuals are included in the sample because they are the most accessible individuals for the researcher to access (Sedgwick, 2013). Prior approval was acquired from the administration of the school to conduct the study. The study was conducted while keeping ethical considerations in mind. The participants were given informed consent and their confidentiality was maintained.

3.3. Participants

The participants are 30 students, 18 females and 12 males, each studying in 11th grade at a state high school in the Korgan district of Ordu, Türkiye, in the second semester of the 2023-2024 academic year. They are all at the age of 16. All of the students are learning English for 10 years. They are learning English as a foreign language, and the same English teacher teaches all students. Their proficiency level is B1+ according to the Common European Framework of Reference for Languages (CEFR). The Ministry of National Education determines this level and students are taught accordingly. The participants were divided into 2 groups randomly: the control group and the experimental group. The control group consisted of 9 females and six males, with 15 students, and the experimental group consisted of 9 females and six males, with 15 students. The demographic information of participants is given in Table 1.

Table 1: Demographic information of participants

Group / Gender	N	%
Control / Female	9	30
Control / Male	6	20
Experimental / Female	9	30
Experimental / Male	6	20
Total	30	100

3.4. Data Collection Instruments

The study utilized a mixed-method research design, incorporating sequential writing tasks and a questionnaire to gather quantitative data. Additionally, semi-structured interviews were conducted with the experimental group to collect qualitative data and gain a deeper understanding of the research questions.

3.4.1. Writing Tasks

The data was collected in a sequential order and can be used to analyze various research questions. First, as a pre-test initial writing task was given to all participants. The topic was “Future Jobs,” the first theme of the 11th-grade English lesson curriculum. A sample of the writing task template is presented in Figure 1 below.

Figure 1: Writing task template as a pre-test

<u>Pre-test</u>		
Topic	: Future Jobs	
Student's Name:		
Write a text about the topic future jobs. Your text must contain at least 200 words. Please pay attention to your grammar and text organization. You can use the back of the paper if you need more space.		

Six sequential writing tasks were used to collect data. These tasks' themes were taken from the students' English lesson curriculum of the second semester that was decided by the Ministry of Education at the beginning of the academic year. Each task's topic was taken from the different themes of the curriculum. The tasks' topics were: Task 1 – Back To Past, Task 2 – Open Your Heart, Task 3 – Facts From Turkey, Task 4 – Sports, Task 5 – My Friends, Task 6 – Values and Norms.

3.4.2. Evaluation Rubrics

The “Writing Task Evaluation Rubric” was used to evaluate students' writing task outputs. The rubric was created by Royster and Lester (2009), but certain changes have been made to make it compatible with the current study. The maximum scores were increased to 10 points from 7 points for each evaluation section to calculate the overall scores more easily. The evaluation rubric consists of four main parts: content, organization, language, and style. The evaluation rubric template is provided below in Figure 2.

Figure 2: Writing task evaluation rubric

Criteria	Score	Description
Content	1-10 -----	The writing is off-topic or lacks substance (1); the writing is somewhat relevant but lacks depth (4); the writing is relevant and has some depth (7); the writing is highly relevant and has significant depth (10)
Organization	1-10 -----	The writing lacks structure and coherence (1); the writing has some structure but is not well-organized (4); the writing is well-structured and organized (7); the writing is highly structured and organized (10)
Language	1-10 -----	The writing is riddled with errors and is difficult to understand (1); the writing has some errors and is somewhat difficult to understand (4); the writing has few errors and is easy to understand (7); the writing is error-free and easy to understand (10)
Style	1-10 -----	The writing is dull and unengaging (1); the writing is somewhat engaging but lacks creativity (4); the writing is engaging and somewhat creative (7); the writing is highly engaging and very creative (10)

Students were evaluated from one to ten under these four main sections, and a total score was obtained based on their performance on the writing tasks. The students' English teacher and the researcher used this rubric to evaluate the control group's writing tasks. The researcher uploaded this rubric to the ChatGPT, which evaluated

students' writing tasks after providing feedback. The total score for the control group students' outputs is the average of the two assessments.

3.4.3. Questionnaire

A 5-point Likert scale questionnaire that included 12 statements was used to obtain experimental group students' opinions about the process they experienced with ChatGPT. The statements in the questionnaire aimed to assess students' ideas of ChatGPT, their overall satisfaction, and their opinion of further usage of it. The questionnaire was adapted from the study conducted by (Han et al., 2023) and edited by the researcher for this study. The questions from the adapted questionnaire turned into statements about the students' experiences. After the questionnaire was adapted, the opinions of experts and field teachers were consulted, and the questionnaire was found to be appropriate. The reliability of the 5-point Likert scale, which was utilized to gather data for the study, was assessed using Cronbach's Alpha. The reliability statistics of the questionnaire are given in Table 2.

Table 2: Reliability statistics of the questionnaire

Cronbach's Alpha	N of Items
.785	12

The total Cronbach's Alpha score of .785 indicates acceptable internal consistency. This means that the statements used in the questionnaire reliably measure a similar underlying construct: the participants' perception of ChatGPT and their opinions about further usage.

3.4.4. Semi-structured Interview Form

In the phase of qualitative data collection, a semi-structured interview form was utilized. This form was developed subsequent to the acquisition of expert opinions and a thorough review of pertinent literature. The template of the semi-structured interview form is provided in Figure 3 below.

Figure 3: Semi-structured interview form

SEMI-STRUCTURED INTERVIEW FORM

- 1) **Please introduce yourself.**
- 2) **What do you think about the importance of Artificial Intelligence technology's role in the language learning process?**
- 3) **How did you feel while getting feedback from ChatGPT during your task writing experience? (Pros/Cons or difficulties that you have experienced during the study)**
- 4) **Would you use AI-supported technologies to improve other language skills in your future language-learning life?**

These interviews afford a comprehensive exploration of the subject matter and the acquisition of participants' fixed responses (Büyüköztürk et al., 2020). They facilitate participants in expressing their thoughts more effectively and enhance the quality of findings to address research inquiries by allowing for adaptability in question formulation (Yıldırım & Şimşek, 2018). The forms underwent evaluation by two experienced foreign language educators in qualitative research within the realm of foreign language education, were found appropriate for the study, and ensured the congruence of the interview questions with the research's scope. Four questions were directed to the 8 participants from the experimental group. In an open-ended survey, respondents provide their answers to questions; response options are not provided by the researchers (Creswell, 2012). Regarding the

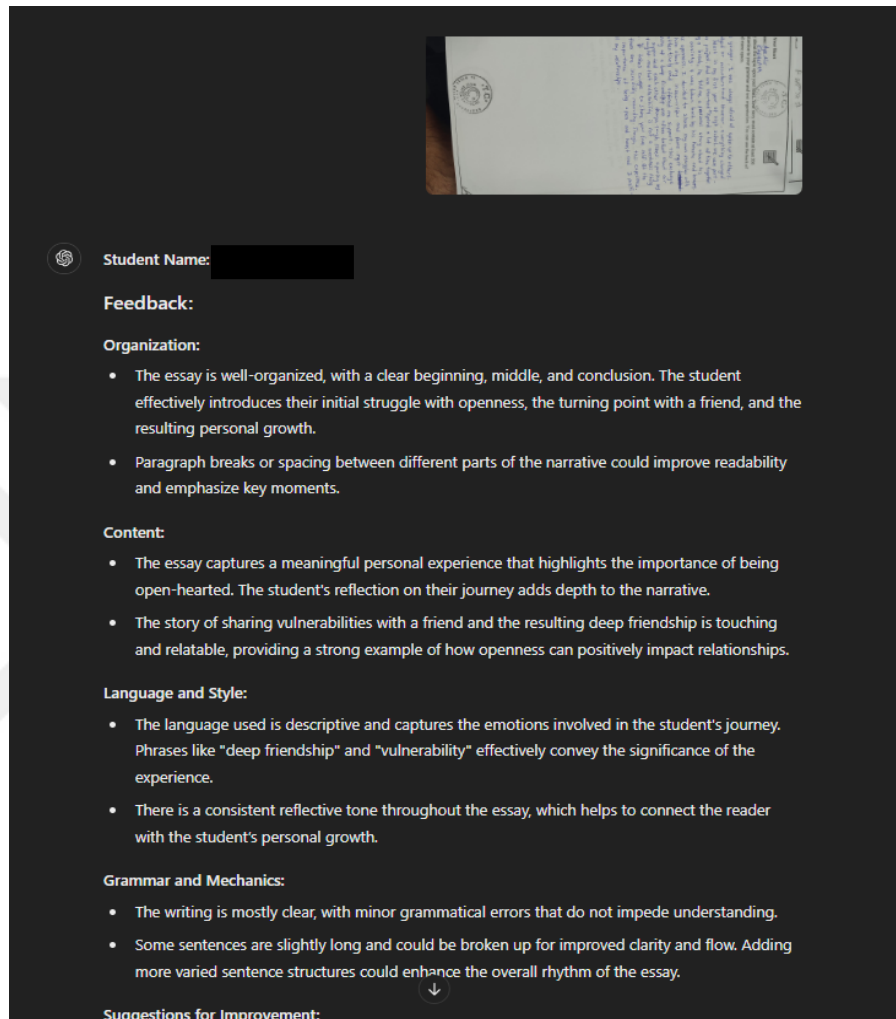
reliability of the qualitative method, the researcher employed the "member checking" procedure, which entails returning data and interpretations to the participants to verify their responses (Creswell & Miller, 2000). Participants were assured that only the researcher would have access to the recordings and were given the liberty to modify their responses after transcription. Furthermore, participants were given the freedom to choose the language for the interview, and it was observed that all participants opted for English. Each interview session had an approximate duration of three minutes.

3.4. Data Collection Procedure

Participants from two classes were given consent forms, along with a summary of the study to get them signed by their parents. Once consent forms were collected, all participants were given a pre-test of which topic was chosen from the students' curriculum to implement tasks as a natural part of the curriculum rather than treat them as a secondary curriculum. Fifteen of the participants were chosen to be the control group that got traditional teacher feedback, and the other 15 participants were chosen to be the experimental group that got ChatGPT feedback. The groups were created randomly.

This study aimed to assess the effectiveness of using ChatGPT feedback compared to traditional teacher feedback on high school students' writing skills. The data comprised a pre-test, six task sessions (Task 1 through Task 6), and a post-test for both groups, allowing for a comprehensive performance evaluation over time. First, participants were given a writing task as a pre-test. After collecting writing task outputs, the researcher informed both groups about the study and the procedure of the study. The experimental group participants were given detailed information about ChatGPT. Then, both groups were given Task 1, and the next day, the English teacher collected the control groups' writing tasks and, after giving feedback on these tasks, handed them back to the students. The experimental group's Task 1 outputs were collected by the researcher and uploaded to ChatGPT, and the chatbot generated specialized feedback for each student. An example of ChatGPT feedback on students' writing output is presented in Figure 4 below.

Figure 4: Example of ChatGPT feedback



The researcher took prints of these ChatGPT feedback and handed them to the students of the experimental group. Then, the next task was given to the students, and the same steps were followed. After 6 sequential tasks, a post-test writing task was given to the participants. After completing writing tasks, the experimental group participants were given a questionnaire with 12 statements. They were asked to rate their overall satisfaction and further usage opinions on a 5-point Likert scale from “1(Strongly Disagree)” to “5(Strongly Agree)”. Then, semi-structured interviews were conducted with volunteer participants from the experimental group. The weekly schedule of the study is provided in Table 3.

Table 3: Weekly schedule of the study

Sessions	Procedure
1 st Week (Intro)	Writing task (as a pre-test)
	Collecting pre-tests and giving information about the study
	Information about ChatGPT was given to the experimental group
2 nd – 3 rd Week	Six sequential writing tasks and their feedback
4 th Week	Writing task (as a post-test)
	Questionnaire
	Semi-structured interviews with the experimental group

3.5. Data Analysis

The quantitative data was analyzed statistically on Statistical Package for the Social Sciences (SPSS) version 26.0. Various statistical methods were utilized with reference to the guidance provided in the book "SPSS Survival Manual: A Step-by-Step Guide to Data Analysis Using IBM SPSS" by Pallant (2020). The collected data was analyzed using both descriptive and inferential statistics. Descriptive statistics were utilized to describe the sample, while inferential statistics were used to make inferences about the population.

In the first step, students' tasks were graded according to the pre-decided rubric, and overall scores were noted. The overall scores were obtained according to this rubric. Normality tests were conducted on pre-test, post-test, and 6 task scores to determine whether parametric tests were appropriate. Initial analysis showed significant deviations from normality for the Pre-test, Task 4, Task 5, and Post-test scores, particularly in the Experimental group. Log transformations were applied to the reflected data to address these deviations, which successfully normalized the distributions as confirmed by the Shapiro-Wilk test. These findings ensured that the data met the assumptions necessary for parametric testing. The initial and final statistics are shown in Table 4 and Table 5.

*Table 4: Initial Normality Analysis Results
transformations applied*

	Shapiro-Wilk
	Sig.
Pre-test	0,025
Task 1	0,390
Task 2	0,435
Task 3	0,248
Task 4	0,004
Task 5	0,036
Task 6	0,131
Post-test	0,000

Table 5: Normality analysis results after log

	Shapiro-Wilk
	Sig.
Pre-test	0,102
Task 1	0,390
Task 2	0,435
Task 3	0,248
Task 4	0,169
Task 5	0,052
Task 6	0,131
Post-test	0,239

The Successful data transformation allowed for the valid application of parametric tests, ensuring that conclusions drawn from the data are statistically reliable. By addressing normality, the study enhances the validity of its comparisons between groups, providing a robust basis for evaluating the effectiveness of ChatGPT feedback on students' writing.

In addition to descriptive statistical methods based on the normal distribution of the data, the independent sample t-test, which is one of the parametric tests to test whether there is a significant difference between the experimental and control groups in the data obtained in the writing tasks, was applied. Paired sample t-tests were applied to test whether the means of the control and experimental groups' scores differed. The Repeated Measures ANOVA analyzed the general patterns in students' writing performance across sequential assignments and compared these patterns between the control and experimental groups. This analysis offered a thorough understanding of how time (tasks) and feedback type (traditional vs. ChatGPT) impact writing enhancement.

4. FINDINGS

In this study, the impact of ChatGPT, a chatbot utilizing AI technology, on the foreign language writing skills of 11th-grade high school students was investigated, as well as their evaluations of this AI-supported chatbot. The findings are divided into two main categories: quantitative and qualitative. The quantitative results center around the influence of ChatGPT on students' writing skill development based on data from administered writing tasks and whether there is a notable difference in the writing skills of the experimental group compared to the control group. The questionnaire also provided insights into the experimental group that got ChatGPT feedback about their opinions of AI-supported chatbot and their experience through the study. The qualitative results, on the other hand, delve into students' assessments of the ChatGPT, drawing from data gathered through semi-structured interviews. The findings are thoroughly detailed and elucidated using tables and excerpts from the interviews.

4.1. Quantitative Findings

The following section presents demographic information about the participants and the findings related to the quantitative research questions. The research aimed to determine whether the use of the AI-supported chatbot ChatGPT has an impact on the foreign language writing skills of 11th-grade high school students, as well as to ascertain if there is a significant difference in the development levels of writing skills between the experimental group and the control group participants.

4.1.1. Sequential Writing Tasks Results

The descriptive statistics including mean, standard deviation, minimum, and maximum values were calculated for each time point (Pre-test, Task 1 through Task 6, and Post-test) separately for the control and experimental groups. The descriptive statistics for the control group are given in Table 6.

Table 6: Descriptive statistics for the control group

	Range	Minimum	Maximum	Mean	Std. Deviation
Pre-test	12	18	30	26.33	3.016
Task-1	9	18	27	23.73	2.463
Task-2	12	20	32	26.00	2.952
Task-3	10	22	32	25.60	3.019
Task-4	15	15	30	24.33	3.885
Task-5	17	16	33	26.60	4.703
Task-6	13	21	34	27.80	3.364
Post-test	17	17	34	29.00	5.014

The control group's pre-test ($M = 26.33$, $SD=3.016$) compared to their post-test ($M = 29$, $SD=5.014$) scores reveal that participants' performance varied across different tasks, with some fluctuations in their mean scores but an overall upward trend.

The descriptive statistics for the experimental group are given in Table 7 below.

Table 7: Descriptive statistics for the experimental group

	Range	Minimum	Maximum	Mean	Std. Deviation
Pre-test	8	22	30	26.20	2.704
Task-1	15	20	35	26.73	3.615
Task-2	7	25	32	28.20	2.077
Task-3	17	20	37	28.80	4.475
Task-4	22	10	32	25.67	5.300
Task-5	15	18	33	26.73	4.200
Task-6	18	13	31	24.60	4.421
Post-test	9	25	34	30.33	2.127

Conversely, the experimental group's pre-test ($M = 26.20$, $SD=2.704$) and their post-test ($M = 30.33$, $SD=2.127$) scores indicate that this group generally achieved higher mean scores throughout the tasks, particularly showing a significant improvement by the post-test phase. Both groups demonstrated an increase in mean scores from the pre-test to the post-test, suggesting that feedback contributed to

enhanced writing performance regardless of type. The experimental group consistently outperformed the control group, especially in the later sessions and during the post-test, indicating that ChatGPT feedback had a more substantial impact. The higher average scores in the post-test for the experimental group suggest that the feedback provided by ChatGPT was not only more effective but possibly more engaging, contributing to improved writing outcomes.

Standard deviations shed light on student performance consistency. The control group showed more significant variability in post-test scores ($SD = 5.014$) compared to the experimental group ($SD = 2.127$). This suggests that the traditional teacher feedback method may have had uneven effects, benefiting some students more than others. Conversely, the smaller standard deviation in the experimental group implies that feedback from ChatGPT resulted in more consistent performance, indicating that it may have provided clearer or more universally applicable guidance, leading to more uniform improvements.

Using pre-test scores, the independent samples t-test was used to compare the mean writing scores between the control group (teacher feedback) and the experimental group (ChatGPT feedback). Both group's independent samples t-test results of the pre-test are presented in Table 8.

Table 8: Independent samples t-test results of the pre-test

	N	M	SD	t	df	p
Control Group	15	26.33	3.016	.127	28	.899
Experimental Group	15	26.20	2.704			

The pre-test mean scores for both the control group ($M = 26.33$, $SD = 3.016$) and the experimental group ($M = 26.20$, $SD = 2.704$) are very similar. This suggests that, on average, there is very little difference between the two groups in terms of their scores. The standard deviations indicate that the variability in scores within each group is relatively similar, meaning that the spread of scores is comparable.

The values ($t = .127$, $p = .899$) indicate that there is almost no difference between the two groups in terms of their mean scores. The difference between the control and experimental groups is not statistically significant. In other words, there is no evidence that the groups differ significantly from each other based on the scores.

Paired-samples t-tests were conducted separately for the Control and Experimental groups to compare pre-test and post-test scores and assess improvements in writing performance within each group. Paired-samples t-test results of the control group are given in Table 9.

Table 9: Paired-samples t-test results of the control group

	N	Mean	SD	t	df	p
The pre-test overall scores	15	27.60	2.098	-18.520	14	.000
The post-test overall scores	15	29.93	1.751			

The overall mean scores of the control group in the post-test ($M = 29.93$, $SD = 1.751$) are higher than the mean score in the pre-test ($M = 27.60$, $SD = 2.098$), indicating an improvement in overall scores after the intervention or time between the tests. The post-test scores are significantly higher than the pre-test scores ($t = -18.520$, $p < .001$). The large magnitude of the t-value indicates a substantial difference between the pre-test and post-test scores. The difference between the pre-test and post-test scores is statistically significant.

Paired-samples t-test results of the experimental group are given in Table 10.

Table 10: Paired-samples t-test results of the experimental group

	N	Mean	SD	t	df	p
The pre-test overall scores	15	27.80	2.366	-14.349	14	.000
The post-test overall scores	15	31.13	1.995			

The overall mean post-test score of the experimental group ($M = 31.13$, $SD = 1.995$) is notably higher than the mean pre-test score ($M = 27.80$, $SD = 2.366$), indicating a substantial improvement in scores after the intervention. The negative t -value indicates that the post-test scores are significantly higher than the pre-test scores. The t -value is quite large ($t = -14.349$, $p < .001$), suggesting a solid difference between the two sets of scores. The difference between the pre-test and post-test scores is statistically significant.

The independent samples t -test was used to compare the mean writing scores between the control group (teacher feedback) and the experimental group (ChatGPT feedback) using post-test scores. The independent samples t -test results of the post-test are shown in Table 11.

Table 11: Independent samples t -test results of the post-test

	N	Mean	SD	t	df	p
Control Group	15	29	5.014	-.948	28	.351
Experimental Group	15	30.33	2.127			

The Experimental Group ($M = 30.33$, $SD = 2.127$) has a slightly higher mean score than the Control Group ($M = 29$, $SD = 5.014$). Higher standard deviation indicates that the scores within the control group are more spread out than the experimental group, which has a smaller standard deviation. This suggests that scores in the experimental group are more consistent. The negative t -value ($t = -.948$, $p > .005$) indicates that the control group's mean is slightly lower than the experimental group's mean. Although the experimental group has a slightly higher average, the difference is slight and not statistically meaningful.

Both groups did not show significant improvements in their overall scores from the pre-test to the post-test. This result indicates that while immediate task-specific benefits of ChatGPT feedback were observed, these did not accumulate into a

broadly, statistically significant enhancement in writing performance from start to finish.

The independent samples t-test was used to compare the mean writing scores between the control group (teacher feedback) and the experimental group (ChatGPT feedback) at different time points, including the pre-test, each task session, and the post-test. This test assesses whether the two groups have statistically significant differences at each specific time point.

When checked one by one the results of t-tests, the following observations were inferred:

The comparison statistics of independent samples t-test results of the pre-test are given in Table 12.

Table 12: Comparison of independent samples t-test results of the pre-test

	N	Mean	SD	t	df	p
Control Group	15	26.33	3.016	.127	28	.899
Experimental Group	15	26.20	2.704			

There was no significant difference ($t = .127$, $p > .899$) in pre-test scores between the control ($M = 26.33$, $SD = 3.016$) and experimental group ($M = 26.20$, $SD = 2.704$), suggesting that both groups started at a similar baseline level in their writing abilities. This similarity supports the validity of subsequent comparisons, as both groups were initially equivalent.

The comparison statistics of independent samples t-test results of Task 1 are given in Table 13.

Table 13: Comparison of independent samples t-test results of Task 1

	N	Mean	SD	t	df	p
Control Group	15	23.73	2.463	-2.656	28	.013
Experimental Group	15	26.73	3.615			

There was a statistically significant difference ($t = -2.656$, $p < .005$) in Task 1 scores, with the experimental group ($M = 26.73$, $SD = 3.615$) outperforming the control group ($M = 23.73$, $SD = 2.463$). This early significant difference suggests that ChatGPT feedback may have had an immediate positive effect on students' writing skills right from the start of the intervention.

The comparison statistics of independent samples t-test results of Task 2 are given in Table 14.

Table 14: Comparison of independent samples t-test results of Task 2

	N	Mean	SD	t	df	p
Control Group	15	26.00	2.962	-2.361	28	.025
Experimental Group	15	28.20	2.077			

The experimental group ($M = 28.20$, $SD = 2.077$) continued to perform significantly ($t = -2.361$, $p < .005$) better than the control group on Task 2. The consistency of significant differences early in the intervention phase indicates that ChatGPT feedback was more effective than traditional feedback at these stages.

The comparison statistics of independent samples t-test results of Task 3 are given in Table 15.

Table 15: Comparison of independent samples t-test results of Task 3

	N	Mean	SD	t	df	p
Control Group	15	25.60	3.019	-2.296	28	.029
Experimental Group	15	28.80	4.475			

Significant differences ($t = -2.296$, $p < .005$) persisted in Task 3, reinforcing the finding that ChatGPT feedback maintained its effectiveness across multiple sessions. This sustained improvement highlights the potential of ChatGPT feedback to produce consistent benefits in writing skill enhancement.

The comparison statistics of independent samples t-test results of Task 4 are given in Table 16.

Table 16: Comparison of independent samples t-test results of Task 4

	N	Mean	SD	t	df	p
Control Group	15	24.33	3.885	-.786	28	.439
Experimental Group	15	25.67	5.300			

No significant difference ($t = -.786$, $p > .005$) was found between the groups in Task 4. This lack of significance may suggest that the initial advantages seen in the experimental group stabilized or that the control group's feedback began to catch up in effectiveness.

The comparison statistics of independent samples t-test results of Task 5 are given in Table 17.

Table 17: Comparison of independent samples t-test results of Task 5

	N	Mean	SD	t	df	p
Control Group	15	26.60	4.703	-.082	28	.935
Experimental Group	15	26.73	4.200			

The absence of significant differences ($t = -.082$, $p > .935$) in Task 5 indicates that performance between the groups became similar during this session. It may reflect variability in how students responded to feedback during this period or indicate a leveling effect where both feedback methods had similar impacts.

The comparison statistics of independent samples t-test results of Task 6 are given in Table 18.

Table 18: Comparison of independent samples t-test results of Task 6

	N	Mean	SD	t	df	p
Control Group	15	27.80	3.364	2.231	28	.034
Experimental Group	15	24.60	4.421			

Task 6 showed a significant difference ($t = 2.231$, $p < .005$) favoring the control group. The results imply that traditional teacher feedback (control group) ($M = 27.80$, $SD = 3.364$) was more effective than ChatGPT feedback (experimental group) ($M = 24.60$, $SD = 4.421$) for this particular task. Students' familiarity and comfort level with AI feedback, the complexity of the task and suitability for AI assistance, and the quality and clarity of feedback provided by ChatGPT versus the teacher could be the possible reasons for this result.

The comparison statistics of independent samples t-test results of the post-test are given in Table 19.

Table 19: Comparison of independent samples t-test results of Post-test

	N	Mean	SD	t	df	p
Control Group	15	29	5.014	0.60	28	.953
Experimental Group	15	30.33	2.127			

The post-test results showed no statistically significant difference ($t = 0.60$, $p > .005$) between the control and experimental groups. The results indicate that for this specific task session, both traditional teacher feedback and ChatGPT feedback were equally effective in supporting student performance. While the experimental group had a slightly higher mean score ($M = 30.33$, $SD = 2.127$), the control group almost equalized the score ($M = 29$, $SD = 5.014$). The slight difference in means does not suggest a meaningful advantage of one feedback method over the other for this session. This outcome suggests that by the end of the intervention, the overall writing performance converged between the groups, indicating that while ChatGPT provided early benefits, traditional feedback may have eventually closed the performance gap.

The Repeated Measures ANOVA examined the overall trends in students' writing performance across multiple tasks and how these trends differed between the control and experimental groups. This analysis provides a comprehensive view of the effects of time (tasks) and feedback type (traditional vs. ChatGPT) on writing improvement.

The multivariate tests evaluate the significance of the effects within the subjects, including time (changes across tasks) and the interaction between time and group.

The statistics of multivariate test results of time are shown in Table 20.

Table 20: Multivariate test results of time

		Value	F	Sig.	df
Time	Pillai's Trace	0.992	404.803	.000	7.000
	Wilks' Lambda	0.008	404.803	.000	7.000
	Hotelling's Trace	128.801	404.803	.000	7.000
	Roy's Largest Root	128.801	404.803	.000	7.000

All tests showed a significant effect of time ($F = 404.803$, $p < 0.001$). The significant time effect indicates that students' writing scores changed significantly across the tasks for both groups, showing overall improvement during the study period. This result confirms that repeated writing tasks and feedback influenced student performance positively, irrespective of the feedback type.

The statistics of multivariate test results of time & group are shown in Table 21.

*Table 21: Multivariate test results of time*group*

		Value	F	Sig.	df
Time * Group	Pillai's Trace	0.551	3.854	0.007	7.000
	Wilks' Lambda	0.449	3.854	0.007	7.000
	Hotelling's Trace	1.226	3.854	0.007	7.000
	Roy's Largest Root	1.226	3.854	0.007	7.000

The interaction between time and group was significant ($F = 3.854$, $p = 0.007$). The significant interaction effect suggests that the pattern of change in writing scores differed between the control and experimental groups. This means that the experimental group, which received ChatGPT feedback, experienced a different trajectory of improvement than the control group, highlighting the potential additional benefits of AI-driven feedback over traditional methods.

Within-subjects effects tests evaluate the changes in scores across the tasks (time effect) and the interaction of these changes with the group variable. Within-subjects effects tests results of time are provided in Table 22 below.

Table 22: Within-subjects effects tests results of time

		F	Sig.	df
Time	Sphericity Assumed	945.874	0.000	7
	Greenhouse-Geisser	945.874	0.000	3.596
	Huynh-Feldt	945.874	0.000	4.339
	Lower-bound	945.874	0.000	1.000

The consistent significance ($p < 0.001$) across all corrections confirms that students' performance improved significantly over time. This improvement reflects the cumulative effect of continuous practice and feedback on writing tasks.

Within-subjects effects tests results of time & group are provided in Table 23.

*Table 23: Within-subjects effects tests results of time*group*

		F	Sig.	df
Time * Group	Sphericity Assumed	6.019	0.000	7
	Greenhouse-Geisser	6.019	0.000	3.596
	Huynh-Feldt	6.019	0.000	4.339
	Lower-bound	6.019	0.021	1.000

The significant interaction ($p < 0.005$) further supports that the experimental group, receiving ChatGPT feedback, had a unique pattern of improvement compared to the control group. This finding suggests that ChatGPT feedback led to differential impacts on performance growth, potentially offering more adaptive and engaging feedback that influenced how students progressed through the tasks.

4.1.2 Questionnaire Results

The questionnaire results revealed high satisfaction and motivation among students who used ChatGPT for feedback on their writing tasks. The questionnaire's descriptive statistics are given in Table 24 below.

Table 24: Descriptive statistics of the questionnaire

	Mean	SD
Statement 1	4.86	0.351
Statement 2	4.93	0.258
Statement 3	4.86	0.351
Statement 4	4.86	0.351
Statement 5	4.73	0.593
Statement 6	4.93	0.258
Statement 7	4.86	0.351
Statement 8	4.80	0.560
Statement 9	4.66	0.617
Statement 10	4.06	1.22
Statement 11	4.86	0.351
Statement 12	4.93	0.258

The mean Scores for most items were close to 5 on a 5-point scale, indicating strong positive responses. Participants reported being highly motivated when using ChatGPT ($M = 4.87$, $SD = 0.35$) and were very satisfied with the feedback they received ($M = 4.93$, $SD = 0.26$). These results indicate that the majority of students found their interactions with ChatGPT both engaging and beneficial. Students generally agreed that using ChatGPT helped them improve their writing skills. The statement "ChatGPT helped me to write better in English." received a high mean score ($M = 4.87$, $SD = 0.35$), reflecting a strong belief in the tool's effectiveness in enhancing writing ability. Additionally, students reported that ChatGPT provided useful suggestions for improving their writing style ($M = 4.87$, $SD = 0.35$) and assisted them in improving grammar and sentence structure ($M = 4.93$, $SD = 0.26$). The data also indicated that ChatGPT had a positive impact on students' confidence in their writing abilities. The item "Using ChatGPT improved my confidence in writing" had a high mean score ($M = 4.80$, $SD = 0.56$), suggesting that the tool

helped students feel more capable and assured in their writing. Furthermore, students felt more capable of expressing their thoughts after using ChatGPT ($M = 4.67$, $SD = 0.62$), indicating a perceived improvement in their ability to articulate ideas effectively.

While the overall feedback was positive, there was a noticeable variation in students' awareness of the ethical issues of using ChatGPT. Specifically, the statement "I am aware of the ethical concerns of using ChatGPT." received a lower average score ($M = 4.07$, $SD = 1.22$) than other statements. Some students were neutral or even disagreed with this statement. This indicates that, although many students recognize ethical considerations, there is still a need for more thorough education on this topic.

4.2. Qualitative Findings

The study involved interviews with participants from the experimental group to explore their perceptions regarding using the AI-powered chatbot ChatGPT as a tool to improve their writing skills. Utilizing a comfortable setting, participants were presented with three open-ended questions, and their responses were recorded with their consent for subsequent in-depth analysis. The responses obtained were categorized under three primary themes:

- ✓ The importance of Artificial Intelligence technology's role in the language learning process,
- ✓ Feelings during the experience with ChatGPT,
- ✓ The use of artificial intelligence tools in their future language learning processes.

The results gathered under these main headings are presented with examples from the participant responses to increase reliability in the analysis and data presentation stages.

4.2.1. The Importance of Artificial Intelligence Technology's Role in Language Learning Process

According to the interview results, when the comments made by the participants under this main heading were analyzed, it was seen that all of the participants expressed that the role of Artificial Intelligence technology in the language learning

process is essential. Most participants stated that this technology can be used to make language practices. The comment made by Participant 3, *“It can be used as a teacher. We can learn new language with it. We can improve our skills.”* reveals that artificial intelligence technology in language learning holds great promise and shows that students' awareness is in this direction. Participant 5 supported Participant 3 by saying, *“We can use it in language learning. We can translate words. We can learn new subjects. We can make exercises.”* Another participant, Participant 6, stated that, *“We can communicate with people from all around the world with using AI.”* This comment draws attention to the importance of the use of artificial intelligence technology in the field of communication. The view was expressed that artificial intelligence facilitates communication between different languages thanks to its ability to perform instant translation. Participant 8 said, *“It saves time. It tells us our errors.”* This comment emphasizes the effective use of artificial intelligence technologies, which provide economic savings in different aspects, and the importance of its widespread use in this respect.

In conclusion, according to the analysis of the data obtained in the interviews, all of the interview participants from the experimental group agreed that artificial intelligence is vital in the language learning process. It was concluded that it is essential to include artificial intelligence technologies in language learning for the reasons explained in detail with the examples above.

4.2.2. Feelings during the Experience with ChatGPT

Students' emotional responses when receiving feedback on writing tasks provide critical insights into the pedagogical effectiveness of feedback mechanisms. According to the data collected from the interviews, most students reported positive emotions, with many expressing happiness, excitement, and security. These emotional responses can be understood through the lens of contemporary educational psychology, particularly about feedback as a motivational tool and its role in developing learner autonomy. When asked about their feelings while getting feedback from ChatGPT, Participant 2 stated, *“I felt good. Technology is in every*

area of our lives. It gave me feedback like my teacher. I saw my weaknesses. I was happy because it tell me my writing is good.” The predominance of positive emotions, such as happiness and excitement, in response to feedback, suggests that the feedback was perceived as constructive and supportive. Students who felt "happy" highlighted the feedback's corrective nature, allowing them to identify and rectify their mistakes. Participant 7 said, *“I was happy to use technology. I saw my problems and fixed them. It gave me new ideas.”* Another comment made by Participant 4 *“I felt happy while getting feedback from ChatGPT. I used ChatGPT before for translation. I didn’t know it can check my homework like my teacher. I was surprised. It showed me the word that I write falsely.”* this may indicate that students view it as an opportunity for mastery and growth rather than simply as a critique of their work. Interestingly, several students reported feeling safe and not stressed during the feedback process. This sense of psychological safety is critical for effective learning, as it allows students to engage with feedback without fear of judgment or failure. Participant 3 stated, *“I felt happy because I could learn from my mistakes and fix them. I felt safe and not stressed.”*

4.2.3. The Use of Artificial Intelligence Tools in Their Future Language Learning Processes

The interviews with students reveal a predominantly positive attitude toward using Artificial Intelligence (AI) in their future language learning journeys. The students expressed a range of practical applications for AI, from learning new languages to enhancing vocabulary and speaking skills. These findings align with broader trends in educational technology, where AI is increasingly recognized for its potential to transform language learning by offering personalized, flexible, and accessible tools. Participant 6 said, *“I will use it. I love Germany and I want to learn German. I can learn German by myself.”* Most students indicated that they plan to incorporate AI into their language-learning processes, particularly when learning new languages. This widespread interest suggests a recognition of AI’s ability to support comprehensive language acquisition. AI-driven language platforms, such as

Duolingo, Babbel, and Rosetta Stone, have demonstrated their effectiveness in this domain, combining various language learning elements (grammar, vocabulary, pronunciation) into a cohesive, interactive experience. Several participants said that they would use AI tools to make speaking exercises. Participant 2 said, *“I will use it to improve my speaking. I will talk with ChatGPT.”* Similarly, Participant 5 stated, *“I will use technology to improve my other language skills. I can use it to correct my grammar mistakes and speak better.”*



5. CONCLUSION AND DISCUSSION

This section comprehensively discusses the study's findings, addressing the research questions and situating the results in relevant literature. The findings are compared with previous studies to provide a broader perspective on the effectiveness of AI-driven feedback in EFL writing instruction.

5.1. Summary of the Study

This study explored the impact of integrating ChatGPT, a state-of-the-art AI chatbot, into the feedback process to enhance high school students' writing skills in an English as a Foreign Language (EFL) setting. Recognizing the growing role of artificial intelligence (AI) in education, the study aimed to determine whether AI-supported feedback could significantly improve students' writing abilities. The study was conducted at a state high school with 30 participants and employed a quasi-experimental design. The students were divided into a control group that received traditional teacher feedback and an experimental group that received feedback generated by ChatGPT. Each group completed six writing tasks based on their English curriculum, followed by a pre-test and post-test to measure their performance. Additionally, the experimental group participated in a questionnaire and semi-structured interviews to gather qualitative insights regarding their experience with ChatGPT.

Quantitative data were analyzed using descriptive statistics, t-tests, and repeated measures ANOVA to assess performance differences between the groups. The qualitative data from the experimental group provided more profound insight into students' perceptions of AI feedback, offering a more holistic view of the research outcomes. The study's findings demonstrated that ChatGPT feedback led to immediate improvements in students' writing, particularly in grammar and sentence structure. While both groups showed improvements over time, the experimental group exhibited greater consistency in their performance, particularly in the early stages of the study. However, the control group eventually caught up in the post-test results, suggesting that traditional feedback has long-term advantages that AI may not fully replicate. Despite these differences, students reported high

satisfaction with ChatGPT, citing its quick responses, personalized feedback, and user-friendly interface.

The study contributes to the growing body of educational literature on AI, specifically regarding how AI tools like ChatGPT can be leveraged to supplement traditional teaching methods. The findings suggest that AI can be an effective supplementary tool in language education, providing immediate, detailed feedback that encourages learner autonomy and improves writing skills.

5.2. Discussion of the Findings

This section comprehensively discusses the study's findings, addressing the research questions and situating the results in relevant literature. The findings are compared with previous studies to provide a broader perspective on the effectiveness of AI-driven feedback in EFL writing instruction.

5.2.1. RQ 1: Is there a significant difference between the achievements of the experimental group using the ChatGPT bot for feedback and the control group receiving teacher feedback on writing tasks?

The quantitative results of this study demonstrated that students in the experimental group who received feedback from ChatGPT showed significant improvements in their writing performance, especially in the earlier tasks. The significant differences observed in the early tasks suggest that ChatGPT feedback can provide immediate and impactful guidance that enhances students' writing skills more effectively than traditional methods. This aligns with previous research highlighting the value of immediate, specific feedback for language learners. According to Hattie and Timperley (2007), timely feedback plays a critical role in helping learners identify and correct their mistakes, which may explain why the experimental group saw rapid improvements in grammar, vocabulary use, and sentence structure.

Nevertheless, the significant initial gains observed in the experimental group align with the findings of Hulstijn (2015), who emphasizes the role of corrective feedback in promoting language accuracy in the early stages of learning. While human feedback is often more effective for deepening understanding and fostering critical thinking, AI feedback can play a complementary role by addressing the immediate and technical errors that might otherwise impede progress. In this way, ChatGPT serves as a valuable tool for scaffolding learners in their early stages of writing improvement, a view supported by Roscoe and McNamara (2013), who found that AI tools significantly enhanced learners' abilities to revise and improve their writing autonomously.

However, the performance gap between the experimental and control groups narrowed as the study progressed. By the post-test, no statistically significant difference was found between the two groups' writing scores. This outcome suggests that while ChatGPT provides effective immediate feedback, traditional teacher feedback offers long-term advantages, likely because human instructors are better equipped to address higher-order writing skills, such as content development, creativity, and rhetorical effectiveness (Bender et al., 2021). This result is consistent with Algaraady and Mahyoob's (2023) study, which found that ChatGPT is highly effective in detecting basic errors but lacks the depth of human teachers in guiding students on more complex writing tasks. Yılmaz and Güneş (2022) found that Turkish EFL students improved their writing skills using ChatGPT, but the improvement was most noticeable in the technical aspects of writing rather than in areas requiring deeper critical thinking. The results of the current study align with Yılmaz and Güneş (2022) in showing that ChatGPT is most effective for surface-level feedback, while teacher feedback still plays an essential role in fostering more sophisticated writing abilities. Several studies emphasize that while ChatGPT can significantly reduce the cognitive load of correcting grammar and structure, its real strength lies in the iterative process it supports.

.5.2.2. RQ 2: Is using the ChatGPT bot to improve high school students' writing skills an effective method in language teaching?

The findings from this study indicate that using ChatGPT as a feedback tool can be an effective method for improving the writing skills of high school students, particularly in English as a Foreign Language (EFL) contexts. The experimental group showed marked improvements in writing performance, especially in grammatical accuracy, vocabulary use, and sentence structure. These results are consistent with existing research that highlights the role of AI-powered tools in supporting language learners by providing immediate and personalized feedback.

Li and Ma (2022) found that AI tools, including chatbots, effectively enhance learners' grammatical accuracy by identifying common mistakes in real-time. This allows students to immediately revise their work, creating a feedback loop that encourages self-regulation and continuous improvement. In the current study, students in the experimental group responded positively to the immediacy of ChatGPT's feedback. This finding aligns with Shute (2008), who argued that formative feedback is most effective when delivered promptly, enabling learners to act on it while their attention is still focused on the task at hand.

Another key advantage of using ChatGPT in language learning is its ability to foster learner autonomy. According to Zimmerman (2002), tools that enable learners to self-regulate, such as ChatGPT, can empower students to take greater responsibility for their learning. In this study, students in the experimental group demonstrated a higher level of engagement with the writing process, actively seeking corrections and making revisions based on AI-generated feedback. This is consistent with the findings of Nguyen (2023), who explored the role of ChatGPT in promoting self-directed learning among EFL students in Vietnam. Nguyen's study showed that students who used ChatGPT for feedback were likelier to engage in independent learning activities, such as reviewing grammar rules and revising their drafts multiple times.

Additionally, AI-driven feedback tools like ChatGPT may help reduce anxiety associated with writing, particularly in language learners. Fryer et al. (2019) found that students often perceive AI tools as less judgmental than human teachers, increasing confidence and reducing anxiety when engaging in writing tasks. Similarly, in this study, students expressed that they felt more comfortable receiving feedback from ChatGPT than from a teacher, as the AI tool allowed them to experiment with their writing without fear of negative judgment. This echoes the findings of Roscoe and McNamara (2013), who reported that learners using AI feedback systems in writing tasks showed greater willingness to revise and take risks in their writing, knowing that feedback was immediate and non-critical.

However, the study also revealed some limitations to using ChatGPT in language learning, particularly in developing higher-order writing skills. While ChatGPT was effective at improving technical aspects of writing, such as grammar and structure, it was less successful in fostering creativity, argumentation, and content development. This limitation is consistent with Bender et al. (2021), who argued that while AI language models can provide accurate grammatical corrections, they lack the human ability to evaluate nuanced elements such as creativity, rhetorical effectiveness, and cultural appropriateness. Zhao (2014) also emphasized that AI-driven feedback tools are primarily designed to address surface-level errors and may not be able to offer the kind of in-depth, interpretative feedback that human teachers provide.

The findings align with those of Yılmaz and Güneş (2022), who investigated the use of ChatGPT in Turkish high school classrooms. Their study found that while ChatGPT helped students improve their grammatical accuracy, it was less effective in guiding students through the more complex aspects of writing, such as organizing ideas or developing arguments. This limitation highlights the need for hybrid feedback models that combine AI-generated feedback with teacher input, as noted by Mohammed et al. (2023), who suggested that AI tools should complement, rather than replace, traditional feedback mechanisms.

Despite these limitations, the overall effectiveness of ChatGPT in improving writing skills, especially in technical areas, cannot be overlooked. The positive student responses, coupled with significant improvements in writing performance, suggest that AI tools like ChatGPT can serve as valuable supplementary resources in language education. Marzuki et al. (2023) found similar results in their study of AI feedback tools, concluding that while human feedback is irreplaceable for higher-order skills, AI feedback provides consistent, scalable support for routine error correction and linguistic accuracy. This finding underscores the value of integrating AI technologies in classrooms where individualized teacher feedback may not always be feasible, particularly in large classes or resource-constrained settings.

The findings from this study, combined with the results of related research, suggest that ChatGPT holds promise as an effective tool in language teaching, particularly for fostering autonomy, improving technical writing skills, and reducing learner anxiety. However, the limitations identified in both this study and previous research highlight the importance of maintaining a balanced approach that combines the strengths of AI with the expertise and interpretive capacity of human instructors.

5.2.3. RQ 3: What are the opinions of the students in the experimental group about studying with the ChatGPT bot for feedback on their writing tasks?

The qualitative findings revealed that students in the experimental group had overwhelmingly positive experiences with ChatGPT, praising its accessibility, speed, and non-judgmental nature. Many students reported feeling more confident in their writing abilities due to the immediate feedback they received. This reflects findings from Fryer et al. (2019), who noted that chatbots provided a low-stress environment for learners to practice language skills without fear of embarrassment or judgment. A study by Carless (2006) emphasizes that the affective dimension of feedback is often overlooked but is vital in ensuring that students are receptive to feedback. The students' feelings of safety suggest that the feedback environment was one of trust and encouragement, which likely mitigated feelings of anxiety or

defensiveness. When students feel safe, they are more likely to accept feedback as part of their language-learning journey rather than as a punitive measure.

The ability to receive feedback without waiting for a teacher's input allowed students to revise their work more quickly, thereby fostering a greater sense of accomplishment. These results also align with the study conducted by Çiftci (2020), who found that AI-driven platforms like Grammarly promoted learner autonomy by enabling students to identify and correct their errors independently. Research suggests that constructive feedback, offering learners both an acknowledgment of their strengths and a clear path for improvement, fosters positive emotional responses (Hattie & Timperley, 2007). According to the self-determination theory (Deci & Ryan, 2000), feedback that fosters intrinsic motivation—such as excitement or curiosity—supports learners' autonomy and competence, which are essential for sustained engagement and improvement. Research indicates that AI-enhanced platforms can offer personalized learning paths that adapt to individual learner needs, thus improving engagement and outcomes (Warschauer & Grimes, 2007). This aligns with findings from Nicol and Macfarlane-Dick (2006), who argue that effective feedback promotes self-regulation in learning by helping students understand the gap between their current performance and the desired outcomes.

The students in this study appreciated the efficiency and accuracy of ChatGPT's feedback on fundamental writing issues, echoing the findings of Roscoe and McNamara (2013) that AI feedback tools improve learners' grammatical accuracy and sentence structure. Conversational AI, powered by Natural Language Processing (NLP) technologies, allows learners to engage in dialogues and receive real-time feedback on pronunciation, fluency, and intonation. This capability addresses a common challenge in language learning: the lack of opportunities for authentic speaking practice (Derwing & Munro, 2015). AI chatbots and voice assistants can serve as accessible conversation partners, offering learners the chance to practice without the social pressures of a classroom environment, thus reducing

anxiety and increasing confidence. The students' intention to use AI in the future suggests that they see it not only as a current tool but as an integral part of their ongoing, lifelong language learning. AI's potential to adapt to a learner's evolving proficiency level, track progress over time, and continuously introduce new content makes it an ideal companion for long-term learning goals.

5.3. Pedagogical Implications

The findings from this study offer several pedagogical implications for integrating AI tools like ChatGPT into EFL writing instruction. First, the study shows that ChatGPT can effectively serve as a supplementary feedback tool in classroom settings. Teachers, particularly those working with large groups of students, often face challenges in providing timely, detailed feedback to every student. ChatGPT offers a solution by providing instant, specific feedback on students' writing, which can be especially useful in early drafting stages where grammatical and structural issues are most common. This reduces the burden on teachers and allows them to focus more on higher-order concerns such as content development and critical thinking. The AI's feedback can foster student autonomy. By allowing students to receive real-time feedback without relying on their teacher, AI tools allow learners to take greater responsibility for their learning process. Students in the experimental group appreciated the immediate nature of the feedback, suggesting that AI tools like ChatGPT could promote self-regulation in learning by encouraging students to engage in self-correction and reflection (Zimmerman, 2002). This could lead to more engaged and independent learners, as they are able to track their progress and make adjustments based on feedback they receive in real time. However, while AI tools offer many advantages, they cannot replace the nuanced, personalized feedback provided by human teachers. The study found that while ChatGPT effectively improved writing mechanics, its ability to address more complex writing issues was limited. Therefore, teachers should view AI tools as complementary rather than replacements for traditional feedback. For example, teachers might use AI to handle basic grammatical corrections while reserving time to provide feedback on content, organization, and creativity. Given the positive reception of ChatGPT by students, it is clear that AI can also play a role in

reducing feedback-related anxiety. The non-judgmental, consistent nature of AI feedback allows students to make mistakes and learn from them without fear of criticism, creating a more supportive learning environment. This aspect of AI tools could be particularly beneficial for students who struggle with language anxiety, allowing them to practice writing skills with greater confidence.

5.4. Limitations and Suggestions for Further Research

This research offers significant insights into the utilization of ChatGPT to provide feedback in EFL (English as a Foreign Language) writing instruction. However, it is important to recognize certain limitations. The study's small cohort of 30 students from a single high school constrains the broader applicability of its conclusions. Conducted among 11th-grade students in a Turkish high school, the study's context was quite specific, focusing on students learning English as a foreign language. Consequently, its outcomes might not be entirely relevant across different educational environments, age demographics, or cultural backgrounds. To improve the findings' applicability in future research, there should be an effort to involve a larger and more varied group of participants.

Another limitation concerns the duration of the study. The study only measured short-term improvements in students' writing performance after completing six writing tasks. While the experimental group showed immediate benefits from using ChatGPT, it is unclear whether these improvements would be sustained over a longer period. Longitudinal studies are necessary to examine whether the positive effects of AI feedback persist over time and contribute to long-term writing skill development. This study focused primarily on surface-level writing improvements, such as grammar, vocabulary, and sentence structure, and did not fully assess more complex aspects of writing, such as content coherence, creativity, and argumentation. These higher-order writing skills may require more nuanced feedback than AI systems like ChatGPT can currently provide. Future research should explore the effectiveness of AI feedback on these more sophisticated elements of writing. The study relied heavily on quantitative measures, such as test scores, to evaluate student performance. While this provides an objective measure of improvement, it does not capture the full range of students' experiences or the qualitative improvements in their writing.

Including more qualitative assessments, such as teacher evaluations of creativity and content quality, could provide a more comprehensive understanding of the impact of AI on writing.

Given the limitations and findings of this study, several directions for further research are suggested. First, future studies should aim to explore the long-term effects of AI feedback on writing performance. While the current study demonstrated short-term gains, whether these improvements are sustainable over time remains unclear. Longitudinal research, spanning several months or even years, could provide insight into how students' writing skills evolve with sustained exposure to AI feedback. Future research could focus on the differential impact of AI feedback on various aspects of writing. While this study primarily focused on improvements in grammar and sentence structure, future studies could examine how AI tools like ChatGPT influence more complex writing skills such as creativity, critical thinking, and argument development. This could be particularly valuable in understanding how AI can support students in producing high-quality, content-rich writing that goes beyond surface-level corrections. Another area for further research involves hybrid models of feedback that combine AI and human input. Future studies could investigate how integrating AI-generated and teacher-provided feedback could create a more holistic feedback system. For example, AI could handle initial rounds of grammatical corrections while teachers focus on providing in-depth feedback on content, style, and rhetorical strategies. Such research could provide insights into how AI and human feedback can complement each other to maximize learning outcomes. Future studies should investigate AI feedback tools' ethical implications and potential biases. Given concerns about AI's inherent biases, particularly in the training data used by systems like ChatGPT, it is crucial to ensure that AI feedback does not perpetuate stereotypes or provide inequitable feedback to different student groups. Research in this area could examine how AI feedback systems can be designed to provide fair and unbiased guidance to learners of diverse backgrounds. Finally, further research is needed to explore the impact of AI feedback on learner engagement and motivation. While the current study provided some qualitative data on students' positive experiences with ChatGPT, more in-depth research

could explore how AI feedback influences students' attitudes toward learning, motivation to improve, and overall engagement with writing tasks.



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APPENDICES

Appendix A – Questionnaire

Please read the statements and check the appropriate option for your experience of studying with ChatGPT.

Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1. I felt motivated while working with ChatGPT.	☐	☐	☐	☐	☐
2. I was happy with the feedback I got from ChatGPT.	☐	☐	☐	☐	☐
3. ChatGPT helped me to write better in English.	☐	☐	☐	☐	☐
4. I didn't get any inaccurate or irrelevant information from ChatGPT.	☐	☐	☐	☐	☐
5. ChatGPT helped me come up with creative ideas for my writing task.	☐	☐	☐	☐	☐
6. ChatGPT assisted me in improving grammar and sentence structure.	☐	☐	☐	☐	☐
7. ChatGPT provided useful suggestions for enhancing writing style.	☐	☐	☐	☐	☐
8. Using ChatGPT improved my confidence in writing.	☐	☐	☐	☐	☐
9. I feel more capable of expressing my thoughts after using ChatGPT.	☐	☐	☐	☐	☐
10. I am aware of the ethical concerns of using ChatGPT.	☐	☐	☐	☐	☐
11. I believe ChatGPT can help me improve my other language skills.	☐	☐	☐	☐	☐
12. I will use ChatGPT in my language learning process more often and effectively.	☐	☐	☐	☐	☐

Appendix B – Writing Task Evaluation Rubric

Student's Name:

Task Number:

Criteria	Score	Description
Content	1-10 -----	The writing is off-topic or lacks substance (1); the writing is somewhat relevant but lacks depth (4); the writing is relevant and has some depth (7); the writing is highly relevant and has significant depth (10)
Organization	1-10 -----	The writing lacks structure and coherence (1); the writing has some structure but is not well-organized (4); the writing is well-structured and organized (7); the writing is highly structured and organized (10)
Language	1-10 -----	The writing is riddled with errors and is difficult to understand (1); the writing has some errors and is somewhat difficult to understand (4); the writing has few errors and is easy to understand (7); the writing is error-free and easy to understand (10)
Style	1-10 -----	The writing is dull and unengaging (1); the writing is somewhat engaging but lacks creativity (4); the writing is engaging and somewhat creative (7); the writing is highly engaging and very creative (10)
Total	-----	

This rubric assesses the writing on four criteria: content, organization, language, and style. Each criterion is scored on a scale of 1-10, with 1 being the lowest score and 10 being the highest score. The descriptions for each score level are also provided in the table.

Appendix C – Writing Task (as a Pre-test)**Pre-test****Topic : Future Jobs****Student's Name:**

Write a text about the topic future jobs. Your text must contain at least 200 words. Please pay attention to your grammar and text organization. You can use the back of the paper if you need more space.

Appendix D – Writing Task 1**Task No: 1****Topic: Back to Past****Student's Name:**

Write a text about the topic back to the past. Your text must contain at least 200 words. Please pay attention to your grammar and text organization. You can use the back of the paper if you need more space.

Appendix E – Writing Task 2**Task No: 2****Topic: Open Your Heart****Student's Name:**

Write a text about the topic open your heart. Your text must contain at least 200 words. Please pay attention to your grammar and text organization. You can use the back of the paper if you need more space.

Appendix F – Writing Task 3**Task No: 3****Topic: Facts From Turkey****Student's Name:**

Write a text about the topic facts from Turkey. Your story must contain at least 200 words. Please pay attention to your grammar and text organization. You can use the back of the paper if you need more space.

Appendix G – Writing Task 4**Task No: 4****Topic: Sports****Student's Name:**

Write a text about the topic sports. Your text must contain at least 200 words. Please pay attention to your grammar and text organization. You can use the back of the paper if you need more space.

Appendix H – Writing Task 5**Task No: 5****Topic: My Friends****Student's Name:**

Write a text about the topic my friends. Your text must contain at least 200 words. Please pay attention to your grammar and text organization. You can use the back of the paper if you need more space.

Appendix I – Writing Task 6**Task No: 6****Topic: Values and Norms****Student's Name:**

Write a text about the topic values and norms. Your text must contain at least 200 words. Please pay attention to your grammar and text organization. You can use the back of the paper if you need more space.

Appendix J – Writing Task (as a Post-test)**Post-test****Topic : Future Jobs****Student's Name:**

Write a text about the topic future jobs. Your text must contain at least 200 words. Please pay attention to your grammar and text organization. You can use the back of the paper if you need more space.

Appendix K – Voluntary Participation Form

ARAŞTIRMA GÖNÜLLÜ KATILIM FORMU

Bu çalışma, “ChatGPT” nin Konuya Özgü Yazma Görevlerini Değerlendirerek ve Geri Bildirim Sağlayarak Lise Öğrencilerinin Yazma Becerilerini Geliştirmek için Kullanımı” başlıklı bir araştırma çalışması olup yapay zekânın dil öğretimine entegrasyonunun yazma becerilerini geliştirme özelinde nasıl kullanılacağını ve etkili bir yöntem olup olmadığını araştırmaktadır. Çalışma, Oğuzhan OZAN tarafından yürütülmektedir ve sonuçları ile bir yüksek lisans tez çalışması ortaya konacaktır.

- Bu çalışmaya katılımınız gönüllülük esasına dayanmaktadır.
- Çalışmanın amacı doğrultusunda, Anket uygulaması / Yazma Aktiviteleri yapılarak sizden veriler toplanacaktır.
- İsminizi yazmak ya da kimliğinizi açığa çıkaracak bir bilgi vermek zorunda değilsiniz/araştırmada katılımcıların isimleri gizli tutulacaktır.
- Araştırma kapsamında toplanan veriler, sadece bilimsel amaçlar doğrultusunda kullanılacak, araştırmanın amacı dışında ya da bir başka araştırmada kullanılmayacak ve gerekmesi halinde, sizin (yazılı) izniniz olmadan başkalarıyla paylaşılmayacaktır.
- İstemeniz halinde sizden toplanan verileri inceleme hakkınız bulunmaktadır.
- Veri toplama sürecinde/süreçlerinde size rahatsızlık verebilecek herhangi bir soru/talep olmayacaktır. Yine de katılımınız sırasında herhangi bir sebepten rahatsızlık hissederseniz çalışmadan istediğiniz zamanda ayrılabilirsiniz. Çalışmadan ayrılmanız durumunda sizden toplanan veriler çalışmadan çıkarılacak ve imha edilecektir.

Gönüllü katılım formunu okumak ve değerlendirmek üzere ayırdığınız zaman için teşekkür ederim. Çalışma hakkındaki sorularınızı Oğuzhan Ozan’a ooguzhan.ozan@gmail.com mail adresi aracılığıyla yöneltebilirsiniz.

Araştırmacı Adı: Oğuzhan OZAN

Adres : Korgan İlçe Milli Eğitim
Müdürlüğü Korgan/ORDU

İş Tel : _____

Cep Tel : _____

Bu çalışmaya tamamen kendi rızamla, istediğim takdirde çalışmadan ayrılabileceğimi bilerek verdiğim bilgilerin bilimsel amaçlarla kullanılmasını kabul ediyorum.

Katılımcı Ad ve Soyadı: _____

İmza: _____

Tarih: _____

Appendix L – Consent Form

Sayın Veli;

Çocuğunuzun katılacağı bu çalışma, “ChatGPT” nin Konuya Özgü Yazma Görevlerini Değerlendirerek ve Geri Bildirim Sağlayarak Lise Öğrencilerinin Yazma Becerilerini Geliştirmek için Kullanımı” adıyla, 22/04/2024 – 31/05/2024 tarihleri arasında yapılacak bir araştırma uygulamasıdır.

Araştırmanın Hedefi: ChatGPT isimli yapay zeka botunun lise öğrencilerinin İngilizce yazma becerilerini geliştirmede kullanılması etkili bir yöntem olup olmadığının belirlenmesi ve öğrencilerin bu sohbet botu ile çalışırken neler hissettiklerinin belirlenmesidir.

Araştırma Uygulaması: Anket / Yazma Aktiviteleri şeklindedir.

Araştırma T.C. Milli Eğitim Bakanlığı’nın ve okul yönetiminin de izni ile gerçekleştirilmektedir. 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 katılmama 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 : Oğuzhan OZAN

İletişim bilgileri :

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

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

T.C.
TOKAT GAZİOSMANPAŞA ÜNİVERSİTESİ SOSYAL VE BEŞERİ BİLİMLER
ARAŞTIRMALARI
ETİK KURULU KARARLARI

KARAR TARİHİ	OTURUM NO	KARAR SAYISI
12.03.2024	05	01-51

Üniversitemiz Sosyal ve Beşerî Bilimler Araştırmaları Etik Kurulu Başkanı Prof. Dr. Nail YILDIRIM Başkanlığında toplandı.

KARAR 05.11- Lisansüstü Eğitim Enstitüsü Müdürlüğünün 27.02.2024 tarih ve 405491 sayılı yazısı görüşüldü.

Aşağıda bilgileri yer alan araştırmacıların yapmak istediği uygulamaların ve kullanacağı veri toplama araçlarının etik açıdan uygunluğuna oy birliği ile karar verildi.

ÇALIŞMANIN TÜRÜ	Yüksek Lisans Tezi
BAŞLIK	ChatGPT'nin Konuya Özgü Yazma Görevlerini Değerlendirerek ve Geri Bildirim Sağlayarak Lise Öğrencilerinin Yazma Becerilerini Geliştirmek İçin Kullanımı
TEZ YÜRÜTÜCÜSÜ/ ÇALIŞMANIN YAZARI	Dr. Öğr. Üyesi Serpil AZAP Oğuzhan OZAN (Yabancı Diller Eğitimi Anabilim Dalı)
RAPORTÖR GÖRÜŞÜ	OLUMLU

Prof. Dr. Nail
YILDIRIM Etik Kurul
Başkanı (İmza)

Prof. Dr. Mehmet Serkan UMUZDAŞ
Başkan Yardımcısı
(İmza)

Prof. Dr. Emine ÖĞÜK
Üye
(İmza)

Prof. Dr. Mehmet KARGÜN
Üye
(İmza)

Prof. Dr. Muhittin DEMİRAY
Üye
(İmza)

Doç. Dr. Tuğba KILIÇER
Üye
(İmza)

Doç. Dr. Hüseyin Baha ÖZTUNÇ
Üye
(İmza)



T.C.
ORDU VALİLİĞİ
İl Millî Eğitim Müdürlüğü



Sayı : E-18802389-605.01-100787569
Konu : Araştırma İzni (Oğuzhan OZAN)

22.04.2024

VALİLİK MAKAMINA

İlgi : a) Millî Eğitim Bakanlığı Yenilik ve Eğitim Teknolojileri Genel Müdürlüğünün 21.01.2020 tarihli ve 1563890 sayılı yazısı (Genelge 2020/2)
b) Tokat Gaziosmanpaşa Üniversitesi Rektörlüğünün 15.03.2024 tarihli ve 412388 sayılı yazısı.

Tokat Gaziosmanpaşa Üniversitesi Lisansüstü Eğitim Enstitüsü Yabancı Diller Eğitimi Anabilim Dalı tezli yüksek lisans programı 22028411842 T.C. kimlik numaralı öğrencisi Oğuzhan OZAN' ın, "ChatGPT' nin Konuya Özgü Yazma Görevlerini Değerlendirerek ve Geri Bildirim Sağlayarak Lise Öğrencilerinin Yazma Becerilerini Geliştirmek için Kullanımı" konulu bilimsel çalışmasına veri sağlamak amacıyla anket çalışması yapma izin talebine ilişkin ilgi (b) yazı ve ekleri, Müdürlüğümüz Araştırma Değerlendirme Komisyonu tarafından ilgi (a) genelge hükümleri doğrultusunda incelenmiş olup, uygulanmasında sakınca görülmemiştir.

Söz konusu anket çalışmasının, eğitim öğretim faaliyetlerini aksatmayacak şekilde olur ekinde yer alan imzalı ve mühürlü formun kullanılarak, öğrencilere ait çalışmaların veli izni doğrultusunda ve elde edilen verilerin herhangi bir haber, resmi özel web sayfaları, yerel ve ulusal basında paylaşılmaması kaydıyla, Tokat Gaziosmanpaşa Üniversitesi Lisansüstü Eğitim Enstitüsü Yabancı Diller Eğitimi Anabilim Dalı tezli yüksek lisans programı 22028411842 T.C. kimlik numaralı öğrencisi Oğuzhan OZAN tarafından; ilimiz Resmi Anadolu Lisesi öğrencilerine 2023-2024 eğitim ve öğretim yılı içinde okul müdürlüğünün sorumluluğunda gönüllülük esasına göre uygulanması Müdürlüğümüzce uygun görülmektedir.

Makamlarınızca da uygun görülmesi halinde olurlarınıza arz ederim.

Ramazan TÖNGEL
Müdür a.
Şube Müdürü

OLUR
Mehmet Fatih VARGELOĞLU
Vali a.
İl Millî Eğitim Müdürü

Ek :

- 1- Komisyon Kontrol Tutanağı (2 Sayfa)
- 2- Mühürlü Anket Formu (13 Sayfa)

Bu belge güvenli elektronik imza ile imzalanmıştır.

Thesis Title:	Employing ChatGPT to Improve High School Students' Writing Skills by Providing Feedback on Topic-Specific Writing Tasks		
Evaluation Result		☒ Unanimously accepted ☐ Accepted by majority vote ☐ Reject	
Advisor Approval			
Title, Name Surname Asst. Prof. Dr. Serpil AZAP	Date 27/02/2024	Signature	
DEPARTMENT / DIVISION OF SCIENCE BOARD DECISION			
Date:/...../20..			
(Signature) Asst. Prof. Dr. Zafer SUSOY Head			
(Signature) Assoc. Prof. Dr. Nejat KUMRAL Member		(Signature) Asst. Prof. Dr. Serpil AZAP Member	
(Signature) Asst. Prof. Dr. Hande ÇETİN Member		(Signature) Asst. Prof. Dr. Elham ZARFSAZ Member	
(Signature) Asst. Prof. Dr. Uğur ADA Member			