

KARADENİZ TECHNICAL UNIVERSITY * THE INSTITUTE OF SOCIAL SCIENCES

DEPARTMENT OF WESTERN LANGUAGES AND LITERATURE

MASTER'S PROGRAM IN APPLIED LINGUISTICS

**AN INVESTIGATION OF THE PERCEIVED EFFECTS OF CORPUS-BASED
VERSUS AI-ASSISTED MULTIDIMENSIONAL FEEDBACK ON EAP
ENGINEERING STUDENTS' WRITING PERFORMANCE**

MASTER'S THESIS

Hürriyet AZAKLI

SEPTEMBER-2025

TRABZON

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Supervisor: Assoc. Prof. Dr. Ali Şükrü ÖZBAY

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APPROVAL

Upon the submission of the dissertation, **Hürriyet AZAKLI** has defended the study “**An Investigation of The Perceived Effects of Corpus-Based Versus AI-Assisted Multidimensional Feedback On EAP Engineering Students’ Writing Performace**” in partial fulfillment of the requirements for the degree of Masters in English Language and Literature at Karadeniz Technical University, and the study has been found fully adequate in scope and quality as a thesis by unanimous/ majority vote on 05.09.2025.

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Title – Name and Surname	Mission	Accept	Refuse	
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*In loving memory of my dear grandmother Tamara Chulkova. Thank you for helping me
become the man that I am today*

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September, 2025

Hürriyet AZAKLI

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ÖZET

Bu çalışma, derlem tabanlı ve yapay zeka destekli çok boyutlu geri bildirimin mühendislik öğrencilerinin Akademik Amaçlı İngilizce (EAP) yazma performansı üzerindeki algılanan etkilerini incelemektedir. Karma yöntem yaklaşımı kullanılan araştırmada, geleneksel derlem araçları ile ChatGPT tarafından sağlanan yapay zeka destekli geri bildirimin etkinliği karşılaştırılmakta ve şu beş değerlendirme ölçütüne odaklanılmaktadır: ölçüte dayalı geri bildirim, iyileştirme talimatlarının netliği, doğruluk, temel özelliklerin önceliklendirilmesi ve destekleyici ton. Veriler, farklı mühendislik disiplinlerindeki yüksek lisans öğrencisilerinden anketler, mülakatlar ve akademik makalenin analizi yoluyla toplanmıştır.

Nicel sonuçlar, ChatGPT'nin kullanım kolaylığı ,dilbilgisi ve çeviri konularındaki etkinliğiyle yaygın şekilde takdir edildiğini ortaya koymuştur. Buna karşılık, korpus araçları alanına özgü ifadeleri ve dilbilgisi kalıplarını tanımlamadaki doğrulukları açısından değerli bulunmuştur. Nitel bulgular, ChatGPT'nin anında ve kişiselleştirilmiş geri bildirim sağlama konusundaki güçlü yönlerini vurgularken, güvenilirlik ve aşırı güven ile ilgili endişeleri de gündeme getirmiştir. Öte yandan, teknik olarak karmaşık olmalarına rağmen, korpus araçları bağımsız öğrenmeyi ve daha derin bir dil farkındalığını teşvik ettikleri için övgü almıştır.

Çalışma, her iki geri bildirim yönteminin de kendine özgü avantajlar sunduğu sonucuna varmaktadır: ChatGPT erişilebilirlik ve gerçek zamanlı destek konusunda öne çıkarken, korpus araçları dili eleştirel bir şekilde kullanmayı teşvik etmektedir. EAP yazma öğretiminin en iyi şekilde yürütülebilmesi için, her iki yaklaşımın da eğitmen rehberliğinde entegre edilmesi önerilmektedir. Bu bulgular, teknoloji destekli dil öğrenimi üzerine süregelen tartışmalara katkı sağlamakta ve yeniliği pedagojik titizlikle dengelemek isteyen eğitimcilere pratik bilgiler sunmaktadır.

Anahtar Kelimeler: Korpus Tabanlı Geri Bildirim, Yapay Zeka Destekli Geri Bildirim, ChatGPT, Akademik Yazma, EAP.

ABSTRACT

This study investigates the perceived effects of corpus-based and AI-assisted multidimensional feedback on Engineering students' English for Academic Purposes (EAP) writing performance. Using a mixed-methods approach, the research compares the effectiveness of traditional corpus tools with AI-driven feedback provided by ChatGPT, focusing on five assessment criteria: criterion-based feedback, clarity of improvement instructions, accuracy, prioritization of key features, and supportive tone. Data were collected through surveys, interviews, and the analysis of academic papers from graduate students across various engineering disciplines.

Quantitative results revealed that while ChatGPT was widely appreciated for its ease of use, its effectiveness in grammar and translation, corpus tools were valued for their accuracy in identifying domain-specific expressions and grammatical patterns. Qualitative findings highlighted ChatGPT's strength in delivering instant, personalized feedback, but also raised concerns about reliability and over-reliance. In contrast, although technically complex, corpus tools were praised for promoting independent learning and deeper language awareness.

The study concludes that both feedback methods offer distinct advantages: ChatGPT excels in accessibility and real-time support, while corpus tools encourage critical engagement with language. For optimal EAP writing instruction, the integration of both approaches, supported by instructor guidance, is recommended. These findings contribute to ongoing discussions on technology-enhanced language learning and provide practical insights for educators aiming to balance innovation with pedagogical rigor.

Keywords: Corpus-Based Feedback, AI-Assisted Feedback, ChatGPT, Academic Writing, EAP.

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LIST OF ABBREVIATIONS

AI	: Artificial Intelligence
AWE	: Automated Writing Evaluation
CF	: Computer-generated feedback
DDL	: Data Driven-Learning
EAP	: English for Academic Purpose
EFL	: English as Foreign Language
ESL	: English as Second Language
SF	: Self Feedback
SPSS	: Statistical Package for the Social Sciences
TF	: Teacher Feedback

CHAPTER ONE

1. INTRODUCTION

The first chapter of the thesis consists of 5 headings, which consists of the background of the study, statement of the problem, purpose of the study, significance of the study, and research questions. This thesis aimed to find out the perceived effects of Corpus-Based and Artificial Intelligence-based writing feedback for English Academic Writing and how they are compared with each other and what perceived effects engineering students received during this period.

1.1. Background of the Study

Providing formative feedback to students during the writing process is an important instructional practice that helps students develop as writers (Graham, Harris, & Hebert, 2011; MacArthur, 2016). However, this requires significant time and effort for teachers, especially when providing feedback to multiple students. (Applebee & Langer, 2011; Kiuahara, Graham, & Hawken, 2009, Graham, 2019). At this point, the introduction of educational technologies can make teaching processes more efficient. Artificial intelligence, in particular, has the potential to revolutionize learning and teaching processes. Artificial Intelligence (AI), a component of technological breakthroughs, is making learning and education easier. Virtual mentors, voice assistants, creative material, smart classrooms, automated tests, and tailored learning are just a few of the prevalent AI-based educational technologies. The educational system has changed as a result of educational technology. Therefore, the participation of the educational community becomes essential in making changes to the learning system in order to enhance graduates' competitiveness by equipping them with critical, creative, and collaborative thinking skills.

One significant measure of academic aptitude is the ability to write in a second language (Crossley, 2013; Hyland, 2019). The corpus, which contains detailed information about the student's language, has been extensively researched in second language acquisition and teaching (Wang et al. 2023). Lexical items form a vital part of any natural human language, and the mastery of verbal use dictates the linguistic performance of a language learner. An extensive vocabulary constitutes a language learner's ultimate objective (Yang and Coxhead 2020). As a result, lexical use and

development have been a significant issue in language acquisition, teaching, and computational linguistics, providing implications for textbook and dictionary compilation. In addition to improving communication, proficient use of vocabulary helps second-language learners succeed academically. Students' reading, writing, speaking, and listening abilities can all be improved by focusing on vocabulary development. In language education, this focus on vocabulary mastery has important implications for the development of teaching resources and assessment tools effectively.

Corpus resources provide second language writers with the opportunity to be exposed to written discourse, helping them understand grammatical patterns, collocations, and appropriate word usage. Moreover, corpora serve as a valuable tool for second-language writers to verify the accuracy and intended meaning of specific text elements (Chen and Ngo, 2024). In this context, the concept of Data-driven Learning (DDL), introduced by Johns (1991), aims to expose language learners directly to corpus data, minimizing intermediaries as much as possible (Johns, 1991). A wide range of language corpora for DDL has emerged in various areas, including first and second language acquisition, skill development, translation, and material development (Lenko-Szymańska & Boulton, 2015). In terms of DDL acquisition, DDL creates an environment that allows students to become active language learners by enabling them to query corpora, examine collocations, and identify gaps in their linguistic knowledge within their L2 repertoire (Godwin-Jones, 2017; O'Keeffe, 2021; Schmidt, 2023). In other words, DDL has the potential to enhance second language learners' academic writing skills by promoting independent learning through corpus-based exploration (Flowerdew, 2015). The student corpus brings together data related to the student's actual language use; it provides detailed and accurate information about the specific features of the language being learned and the learner's difficulties. A detailed description of student language can be obtained by collecting statistics on the data regarding students' real language use (Wang et al., 2023). Existing literature that suggests corpus use can have a positive impact on language learners' grammar and vocabulary knowledge. Content analysis was used to evaluate the effectiveness of corpus use and categorize students' errors and corrections; this demonstrated which features of the L2 academic writing participants used corpora to correct their errors. Another content analysis was employed to reveal their views on the use of a corpus as a DDL tool. The use of corpora had a significant positive impact on EFL students' academic writing in a second language, particularly in terms of increased vocabulary and grammar usage (Emir and Ekşi, 2023). It is crucial to understand that using corpora fosters a deeper comprehension of language patterns and structures in addition to improving vocabulary and grammar. Students are exposed to realistic language use through active interaction with real language data, which can greatly improve writing correctness and fluency. More learning autonomy is also promoted by the capacity to self-correct and assess one's writing using corpus tools. AI-powered corpus tools have the ability to completely transform second language writing instruction as technology advances by giving students instantaneous, tailored feedback and fostering long-term language growth effectively.

Looking at previous studies, the positive effects of corpus on EFL students' academic writing have been observed. ChatGPT is a creation of OpenAI, an artificial intelligence company based in San Francisco, California (Stokel-Walker, 2022). The company released GPT-3, a type of artificial intelligence known as a large language model, in 2020. It generates text by filtering billions of words of training data and understanding the relationships between words and phrases (Fitria, 2023). The study aims to explore the benefits, drawbacks, and reliability of integrating AI in providing feedback for EFL students' academic writing. Text generation tools like ChatGPT are now more accessible, scalable, and comprehensive due to the quick advancement of artificial intelligence technology (Zhou et al., 2022). Since its emergence, ChatGPT has been widely used for various authoring purposes. It has proven effective in content creation, creating well-structured articles [Qasem, 2023., Lo, 2023], engaging stories [Cotton et al., 2023], and other realistic and coherent written texts. Therefore, ChatGPT is an AI-powered chatbot that has proven to be a valuable tool. As demonstrated in qualitative studies, it supports ESL/EFL learning (e.g., Huang et al., 2022; Kuhail et al., 2023; Kasneci et al., 2023). The potential to support and enhance the articulation of AI tools like ChatGPT is significantly greater. Further research into effectiveness and best practices in voicing AI feedback is warranted, with great emphasis placed on maximizing the benefits of these tools while addressing potential downsides. In this research, we will examine whether the positive effects of feedback provided by corpus can be similarly observed in feedback generated by artificial intelligence tools like ChatGPT.

1.2. Statement of the Problem

English is recognized as the language of international communication and holds a significant place in academic fields. Therefore, students who wish to publish an international scientific article today are required to develop their academic English writing skills to a sufficient level. English for Academic Purposes (EAP) is a teaching approach aimed at equipping students with the necessary language skills to succeed in academic settings. The main goal of EAP is to help students gain mastery over the language used in their specific fields by developing materials consisting of discipline-specific vocabulary groups (e.g., N-grams, collocations, lexical bundles, word clusters) and terminology, and to assist them in expressing their ideas effectively.

With advancing technology, Artificial Intelligence (AI) applications are now being used in many areas. This research aims to evaluate whether the use of the ChatGPT tool by students during the academic writing process in English is as effective as using a corpus. As part of the study, students will use ChatGPT to detect writing errors, punctuation mistakes, and grammatical issues.

Additionally, they will be asked to use ChatGPT to identify problems such as semantic coherence, thematic development, and expression errors in their academic papers.

In the final stage, students will present the feedback they received from ChatGPT to expert instructors, and this feedback will be analyzed by the experts. The experts will thoroughly evaluate the students' work and provide direct formative feedback. This process aims to measure the effectiveness of ChatGPT in the academic writing process and assess its contributions to students.

Despite the increasing importance of English academic writing skills for students aiming to publish on international academic platforms, many learners continue to face challenges in producing coherent, accurate, and well-structured texts. Traditional feedback methods, while effective, are often time-consuming and limited in scalability. While corpus-based tools have been shown to enhance student's awareness of grammar and vocabulary usage, the integration of AI-powered tools like ChatGPT into academic writing instruction remains relatively underexplored. There is a need to examine whether AI-generated feedback can match or complement the effectiveness of corpus-based approaches in supporting English as a Foreign Language (EFL) students' academic writing development. This study addresses this gap by evaluating how effectively ChatGPT assists students in identifying and correcting writing errors and improving the overall quality of their academic texts compared to traditional corpus-based feedback.

1.3. Purpose of the Study

This study aims to evaluate and compare the effectiveness of two different feedback strategies: corpus-based feedback and ChatGPT-focused generative Artificial Intelligence (AI)-based feedback. The primary goal of the research is to determine which of these methods is more effective in providing formative feedback on academic articles written by 312 graduate (master's and PhD) students from various engineering disciplines. For this comparative analysis, a systematic framework will be designed to assess the quality of both corpus-based and AI-generated feedback. To measure the effectiveness of the feedback, five evaluation criteria will be employed: (a) Criterion-Based Feedback, (b) Clarity of Improvement Instructions, (c) Accuracy of the Feedback, (d) Prioritization of Key Features, and (e) Supportive Tone. Within the scope of the study, a dataset of 312 academic articles written by engineering students will be compiled based on strict design criteria. For each article, feedback will be generated using both corpus-based methods and ChatGPT. The evaluation of the feedback will be carried out by four expert reviewers according to the five measurement criteria. The findings of this research aim to reveal whether ChatGPT can provide feedback of comparable quality to Corpus-Based Learning methods within the context of English for Academic Purposes (EAP).

1.4. Significance of Study

This study holds significant value in the field of English for Academic Purposes (EAP) as it addresses the growing need for effective academic writing support tools for graduate students, particularly in engineering disciplines. By comparing corpus-based feedback methods with AI-driven feedback through ChatGPT, this research contributes to the understanding of how emerging technologies can complement or even enhance traditional feedback practices. The findings will offer insights into the pedagogical potential of generative AI tools in academic writing instruction, highlighting their strengths and limitations. Furthermore, the study provides practical implications for educators, curriculum designers, and language instructors seeking to integrate innovative, data-driven approaches into academic writing programs. Ultimately, the research aims to support students in developing more precise, coherent, and discipline-specific academic texts by identifying the most effective feedback strategies.

1.5. Research Questions

1. How is feedback provided by the AI for academic writing perceived by the students?
2. How is feedback provided by the Corpus tools for academic writing perceived by the students?
3. Can the implementation of both AI and Corpus tools prove to be beneficial for academic writing and what are their respective advantages and disadvantages?

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Artificial Intelligence (AI) and CHATGPT

The term “Artificial Intelligence”(AI) was first coined by John McCarthy (1955) who described it as machines, which can use form concepts and abstractions, improve themselves and find solutions to the problems that are reserved for humans. From that point in time, AI started its advancement as part of computer science. A more suitable definition would be to describe AI, as a huge field of computer science that is involved in the creation of Technologies and machines, that can perform tasks that usually require human intelligence (Jia et al., 2022).

The Natural language processing (NLP) and artificial intelligence (AI) made progress, which in turn allowed other variety of assisted tools to be developed for writers. The Criterion Online Writing Evaluation Service, which was initially developed as an essay scoring device, which later was expanded and incorporated different writing tools, and Grammarly programs’ grammar correction systems, are two examples that can be worth mentioning. For both non-native and native writers, these tools became crucial. (Yoon, S., Miszoglád, E., & Pierce, L.R, 2023).

In recent times, a huge scale of generative language models has emerged, which helped to develop NPL and AI. Some studies have shown that these language models can acquire skills in new tasks by using only limited examples, and in turn can achieve performance that is similar to humans on certain tasks, such as translation, generation of texts, and answering questions (Chung et al., 2024; Brown, Tom B., 2020; Radford et al., 2019). Additionally, the fourth generation of the Generative Pre-trained Transformer (GPT) model, which is ChatGPT, is already being used in fields, such as customer support and education (Yoon, S., Miszoglád, E., & Pierce, L.R, 2023).

ChatGPT is an artificial Intelligence chatbot, which was developed by the company OpenAI. In its core design, it uses cutting-edge machine learning algorithms, to produce responses that are kind to natural human speech. The development of ChatGPT has been going on for several years, and it underwent many improvements and updates which made it the most advanced chatbot

nowadays. The history of ChatGPT goes back to the development of GPT, which is an AI language model, which was also developed by the company OpenAI in 2018. The design philosophy behind GPT is that it contains a large dataset of human-generated texts, which helps the chatbot to learn the style and structure of language, which in turn helps to predict the following words in the given sequence of words. As the success of this technology was proven, the integration of it in a variety of fields was a matter of time. Today it is integrated into different types of fields and not limited to, machine translation, music composition, and language generation. (Kovacevic,2023).

Thanks to GPT's capabilities and its achievements, the company OpenAI was able to develop an advanced chatbot that can have natural discussions with people. As a result, ChatGPT was born and was made available in 2020. Because it contains a vast amount of dataset of hundreds of billions of words and was trained on them, ChatGpt can produce high-quality language, and engage itself in a variety of different NLP tasks, such as summarization, feedback, translation, and answering questions. Furthermore, as it can produce human-like organic responses to given inputs, the model has been optimized for conversational language, it can act similarly to virtual assistants and chatbots, by generating responses in a conversational setting. The model can content and context of the ongoing conversation with the user thanks to advanced machine learning algorithms, as an outcome of this it can store and use this information for producing relevant responses. In turn, this grants the model to have a conversation with humans that is flowing and natural, rather than generating responses that are pre-determined. A feature that also should be taken into consideration, is its high knowledge build. To be specific, as it has access to a huge amount of human-generated datasets, this helps the model to learn more variety of topics, including language and culture. In turn, this helps ChatGPT, to respond and generate appropriate responses to a variety of questions in a detailed and accurate manner.

ChatGPT received a lot of attention from the public eye. An online survey was made by Intelligent in 2023 January, which was updated again in May. In total 1,223 graduate and undergraduate students took part in the survey, in which nearly %30 of students used ChatGPT for their schoolwork. ChatGPT's skill, in creating human-like natural texts raised concerns in the education field. The main concerns were the authenticity of the work that was done by the students, academic integrity, and their progress in education. Because of this, some schools in the U.S. and certain universities banned the use of Artificial Intelligence tools in written assignments (Yoon, S., Miszoglad, E., & Pierce, L.R, 2023).

Another online survey which was made by Intelligent (2023), aimed to investigate teachers' views towards integration of ChatGPT in the education field. Only educators who were aware of

ChatGPT took part in the survey, while those who were unaware were eliminated. In total of 1000 educators took part in the survey, which was made up of university professors, and teachers from high schools, and of %97 responses were that they included ChatGPT into their teachings. The educators used ChatGPT for a variety of tasks such as grading and feedback, lesson plan creation, and recommendation letters.

According to Yoon, S., Miszoglad, E., & Pierce, L.R (2023), the usage of ChatGPT for student essay grading started to receive more interest. Popular video site YouTube has become full of videos, which have tutorials for educators, for grading students' essay papers and providing feedback that is "pain-free". The tutorial videos are not limited to only grammar correction and vocabulary suggestions, The tutorial makers generate feedback using ChatGPT for Higher Order Concerns (HOC), which organizes the paper feedback from higher priority to lower, as not every part of the paper is equally important. In comparison to grammatic error correction and holistic essay grading studies that were done by NLP researchers (Yancey et al., 2023; Coyne et al.,2023; Fang et al., 2023; Wu et al., 2023) the validity and reliability of ChatGPT is not studied deeply enough.

The quality of the response that ChatGPT generates depends on the prompt, the model is known to be very sensitive to the quality of it (Reynolds & McDonell,2021), a prompt can be seen as a natural instruction to ChatGPT for response generation. Entering a good prompt in ChatGPT is key to generating quick and high-quality answers (Lin, 2023). The quality of the prompts can help users to correct their errors among many other things.ChatGpt also is not limited to English language only, the instructions or the prompts can be entered in different languages such as Turkish, Russian, German, Spanish, French, Italian, Dutch, Korean, and Chinese are few examples. This is important, simply because non-native speakers or L2 learners can use this feature to give prompts to ChatGPT in their native language and generate answers, which can in turn help them in their English writing skill, a linguistic flexibility.

2.2. AWE, CHATBOTS and ChatGPT

For L1 and L2 learners' dialogical interaction is highly important, because during their learning process they encounter challenges in writing, from language-related perspectives, dialogical and structural point of view (Wagner, Parra & Proctor, 2017). Because of this quality feedback at the right time is important. However, educators sometimes do not have time and energy to provide feedback both on content and language (Guo, Wang & Chu, 2022; Xu & Zhang, 2022; Thi & Nikolov,2021). Because of this, educators tried to find new ways, and new technologies for support, one of which is an automated writing evaluation (AWE). It is a system that is used to provide

substantial feedback on argumentative writing and corrective feedback on language features (Shi, Liu, Lai, & Jin, 2022), which in addition also uses chatbots that are AI-based, to interact with students and scaffold their English writing essays (Guo, Wang, & Chu, 2022; Lin & Chang, 2020).

Chatbots are intelligent systems that were developed to interact with humans using natural language ((Luo, Lau, Li, & Si, 2022). While the usage of chatbots for language learning has been around for more than decades (Huang, Hew, & Fryer, 2022), the studies that explored how effective chatbots were in argumentative writing had mixed results. In a study conducted by Lin and Chang (2020), positive results were observed, in assisting outlining drafting of essays. However, the researchers attributed this to the novelty effect. In another study done by Guo, Wang, & Chu (2022), Argumate was designed "to scaffold rebuttals and counterarguments" for the writing process. Although it was well-intentioned, it lacked the understanding of students' inputs and only generated a pre-defined scaffold on limited topics, which shows its limitations. This can be attributed to, old versions of chatbots not being based on generative models, because of this they were not able to provide personalized and dynamic feedback but rather generated pre-set responses.

AWE systems are also not perfect, even though in a study done by Ngo, Chen, & Lai, (2022), with an overall effect size of 0.59 AWE systems can be regarded as an effective tool for writing. This system's main design philosophy, is to enhance meta-cognitive awareness, with the addition of self-monitoring of writing with feedback that is limited to time. Because of this some scholars believe that AWE does not let students have authentic writing contexts (Herrington & Moran, 2012; Vojak, Kline, Cope, McCarthey, & Kalantzis, 2011), therefore they cannot overcome the dialogic challenges in writing. According to Ranalli (2018) and Zhang (2020), AWE systems might give users abstract feedback, which makes it hard to understand.

Different studies have been conducted that incorporated AWE tools such as Vantage Learning's MY Access, Educational Testing Service's (ETS) Criterion Online Writing Evaluation Service to explore how automated writing tools affect formative assessment (Chapelle, Cotos & Lee, 2013; Chen & Cheng, 2008; Ranalli, Link & Chukharev-Hudilainen, 2016). The feedback that was gathered from Vantage Learning's MY Access was about the essay organization of students, but feedback lacked personal feedback and relied on rubrics from which generic templates were gathered. The feedback gathered from ETS provided feedback related to the discourse structure of the essay, especially how it conforms to the 5-paragraph format, which is a standard American Argumentative essay writing style. The feature helped with finding the errors in the organization of papers, for example, lacking a conclusion or missing thesis statement, however, worry for a rose for its potential encouragement to use formulaic structures. (Yoon, S., Miszoglad, E., & Pierce, L.R, 2023). Because

of these problems, the reactions of educators and students were not so positive on automated feedback's content and coherence and cohesion (Chen & Cheng, 2008; Dikli, 2010). In both studies, educators and students that participated in AWE integrated classes, had negative feedback because of its poor usage, redundancy, restricted coverage, and low accuracy (Yoon, S., Miszoglud, E., & Pierce, L.R, 2023).

Nevertheless, both chatbots and AWE have their limits. For AWE systems, their limitation is that they fail to take into the account social aspect of writing (Godwin-Jones, 2022). Chatbots were limited in providing students detailed feedback to students, (Guo, Wang, & Chu, 2022; Lin & Chang, 2020), and also users encountered communication breakdowns frequently. (Yin & Satar, 2020). However, the new chatbot, ChatGPT has a great range in understanding natural language, high adaptability, and vastly improved efficiency and accuracy in responding to prompts (Rudolph, Tan, & Tan, 2023). Therefore it can support students in overcoming structural, dialogical, and linguistic challenges that are in English writing.

Lately, a significant development has been made in AI using a machine learning approach. A company named OpenAI, released to the public their chatbot, ChatGPT, which in comparison with its rivals had the most technical leap (Godwin-Jones, 2022). These models contain a large tokenized language dataset, which was used to train them, which in turn gives the ability to understand the data that is provided and generate human-like responses, by predicting which subsequent words usually come after, within the string of given words. To improve ChatGPT's ability to respond to given prompts, the model was tuned with Reinforcement Learning from Human Feedback (RLHF), which helps ChatGPT to adapt and adjust its responses, and improve its performance based on the feedback given by the human user (OpenAI, 2022). The model has the ability, can store and maintain prior conversation exchanges between users, store it, and respond accordingly in subsequent interactions, depending on users' needs, requests for modifications, and clarifications. (OpenAI, 2022). The repetitive training and improvement process upgrades the ChatGPT's ability to understand natural language, generate creative responses to different prompts, process inputs, and maintain the flow of natural conversation. (Adamopoulou & Moussiades, 2020; Florida, 2023; Kasneci et al., 2023). Nevertheless, the model ChatGPT has the potential to generate false or unneeded data, because of bias in the training data, so refinement might be needed based on the feedback from its users (OpenAI, 2022).

Sharing similarities with AWE systems, ChatGPT'S improved performance for processing longer inputs gives the ability to the models, which was not achievable in its early predecessors (Guo, Wang, & Chu, 2022; Lin & Chang, 2020). In addition, ChatGPT can be used as a virtual learning

partner, which facilitates social interaction, potentially addressing dialogical problems of argumentative writing (Park et al., 2021), also playing a role in reducing communication problems for instance the likes of social anxiety (Abrams, 2005). Thanks to its upgraded natural language understanding abilities, can breakdown interactions in a much more efficient manner and require less precision in user language than its predecessors (Fryer, Nakao, & Thompson, 2019; Kasneci et al., 2023; OpenAI, 2022; Yin & Satar, 2020).

2.3. English for Academic Purpose and Data-Driven Learning (DDL)

English for Academic Purpose sometimes referred to as EAP emerged out of another big field referred to as English for Specific Purpose (ESP), which is defined as teaching English specifically to facilitate the needs of the learners using English (Flowerdew and Peacock, 2001). A similar definition for ESP was made by Anthony (2018), in which he defined it as a language teaching approach, that identifies the current or future academic needs of the students, targets the necessary genres, skills, and language to address those needs and helping students in addressing those needs, by integrating discipline specific or general methods of teaching. EAP is differentiated by this focus from the ESP because the focus is on the academic context, however, both in the field of English and Applied Linguistics it is viewed that EAP is a subdiscipline of the ESP (Hamp-Lyons, 2001) While defining the EAP, Yuan, and Zeng (2021) referred to EAP as a kind of ESP branch, and used the definition of ESP by Dudley-Evans and Swales (1998) for the EAP which is, any kind of English Teaching that is related to purposes of the study.

The use of corpus linguistics methods for EAP has got a lot of attention and in the past ten years analysis of written, spoken discourse, and academic language corpora have become an important tool of the analysts for the EAP (Hamp- Lyons,2001). The works of Hyland have been informed by the corpora greatly, as in the examples of his works such as "A discourse analysis of Swales' writing" (Hyland, 2008) and "Humble Servants of the Discipline?" (Hyland, 2001). Corpora is a collection of language that occurs naturally, then stored in the form of electronics and designed to analyze the text with the use of computer programs (Nesi,2016) Corpora are used widely in the field of EAP and provide both quantitative information that is retrieved from the discourse and also used to corroborate insights that are gathered from qualitative studies.

The latest surveys show that the use of Corpora by students who take EAP classes is increasing (Charles and Hadley, 2022). A result of the study shows there is an increase in the number of EAP papers' corpus use in the years between 2010 and 2016 in comparison to the past ten years, which means that the number of students that were exposed to data-driven learning (DDL) has increased.

(Chen & Flowerdew 2018). DDL is a term that was first coined by Johns (1991) and is a method in which the learners are exposed to a huge amount of authentic language, and themselves try and discover the linguistic patterns and the rules on their own. In the worlds of Talai and Fotovatnia (2012), teachers are seen as directors and collaborators instead of providing the information to the students explicitly and directly. In DDL the emphasis is put on the learners' role. It also needs to be noted that. Usually regarded that teaching and learning as two activities that are complementary, however in reality that is not the case, and learning can occur without the instructor's interference. It is also believed that in certain situations learning is seen to be more effective when there is no instructor. This is the basis of DDL, where learners are exposed to authentic language use in written and spoken text and are expected to figure out the patterns and the rules of the languages by themselves. DDL has some advantages, such as increasing the autonomy and independence of the learner, enhancing awareness of the language, and making the student able to manage authentic language use.

A study (Charles & Hadley, 2022) was conducted in a span of nine years, they tracked the development of the use of do-it-yourself autonomous corpora by the graduates. Priorly the use of the corpora was stable in English Language Learning (ELL) classes with the use of 24%, when the course was done stable usage of corpora increased to 80-90% of students. The year after the course was finished, data showed that 62% of the students continued to use their corpus even after the course was finished, while 37% were regulars, the results showed only a slight rise over the nine-year period. Researchers who conducted the study argued that even though the findings were somewhat optimistic, there was a lack of significant growth of corpus use over the nine-year period, and this does not show a certainty that the use of corpus will be increased in the future. It was noted by the researchers that for the corpus to be a mainstream method, it is required for it to have engagement with the everyday practices of EAP.

To summarize, the literature supports the view that autonomous corpus learning for EAP can be very effective. One of the goals of the EAP itself is in a way make students more autonomous, Watson (2003) reinforces this by stating that there are six different approaches to be considered for the EAP, one of which is learners' autonomy. Combining another tool that is known for its autonomy, that is corpora 'DLL', can greatly increase the autonomy of the learner and can show beneficial results for the learner. With the power of using corpora and DDL combined, students can improve their needs for EAP, as they would be able to use corpora to search words and find the most frequent words that are used in their academic field, without the need for the instructor. Having advantages corpora might have some disadvantages for some people, for instance, some people are not user-friendly with the technologies and no matter what is done might not learn how the corpora can be used for their EAP, also for some students it might be difficult to make sense of all the data that can be available

through corpora. However, in recent times DDL and corpus have become popular in language learning, and their application for improving students' language skills and specific needs of the students are proven to be effective with studies, so the lecturers should incorporate DLL and corpus in their EAP classes for improving student' needs, goals, skills and most importantly the autonomy.

2.4. Application of CHATGPT for Feedback in EFL/ESL Learning

Educators can use, ChatGPT to create fun, engaging, and personalized learning experiences thanks to its flexibility and generative abilities for students who have goals for improving their English writing skills. One of the ways of improving EFL/ESL learning of a student is by giving proper feedback to the students. During the process of learning English as a second or foreign language, feedback has great importance to the process itself (Cao et al., 2022 Ha & Nguyen, 2021; Hyland & Hyland, 2006), thanks to its contribution to student motivation and achievement (Cauley & McMillan, 2010). Different types of feedback are available to use such as teacher feedback (TF), self-feedback (SF), and computer-generated feedback (CP) Hattie & Timperley, 2007; Lipnevich & Smith,2022). Nevertheless, views surrounding the effectiveness of this feedback vary, when previous studies are taken into account. For example, in terms of finding grammatical errors and improving writing quality, results from some studies show that TF was much better at doing so in comparison to CF (Kaivanpanah et al., 2020; Park, 2019). However, some studies, indicate the opposite, which is that CF was much better at reducing grammatical errors and had a higher positive impact in comparison to TF (Hernández Puertas, 2018; Sistani & Tabatabaei, 2023). Furthermore in the end TF and CF, both in the end might be combined with SF. (Lipnevich & Smith, 2022).

As seen in the results of some qualitative studies, ChatGPT has proven itself to be an effective tool in aiding EFL/ESL learning (Huang et al., 2022; Kuhail et al.,2023; Kasneci et al., 2023). Some studies that were done in the near future, explored ChatGPT's feedback capability for aiding in education, with focus being on both teacher and student. In terms of benefits for the usage of teachers, ChatGPT can generate relevant feedback for classroom instruction improvement, however, the negative side is, it might come with novel and smart content (Wang & Demszky, 2023). The reason behind this can be attributed to the data quality that was given to ChatGPT, as it only uses the patterns from which it was trained (Grassini, 2023). From the side of students, the feedback that is generated by ChatGPT is inclined to be more detailed, coherent, and fluent, notably when the case is about the evaluation of science reports (Dai et al., 2023). Furthermore, the feedback that is generated for students from ChatGpt, might help students improve their performance in other subjects, for example in argumentative essay writing (Su et al., 2023). and program problem-solving (Hellas et al., 2023).

ChatGPT might also be an aiding hand for EFL/ESL learners. Some theoretical studies have pointed out a few advantages on this matter. First of all, ChatGPT can generate fast and personalized feedback, which in turn aids students to improve themselves in the moment (Hong, 2023). Secondly, the feedback that is generated by ChatGPT is limitless, which gives students plenty of opportunity to improve and practice (Kim et al., 2023). Third, direct interaction with ChatGPT exposes EFL/ESL students to authentic language use, which helps them to improve their proficiency unconsciously (Liu & Ma, 2023)

Currently, however, there is a lack of studies on ChatGPT's feedback effectiveness in EFL/ESL learning (Cao, S., & Zhong, L. (2023). Some studies (Mohammed,2023; Nguyen,2023) conducted interviews with teachers, and their views on ChatGPT, were positive, as they viewed it as a tool that is affordable and convenient. Furthermore, some studies conducted a survey with a student who had an experience with ChatGPT, and the feedback, on the experience was positive for the student (Han et al.,2023; Schmidt-Fajlik,2023).

A study (Steiss et al., 2024) was done to compare the quality feedback of a real-life human versus ChatGpt. The goal was to offer students formative feedback during their writing process, which is an essential instruction procedure for improving the writing of the students (Graham, Harris, & Hebert, 2011; MacArthur, 2016). The study had 5 different degrees based on which feedback was scored. The study involved 200 pieces of feedback for both human-generated formative one and ChatGPT-generated ones, for both native and non-native English learners. The results of the study have shown, that feedback provided by humans was better in comparison to ChatGPT in all degrees other than criteria-based. The quality of the feedback provided by both ChatGPT and humans was also dependent on the quality of the essay. The results of the study showed that the trained evaluators were superior in providing feedback to students. However, ChatGPT could still be useful in some cases as it is easier to generate feedback through it, and its quality can be useful in some settings, such as for early draft phases or in instances where evaluators are not available.

2.5. Utilizing Corpora as DDL in EFL/ESL Writing

For non-native English speakers, who learn the English language in foreign settings, academic writing in a second language is regarded as a skill that is difficult to master (Emir & Yangın Ekşi, 2023). Some scholars state that academic writing in L2 has difficulties for learners such as linguistic and sociocultural, that include grammatical accuracy, sentence structures, discourse organization,

word choice, and other things (Cangir,2023), which paves ways to study effective ways to improve academic writing of L2 learners. In order to solve this problem, concordance and corpora have gained a massive following as tools or resources for quality L2 writing, with corpora having a leading role in providing the learners with quality and authentic samples of language to analyze and learn (Boulton & Vyatkina, 2021; Römer, 2011).

DDL is a term that was coined by John(1991), whose goal was to eliminate as many intermediaries and engage the learners directly with the data that is provided by corpus. By doing so, the learners are encouraged to develop their own profiles for language use and meaning in the target languages (Boulton & Cobb, 2017; Boulton & Pérez Paredes, 2014). The main idea behind DDL, is the active use of authentic language data presented by corpus for foreign language learning, or L2, for the learner's autonomous language learning (Boulton, 2011). In terms of its effect on L2 acquisition, DDL creates an environment for learners that enables them to become autonomous, by letting them actively examine corpora, understand the information about collection and concordance, and give them insight into their L2 linguistic gap(Godwin-Jones, 2017; O'Keeffe, 2021; Schmidt, 2023). This approach type can be used as an alternative to other approach types for language teaching pedagogy such as rule-based approach and teacher-based approach (Crosthwaite, 2017).

The application of DDL for L2 academic writing has the potential to improve the learners' writing skills, by enabling them to learn autonomously using corpora (Flowerdew, 2015). By utilizing the approach, learners are encouraged to take responsibility for their improvement (Aston, 2015; Godwin-Jones, 2017). According to O'Keeffe (2021) enabling learners to access the authentic corpus data, can improve their noticing (Schmidt, 1990, 2001), which is a process that helps the learners to increase their awareness of their fossilized errors, and helps them improve their writing skills by exploring the their interlanguage.

The literature includes many studies on the incorporation of DDL in classroom settings for academic writing improvement. In order to use corpus directly in L2 writing, some studies used corpora as a tool for reference, with the aim of improving their writing skills and correcting their errors (Emir & Yangın Ekşi, 2023). The results of some studies revealed some important characteristics regarding the use of native corpus, for the improvement of writing skills of the learners, the results of the study showed that the implementation and examination of corpus data were beneficial for students' development of lexis-oriented view for L2 in comparison to grammar oriented view (Kennedy & Miceli,2016). Another study examined the essays done by learners with the use of a native corpus tool and focused on improving the learners' linking of adverbials in them, the results showed the improvement of learners' semantical production in linking adverbials (Larsen-

Walker, 2017). An experimental study was conducted (Cotos, 2014), in which the control group used only L1 reference corpora while the experimental group used both L1 reference corpora and L2 learner corpus, which was gathered from students. The results of this study supported the idea of incorporating learner corpus data to highlight the adverbial errors and improve the writing skills of the learners. Another study was conducted to improve the learner's use of hedging in academic writing. The results of the study showed that using the corpus data had a positive effect on the use of hedges and their overall quality in academic writing (Sun & Hu, 2020). A study done by Emir and Yangın-Ekşi (2023) investigated the effect of corpora as a tool for improving the academic writing of Turkish EFL learners, which was done by comparing the students' corpus-based written dataset with their conventional written data sets. In addition, the study also showed the view of participants towards the use of corpora as a tool for L2 academic writing. The findings of the study revealed that the implementation of the corpus had a significant positive impact on the L2 academic writing of students on Turkish EFL learners, mostly increasing the vocabulary and grammar usage of the participants. Additionally, students' views towards how useful was corpus as a DDL tool in improving their academic L2 writing, were positive.

Artificial Intelligence (AI) is fundamentally transforming the academic English writing process in today's educational landscape. This transformation is particularly evident in its ability to provide personalized feedback, systematically enhance writing skills, and support the development of critical and analytical thinking abilities. The integration of various AI-based tools—such as Grammarly and e-portfolios—into educational settings has made it easier for instructors to deliver individualized assessments and constructive feedback tailored to students' specific needs. This approach offers a significant advantage in fostering writing proficiency (Aljuaid, 2024; Farhat & Arafa, 2024). Research indicates that AI-supported systems can analyze students' writing samples, offer suggestions for improving grammatical structures and writing style, and track students' writing development over time, thereby creating a more personalized learning environment (PAN, 2024; Kong et al., 2024).

The use of AI-powered writing tools is becoming increasingly common in higher education, with a particularly strong presence among English major students. These students engage with AI technologies to enhance the quality of their writing, strengthen their language skills, and receive instant feedback that helps them revise their texts more effectively (Candelas et al., 2024). The automation of the feedback process allows learners to progress at their own pace, reducing their dependence on instructors and promoting a more autonomous and self-regulated model of learning (Song & Song, 2023). However, it is crucial to recognize the boundaries of AI's supportive role; these tools should complement rather than replace the contribution of human instructors. Maintaining this

balance helps uphold academic integrity while encouraging students to produce original work and develop authentic writing voices (Selim, 2024; Yazid & Dzulfikri, 2024).

Nonetheless, several criticisms have emerged regarding the limitations of AI-assisted feedback. Some students report that the feedback provided by AI tools can be inconsistent or superficial, making it less effective in improving the quality of their writing (Yazid & Dzulfikri, 2024; Kouam, 2024). Furthermore, overreliance on such tools may raise ethical concerns in terms of academic honesty, as students may unintentionally commit plagiarism or neglect the development of their own critical thinking skills (Selim, 2024; Utami et al., 2023). For this reason, while AI offers real-time support and promotes higher-order thinking during the writing process, it is essential that this process is also guided by teacher support. Moreover, students should be encouraged to develop reflective awareness of their writing to ensure meaningful learning (Shofiah & Putera, 2024; Poade & Crawford, 2024).

2.6. Feedback Types

In SLA/ESL writing is regarded as a crucial skill to master for academic success (Bobanović, 2016; Hyland, 2003; Mohammad Hosseinpur, 2015). One of the most important elements in writing is to aid the learners in their learning process and ease the challenges which they are facing especially linguistic ones (Hosseinpur & Nevisi , 2024). Because of this feedback has an important role in helping students in guiding and enchanging their cognitive skills during the writing process (Hyland & Hyland, 2019; Yu et al., 2018; Zhang et al., 2021; Zhang & Cheng, 2021; Hosseinpur & Nevisi , 2024).

2.6.1. Computer-Generated Feedback (CF)

Computer-generated feedback (CF), produced automatically by digital tools such as Grammarly (Koltovskaia, 2023), Pigai Wang (Bai & Hu, 2016), and Criterion (Li et al., 2015), has been shown to support ESL/EFL learners in multiple ways. One key advantage is the immediacy of feedback, which allows learners to revise and practice their writing as often as needed, thereby enhancing the learning experience (Cheng, 2017). Additionally, CF tends to reduce writing-related anxiety and the fear of being judged, since the feedback is provided by a non-human source in a neutral tone (Kukulska-Hulme & Viberg, 2018). Moreover, CF can assist educators by allowing them to concentrate on higher-order writing skills rather than spending time on surface-level error correction, ultimately promoting more holistic instruction (Taskiran & Goksel, 2022). Nonetheless,

some drawbacks of CF have been noted, including the potential for overly generic, repetitive, or even inaccurate feedback (Dikli, 2010; Jiang & Yu, 2022; Cao & Zhong, 2023).

2.6.2. Teacher Feedback (TF)

Teacher feedback (TF), delivered directly by instructors, represents a traditional and essential approach to providing guidance in educational settings. It is often regarded by learners as particularly trustworthy and insightful, largely because teachers are perceived as knowledgeable authorities in their fields (Guasch et al., 2013). Moreover, TF has been shown to boost learners' confidence in second-language writing and foster motivation and engagement in the learning process (Ruegg, 2018; Srichanyachon, 2012). Despite its benefits, TF is not without limitations. Due to time limitations, educators may struggle to consistently offer detailed and individualized feedback to every student (Gul et al., 2016; Zou et al., 2023). Additionally, excessive dependence on teacher feedback may weaken students' critical thinking and self-evaluation skills, as they might follow corrections passively without reflecting on their own writing choices (Mikume & Oyoo, 2010; Cao & Zhong, 2023).

2.6.3. Self-feedback (SF)

Self-feedback (SF) refers to the process in which students recognize and correct their own mistakes throughout their learning journey. This approach is widely recommended in ESL/EFL (English as a Second/Foreign Language) contexts due to its ability to foster critical self-assessment, enhance metacognitive awareness, and support learner autonomy (Cahyono & Rosyida, 2016; Lee et al., 2019). Moreover, SF can increase students' motivation and engagement in second-language writing, offering a more personalized and self-paced learning experience (Miranty & Widiati, 2021; Yu et al., 2020). However, the effectiveness of SF may be limited when learners lack adequate language proficiency, as they may struggle to accurately identify and correct their own errors (Srichanyachon, 2011). In such cases, there is a risk that students might unintentionally reinforce incorrect language use in the absence of proper instructional support (Cao & Zhong, 2023).

2.6.4. Formative Feedback

Giving students formative feedback throughout the writing process is an essential teaching strategy that supports their development as writers (Graham et al., 2011; MacArthur, 2016).

Formative feedback helps clarify for students the expectations of high-quality performance and provides guidance on how to meet these standards, encouraging improvements in specific writing skills (Graham et al., 2012, 2016; Parr & Timperley, 2010). However, the significant time and effort required to give feedback to numerous students across different classes can overwhelm educators, and this challenge may even discourage some teachers from offering the necessary writing guidance (Applebee & Langer, 2011; Graham, 2019). Therefore, alleviating the responsibility of feedback from teachers alone could create more opportunities for both writing and instruction. Additionally, offering more frequent and timely feedback has been shown to enhance students' writing (Biber et al., 2011; Graham et al., 2015).



CHAPTER THREE

3. MATERIAL-METHOD

3.1. Mixed Method Approach

Qualitative research is a method that seeks to explore phenomena by examining the meanings, experiences, and interpretations of individuals in natural contexts. It involves non-numerical data such as interviews, documents, and observations to gain in-depth understanding (Creswell, 2014). This approach is particularly useful when the aim is to understand complex social, cultural, or educational processes.

Quantitative research is a systematic investigation that relies on numerical data and statistical methods to test hypotheses, measure variables, and identify patterns or relationships (Bryman, 2016). It often uses tools such as surveys, experiments, and structured observations to collect data that can be generalized to larger populations.

Mixed methods research is a methodology that combines both qualitative and quantitative approaches in a single study to draw on the strengths of each and provide a more complete understanding of the research problem (Creswell & Plano Clark, 2018). This method is particularly valuable when neither qualitative nor quantitative data alone are sufficient to address the research questions comprehensively.

In our study, a mixed methods research design, which combines both qualitative and quantitative data collection and analysis techniques, was adopted. This approach allows for a more comprehensive perspective on the research problem by enabling the presentation of results that can be measured through numerical data, while also providing an in-depth examination of participants' experiences, opinions, and perceptions.

3.2. Data Collection

The participants took English for academic writing classes. At the beginning of the semester, a survey was conducted, in order to understand the student's knowledge about Corpus tools or AI tools for academic writing. During the semester students wrote an academic paper and they generated the feedback using AI tools such as ChatGPT and corpus tools as well as manual feedback from the feedback providers. After the semester ended, another survey was conducted which aimed to gather the experiences of the participants with using corpus tools and AI tools for academic writing feedback and which they preferred and found More useful for their writings. In addition, semi-structured interviews were conducted after the semester, with students to gain more detailed knowledge of their experiences and preferences using AI tools, corpus tools, and their preferred feedback type. The aim of this interview was to understand what students preferred more, why, and how could it be applied better in academic writing. Semi-structured interviews were done in the span of one week.

3.3. Data Analysis

The IBM SPSS STATISTICS 30.0 software package was used for the analysis of the data collected in this study for the quantitative section. Descriptive statistical techniques were utilized for the analysis of the quantitative data of the research. Participants' demographic characteristics (gender, department, level of education, year of starting graduate education) and their responses to various survey items were summarized using frequency (N) and percentage (%) distributions. For the evaluation of responses to Likert-type scale items, frequency (N), percentage (%), and arithmetic mean (M) values were used. Standard deviation (SD) values were also calculated and presented for some variables, such as the year of starting graduate education. The responses to the open-ended questions in the research were examined using content analysis and thematic analysis methods. Within the scope of these analyses, themes, and subcategories were created based on participant responses. The distributions of these created themes and subcategories were described with frequency (N) and percentage (%) values.

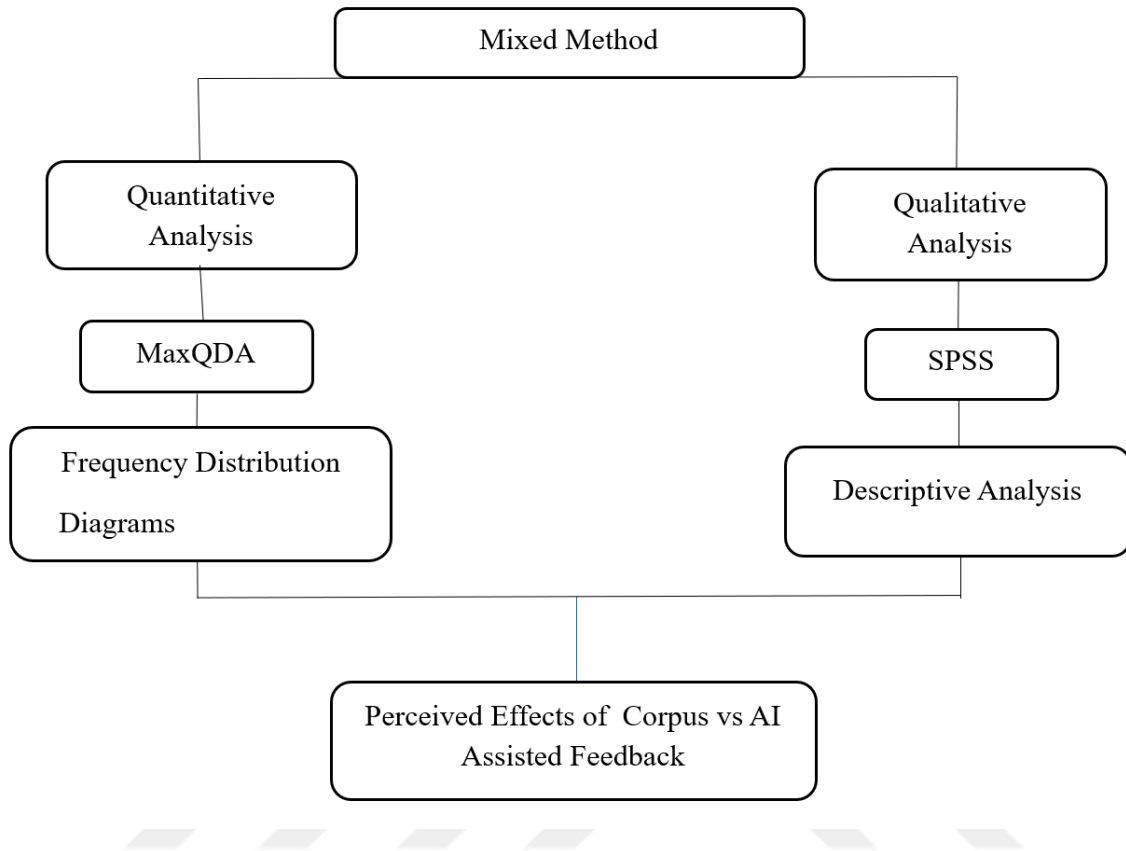
In the qualitative analysis process of the study, the thematic analysis method, one of the commonly used techniques, was preferred. Thematic analysis enables the systematic and in-depth analysis of data to uncover participants' experiences, perceptions, and attitudes (Braun & Clarke, 2006). This method offers a wide range of applications in exploring various research questions, as it approaches qualitative data analysis without relying on a theoretical preconception (Nowell, Norris, White & Moules, 2017).

The dataset of this study was collected through semi-structured interviews conducted with a total of 11 engineering students. The semi-structured interview technique allows the researcher to focus on specific topics while also enabling the participant to freely express their own experiences and thoughts. In this respect, it is considered an effective method for obtaining in-depth information in qualitative data collection (Yıldırım & Şimşek, 2021). The interviews were conducted based on a pre-prepared set of questions, but flexibility was allowed depending on participants' responses, and additional sub-questions were introduced to increase the depth of the data.

After the raw data obtained from the interviews was organized, it was transferred into the MaxQDA Analytics PRO software. MaxQDA is a comprehensive software developed to ensure systematic, accurate, and transparent qualitative data analysis. Supporting analysis steps such as coding, category formation, thematic mapping, and visualization, the software provides researchers with holistic control over the data (Kuckartz & Rädiker, 2019). In this context, using the advanced tools offered by the software, tables, code-frequency analyses, graphs, and conceptual diagrams were created, and the data was presented in both quantitatively and qualitatively meaningful ways.

The coding process was carried out with an exploratory (inductive) approach within the framework of the semi-structured interview questions. Meaningful expressions were identified in the context of participants' responses and were transformed into codes based on the data. Each code was classified according to the relevant interview question, thereby allowing the thematic structure to emerge naturally. Categorizing the codes within the context of related questions facilitates the systematic organization of data and enables the interpretation of participants' responses around specific themes (Clarke & Braun, 2017).

Figure 1: Methodology



CHAPTER FOUR

4. FINDINGS

The findings of the research are given in this section.

4.1. Findings Related to ChatGPT Survey Data at the Beginning of the Semester

Findings regarding the ChatgGPT semester survey data analyzed within the scope of the research are given under this heading.

Gender distribution is presented in the table below.

Table 1: Distribution by Gender

Gender	N	%
Male	36	45,0
Female	44	55,0
Total	80	100,0

There were a total of 80 participants in the analyzed data. Of the participants, 55.0% (n = 44) were female and 45.0% (n = 36) were male.

Table 2: Distribution by Department

Department	N	%
Civil Engineering	10	12,5%
Molecular Biology and Genetics	8	10,0%
Electrical and Electronics Engineering	7	8,8%
Computer Engineering	7	8,8%
Architecture	6	7,5%
Mechanical Engineering	6	7,5%
Map Engineering	6	7,5%
Landscape Architecture	4	5,0%
Interior Architecture	3	3,8%
Energy Systems Engineering	3	3,8%
Marine Transportation Management Engineering	3	3,8%
Forest Engineering	2	2,5%
Mathematics	2	2,5%
Geological Engineering	2	2,5%
Biology	2	2,5%
Forensic Science	2	2,5%
City and Regional Planning	1	1,3%
Mining Engineering	1	1,3%
Chemistry	1	1,3%
Statistics	1	1,3%
Industrial Engineering	1	1,3%
Biotechnology	1	1,3%
Fisheries Technology Engineering	1	1,3%
Total	80	100,0%

The highest representation was from the Department of Civil Engineering, comprising 12.5% ($n = 10$) of the total participants. This was followed by Molecular Biology and Genetics with 10.0% ($n = 8$), and both Electrical and Electronics Engineering and Computer Engineering departments, each accounting for 8.8% ($n = 7$) of the sample.

Architecture, Mechanical Engineering, and Geomatics Engineering departments each contributed 7.5% ($n = 6$). Participants from Landscape Architecture represented 5.0% ($n = 4$). A smaller proportion of the sample, 3.8% ($n = 3$), was drawn respectively from the departments of Interior Architecture, Energy Systems Engineering, and Maritime Transportation Management Engineering.

Additionally, 2.5% ($n = 2$) of participants were enrolled in each of the following departments: Forestry Engineering, Mathematics, Geological Engineering, Biology, and Forensic Sciences. The remaining departments—Urban and Regional Planning, Mining Engineering, Chemistry, Statistics, Industrial Engineering, Biotechnology, and Fisheries Technology Engineering—were each represented by 1.3% ($n = 1$) of the participants.

Table 3: Distribution by Level of Education

Education	N	%
Doctoral (PhD)	30	37,5%
Master of Arts (M.A)	50	62,5%
Total	80	100,0%

A majority of the participants held a Master of Arts (M.A) degree, accounting for 62.5% of the sample (n = 50). The remaining 37.5% (n = 30) of participants were enrolled in or had completed doctoral (PhD) programs.

Table 4: Findings Related To The Question “Have You Ever Published in English (Article-Thesis-Homework)?

Answer	N	%
Yes	34	42,5
No	46	57,5
Total	80	100,0

When asked whether they had ever published in English (including articles, theses, or assignments), 42.5% of the participants (n = 34) responded affirmatively. In contrast, the majority, 57.5% (n = 46), reported having no prior experience with publishing in English.

Table 5: Have You Heard of The Term “Chatgpt”, An Artificial Intelligence Tool, Before You Started Taking The Course Coded FBE 5008?

Answer	N	%
Yes	74	92,5
No	6	7,5
Total	80	100,0

The majority of participants (n = 74, 92.5%) indicated that they had heard of ChatGPT prior to the course. In contrast, a small proportion of the participants (n = 6, 7.5%) reported no prior awareness of the term.

Table 6: Findings Related to the Question “If Yes, Did You Have The Opportunity To Use The Chatgpt Artificial Intelligence Tool Before You Started Taking The Course Coded FBE 5008?”

Answer	N	%
Yes	59	79,7
No	15	20,3
Total	74	100,0

Among the 74 participants who indicated prior awareness of ChatGPT, a substantial majority (n = 59, 79.7%) reported having used the tool before the course began. In contrast, 15 participants (20.3%) stated that they had not used ChatGPT prior to enrolling in the course.

“If your answer is “Yes”, what did you use it for and how? Can you explain briefly?” was asked as an open-ended question and analyzed by content analysis method. The findings of the analysis are summarized in the table below.

Table 7: Findings Related to the ChatGPT Usage Among Course Participants (n = 59)

Theme	Subcategory	N	%	Example Quote
Academic Writing and Translation	Translation Services (Turkish-English)	8	13.6%	"I use ChatGPT for translation purposes. When I encounter language barriers, this platform's translation feature is quite valuable for me."
	Grammar and Language Correction	6	10.2%	"Generally for grammar corrections and to find synonyms that would better fit the sentence and better support the meaning if I can catch them."
	Academic Text Enhancement	4	6.8%	"To obtain feedback on grammar and correct texts in English."
	Subtotal	18	30.5%	
Research and Literature Review	Literature Search and Review	6	10.2%	"I used it for literature review in my research."
	Concept Definition and Exploration	5	8.5%	"To quickly learn the general outline of the topic I want to research and find its keywords."
	Academic Publication Assistance	4	6.8%	"Using ChatGPT 3.5, I asked it to write an introduction section by entering relevant keywords for a publication we were working on."
	Subtotal	15	25.4%	
Assignment and Coursework Support	Assignment Preparation and Completion	9	15.3%	"For my assignments and research topics."
	Topic Development and Brainstorming	3	5.1%	"I used it to get help with creating topic headings for assignments."
	Educational Resource Creation	2	3.4%	"I use ChatGPT for academic purposes, such as getting help with coding, gaining insights on complex topics, addressing challenges, improving the clarity of my writing, and creating educational resources"
	Subtotal	14	23.7%	
Programming and Technical Support	Code Debugging and Error Resolution	7	11.9%	"I generally use it to fix errors in my Python and Matlab codes."
	Code Writing and Development	3	5.1%	"I used it for writing code, examining my errors and finding solutions, and conducting research."
	Technical Consultation	2	3.4%	"For consulting on technical subjects."
	Subtotal	12	20.3%	
General Information Seeking	Exploratory Knowledge Acquisition	5	8.5%	"I was getting information about topics I didn't know."
	Term and Concept Clarification	3	5.1%	"For term searches, topic explanations, question examples, mathematical transformations, etc."
	Subtotal	8	13.6%	
Experimental/Trial Usage	Platform Testing and Exploration	3	5.1%	"I used it to test what kind of program it was."
	Trial and Demonstration Purposes	1	1.7%	"For trial purposes."
	Subtotal	4	6.8%	

Note: Total percentages may exceed 100% due to multiple theme coding per participant response

The thematic analysis revealed six distinct categories of ChatGPT usage among participants, with academic writing and translation emerging as the most prevalent application (n = 18, 30.5%).

This finding indicates that participants primarily utilized ChatGPT as a linguistic support tool, particularly for cross-language academic communication. As one participant noted, "I use ChatGPT for translation purposes. When I encounter language barriers, this platform's translation feature is quite valuable for me".

Research and literature review activities constituted the second most common usage pattern (n = 15, 25.4%), suggesting that participants leveraged ChatGPT for academic inquiry and knowledge exploration. However, this usage was accompanied by notable methodological awareness, as exemplified by one participant's observation: "I saw that this version could not access reliable articles for post-2021 data, and even fabricated publications". This response demonstrates sophisticated critical thinking regarding AI limitations in academic contexts.

Assignment and coursework support represented another significant usage category (n = 14, 23.7%), with participants employing ChatGPT for various academic tasks ranging from topic development to assignment completion. The responses in this category suggest strategic integration of AI tools into academic workflows rather than wholesale dependence on automated content generation.

Programming and technical support applications were reported by 20.3% of participants (n = 12), primarily focusing on code debugging and error resolution. This finding aligns with ChatGPT's documented strengths in programming assistance and suggests that participants recognized and utilized the tool's technical capabilities effectively.

Less frequent but notable usage patterns included general information seeking (n = 8, 13.6%) and experimental or trial usage (n = 4, 6.8%). These categories suggest that some participants approached ChatGPT with exploratory intentions, either as a general knowledge resource or as a platform for understanding AI capabilities.

“Did this artificial intelligence tool meet your expectations? Can you briefly explain?” were also analyzed by content analysis method and the findings are presented in the table below.

Table 8: Thematic Analysis of Participant Responses Regarding ChatGPT Satisfaction (N = 59)

Theme	Subcategory	N	%	Example Quote
High Satisfaction	Complete fulfillment of expectations	11	18.6%	"Yes, this AI tool has fulfilled my expectations. It provides accurate, detailed, and timely responses to my queries, whether I'm seeking help with coding, academic guidance, or brainstorming ideas."
	Mostly satisfied with performance	9	15.3%	"It largely met my expectations. 8 out of 10 times it meets my needs."
	Time-saving and efficiency benefits	6	10.2%	"Yes, it met my expectations. Especially in terms of error checking and getting feedback, I think it's a very efficient and time-saving artificial intelligence tool."
	Subtotal	26	44.1%	
Moderate Satisfaction	Partial satisfaction with limitations	13	22.0%	"Partially met my expectations, but I still think terminological corrections need to be made and results need to be checked."
	Conditional satisfaction with proper use	5	8.5%	"Partially, it met my expectations when used as a controlled supportive tool."
	Version-dependent performance	2	3.4%	"The new version was quite sufficient, but it's possible to experience problems with long-term use in the old version."
	Subtotal	20	33.9%	
Quality and Reliability Concerns	Accuracy and error issues	9	15.3%	"Most of the answers given are incorrect or do not fully correspond to the question."
	Need for verification and control	7	11.9%	"Since it can give both correct and incorrect information, I can say that it meets my expectations provided that the outputs are checked."
	Inconsistent performance	3	5.1%	"Although it's a satisfactory tool for simple operations, it occasionally provides incorrect information, which negatively affects its reliability."
	Subtotal	19	32.2%	
Domain-Specific Limitations	Insufficient specialized knowledge	4	6.8%	"It can provide useful information on general topics, but it falls short on more detailed, specialized subjects. It can make errors in statistical data."
	Academic integrity concerns	3	5.1%	"I can say it partially met my expectations, but I think it's not ethically correct to have AI write articles directly."
	Language and translation issues	2	3.4%	"It didn't meet my expectations. It provides information unrelated to the topic. Professional English knowledge is insufficient."
	Subtotal	9	15.3%	
Limited or No Usage	Minimal interaction	1	1.7%	"I never used it."
	No prior expectations	1	1.7%	"I had no expectations."
	Subtotal	2	3.4%	

Note: Total percentages may exceed 100% due to multiple theme coding per participant response

The content analysis of participant responses regarding ChatGPT satisfaction reveals a nuanced landscape of user experiences and expectations. The thematic analysis identified five primary categories of satisfaction levels, ranging from high satisfaction to domain-specific concerns.

High Satisfaction (44.1%) emerged as the most prevalent theme among participants, with nearly half expressing positive experiences with ChatGPT. This category encompasses three distinct

subcategories: complete fulfillment of expectations (18.6%), mostly satisfied performance (15.3%), and recognition of time-saving benefits (10.2%). Participants in this category particularly valued ChatGPT's ability to provide comprehensive responses across multiple domains, as evidenced by one participant's observation: "Yes, this AI tool has fulfilled my expectations. It provides accurate, detailed, and timely responses to my queries, whether I'm seeking help with coding, academic guidance, or brainstorming ideas."

Moderate Satisfaction (33.9%) represented the second-largest response category, indicating that approximately one-third of participants experienced qualified satisfaction with the tool. This theme primarily consisted of partial satisfaction with acknowledged limitations (22.0%), conditional satisfaction contingent upon proper usage (8.5%), and version-dependent performance variations (3.4%). Participants in this category demonstrated sophisticated understanding of AI limitations while recognizing utility, as exemplified by the response: "Partially met my expectations, but I still think terminological corrections need to be made and results need to be checked."

Quality and Reliability Concerns (32.2%) constituted a substantial portion of responses, highlighting significant apprehensions about ChatGPT's accuracy and consistency. This theme encompassed accuracy and error issues (15.3%), the necessity for verification and control (11.9%), and inconsistent performance patterns (5.1%). Critical awareness was evident in responses such as: "Since it can give both correct and incorrect information, I can say that it meets my expectations provided that the outputs are checked."

Domain-Specific Limitations (15.3%) reflected participants' recognition of ChatGPT's variable performance across different knowledge domains. This category included insufficient specialized knowledge (6.8%), academic integrity concerns (5.1%), and language-related limitations (3.4%). The responses in this category suggest sophisticated understanding of AI capabilities and constraints, particularly regarding specialized academic applications.

Limited or No Usage (3.4%) represented a small proportion of participants who had minimal engagement with the tool or lacked baseline expectations for comparison.

4.2. Findings Related to ChatGPT Survey Data at the End of the Semester

Findings regarding the ChatGPT end of the semester survey data analyzed within the scope of the research are given under this heading.

Gender distribution is presented in the table below.

Table 9: Distribution by Gender

Gender	N	%
Male	30	42,9
Female	40	57,1
Total	70	100,0

A total of 30 participants identified as male, accounting for 42,9% of the sample, while 40 participants identified as female, representing 57,1%.

Table 10: Distribution by Department

Department	N	%
Civil Engineering	9	12,9
Computer Engineering	8	11,4
Map Engineering	7	10,0
Architecture	7	10,0
Molecular Biology and Genetics	7	10,0
Electrical and Electronics Engineering	6	8,6
Mechanical Engineering	5	7,1
Marine Transportation Management Engineering	3	4,3
Landscape Architecture	3	4,3
Biology	2	2,9
Interior Architecture	2	2,9
Mathematics	2	2,9
Forest Engineering	2	2,9
Forensic sciences	1	1,4
Fisheries Technology Engineering	1	1,4
Industrial Engineering	1	1,4
Statistics	1	1,4
Geological Engineering	1	1,4
Chemistry	1	1,4
City and Regional Planning	1	1,4
Total	70	100,0

The highest proportion of participants came from the Department of Civil Engineering (n = 9, 12.9%), followed by Computer Engineering (n = 8, 11.4%), Map Engineering (n = 7, 10.0%), Architecture (n = 7, 10.0%), and Molecular Biology and Genetics (n = 7, 10.0%). Participants from the Department of Electrical and Electronics Engineering constituted 8.6% (n = 6), while those from Mechanical Engineering made up 7.1% (n = 5). Departments with lower representation included

Marine Transportation Management Engineering and Landscape Architecture (each $n = 3$, 4.3%), Biology, Interior Architecture, Mathematics, and Forest Engineering (each $n = 2$, 2.9%). Additionally, one participant (1.4%) was reported from each of the following departments: Forensic Sciences, Fisheries Technology Engineering, Industrial Engineering, Statistics, Geological Engineering, Chemistry, and City and Regional Planning.

Table 11: Distribution by Level of Education

Education	N	%
Doctoral (PhD)	28	40,0
Master of Arts (M.A)	42	60,0
Total	70	100,0

Of the participants, 28 individuals (40.0%) were enrolled in a doctoral (PhD) program, while 42 individuals (60.0%) were pursuing a Master of Arts (M.A) degree.

Table 12: Findings Related to the Question “Have You Ever Used Chatgpt After You Started Taking The FBE 5008 Coded Course?”

Answer	N	%
Yes	66	94,3
No	4	5,7
Total	70	100,0

A vast majority of the participants, 66 individuals (94.3%), reported that they had used ChatGPT after the course began, whereas only 4 participants (5.7%) stated that they had not used it.

Findings regarding the survey questions on behaviors and attitudes related to the ChatGPT end-of-term survey are given in the table below.

Table 13: Findings on Behaviors and Attitudes Toward ChatGPT

Expression	Strongly Disagree (1)		Disagree (2)		Neutral (3)		Agree (4)		Strongly Agree (5)		Total		1-5
	N	%	N	%	N	%	N	%	N	%	N	%	M
<i>What are your general thoughts about using “ChatGPT” after starting to take FBE 5008 coded course?</i>													
Using ChatGPT is easy.	0	0,0%	2	2,9%	0	0,0%	36	51,4%	32	45,7%	70	100,0%	4,40
I can use ChatGPT effectively.	1	1,4%	2	2,9%	6	8,6%	38	54,3%	23	32,9%	70	100,0%	4,14
Using ChatGPT is necessary for learning vocabulary.	3	4,3%	13	18,6%	17	24,3%	24	34,3%	13	18,6%	70	100,0%	3,44
ChatGPT is useful for grammar.	0	0,0%	2	2,9%	11	15,7%	36	51,4%	21	30,0%	70	100,0%	4,09
ChatGPT is useful for translation.	0	0,0%	2	2,9%	5	7,1%	38	54,3%	25	35,7%	70	100,0%	4,23
ChatGPT can also be used in other courses taught in English.	0	0,0%	1	1,4%	3	4,3%	29	41,4%	37	52,9%	70	100,0%	4,46
<i>What kind of experience did you gain with “ChatGPT” after you started taking FBE 5008 coded course?</i>													
I have gained enough knowledge to be self-sufficient.	1	1,4%	0	0,0%	7	10,0%	39	55,7%	23	32,9%	70	100,0%	4,19
I have gained a stronger theoretical background.	0	0,0%	8	11,4%	16	22,9%	30	42,9%	16	22,9%	70	100,0%	3,77
I have gained more experience in practice.	1	1,4%	0	0,0%	14	20,0%	34	48,6%	21	30,0%	70	100,0%	4,06
I have provided more examples.	1	1,4%	3	4,3%	7	10,0%	36	51,4%	23	32,9%	70	100,0%	4,10
I have done more concrete exercises to practice on my own.	0	0,0%	1	1,4%	8	11,4%	36	51,4%	25	35,7%	70	100,0%	4,21
<i>After starting to take the course coded FBE 5008, I think that the use of “ChatGPT” can be useful for the following actions.</i>													
Finding an idea in a text	1	1,4%	1	1,4%	5	7,1%	36	51,4%	27	38,6%	70	100,0%	4,24
Seeing the grammatical use of a word/expression in a text	0	0,0%	1	1,4%	6	8,6%	34	48,6%	29	41,4%	70	100,0%	4,30
Checking whether a word/expression is appropriate in a text	0	0,0%	0	0,0%	10	14,3%	31	44,3%	29	41,4%	70	100,0%	4,27
Seeing how a word/expression is used with other collocating words in a text	0	0,0%	2	2,9%	18	25,7%	26	37,1%	24	34,3%	70	100,0%	4,03
Checking the spelling of a word in a text	1	1,4%	1	1,4%	7	10,0%	29	41,4%	32	45,7%	70	100,0%	4,29
<i>After I started taking FBE 5008 coded course, I can use “ChatGPT” for the following tasks.</i>													
Finding field-specific expressions used in a text	2	2,9%	2	2,9%	13	18,6%	36	51,4%	17	24,3%	70	100,0%	3,91
Correcting mistakes made in a text	0	0,0%	0	0,0%	7	10,0%	30	42,9%	33	47,1%	70	100,0%	4,37
Correcting grammatical errors in a text	0	0,0%	2	2,9%	6	8,6%	29	41,4%	33	47,1%	70	100,0%	4,33

The findings related to participants' behaviors and attitudes toward ChatGPT at the end of the semester are presented in Table. The results are grouped into four main categories: general thoughts about ChatGPT, experiences gained after using ChatGPT in the course, perceived usefulness in specific academic tasks, and practical applications after course participation.

Most participants agreed or strongly agreed that using ChatGPT is easy (51.4% agree, 45.7% strongly agree), with a mean score of 4.40. Similarly, a large proportion believed they could use ChatGPT effectively (54.3% agree, 32.9% strongly agree), yielding a mean of 4.14. When asked whether using ChatGPT is necessary for learning vocabulary, responses were more varied: 34.3%

agreed and 18.6% strongly agreed, while 24.3% were neutral and 22.9% disagreed or strongly disagreed, resulting in a mean score of 3.44. Regarding its utility for grammar, 51.4% agreed and 30.0% strongly agreed ($M = 4.09$), while for translation, 54.3% agreed and 35.7% strongly agreed ($M = 4.23$). Furthermore, most participants indicated that ChatGPT could be used in other English-medium courses (52.9% strongly agreed, 41.4% agreed), with a mean of 4.46.

Participants generally reported positive experiences. A total of 55.7% agreed and 32.9% strongly agreed that they had gained enough knowledge to be self-sufficient ($M = 4.19$). A smaller majority indicated they had gained a stronger theoretical background (42.9% agree, 22.9% strongly agree; $M = 3.77$). Most participants also reported gaining more experience in practice (48.6% agree, 30.0% strongly agree; $M = 4.06$), providing more examples (51.4% agree, 32.9% strongly agree; $M = 4.10$), and doing more concrete exercises on their own (51.4% agree, 35.7% strongly agree; $M = 4.21$).

In terms of specific academic activities, ChatGPT was considered especially helpful for identifying ideas in texts (51.4% agree, 38.6% strongly agree; $M = 4.24$), examining grammatical usage of words or expressions (48.6% agree, 41.4% strongly agree; $M = 4.30$), and evaluating the appropriateness of terms within texts (44.3% agree, 41.4% strongly agree; $M = 4.27$). Participants also acknowledged its utility for analyzing collocations (37.1% agree, 34.3% strongly agree; $M = 4.03$) and checking spelling (41.4% agree, 45.7% strongly agree; $M = 4.29$).

Regarding functional tasks, participants stated that they could use ChatGPT to find field-specific expressions (51.4% agree, 24.3% strongly agree; $M = 3.91$), correct mistakes in a text (42.9% agree, 47.1% strongly agree; $M = 4.37$), and fix grammatical errors (41.4% agree, 47.1% strongly agree; $M = 4.33$). Overall, the findings suggest that after completing the FBE 5008 course, participants developed favorable attitudes toward the usability and educational potential of ChatGPT in academic contexts.

The findings of the content analysis applied for the open-ended question “Apart from the questions we have asked above, could you share with us your positive/negative thoughts about the ‘new research perception’ created by ‘Using ChatGPT’ in article writing?” are given in the table below.

Table 14: ChatGPT Usage in Academic Writing

Main Theme	Subcategory	N	%	Example Quote
Positive Perceptions	Efficiency and Time-Saving	18	25,71%	"Research saves a lot of time by shortening them" / "Writing articles with the Chat GPT application has become much easier"
	Language and Grammar Support	15	21,43%	"I think it is quite helpful in correcting grammar errors and handling the text in an academic language" / "ChatGPT is successful in translation, detection and correction of grammatical errors"
	Idea Generation and Inspiration	12	17,14%	"It can offer us nice ideas for any questions or article writing. I think the different ideas of artificial intelligence inspire us" / "It provides the opportunity to discover different sentences related to the research topic"
	Research Assistance	10	14,29%	"It is a very ideal tool for creating research routes" / "I can ask for examples and comments on a subject"
	Accessibility and Convenience	8	11,43%	"Instead of searching for a topic on Google and browsing websites to find the information I'm looking for, I ask ChatGPT to give me information directly about the topic I want"
	Subtotal	63	90,00%	
Negative Perceptions	Over-reliance and Laziness	14	20,00%	"Although it is a versatile helpful application, I think ChatGPT makes people a little lazy" / "Getting all the information we want destroys our researcher personality. I think this is a negative situation"
	Accuracy and Reliability Issues	12	17,14%	"Sometimes it can make wrong translations or incorrect/meaningless corrections" / "ChatGPT is an algorithm, so it finds something for every given expression and word. However, the answers found may not be complete"
	Loss of Originality	8	11,43%	"One of the negative points of trusting ChatGPT is that it leads to the loss of the researcher's personal opinion and style in scientific writing" / "It encourages people to be ready-made, which can be considered as a negative aspect"
	Limited Domain Knowledge	7	10,00%	"I think it is weak in terms of terminology" / "It cannot detect the semantic error and does not give me feedback on the word group specific to that scientific field"
	Subtotal	41	58,57%	
Conditional Usage	Proper Usage Guidelines	16	22,86%	"I find it useful as long as it is used within the framework of academic ethics" / "When used correctly, it is really useful, but using it ignorantly enslaves you to the application"
	Tool vs. Replacement	11	15,71%	"ChatGPT should not be considered as a direct assistant, but as an external eye, considering that it can make mistakes" / "It works best as a helper, not a replacement for original ideas"
	Need for Verification	9	12,86%	"Articles should be useful even if they are useful, but they should not be accepted as completely correct and the articles should be reviewed again" / "It is necessary to have knowledge in the field and to check the texts repeatedly"
	Subtotal	36	51,43%	
Neutral/Balanced Views	Mixed Experiences	6	8,57%	"It is mostly useful when used correctly, but it can also be negative" / "Good and appreciable"
	Future Potential	4	5,71%	"I think that the use of this and such artificial intelligence tools will become widespread in the future and save time" / "If the application develops further, the efficiency gained will be more"
	Subtotal	10	14,29%	

The content analysis of participants' responses regarding ChatGPT usage in academic writing revealed four main thematic categories: Positive Perceptions, Negative Perceptions, Conditional Usage, and Neutral/Balanced Views, with a total of 150 coded responses.

Positive Perceptions were expressed by 63 participants, accounting for 90.00% of the responses. These were divided into five subcategories. Efficiency and Time-Saving was the most

frequently reported benefit (n = 18, 25.71%), with participants stating that “Research saves a lot of time by shortening them” and “Writing articles with the Chat GPT application has become much easier.” Language and Grammar Support followed (n = 15, 21.43%), where respondents highlighted ChatGPT’s ability to aid in “correcting grammar errors and handling the text in an academic language” and its success in “translation, detection and correction of grammatical errors.” Idea Generation and Inspiration was noted by 12 participants (17.14%), who mentioned that ChatGPT “offers nice ideas for any questions or article writing” and “provides the opportunity to discover different sentences related to the research topic.” Research Assistance was another subcategory (n = 10, 14.29%), with respondents appreciating that “It is a very ideal tool for creating research routes” and that they could “ask for examples and comments on a subject.” Finally, Accessibility and Convenience was reported by 8 respondents (11.43%), emphasizing that instead of “searching for a topic on Google and browsing websites,” they could “ask ChatGPT to give me information directly about the topic I want.”

Negative Perceptions were noted by 41 participants (58.57%), encompassing four subcategories. Over-reliance and Laziness was the most cited concern (n = 14, 20.00%), with comments such as “ChatGPT makes people a little lazy” and “Getting all the information we want destroys our researcher personality.” Accuracy and Reliability Issues were highlighted by 12 participants (17.14%), who pointed out that “Sometimes it can make wrong translations or incorrect/meaningless corrections” and that “the answers found may not be complete.” Loss of Originality was mentioned by 8 participants (11.43%), noting that ChatGPT “leads to the loss of the researcher’s personal opinion and style” and “encourages people to be ready-made.” Limited Domain Knowledge was also reported (n = 7, 10.00%), with concerns that “It is weak in terms of terminology” and “cannot detect semantic errors or give feedback specific to scientific fields.”

Conditional Usage was identified by 36 respondents (51.43%), divided into three subcategories. Proper Usage Guidelines were emphasized by 16 participants (22.86%), who stated that ChatGPT is useful “as long as it is used within the framework of academic ethics” and warned that “using it ignorantly enslaves you to the application.” The view of ChatGPT as a Tool versus Replacement was expressed by 11 respondents (15.71%), who suggested it “should not be considered a direct assistant, but as an external eye” and “works best as a helper, not a replacement for original ideas.” The Need for Verification was highlighted by 9 participants (12.86%), indicating that “articles should be reviewed again” and that “it is necessary to have knowledge in the field and to check the texts repeatedly.”

Finally, Neutral/Balanced Views were held by 10 respondents (14.29%), subdivided into Mixed Experiences (n = 6, 8.57%) and Future Potential (n = 4, 5.71%). Participants noted that ChatGPT “is mostly useful when used correctly, but it can also be negative,” describing it as “good and appreciable.” They also expressed optimism that “the use of this and such artificial intelligence tools will become widespread in the future and save time,” and suggested that “if the application develops further, the efficiency gained will be more.”

Overall, the findings illustrate a complex perception of ChatGPT’s role in academic writing, highlighting its benefits in efficiency and support, concerns about originality and reliability, and the importance of ethical and informed use.

4.3. Findings Related to the Corpus Semester Beginning Questionnaire

Findings related to the corpus semester questionnaire are given under this heading.

Findings regarding gender are given in the table below.

Table 15: Findings Related to Gender

Gender	N	%
Female	47	55,3
Male	38	44,7
Total	85	100,0

The sample size for this survey consists of 85 respondents. The findings from the corpus semester beginning questionnaire regarding participants’ gender distribution are presented in Table. Of the total 85 participants, 47 identified as female, representing 55.3% of the sample, while 38 identified as male, accounting for 44.7%.

The distribution of the department is given in the table below.

Table 16: Findings Related to Department

Department	N	%
Architecture	10	11,8%
Civil Engineering	10	11,8%
Molecular Biology and Genetics	8	9,4%
Map Engineering	8	9,4%
Electrical and Electronics Engineering	8	9,4%
Computer Engineering	8	9,4%
Mechanical Engineering	5	5,9%
Marine Transportation Management Engineering	4	4,7%
Landscape Architecture	3	3,5%
Interior Architecture	3	3,5%
Forest Engineering	2	2,4%
Mathematics	2	2,4%
Energy Systems Engineering	2	2,4%
Biology	2	2,4%
Forensic Science	2	2,4%
Turkish Language and Literature	1	1,2%
City and Regional Planning	1	1,2%
Mining Engineering	1	1,2%
Chemistry	1	1,2%
Geological Engineering	1	1,2%
Industrial Engineering	1	1,2%
Biotechnology	1	1,2%
Fisheries Technology Engineering	1	1,2%
Total	85	100,0%

The distribution of participants according to their academic departments is presented in Table. Among the 85 participants, the highest representation was shared equally by students from the Department of Architecture (n = 10, 11.8%) and Civil Engineering (n = 10, 11.8%). These were followed by participants from Molecular Biology and Genetics (n = 8, 9.4%), Map Engineering (n = 8, 9.4%), Electrical and Electronics Engineering (n = 8, 9.4%), and Computer Engineering (n = 8, 9.4%). Mechanical Engineering had 5 participants (5.9%), while Marine Transportation Management Engineering was represented by 4 participants (4.7%).

Departments with three participants each (3.5%) included Landscape Architecture and Interior Architecture. Forest Engineering, Mathematics, Energy Systems Engineering, Biology, and Forensic Science each had 2 participants (2.4%). Lastly, the following departments each had one participant (1.2%): Turkish Language and Literature, City and Regional Planning, Mining Engineering, Chemistry, Geological Engineering, Industrial Engineering, Biotechnology, and Fisheries Technology Engineering.

Distribution according to educational level is given in the table below.

Table 17: Findings Related to Educational Level

Educational Level	N	%
Doctoral (PhD)	34	40,0
Master of Arts (M.A)	51	60,0
Total	85	100,0

The distribution of participants according to their educational level is presented in Table. Of the 85 participants, a majority were enrolled in a Master of Arts (M.A.) program (n = 51, 60.0%), while the remaining 34 participants (40.0%) were pursuing doctoral (PhD) studies.

The findings regarding the year of starting graduate education are given in the table below.

Table 18: Findings Regarding the Year of Starting Graduate Education

Years	Frequency	Percent	Mean±Sd.
2007	1	1,2	2021,62±2,79
2015	1	1,2	
2016	2	2,4	
2017	2	2,4	
2018	3	3,5	
2019	9	10,6	
2020	6	7,1	
2021	6	7,1	
2022	6	7,1	
2023	29	34,1	
2024	20	23,5	
Total	85	100,0	

Table presents the findings regarding the participants' year of starting graduate education. The year most frequently reported was 2023, with 29 participants (34.1%), followed by 2024 with 20 participants (23.5%). Smaller proportions of participants began their graduate studies in 2019 (n = 9, 10.6%), 2020 (n = 6, 7.1%), 2021 (n = 6, 7.1%), and 2022 (n = 6, 7.1%). A few participants reported starting in 2018 (n = 3, 3.5%), 2016 (n = 2, 2.4%), and 2017 (n = 2, 2.4%). One participant each reported beginning in 2007 (1.2%) and 2015 (1.2%). The mean year of starting graduate education was 2021.62 (SD = 2.79), indicating that, on average, participants had relatively recent enrollment in their graduate programs.

The findings regarding the answers to the question “Had you ever heard of the term ‘Corpus Linguistics’ before you started taking the course coded FBE 5008?” are given in the table below.

Table 19: Findings Related to the Question “Had you ever heard of the term ‘Corpus Linguistics’ before you started taking the course coded FBE 5008”

Answer	N	%
No	81	95,3
Yes	4	4,7
Total	85	100,0

Table presents the findings related to participants’ prior familiarity with the term *corpus linguistics* before taking the course coded FBE 5008. The vast majority of the participants (n = 81, 95.3%) reported that they had not heard of the term prior to the course. In contrast, only a small minority (n = 4, 4.7%) indicated prior awareness of the term.

Among the four participants (n = 4, 4.7%) who reported having heard of the term *corpus linguistics* prior to enrolling in the FBE 5008 course, further qualitative insights were provided regarding when and where they encountered the term. One participant stated that they heard it from friends studying in the Department of English Language and Literature. Another noted that they came across the term on YouTube while conducting preliminary research about the course before enrollment. A third participant recalled being introduced to the term in 2020 during the coursework phase of their master’s studies, specifically through a master’s thesis conducted within their department. The final participant could not recall the exact time but estimated it to be 3–4 years ago, having heard it mentioned by academics working in the field during an academic talk. These findings suggest that prior exposure to the concept was incidental and occurred in informal or academic contexts outside of structured instruction.

The findings related to the question “Have you published in English before?” are given in the table below.

Table 20: Findings Related to the Question “Have you published in English before?”

Answer	N	%
(Missing)	1	1,2
No	64	75,3
Yes	20	23,5
Total	85	100,0

The findings regarding participants’ previous experience with English-language publication revealed that the majority of respondents had not published in English before. Specifically, 75,3% (n = 64) of the participants reported that they had no prior English-language publications, whereas

23,5% (n = 20) indicated that they had published in English. One participant (1,2%) did not respond to the question.

The findings related to the question “Have you ever visited the following corpus science websites before you started taking the course coded FBE 5008?” are given in the table below.

Table 21: “Did you ever visit the following corpus science websites before you started taking the course coded FBE 5008?” Findings Related to the Question

Site	Answer	N	%
COCA	No	85	100,0%
	Total	85	100,0%
Skell	No	83	97,6%
	Yes	2	2,4%
	Total	85	100,0%
Frazzeit	No	84	98,8%
	Yes	1	1,2%
	Total	85	100,0%
MICUSP	No	85	100,0%
	Total	85	100,0%
BNC	No	84	98,8%
	Yes	1	1,2%
	Total	85	100,0%
Others	No	76	89,4%
	Yes	9	10,6%
	Total	85	100,0%

Findings related to participants’ prior exposure to various corpus linguistics websites before enrolling in the course coded FBE 5008 are presented in Table. According to the data, none of the participants (n = 85, 100.0%) had visited the COCA prior to the course. Similarly, all participants (n = 85, 100.0%) reported no prior use of MICUSP. A vast majority also reported unfamiliarity with other corpus tools: Skell was not used by 97.6% (n = 83), while only 2.4% (n = 2) had visited it; Frazzeit had not been accessed by 98.8% (n = 84), with just one participant (1.2%) indicating prior use; and BNC was unknown to 98.8% (n = 84), while 1.2% (n = 1) had visited the site. In contrast, when asked about other corpus-related websites, 10.6% (n = 9) indicated prior access, while the remaining 89.4% (n = 76) had not visited any.

The findings related to the question “Were you using the following corpus tools before taking the course coded FBE 5008?” are given in the table below.

Table 22: Findings Related to the Question “Were you using the following corpus tools before taking the course coded FBE 5008?”

Tool	Answer	N	%
AntConc	No	84	98,8%
	Yes	1	1,2%
	Total	85	100,0%
Sketch Engine	No	85	100,0%
	Total	85	100,0%
Wordsmith	No	85	100,0%
	Total	85	100,0%
Voyant Tools	No	85	100,0%
	Total	85	100,0%
LancsBox	No	85	100,0%
	Total	85	100,0%
vd	No	85	100,0%
	Total	85	100,0%

Findings regarding participants’ use of various corpus tools prior to enrolling in the course coded FBE 5008 are presented in Table. The results indicate that nearly all participants had no previous experience with these tools. Specifically, 98.8% (n = 84) reported that they had not used AntConc before the course, while only 1.2% (n = 1) had prior experience with it. In contrast, 100.0% (n = 85) of the participants stated they had not used Sketch Engine, Wordsmith, Voyant Tools, LancsBox, or vd before taking the course.

The results of the survey findings regarding attitudes and behaviors towards corpus tools are given in the table below.

Table 22: Results of Survey Findings on Attitudes and Behaviors Towards Corpus Tools

Expression	Strongly Disagree (1)		Disagree (2)		Neutral (3)		Agree (4)		Strongly Agree (5)		Total		1-5
	N	%	N	%	N	%	N	%	N	%	N	%	
<i>To be able to use “corpus tools” before taking FBE 5008 coded course</i>													
I had enough knowledge for myself.	32	37,6%	41	48,2%	6	7,1%	6	7,1%	0	0,0%	85	100,0%	1,84
I had more of a theoretical background.	26	30,6%	30	35,3%	11	12,9%	17	20,0%	1	1,2%	85	100,0%	2,26
I had more methodological knowledge	30	35,3%	31	36,5%	13	15,3%	10	11,8%	1	1,2%	85	100,0%	2,07
I would do more knitting.	33	38,8%	27	31,8%	8	9,4%	16	18,8%	1	1,2%	85	100,0%	2,12
I would do more concrete exercises to practice on my own.	28	32,9%	31	36,5%	8	9,4%	13	15,3%	5	5,9%	85	100,0%	2,25
Others	30	35,3%	27	31,8%	21	24,7%	3	3,5%	4	4,7%	85	100,0%	2,11
<i>Before taking FBE 5008, I thought that the use of corpus tools could be useful for the following actions</i>													
Finding an idea	11	12,9%	18	21,2%	25	29,4%	24	28,2%	7	8,2%	85	100,0%	2,98
See the grammatical use of a word/phrase	9	10,6%	13	15,3%	19	22,4%	29	34,1%	15	17,6%	85	100,0%	3,33
Checking whether a word/phrase exists or not	12	14,1%	13	15,3%	21	24,7%	24	28,2%	15	17,6%	85	100,0%	3,20
Checking the meaning of a word / an expression	13	15,3%	12	14,1%	21	24,7%	26	30,6%	13	15,3%	85	100,0%	3,16
Checking whether a word/phrase is appropriate	10	11,8%	13	15,3%	21	24,7%	27	31,8%	14	16,5%	85	100,0%	3,26
See how a word/phrase is used grammatically	11	12,9%	12	14,1%	19	22,4%	30	35,3%	13	15,3%	85	100,0%	3,26
Compare two words/phrases	11	12,9%	15	17,6%	22	25,9%	25	29,4%	12	14,1%	85	100,0%	3,14
Checking the spelling of a word	10	11,8%	13	15,3%	27	31,8%	25	29,4%	10	11,8%	85	100,0%	3,14
Others	10	11,8%	14	16,5%	37	43,5%	16	18,8%	8	9,4%	85	100,0%	2,98
<i>Before taking FBE 5008, I was able to use corpus tools for the following tasks</i>													
To find words.	32	37,6%	28	32,9%	14	16,5%	10	11,8%	1	1,2%	85	100,0%	2,06
To find phrases specific to a particular field	31	36,5%	29	34,1%	11	12,9%	12	14,1%	2	2,4%	85	100,0%	2,12
To find collocations.	34	40,0%	30	35,3%	12	14,1%	8	9,4%	1	1,2%	85	100,0%	1,96
To find synonyms	34	40,0%	29	34,1%	12	14,1%	9	10,6%	1	1,2%	85	100,0%	1,99
For comparison	33	38,8%	30	35,3%	13	15,3%	8	9,4%	1	1,2%	85	100,0%	1,99
Others	31	36,5%	30	35,3%	19	22,4%	4	4,7%	1	1,2%	85	100,0%	1,99

The results of the survey regarding participants' attitudes and behaviors toward corpus tools prior to taking the course coded FBE 5008 are summarized in Table. The findings indicate that participants generally lacked sufficient prior knowledge or experience with corpus tools. When asked whether they had enough knowledge to use corpus tools before the course, 37.6% (n = 32) strongly disagreed, and 48.2% (n = 41) disagreed, with a mean score of M = 1.84, suggesting limited familiarity. Similarly, 30.6% (n = 26) strongly disagreed and 35.3% (n = 30) disagreed that they had a strong theoretical background (M = 2.26). A comparable pattern was observed for methodological knowledge, with 35.3% (n = 30) strongly disagreeing and 36.5% (n = 31) disagreeing (M = 2.07).

Regarding participants' behaviors, 38.8% (n = 33) strongly disagreed and 31.8% (n = 27) disagreed with the statement "I would do more knitting," suggesting low engagement in theoretical synthesis before the course (M = 2.12). Likewise, 32.9% (n = 28) strongly disagreed and 36.5% (n = 31) disagreed that they engaged in concrete self-practice exercises using corpus tools (M = 2.25). For other behaviors, the average score was M = 2.11, with 35.3% (n = 30) strongly disagreeing and 31.8% (n = 27) disagreeing.

Participants were also asked whether they thought corpus tools could be useful for various linguistic tasks before the course. The highest agreement was observed for the statement "*to see the grammatical use of a word/phrase*" (M = 3.33), with 34.1% (n = 29) agreeing and 17.6% (n = 15) strongly agreeing. Similarly, statements such as "*to check whether a word/phrase is appropriate*" and "*to see how a word/phrase is used grammatically*" received relatively high agreement (M = 3.26 for both). Tasks such as checking the meaning of a word (M = 3.16), comparing two words/phrases (M = 3.14), and checking spelling (M = 3.14) also reflected moderate agreement. The lowest agreement was for "finding an idea" and "others," both with mean scores of M = 2.98.

Lastly, participants' self-reported ability to use corpus tools before the course for specific tasks was notably low. For instance, 40.0% (n = 34) strongly disagreed and 35.3% (n = 30) disagreed that they could find collocations (M = 1.96). Similar trends were seen in tasks like finding synonyms (M = 1.99), using tools for comparison (M = 1.99), and performing other tasks (M = 1.99). Although slightly higher, the mean scores for tasks such as finding field-specific phrases (M = 2.12) and finding words (M = 2.06) were still low, confirming participants' limited prior competence with corpus tools.

The open-ended responses collected from participants regarding their thoughts on corpus tool usage revealed several recurring themes related to perceived usefulness, prior knowledge, and future expectations. Many participants expressed positive sentiments about the FBE 5008 course, noting that it was more enjoyable and engaging than they initially anticipated. For instance, one participant stated, "It turned out to be a much more enjoyable course than I expected. Thank you very much for your efforts, instructor." Another participant emphasized the value of learning about corpus tools, indicating that they aim to produce more advanced-level texts in future academic work, such as theses or publications. Some respondents admitted they had no prior knowledge of corpus tools before taking the course. As one student noted, "I had no idea about the existence of corpus tools, so I didn't know how they could be used." Others echoed similar sentiments, expressing that they learned both about the tools and their practical benefits through the course. One participant remarked that they had felt they were late in learning these tools and believed such content should be included at the undergraduate level. In addition to acknowledging their lack of prior exposure, several participants

highlighted the need for preliminary training. One respondent recommended offering a one-day introductory session on corpus tools at the beginning of graduate education. Another participant reflected on the challenges of dealing with vast amounts of information online and pointed out that corpus tools could be especially helpful in categorizing information and identifying domain-specific terminology and expressions. Linguistic competency also emerged as a concern. One comment emphasized that future students using corpus tools should possess a certain level of proficiency in both English and Turkish to maximize the effectiveness of these tools. Moreover, the importance of the instructor's role was underlined by a respondent who mentioned, "At this early stage of our course, I feel that this subject is incredibly valuable and essential for the lessons I will encounter in the upcoming year. One thing more I should mention here is that our lecturer's behavior and sincerity towards us will leave a lasting impression." Some participants underscored the pedagogical value of corpus tools, calling them both instructive and efficient. One response stated, "I think it is a very useful and educational tool, and if used efficiently, it can serve as a rapid learning and analysis tool."

Findings related to thematic analysis are given in the table below.

Table 23: Participants' Reflections on Corpus Tool Usage (N = 13)

Theme	N	Responses
Enjoyment and Satisfaction	2	"It turned out to be a much more enjoyable course than I expected." "Thank you very much for your efforts, instructor."
Perceived Usefulness	2	"I aim to produce more advanced texts in my thesis and publications after this course." "Corpus tools are very useful when used efficiently."
Lack of Prior Knowledge	2	"I had no idea about the existence of corpus tools." "I had no prior knowledge before taking this course."
Curriculum Recommendations	2	"This should be taught at the undergraduate level." "A one-day introductory training at the beginning of graduate studies would be useful."
Language Competence Requirement	1	"Those using corpus tools should have a certain level of English and Turkish proficiency."
Instructor Impact	1	"Our lecturer's sincerity will leave a lasting impression."
Overcoming Information Overload	1	"There is too much information online. Corpus tools help categorize and identify terminology."
General Feedback	2	"I think it is a very useful and educational tool." "It can serve as a rapid learning and analysis tool."

Note. This table summarizes open-ended responses from participants regarding their experiences with corpus tools during the FBE 5008 course. Themes were derived through qualitative content analysis.

4.4. Findings Related to the Corpus End-of-Semester Questionnaire

Findings related to the Corpus end-of-semester questionnaire are given under this heading.

Findings regarding gender are given in the table below.

Table 24: Findings Related to Gender

Gender	N	%
Female	43	55,8
Male	34	44,2
Total	77	100,0

The analysis of gender distribution among participants in the end-of-semester corpus questionnaire revealed that the sample was slightly female-dominant. Out of a total of 77 participants, 55,8% (n = 43) identified as female, while 44,2% (n = 34) identified as male.

The distribution of the department is given in the table below.

Table 25: Findings Related to Department

Department	N	%
Computer Engineering	10	13,0%
Architecture	9	11,7%
Civil Engineering	9	11,7%
Electrical and Electronics Engineering	6	7,8%
Molecular Biology and Genetics	5	6,5%
Map Engineering	5	6,5%
Landscape Architecture	4	5,2%
Mechanical Engineering	3	3,9%
Interior Architecture	3	3,9%
Energy Systems Engineering	3	3,9%
Marine Transportation Management Engineering	3	3,9%
Forest Engineering	2	2,6%
Mathematics	2	2,6%
Geological Engineering	2	2,6%
Biology	2	2,6%
Forensic Science	2	2,6%
City and Regional Planning	1	1,3%
Mining Engineering	1	1,3%
Chemistry	1	1,3%
Statistics	1	1,3%
Industrial Engineering	1	1,3%
Biotechnology	1	1,3%
Fisheries Technology Engineering	1	1,3%
Total	77	100,0%

The analysis of departmental distribution among participants revealed a diverse representation across various academic disciplines. A total of 77 participants from 23 different departments responded to the questionnaire. The largest proportion came from Computer Engineering (n = 10, 13,0%), followed by Architecture (n = 9, 11,7%) and Civil Engineering (n = 9, 11,7%). Participants from Electrical and Electronics Engineering constituted 7,8% (n = 6), while Molecular Biology and Genetics and Map Engineering each accounted for 6,5% (n = 5). Landscape Architecture was represented by 5,2% (n = 4) of the participants. Mechanical Engineering, Interior Architecture, Energy Systems Engineering, and Marine Transportation Management Engineering each had three participants (3,9%). Forest Engineering, Mathematics, Geological Engineering, Biology, and Forensic Science were each represented by two participants (2,6%). Finally, City and Regional Planning, Mining Engineering, Chemistry, Statistics, Industrial Engineering, Biotechnology, and Fisheries Technology Engineering were each represented by a single participant (1,3%).

Distribution according to educational level is given in the table below.

Table 26: Findings Related to Educational Level

Educational Level	N	%
Doctoral (PhD)	28	36,4
Master of Arts (M.A)	49	63,6
Total	77	100,0

The distribution of participants according to their educational level is presented in Table. Of the 77 participants, a majority were enrolled in Master of Arts (M.A) programs (n = 49, 63,6%), while the remaining 28 participants (36,4%) were pursuing doctoral (PhD) studies.

The findings regarding the year of starting graduate education are given in the table below.

Table 27: Findings Regarding the Year of Starting Graduate Education

Years	Frequency	Percent	Mean±Sd.
2008	1	1,3	2021,88±2,63
2015	1	1,3	
2017	1	1,3	
2018	4	5,2	
2019	6	7,8	
2020	6	7,8	
2021	5	6,5	
2022	6	7,8	
2023	26	33,8	
2024	21	27,3	
Total	77	100,0	

The findings regarding the participants' year of entry into graduate education are presented in Table. Among the 77 participants, the majority began their graduate studies in 2023 (n = 26, 33,8%) and 2024 (n = 21, 27,3%). Smaller groups started in 2019 (n = 6, 7,8%), 2020 (n = 6, 7,8%), 2022 (n = 6, 7,8%), 2021 (n = 5, 6,5%), and 2018 (n = 4, 5,2%). Only one participant each reported starting in 2008, 2015, and 2017 (each n = 1, 1,3%). The mean year of starting graduate education was 2021,88 (SD = 2,63), indicating that most participants had recently commenced their graduate studies, with a noticeable concentration within the last two years.

The findings related to the question “Have you ever visited the following corpus science websites after you started taking FBE 5008?” are given in the table below.

Table 28: “Have you ever visited the following corpus science websites after you started taking FBE 5008?” Findings Related to the Question

Site	Answer	N	%
COCA	No	42	54,5%
	Yes	35	45,5%
	Total	77	100,0%
Skell	No	57	74,0%
	Yes	20	26,0%
	Total	77	100,0%
Frazzeit	No	71	92,2%
	Yes	6	7,8%
	Total	77	100,0%
MICUSP	No	72	93,5%
	Yes	5	6,5%
	Total	77	100,0%
BNC	No	72	93,5%
	Yes	5	6,5%
	Total	77	100,0%
Others	No	39	50,6%
	Yes	38	49,4%
	Total	77	100,0%

Findings related to the participants' engagement with various corpus science websites after the commencement of the FBE 5008 course are presented in Table. Among the 77 participants, 45,5% (n = 35) reported having visited the COCA, while 54,5% (n = 42) indicated they had not. Skell was visited by 26,0% (n = 20) of the participants, whereas 74,0% (n = 57) reported not visiting it. Frazeit was the least visited site, with only 7,8% (n = 6) reporting usage, and 92,2% (n = 71) indicating they had not accessed it. Similarly, both the MICUSP and the BNC were visited by only 6,5% (n = 5) of participants, with the remaining 93,5% (n = 72) stating they had not visited these sites. Interestingly, nearly half of the participants (49,4%, n = 38) reported visiting other corpus-related websites not listed, while 50,6% (n = 39) indicated otherwise.

The findings related to the question “Which of the following “Corpus tools” did you use after you started taking FBE 5008?” are given in the table below.

Table 29: Findings Related to the Question “Which of the following “Corpus tools” did you use after you started taking FBE 5008?”

Tool	Answer	N	%
AntConc	No	2	2,6%
	Yes	75	97,4%
	Total	77	100,0%
Sketch Engine	No	2	2,6%
	Yes	75	97,4%
	Total	77	100,0%
Wordsmith	No	68	88,3%
	Yes	9	11,7%
	Total	77	100,0%
Voyant Tools	No	73	94,8%
	Yes	4	5,2%
	Total	77	100,0%
LancsBox	No	63	81,8%
	Yes	14	18,2%
	Total	77	100,0%
vd	No	69	89,6%
	Yes	8	10,4%
	Total	77	100,0%

Findings related to the question “Which of the following corpus tools did you use after you started taking FBE 5008?” are presented in Table X. The results indicate that AntConc and Sketch Engine were the most frequently used tools among participants, with 97,4% (n = 75) of respondents reporting having used each, while only 2,6% (n = 2) stated they had not. In contrast, Wordsmith was used by only 11,7% (n = 9) of the participants, with 88,3% (n = 68) indicating they did not use it. Voyant Tools was among the least used tools, reported by only 5,2% (n = 4), whereas 94,8% (n = 73) had not used it. Similarly, LancsBox was used by 18,2% (n = 14), while 81,8% (n = 63) reported not using it. The tool labeled “vd” was used by just 10,4% (n = 8) of participants, and the remaining 89,6% (n = 69) did not use it.

The findings regarding the general thoughts and attitudes about being able to use “Corpus tools” after starting to take the course coded FBE 5008 are given in the table below.

Table 30: Findings Related to General Thoughts and Attitudes Towards Using “Corpus Tools” After Starting to Take the Course Coded FBE 5008

Expression	Strongly Disagree (1)		Disagree (2)		Neutral (3)		Agree (4)		Strongly Agree (5)		Total		1-5
	N	%	N	%	N	%	N	%	N	%	N	%	M
<i>What are your general thoughts about being able to use “Corpus tools” after starting to take the course coded FBE 5008?</i>													
Corpus tools are easy to use.	0	0,0%	2	2,6%	7	9,1%	41	53,2%	27	35,1%	77	100,0%	4,21
I can use corpus tools effectively.	0	0,0%	1	1,3%	11	14,3%	38	49,4%	27	35,1%	77	100,0%	4,18
Using corpus tools is necessary for learning vocabulary.	0	0,0%	7	9,1%	10	13,0%	30	39,0%	30	39,0%	77	100,0%	4,08
Corpus tools are useful for grammar.	0	0,0%	5	6,5%	18	23,4%	29	37,7%	25	32,5%	77	100,0%	3,96
Corpus tools are useful for translation.	0	0,0%	8	10,4%	18	23,4%	32	41,6%	19	24,7%	77	100,0%	3,81
The corpus tools can also be used in other courses in English	0	0,0%	5	6,5%	6	7,8%	24	31,2%	42	54,5%	77	100,0%	4,34
To be able to use “Corpus tools” after starting to take FBE 5008 coded course													
I had enough knowledge for myself.	0	0,0%	0	0,0%	5	6,5%	46	59,7%	26	33,8%	77	100,0%	4,27
I had more of a theoretical background.	0	0,0%	7	9,1%	13	16,9%	38	49,4%	19	24,7%	77	100,0%	3,90
I had more practical experience.	0	0,0%	1	1,3%	6	7,8%	40	51,9%	30	39,0%	77	100,0%	4,29
I made more examples.	0	0,0%	1	1,3%	10	13,0%	37	48,1%	29	37,7%	77	100,0%	4,22
I did more concrete exercises to practice on my own.	0	0,0%	1	1,3%	9	11,7%	40	51,9%	27	35,1%	77	100,0%	4,21
<i>After starting to take FBE 5008, I think that the use of “Corpus tools” can be useful for the following actions.</i>													
Finding an idea in the text	0	0,0%	11	14,3%	14	18,2%	32	41,6%	20	26,0%	77	100,0%	3,79
To see the grammatical usage of a word/phrase in the text	0	0,0%	2	2,6%	2	2,6%	38	49,4%	35	45,5%	77	100,0%	4,38
Looking for the presence of a word/phrase in the text	1	1,3%	0	0,0%	2	2,6%	38	49,4%	36	46,8%	77	100,0%	4,40
Checking the meaning of a word/phrase in the text	1	1,3%	3	3,9%	16	20,8%	36	46,8%	21	27,3%	77	100,0%	3,95
Checking whether a word/phrase is appropriate in the text	0	0,0%	0	0,0%	6	7,8%	35	45,5%	36	46,8%	77	100,0%	4,39
See how a word/phrase is used with other coordinated words in the text	0	0,0%	0	0,0%	4	5,2%	32	41,6%	41	53,2%	77	100,0%	4,48
Compare two words/phrases in the text	0	0,0%	1	1,3%	11	14,3%	39	50,6%	26	33,8%	77	100,0%	4,17
Checking the spelling of the word in the text	0	0,0%	5	6,5%	8	10,4%	35	45,5%	29	37,7%	77	100,0%	4,14
<i>After I started taking the course coded FBE 5008, I can use the “Corpus tools” for the following tasks</i>													
To find keywords in the text	0	0,0%	0	0,0%	4	5,2%	34	44,2%	39	50,6%	77	100,0%	4,45
To sort word frequency in text	0	0,0%	0	0,0%	2	2,6%	22	28,6%	53	68,8%	77	100,0%	4,66
To find target words in text.	0	0,0%	1	1,3%	5	6,5%	25	32,5%	46	59,7%	77	100,0%	4,51
To find phrases specific to a particular field used in the text	0	0,0%	0	0,0%	5	6,5%	35	45,5%	37	48,1%	77	100,0%	4,42
To find collocations in text.	0	0,0%	0	0,0%	6	7,8%	31	40,3%	40	51,9%	77	100,0%	4,44
To find synonyms for words in the text	0	0,0%	5	6,5%	21	27,3%	27	35,1%	24	31,2%	77	100,0%	3,91
To compare groups of words used in the text	0	0,0%	1	1,3%	7	9,1%	33	42,9%	36	46,8%	77	100,0%	4,35
To identify multiple word groups used in the text (Ngram)	0	0,0%	0	0,0%	5	6,5%	27	35,1%	45	58,4%	77	100,0%	4,52
To find clusters of words in the text (Cluster)	0	0,0%	0	0,0%	4	20,0%	4	20,0%	12	60,0%	20	100,0%	4,40

Regarding the statement “*Corpus tools are easy to use,*” a majority agreed (n = 41, 53,2%) or strongly agreed (n = 27, 35,1%), while a small number were neutral (n = 7, 9,1%) or disagreed (n = 2, 2,6%), and no participants strongly disagreed (M = 4,21). For “*I can use corpus tools effectively,*” 49,4% (n = 38) agreed, and 35,1% (n = 27) strongly agreed, while 14,3% (n = 11) were neutral, and only one participant (1,3%) disagreed (M = 4,18). The belief that “*Using corpus tools is necessary for learning vocabulary*” was endorsed by 39,0% of participants (n = 30) who agreed and an equal proportion (39,0%, n = 30) who strongly agreed; others were neutral (13,0%, n = 10) or disagreed (9,1%, n = 7) (M = 4,08). Concerning their usefulness for grammar, 37,7% (n = 29) agreed and 32,5% (n = 25) strongly agreed; 23,4% (n = 18) were neutral and 6,5% (n = 5) disagreed (M = 3,96). On their usefulness for translation, 41,6% (n = 32) agreed, 24,7% (n = 19) strongly agreed, 23,4% (n = 18) were neutral, and 10,4% (n = 8) disagreed (M = 3,81). The statement “*The corpus tools can also be used in other courses in English*” received strong support, with 54,5% (n = 42) strongly agreeing and 31,2% (n = 24) agreeing; only 7,8% (n = 6) were neutral and 6,5% (n = 5) disagreed (M = 4,34).

Regarding whether they had enough knowledge to use corpus tools after starting the course, 59,7% (n = 46) agreed and 33,8% (n = 26) strongly agreed, while 6,5% (n = 5) remained neutral (M = 4,27). For “*I had more of a theoretical background,*” 49,4% (n = 38) agreed, 24,7% (n = 19) strongly agreed, 16,9% (n = 13) were neutral, and 9,1% (n = 7) disagreed (M = 3,90). The statement “*I had more practical experience*” received agreement from 51,9% (n = 40) and strong agreement from 39,0% (n = 30), with only 7,8% (n = 6) remaining neutral and 1,3% (n = 1) disagreeing (M = 4,29). Similarly, “*I made more examples*” was affirmed by 48,1% (n = 37) who agreed and 37,7% (n = 29) who strongly agreed; 13,0% (n = 10) were neutral and 1,3% (n = 1) disagreed (M = 4,22). Regarding doing more concrete exercises, 51,9% (n = 40) agreed and 35,1% (n = 27) strongly agreed, while 11,7% (n = 9) were neutral and 1,3% (n = 1) disagreed (M = 4,21).

As for the specific uses of corpus tools, 41,6% (n = 32) agreed and 26,0% (n = 20) strongly agreed that they help in “*Finding an idea in the text*”; however, 18,2% (n = 14) were neutral and 14,3% (n = 11) disagreed (M = 3,79). A strong endorsement was observed for “*To see the grammatical usage of a word/phrase in the text*” with 49,4% (n = 38) agreeing and 45,5% (n = 35) strongly agreeing; only 2,6% (n = 2) were neutral and 2,6% (n = 2) disagreed (M = 4,38). Likewise, “*Looking for the presence of a word/phrase*” was supported by 49,4% (n = 38) who agreed and 46,8% (n = 36) who strongly agreed, while just 2,6% (n = 2) were neutral and one participant (1,3%) strongly disagreed (M = 4,40). The usefulness of corpus tools for “*Checking the meaning of a word/phrase*” was acknowledged by 46,8% (n = 36) who agreed and 27,3% (n = 21) who strongly agreed; 20,8% (n = 16) were neutral and 5,2% (n = 4) disagreed or strongly disagreed (M = 3,95). Additionally, 45,5% (n = 35) agreed and 46,8% (n = 36) strongly agreed that corpus tools help “*Check whether a word/phrase is appropriate in the text*”; only 7,8% (n = 6) were neutral (M =

4,39). Most participants agreed (41,6%, n = 32) or strongly agreed (53,2%, n = 41) that corpus tools help “*See how a word/phrase is used with other coordinated words*” (M = 4,48).

In terms of “*Comparing two words/phrases*,” 50,6% (n = 39) agreed and 33,8% (n = 26) strongly agreed, while 14,3% (n = 11) were neutral and one participant (1,3%) disagreed (M = 4,17). Regarding spelling checks, 45,5% (n = 35) agreed and 37,7% (n = 29) strongly agreed, whereas 10,4% (n = 8) were neutral and 6,5% (n = 5) disagreed (M = 4,14). After taking the course, 44,2% (n = 34) agreed and 50,6% (n = 39) strongly agreed that they could use corpus tools “*To find keywords*,” with only 5,2% (n = 4) neutral (M = 4,45). For “*To sort word frequency*,” a large majority strongly agreed (68,8%, n = 53) or agreed (28,6%, n = 22), and only 2,6% (n = 2) were neutral (M = 4,66). A similar pattern was observed for “*To find target words*,” where 59,7% (n = 46) strongly agreed and 32,5% (n = 25) agreed (M = 4,51).

Further, 48,1% (n = 37) strongly agreed and 45,5% (n = 35) agreed that corpus tools can be used “*To find phrases specific to a particular field*” (M = 4,42). Regarding “*Finding collocations*,” 51,9% (n = 40) strongly agreed and 40,3% (n = 31) agreed; 7,8% (n = 6) were neutral (M = 4,44). However, the usefulness of corpus tools “*To find synonyms*” was endorsed less strongly, with 35,1% (n = 27) agreeing and 31,2% (n = 24) strongly agreeing, while 27,3% (n = 21) were neutral and 6,5% (n = 5) disagreed (M = 3,91). For “*Comparing groups of words*,” 42,9% (n = 33) agreed and 46,8% (n = 36) strongly agreed; only 9,1% (n = 7) were neutral and one person (1,3%) disagreed (M = 4,35). In terms of “*Identifying Ngrams*,” 58,4% (n = 45) strongly agreed and 35,1% (n = 27) agreed, while 6,5% (n = 5) were neutral (M = 4,52). Finally, the statement “*To find clusters of words (Cluster)*”—based on a smaller subsample (n = 20)—was supported by 60,0% (n = 12) who strongly agreed, 20,0% (n = 4) who agreed, and 20,0% (n = 4) who were neutral (M = 4,40).

The findings obtained as a result of thematic analysis regarding the open-ended question “Apart from the questions we asked above, could you share with us your positive/negative thoughts about the ‘new research perception’ created by ‘corpus use’ in article writing?” are given in the table below.

Table 31: Thematic Content Analysis of Participants' Perceptions on the Impact of Corpus Use in Academic Writing (n = 42)

Theme	Subcategory	N	%	Example Quote
Increased Confidence and Autonomy	Increased confidence in academic writing	3	7,1%	"I became more confident in my academic writing after using corpus tools."
	Reduced dependency on others	2	4,8%	"I no longer wait for someone to review my sentences."
	Sense of self-sufficiency	2	4,8%	"Corpus helped me realize I can evaluate my own writing."
	Subtotal	7	16,7%	
Awareness of Academic Language and Patterns	Familiarity with common expressions	5	11,9%	"I learned academic phrases that are commonly used in research articles."
	Recognition of academic structures	4	9,5%	"I started noticing how sentences are generally structured in articles."
	Identification of discipline-specific language norms	3	7,1%	"I saw which words are frequently used in ELT literature."
	Subtotal	12	28,6%	
Practical Application in Research and Writing	Support in literature review and writing	4	9,5%	"Corpora supported my writing, especially in the literature review section."
	Sentence pattern discovery	3	7,1%	"I identified how native authors begin and conclude paragraphs."
	Time-saving during writing	4	9,5%	"Instead of searching random sites, I use corpus to find correct patterns."
	Reinforcement of linguistic choices	3	7,1%	"I cross-check phrases I want to use and confirm they sound natural."
	Subtotal	14	33,3%	
Challenges in Initial Use	Tool interface complexity	2	4,8%	"The tool interface was confusing at first, I didn't know what to click."
	Time-consuming at first	2	4,8%	"It took me a lot of time to understand how to use the corpus effectively."
	Need for repeated use to develop comfort	2	4,8%	"After several uses, I became more comfortable and faster."
	Subtotal	6	14,3%	
Enhanced Critical and Analytical Perspective	Evaluation of language use	2	4,8%	"Now I pay more attention to how language is used in academic texts."
	Shift from passive to analytical reading	2	4,8%	"Instead of copying sentences, I analyze how they're structured."
	Improvement in noticing language details	1	2,4%	"I began to notice article usage and collocations more carefully."
	Subtotal	5	11,9%	
Perceived Limitations of Corpus Use	Concerns about loss of originality	1	2,4%	"If we always follow corpus patterns, our texts might lack originality."
	Reliance on high-frequency patterns	1	2,4%	"Corpus shows what's common, but sometimes I want to use unique expressions."
	Tendency toward formulaic writing	1	2,4%	"It made my writing a bit mechanical."
	Subtotal	3	7,1%	
Global Perspective and Cross-cultural Insight	Exposure to authentic and diverse usage	1	2,4%	"Corpus showed me real language use, not just what the teacher teaches."
	Opportunity to compare linguistic norms	1	2,4%	"I noticed how writers from different cultures phrase the same idea."
	Subtotal	2	4,8%	

Table 31 (Continued)

Theme	Subcategory	N	%	Example Quote
Motivation and Engagement	Increased interest in language research	1	2,4%	"I found myself exploring patterns even outside the course tasks."
	Enjoyment in discovering language patterns	2	4,8%	"It was fun to see how phrases are really used in context."
	Increased participation in academic tasks	1	2,4%	"I started contributing more in writing workshops."
	Subtotal	4	9,5%	
Transfer to Future Academic Practice	Desire to use corpus tools in thesis writing	2	4,8%	"I will definitely use corpus tools when writing my thesis."
	Planning to integrate in future teaching	1	2,4%	"I may use corpus in my future language classes."
	Subtotal	3	7,1%	

The thematic content analysis of the open-ended question regarding the perceived impact of corpus use on academic writing among the participants (n = 42) yielded a wide range of responses, categorized under nine main themes and various subcategories.

The most commonly expressed theme was Practical Application in Research and Writing (n = 14, 33,3%). Participants highlighted that corpus tools supported their literature reviews and overall writing process (n = 4, 9,5%), enabled discovery of sentence patterns used by native speakers (n = 3, 7,1%), saved time during writing (n = 4, 9,5%), and helped reinforce their linguistic choices (n = 3, 7,1%). One participant stated, *"Instead of searching random sites, I use corpus to find correct patterns."* The second most prominent theme was Awareness of Academic Language and Patterns (n = 12, 28,6%). Participants reported gaining familiarity with common academic expressions (n = 5, 11,9%), recognition of academic structures (n = 4, 9,5%), and identification of discipline-specific language norms (n = 3, 7,1%). A participant commented, *"I saw which words are frequently used in ELT literature."* The theme of Increased Confidence and Autonomy (n = 7, 16,7%) also emerged significantly. This included increased confidence in academic writing (n = 3, 7,1%), reduced dependency on others (n = 2, 4,8%), and a stronger sense of self-sufficiency (n = 2, 4,8%). For instance, one participant shared, *"I no longer wait for someone to review my sentences."* Challenges in Initial Use were mentioned by several participants (n = 6, 14,3%), indicating initial struggles with tool interface complexity (n = 2, 4,8%), time consumption (n = 2, 4,8%), and the need for repeated use to become comfortable (n = 2, 4,8%). A participant stated, *"It took me a lot of time to understand how to use the corpus effectively."* Another notable theme was Enhanced Critical and Analytical Perspective (n = 5, 11,9%). Participants noted improved evaluation of language use (n = 2, 4,8%), a shift from passive to analytical reading (n = 2, 4,8%), and enhanced attention to language details (n = 1, 2,4%). One reflected, *"I began to notice article usage and collocations more carefully."* Some participants voiced Perceived Limitations of Corpus Use (n = 3, 7,1%), such as concerns about loss

of originality (n = 1, 2,4%), reliance on high-frequency patterns (n = 1, 2,4%), and a tendency toward formulaic writing (n = 1, 2,4%). As one participant explained, *"It made my writing a bit mechanical."* The theme Motivation and Engagement was expressed by a smaller number (n = 4, 9,5%), yet it highlighted increased interest in language research (n = 1, 2,4%), enjoyment in discovering patterns (n = 2, 4,8%), and increased participation in academic tasks (n = 1, 2,4%). A participant reported, *"It was fun to see how phrases are really used in context."* Under Global Perspective and Cross-cultural Insight (n = 2, 4,8%), participants described being exposed to authentic and diverse language use (n = 1, 2,4%) and the opportunity to compare linguistic norms across cultures (n = 1, 2,4%). One participant reflected, *"I noticed how writers from different cultures phrase the same idea."* Finally, Transfer to Future Academic Practice (n = 3, 7,1%) encompassed intentions to use corpus tools in thesis writing (n = 2, 4,8%) and plans to incorporate corpus tools in future teaching (n = 1, 2,4%). As stated by one participant, *"I may use corpus in my future language classes."* In sum, the thematic analysis indicates that corpus use is generally perceived positively, with most participants reporting gains in practical writing skills, academic awareness, and autonomy. However, some also noted initial usability challenges and concerns about mechanical writing.

4.5. Findings Related to the Analysis of the Interview

The interviews conducted with a smaller focus group compared to the number of participants in the questionnaire study will be analysed in this section within the framework of the interview questions. Data will be supported and visualised with frequency distribution and diagrams.

4.5.1. Findings Related to the Codes Discovered in the Interviews for Question 1

In the Question 1, the participants' perceptions of which type of tools are more effective in terms of feedback when writing an article were analysed. Within the scope of the Question 1, 3 codes were discovered. These codes are "Artificial Intelligence Tools", "Corpus Tools" and "Both AI and Corpus Tools" codes.

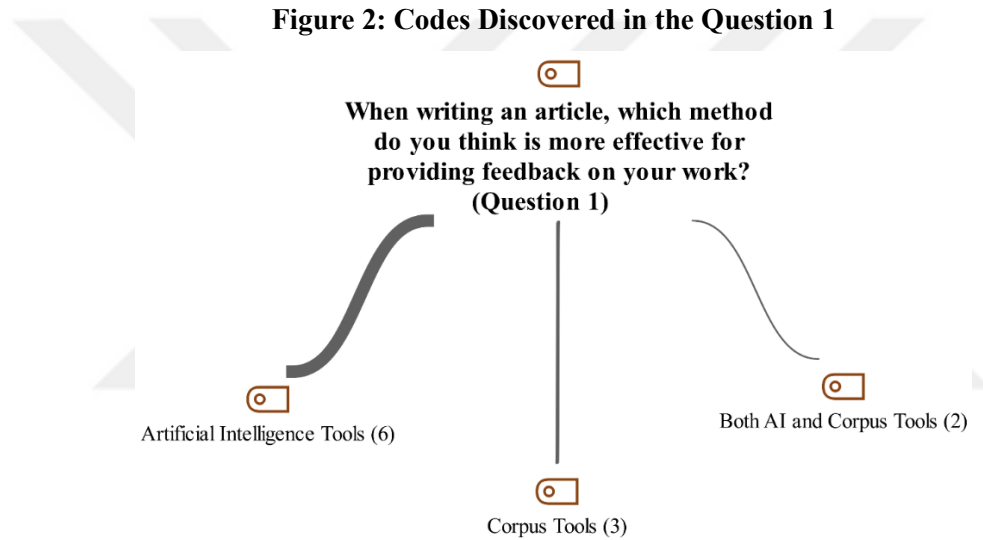
The table for the representation of the codes discovered for Question 1 is given below.

Table 32: Representation of the Codes Discovered for Question 1

Question	Codes	Responses	<i>f</i>
When writing an article, which method do you think is more effective for providing feedback on your work?	Artificial Intelligence Tools	P1, P2, P3, P4, P6, P7	6
	Corpus Tools	P8, P10, P11	3
	Both AI and Corpus Tools	P5, P9	2

When the answers to the question were analysed, “Artificial Intelligence Tools” code was coded 6 times, “Corpus Tools” code was coded 3 times and “Both AI and Corpus Tools” code was coded 2 times.

The diagram for the codes discovered for the question is given below.



4.5.2. Findings Related to the Codes Discovered in the Interviews for Question 2

In Question 2, participants' comparative perceptions of the contribution of the feedback provided by AI tools and Corpus tools to the academic writing process were analysed. Within the scope of the Question 2, 13 codes were discovered. These codes are "AI Tools More Faster", "Using Both is More Effective", "AI Tools More Helpful", "AI Tools Improves the Qualifications of Text", "AI Tools Can Make Mistakes", "Corpus Tools Improve Academic Writing", "Corpus Tools Create an Outline in Writing", "Corpus Tools are Not Enough Alone", "Corpus Tools are Better", "AI Tools Helps to Literature Search", "AI Tools Helps to Correct Errors", "AI Tools are Better when Lack of Knowledge" and "Results are Almost Same" codes.

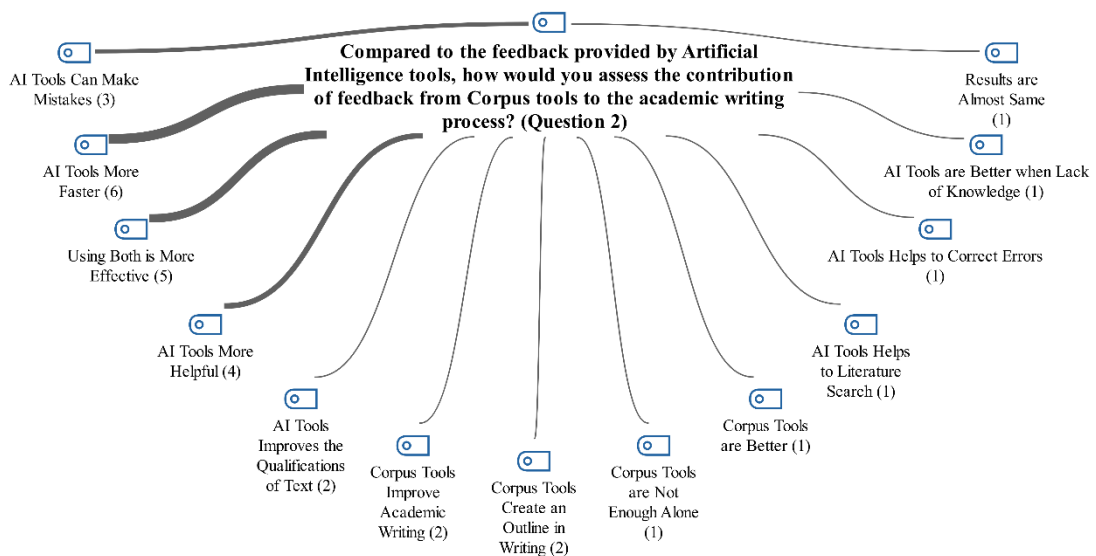
The table for the representation of the codes discovered for Question 2 is given below.

Table 33: Representation of the Codes Discovered for Question 2

Question	Codes	Responses	<i>f</i>
Compared to the feedback provided by Artificial Intelligence tools, how would you assess the contribution of feedback from Corpus tools to the academic writing process?	AI Tools More Faster	P1, P3, P5, P7, P8, P11	6
	Using Both is More Effective	P4, P7, P8, P9, P11	5
	AI Tools More Helpful	P1, P7, P10, P11	4
	AI Tools Can Make Mistakes	P3, P4, P11	3
	AI Tools Improves the Qualifications of Text	P5, P6	2
	Corpus Tools Improve Academic Writing	P2, P10	2
	Corpus Tools Create an Outline in Writing	P6, P11	2
	Corpus Tools are Not Enough Alone	P2	1
	Corpus Tools are Better	P7	1
	AI Tools Helps to Literature Search	P5	1
	AI Tools Helps to Correct Errors	P5	1
	AI Tools are Better when Lack of Knowledge	P2	1
	Results are Almost Same	P1	1

When the codes discovered for the question are analysed, the code "AI Tools More Faster" coded 6 times, the code "Using Both is More Effective" coded 5 times, the code "AI Tools More Helpful" coded 4 times, the code "AI Tools Can Make Mistakes" coded 3 times. Each of the codes "AI Tools Improves the Qualifications of Text", "Corpus Tools Improve Academic Writing", "Corpus Tools Create an Outline in Writing" coded 2 times and each of the codes "Corpus Tools are Not Enough Alone", "Corpus Tools are Better", "AI Tools Helps to Literature Search", "AI Tools Helps to Correct Errors", "AI Tools are Better when Lack of Knowledge" and "Results are Almost Same" was coded 1 time.

The diagram for the codes discovered for the question is given below.

Figure 3: Codes Discovered in the Question 2

The coded sections table for the codes discovered within the scope of the question is given below.

Table 34: Coded Section Table for Question 2

Codes	Coded Sections
AI Tools More Faster	(...) but AI tools is quicker and (...) P1 Both have their own advantages; while feedback is faster with artificial intelligence, it can be slower with corpus tools since we write it ourselves. P3 These tools speed up the academic writing process with fewer errors. Corpus tools provide a wide language database. They show the frequency of word or sentence patterns according to our field. These features are more time-consuming as they are done manually. P5 However, in cases where meeting the individual's request is sufficient for them, or when there is time pressure or a race against time that limits the actual potential expected from the article, the use of AI tools would be the most appropriate option.(...) P7 AI tools are highly effective in providing instant feedback. For example, if there is an expression error in a sentence, they can immediately detect it and suggest corrections. This is especially helpful during the drafting stage. On the other hand, corpus tools are more domain-focused and assist in the correct use of terminology. For instance, I have used tools like AntConc to see in which contexts an academic word is used. However, since these tools do not provide instant feedback like AI, they require a bit more time. P8 At the same time, compared to corpora, AI tools can be faster and more efficient.P11
Using Both is More Effective	Corpus tools were the primary resource in writing my article. They helped me select phrases and words that were appropriate for the content. In contrast, AI tools were more helpful in placing the selected words properly, ensuring grammatical accuracy, and checking spelling rules.. P4 "In my opinion, the ideal scenario—especially when the true potential of an academic article is expected to be realized—is the combined use of corpus tools and AI tools. The most effective approach would involve fine-tuning AI tools based on the user's specific discipline, and integrating domain-specific corpora extracted through corpus tools into the AI system. This would enable AI to analyze relevant data, facilitate in-depth discussions, and generate cross-validated results.. P7 I usually start by organizing the text with the help of AI tools in the initial stage, and then I refine it to make it more academic using corpus tools. In my opinion, using both together yields the best results. P8

Table 34 (Continued)

Codes	Coded Sections
Using Both is More Effective	Corpora were especially important and useful at the beginning of the writing process, as they helped us identify the key vocabulary, phrases, and verbs to use in our articles. This was particularly valuable because academic language is structured differently than everyday language. We worked extensively on these patterns through various assignments, so they became more familiar to us. When writing, we simply rearranged these structures to fit our own content and added minor adjustments. AI, on the other hand, cannot independently generate accurate academic content. However, I sometimes used it in a guided way—by providing it with my own data (such as the main idea and methodology of my article). I would then paste 4 to 6 sample paragraphs from academic papers I liked, and ask the AI to write something similar based on my own data. Still, the outputs needed close review and revision, as the meaning was often distorted or the language sounded too robotic. Nonetheless, AI was quite effective at checking grammar and spelling. For this reason, I combined both tools while writing my article P9 To achieve good results, it can be beneficial to use both tools together.. P11
AI Tools More Helpful	(...) more helpful. P1 "Nevertheless, not everyone may possess the necessary skills to comprehend and utilize corpus tools, may lack proficiency in a foreign language, or may be unwilling to invest time in learning and applying them. Even in cases where users have little to no prior knowledge or produce grammatically incorrect sentences, AI tools are designed to interpret the input as accurately as possible and fulfill the user's requests to a certain degree. AI tools give us automated, and detailed feedback that is beneficial for newcomers and general enhancements. P10 However, using AI tools can be easier. P11
AI Tools Can Make Mistakes	However, a disadvantage of AI is that it can make mistakes P3 AI tools have started to generate some words that were not present in my corpus. For this reason, I concluded that we cannot rely entirely on AI tools. In this context, traditional methods and corpus tools are more reliable.. P4 Corpus tools may be better suited for language analysis and academic style compared to AI. In other words, AI might not fully grasp the depth of the subject matter. P11
AI Tools Improves the Qualifications of Text	(...) improve the fluency of the text in terms of meaning. P5 We can ask AI to improve our writing and make it more professional. It can also be requested to paraphrase the text. Additionally, AI can check our writing for grammar and correct terminology usage. P6
Corpus Tools Improve Academic Writing	Although corpus tools are very useful for establishing academic English, (...) P2 But on the other hand Corpus tools give us data-driven, context-aware insights which are more ideal for refining academic writing with Accurate terminology and disciplinary conventions. Corpus tools are essential in improving academic writing as they offer insights grounded in authentic language usage. P10

Table 34 (Continued)

Codes	Coded Sections
Corpus Tools Create an Outline in Writing	Corpora help to better understand the usage of terms, phrases, and collocations in articles written within similar fields. Thus, they provide us with a draft framework at the beginning of the article writing process.. P6 The use of corpora fosters and amplifies the author's ability to interpret and draw inferences, a capacity that AI tools may potentially restrict. P11
Corpus Tools are Not Enough Alone	(...) is not truly sufficient on its own. P2
Corpus Tools are Better	I believe that when corpus tools are effectively utilized and well assimilated, they can yield incomparably better results in academic articles compared to AI tools.. P7
AI Tools Helps to Literature Search	Although they do not provide exact accuracy, they can present sources by conducting a literature search. P5
AI Tools Helps to Correct Errors	AI tools help to correct spelling and grammatical errors and (...) P5
AI Tools are Better when Lack of Knowledge	AI tools can facilitate the writing of academic papers by individuals with minimal or no proficiency in English. P2
Results are Almost Same	Compared to the feedback provided by Artificial Intelligence tools, Corpus tools gives almost the same result (...) P1

4.5.3. Findings Related to the Codes Discovered in the Interviews for Question 3

Within the scope of Question 3, the participants' experiences regarding the reliability of the feedback given by AI tools and Corpus tools on consistency and reliability were analysed. A total of 6 codes were discovered. These codes are “AI Outputs Can be Unexpected”, “Corpus Tools are More Consistent and Reliable”, “Consistency and Reliability of AI Tools Differ Due to the Model”, “AI Tools are More Consistent and Reliable”, “AI Outputs Must be Filtered” and “AI Tools are Better when Lack of Knowledge”.

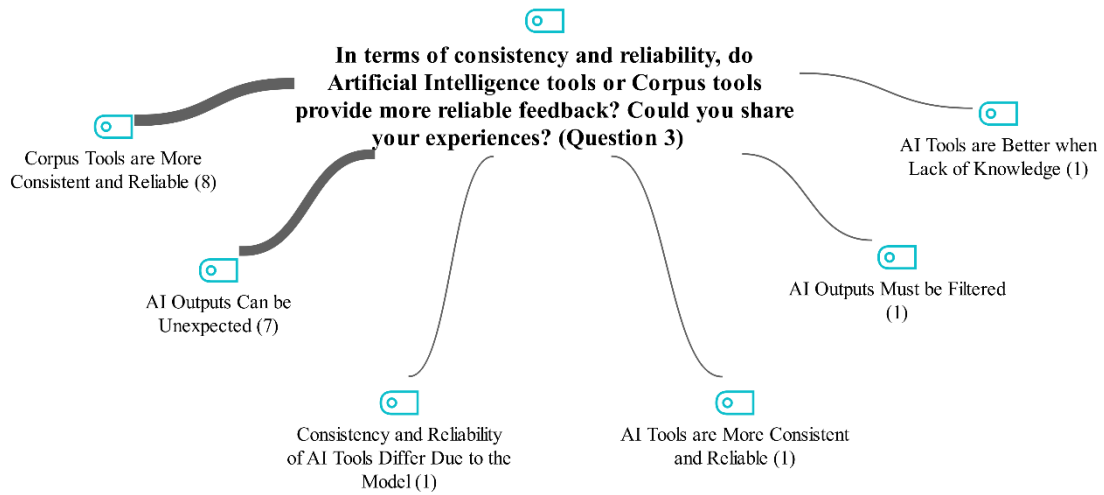
The table for the representation of the codes discovered for Question 3 is given below.

Table 35: Representation of the Codes Discovered for Question 3

Question	Codes	Responses	<i>f</i>
In terms of consistency and reliability, do Artificial Intelligence tools or Corpus tools provide more reliable feedback? Could you share your experiences?	Corpus Tools are More Consistent and Reliable	P2, P3, P4, P5, P7, P8, P10, P11	8
	AI Outputs Can be Unexpected	P2, P4, P5, P7, P8, P10, P11	7
	Consistency and Reliability of AI Tools Differ Due to the Model	P9	1
	AI Tools are More Consistent and Reliable	P6	1
	AI Outputs Must be Filtered	P2	1
	AI Tools are Better when Lack of Knowledge	P1	1

Among the codes discovered within the scope of the question the code "Corpus Tools are More Consistent and Reliable" was coded 8 times, and the code "AI Outputs Can be Unexpected" was coded 7 times. Each of the codes "Consistency and Reliability of AI Tools Differ Due to the Model", "AI Tools are More Consistent and Reliable", "AI Outputs Must be Filtered" and "AI Tools are Better when Lack of Knowledge" was coded once.

The diagram for the codes discovered for the question is given below.

Figure 4: Codes Discovered in the Question 3

The coded sections table for the codes discovered within the scope of the question is given below.

Table 36: Coded Section Table for Question 3

Codes	Coded Sections
Corpus Tools are More Consistent and Reliable	Of course, corpus tools are more consistent and reliable. P2
	Corpus tools tend to offer more reliable feedback. I have observed that AI tools sometimes stray from the conventions of academic language. Given that corpus tools allow for complete user control, I find them to be more trustworthy.. P3
	Actually, I have already answered this in the previous question. Although corpus tools may seem somewhat cumbersome, they are more reliable.P4
	Corpus tools may be more consistent and reliable than AI tools because they align closely with language usage and academic writing conventions identified through manual literature analysis. Additionally, they can be reliably used based on established standards in grammar, word choice, and phrase frequency. The language patterns, grammatical structures, and expression frequencies analyzed from our source materials provide a standardized framework." P5
	In such a scenario, I believe corpus tools would provide more reliable feedback, (...) At this point, since the data is input and filtered by the user, corpus tools are likely to produce more accurate results. P7
	In my experience, corpus tools have an advantage in terms of consistency and academic reliability because they analyze real academic texts. For example, in an energy engineering article I wrote, a corpus tool provided me with very clear guidance on the correct usage of certain terms. P8
AI Outputs Can be Unexpected	On the other hand, corpus tools such as Sketch Engine and COCA provide trustworthy feedback by analyzing authentic academic documents, thereby ensuring precision and consistency..P10
	I consider corpus tools to be more dependable, given the exacting standards demanded by academic writing. P11
	Sometimes, AI produces unexpected results and expressions. P2
	We can encounter unexpected problems/outcomes with AI tools.(...) I think narrowing down the topic is important when using AI tools. Unless we limit the topic, it can produce content unrelated to the context. However, even that doesn't guarantee the problem will be fully resolved.. P4
	To obtain correct results in academic writing with AI, it is necessary to give the right instructions or use the paid premium version. For example, when I ask AI to give a source, it cites irrelevant sources. When I ask for a different source, it repeats the same ones. P5
	(...) Despite ongoing data input, contemporary AI tools still suffer from gradual forgetting (known as catastrophic forgetting), which may lead to deviations from the topic.. P7
	However, sometimes it can offer incorrect suggestions due to not fully understanding the context. P8
	(...) but may sometimes be inconsistent and misunderstand the academic context. P10

Table 36 (Continued)

Codes	Coded Sections
	AI tools can provide inconsistent answers or information depending on the depth of the topic. When I asked the same question several times to verify the information, I sometimes received very different responses.. P11
Consistency and Reliability of AI Tools Differ Due to the Model	I think this is something specific to the site or tool, because it gives different results depending on the modules (or software) used. P9
AI Tools are More Consistent and Reliable	I believe AI is more accurate. Corpus tools are beneficial for correct term and phrase usage. However, similarly, AI could be enabled to perform the functions that corpora tools currently provide. P6
AI Outputs Must be Filtered	In my opinion, if AI is to be used, it should definitely be filtered through a screening process. P2
AI Tools are Better when Lack of Knowledge	Artificial Intelligence tools provides more reliable feedback but in condition we have minimum knowledge. P1

4.5.4. Findings Related to the Codes Discovered in the Interviews for Question 4

In Question 4, participants' perceptions of artificial intelligence and corpus tools were analysed within the framework of speed and accuracy. Within the scope of the question, 7 codes were discovered. These codes are “AI Tools are More Faster”, “Corpus Tools are More Accurate”, “Outputs of AI Tools Needs a Control”, “Both Tools are Same in Speed”, “Corpus Tools are Better when Lack of Knowledge”, “Free AI Tools are Insufficient in Accuracy” and “AI is Better when Lack of Knowledge”.

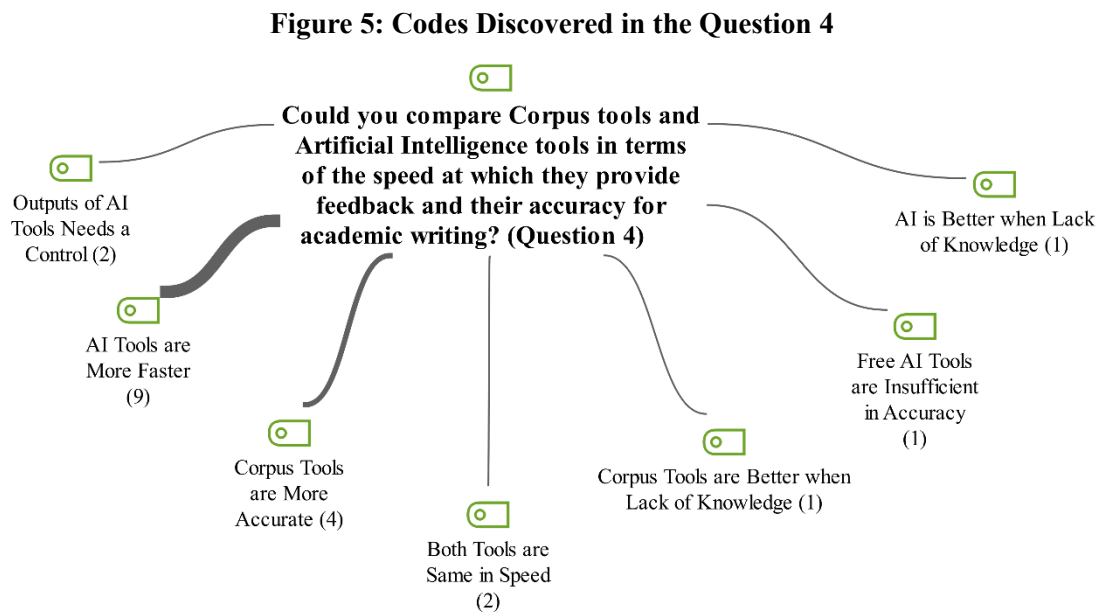
The table for the representation of the codes discovered for Question 4 is given below.

Table 37: Representation of the Codes Discovered for Question 4

Question	Codes	Responses	f
Could you compare Corpus tools and Artificial Intelligence tools in terms of the speed at which they provide feedback and their accuracy for academic writing?	AI Tools are More Faster	P1, P2, P3, P5, P6, P7, P8, P10, P11	9
	Corpus Tools are More Accurate	P3, P8, P10, P11	4
	Outputs of AI Tools Needs a Control	P5, P9	2
	Both Tools are Same in Speed	P4, P9	2
	Corpus Tools are Better when Lack of Knowledge	P6	1
	Free AI Tools are Insufficient in Accuracy	P5	1
	AI is Better when Lack of Knowledge	P1	1

When the codes discovered within the scope of the question are analysed the code "AI Tools are More Faster" was coded 9 times and the code "Corpus Tools are More Accurate" was coded 4 times. The codes "Outputs of AI Tools Needs a Control" and "Both Tools are Same in Speed" were each coded 2 times, while the codes "Corpus Tools are Better when Lack of Knowledge", "Free AI Tools are Insufficient in Accuracy" and "AI is Better when Lack of Knowledge" were each coded once.

The diagram for the codes discovered for the question is given below.



The coded sections table for the codes discovered within the scope of the question is given below.

Table 38: Coded Section Table for Question 4

Codes	Coded Sections
AI Tools are More Faster	Artificial Intelligence tools provides quicker feedback (...) P1
	In this case, I think AI has the upper hand. If you try to write an article using only corpus tools, I believe it will take up quite a lot of your time. P2
	Corpus tools are, of course, slower than artificial intelligencegöre (...) P3

Table 38 (Continued)

Codes	Coded Sections
	When I input my keywords into AI and ask for an article heading or abstract, it immediately gives me an average of 7-10 heading and a short text. So AI tools certainly provide faster feedback. P5 AI tools provide faster feedback. P6 I believe that the speed and accuracy of feedback entirely depend on the individual's experience with the two mentioned tools. In this case, if I consider the learning curve of the tools, I might give AI tools an advantage, as they can provide faster feedback even with less experience.. P7 The greatest advantage of AI tools is their speed. They can detect writing errors and offer suggestions within seconds. Especially during busy periods, they have saved me a lot of time. P8 AI tools give us fast corrections for grammar and style (...) AI tools deliver immediate feedback by quickly correcting grammar and readability, but their precision can vary, sometimes providing misleading suggestions. In contrast, corpus tools require manual evaluation and operate at a slower pace, (...) P10 AI tools are faster, while corpus-based methods are slower and progress manually. P11
Corpus Tools are More Accurate	(...) However, in terms of accuracy, corpus tools are more successful.. P3 But the accuracy issue is a bit complicated. Some suggestions are not contextually appropriate and can especially make mistakes with technical terms. Corpus tools, on the other hand, are slow but reliable. They are particularly useful when selecting words and phrases suitable for the literature. P8 (...) but they provide highly precise, evidence-based insights by referencing actual academic literature. P10 However, considering the limited and inconsistent information provided by AI tools and their inability to fully grasp the topic, I believe using corpus tools is a more accurate approach." P11
Outputs of AI Tools Needs a Control	AI-generated texts may not match the structure usually used in academic articles. Or, since the heading options suggest are too short and generic, they are unsuitable for direct use. Therefore it definitely requires regulation and control. P5 In terms of accuracy, I'm not sure — both are good, but verification is necessary.P9
Both Tools are Same in Speed	In terms of speed, I think they are fairly equal. Corpus tools already work based on specific algorithms and mathematics. AI tools are also products of algorithms, so I believe their speed is not very different. What takes time here is making the obtained information meaningful, and that responsibility falls on us." P4 Both have good speed (in terms of how quickly they respond to questions)P9
Corpus Tools are Better when Lack of Knowledge	However, accurate commands and questions must be given to AI. For someone who is not an expert on the topic, it may not be possible to provide the right commands and questions, so I believe corpus tools can deliver more accurate results initially and be more useful.. P6

Table 38 (Continued)

Codes	Coded Sections
Free AI Tools are Insufficient in Accuracy	Also, free tools may be more limited than premium, even if I enter the correct instructions. P5
AI is Better when Lack of Knowledge	(...) but in condition we have minimum knowledge in what we want to ask because if the question is not well precised then the feedback also is given as so. With Corpus tools we need to have full knowledge. P1

4.5.5. Findings Related to the Codes Discovered in the Interviews for Question 5

In Question 5, analysed the participants' statements about the comparison of AI tools with corpus tools in terms of content generation, literature review and giving feedback in writing. The codes discovered within the scope of the question were classified under 3 categories. Five codes were discovered in the category of "Effectiveness in Providing Feedback on Writing", three in the category of "Effectiveness in Literature Review" and four in the category of "Effectiveness in Content Development".

The table for the representation of the codes discovered for Question 5 is given below.

Table 39: Representation of the Codes Discovered for Question 5

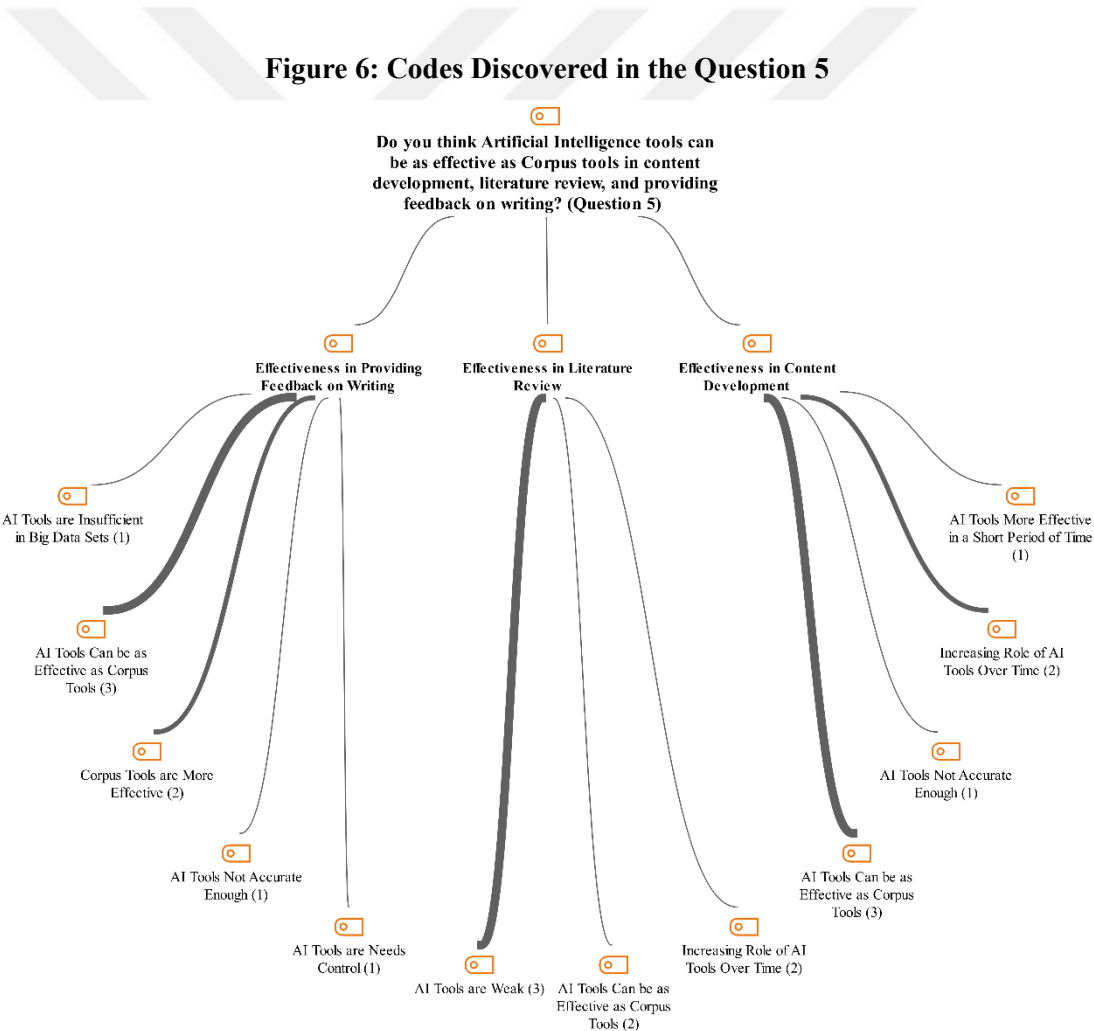
Question	Categories and Codes	Responses	<i>f</i>
Do you think Artificial Intelligence tools can be as effective as Corpus tools in content development, literature review, and providing feedback on writing?	Effectiveness in Providing Feedback on Writing		8
	AI Tools Can be as Effective as Corpus Tools	P8, P9, P10	3
	Corpus Tools are More Effective	P3, P5	2
	AI Tools Not Accurate Enough	P8	1
	AI Tools are Needs Control	P5	1
	AI Tools are Insufficient in Big Data Sets	P4	1
	Effectiveness in Literature Review		7
	AI Tools are Weak	P5, P6, P11	3
	AI Tools Can be as Effective as Corpus Tools	P10, P11	2
	Increasing Role of AI Tools Over Time	P2, P7	2
	Effectiveness in Content Development		7
	AI Tools Can be as Effective as Corpus Tools	P1, P8, P10	3
	Increasing Role of AI Tools Over Time	P2, P6	2
	AI Tools Not Accurate Enough	P8	1
	AI Tools More Effective in a Short Period of Time	P1	1

In the category “Effectiveness in Providing Feedback on Writing”, the code “AI Tools Can be as Effective as Corpus Tools” was coded 3 times, the code “Corpus Tools are More Effective” was coded 2 times and the codes “AI Tools Not Accurate Enough”, “AI Tools are Needs Control” and “AI Tools are Insufficient in Big Data Sets” were each coded once.

Under the category “Effectiveness in Literature Review”, the code “AI Tools are Weak” was coded 3 times, and the codes “AI Tools Can be as Effective as Corpus Tools” and “Increasing Role of AI Tools Over Time” were each coded 2 times.

In the category “Effectiveness in Content Development”, the code “AI Tools Can be as Effective as Corpus Tools” was coded 3 times, the code “Increasing Role of AI Tools Over Time” was coded 2 times and the codes “AI Tools Not Accurate Enough” and “AI Tools More Effective in a Short Period of Time” were each coded once.

The diagram for the codes discovered for the question is given below.



The coded sections table for the codes discovered within the scope of the question is given below.

Table 40: Coded Section Table for Question 5

Categories\Codes	Coded Sections
Effectiveness in Providing Feedback on Writing\AI Tools Can be as Effective as Corpus Tools	Therefore, corpus tools are currently more reliable, but artificial intelligence may improve over time.P8 I think yes, if we teach it using the right sources, it can do a great jobP9 AI tools can be very useful in creating content, conducting literature reviews, and providing writing feedback by brainstorming ideas, condensing sources, and enhancing readability. P10
Effectiveness in Providing Feedback on Writing\Corpus Tools are More Effective	Not for now, but when we train the AI, its effectiveness increases. However, overall, corpus tools are more effective at the moment.. P3 Corpus, on the other hand, is based on a standardised language structure and dataset, which provides more rigid feedback but is academically more reliable. It performs an analysis based on generic grammar rather than writing style. P5
Effectiveness in Providing Feedback on Writing\AI Tools Not Accurate Enough	In my opinion, although AI tools are fast and useful for content development and providing feedback, they are not as accurate as corpus tools at the moment. AI can quickly identify errors, but it can sometimes lack academic accuracyP8
Effectiveness in Providing Feedback on Writing\AI Tools are Needs Control	On the other hand, it is still necessary to check to ensure accuracy in English grammar and sentence structure. It provides explanations for corrections and offers different alternatives. Thus, researchers' language proficiency and writing skills can be improved and the quality of academic writings can increase. Nevertheless, it is necessary to review them. P5
Effectiveness in Providing Feedback on Writing\AI Tools are Insufficient in Big Data Sets	Yes, it's possible; however, there may be issues when evaluating large-scale texts in terms of spatial/contextual coherence. It may be necessary to retain the content conveyed throughout the entire text in memory. This can be considered partly an engineering problem. Nevertheless, the theme discussed in the text/article should still be understood and, ultimately, feedback should be provided accordingly.. P4
Effectiveness in Literature Review\AI Tools are Weak	AI tools are weak in terms of literature search. I find it difficult to find reliable sources with AI. It provides sources with the keywords I suggested, but only a few are relevant to the topic. Instead of academic articles, it mostly suggests books or websites and is often inaccurate. It also gives outdated sources (older than 10 years). P5 Corpus tools play an active role in literature review and content development. While AI tools can provide academic-level information when existing texts are given and detailed questions are asked—thus helping to develop the text through questions—they fall short in contributing to literature reviews. In addition, they have a major shortcoming in correctly citing sources, as they often assign incorrect references.. P6 "It may be effective in content development and providing feedback on writing, but I can say that it is weak in the literature review part. This can be understood from some of its inconsistent and outdated responses.. P11

Table 40 (Continued)

Categories\Codes	Coded Sections
Effectiveness in Literature Review\AI Tools Can be as Effective as Corpus Tools	AI tools can be very useful in creating content, conducting literature reviews, and providing writing feedback by brainstorming ideas, condensing sources, and enhancing readability. P10 I don't think it is as effective as corpus tools at the moment, but this may be overcome in the future as it continues to develop. P11
Effectiveness in Literature Review\Increasing Role of AI Tools Over Time	Yes, it's possible. I believe the role of artificial intelligence in literature review and content development will increasingly grow over timeP2 However, from my current perspective, considering that the AI tools presented to us are trained on billions of data points, even if provided with 300 sample articles (a few million data) for a literature review and given the necessary training, I think it still may not deliver the best results. Yet, for some, it might provide a satisfactory outcome. P7
Effectiveness in Content Development\AI Tools Can be as Effective as Corpus Tools	Let's say that we know very well the tasks we want to do, the use of AI tools and the corpus tools, I think AI tools can be as effective as corpus tools in content development, (...) P1 Therefore, corpus tools are currently more reliable, but artificial intelligence may improve over time.P8 AI tools can be very useful in creating content, conducting literature reviews, and providing writing feedback by brainstorming ideas, condensing sources, and enhancing readability. P10
Effectiveness in Content Development\Increasing Role of AI Tools Over Time	Yes, that's possible. I believe the role of artificial intelligence in literature review and content development will gradually increaseP2 However, it facilitates content development, connecting topics, and flow control. It also helps with writing style correction. Since it is expected that AI tools will gradually close these gaps over time, they will become more effective.P6
Effectiveness in Content Development\AI Tools Not Accurate Enough	In my opinion, although AI tools are fast and useful for content development and providing feedback, they are not as accurate as corpus tools at the moment. AI can quickly identify errors, but sometimes it lacks academic accuracy P8
Effectiveness in Content Development\AI Tools More Effective in a Short Period of Time	(...) they even give more accuracy in a short period of time. P1

4.5.6. Findings Related to the Codes Discovered in the Interviews for Question 6

Question 6 examined the participants' perceptions on the comparison of artificial intelligence and corpus tools in terms of giving personalised feedback. A total of 7 codes were discovered within the scope of the question. These codes are "AI Tools are More Effective", "AI Tools are More Effective with Training", "AI Tools are as Effective as Corpus Tools", "AI Tools are More Effective if There is No Mistake", "Corpus Tools are More Effective", "Both Type of Tools are Not Enough" and "AI Tools are Helpful According to Ideas".

The table for the representation of the codes discovered for Question 6 is given below.

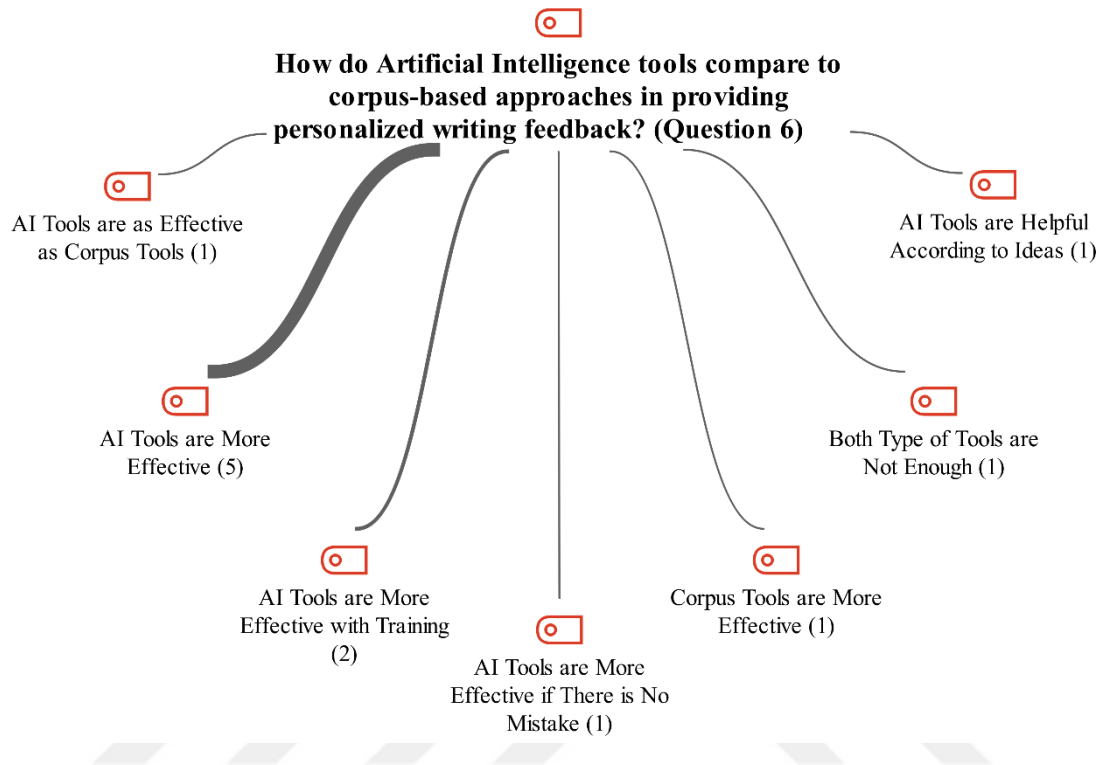
Table 41: Representation of the Codes Discovered for Question 6

Question	Codes	Responses	<i>f</i>
How do Artificial Intelligence tools compare to corpus-based approaches in providing personalized writing feedback?	AI Tools are More Effective	P5, P6, P8, P10, P11	5
	AI Tools are More Effective with Training	P7, P9	2
	AI Tools are as Effective as Corpus Tools	P4	1
	AI Tools are More Effective if There is No Mistake	P3	1
	Corpus Tools are More Effective	P3	1
	Both Type of Tools are Not Enough	P2	1
	AI Tools are Helpful According to Ideas	P1	1

When examining the discovered codes, the code "AI Tools are More Effective" was coded 5 times and the code "AI Tools are More Effective with Training" was coded 2 times. The codes "AI Tools are as Effective as Corpus Tools", "AI Tools are More Effective if There is No Mistake", "Corpus Tools are More Effective", "Both Type of Tools are Not Enough" and "AI Tools are Helpful According to Ideas" were each coded once.

The diagram for the codes discovered for the question is given below.

Figure 7: Codes Discovered in the Question 6



The coded sections table for the codes discovered within the scope of the question is given below.

Table 42: Coded Section Table for Question 6

Codes	Coded Sections
AI Tools are More Effective	AI tools can personalise suggestions based on your academic writing style according to the instructions you input. Corpus tools are more reliable in terms of academic relevance, but personalisation is limited. So AI tools offer more flexibility and improved feedback. P5 AI tools improve the text they provide based on the questions you ask and the responses you like. Over time, they learn to generate results exactly as you want. However, corpus tools mainly produce results that highlight the patterns presented to them, mostly synthesizing existing content. P6 In this regard, I can say that artificial intelligence is clearly ahead. I especially like how it recognizes my writing style and offers personalized suggestions. For example, I usually write long sentences, and ChatGPT notices this and suggests shorter, clearer sentences. Corpus tools, on the other hand, mostly provide general patterns but do not recognize personal style. Therefore, I believe AI tools are more effective for personal development. P8

Table 42 (Continued)

Codes	Coded Sections
AI Tools are More Effective	AI tools deliver quick, tailored feedback but may sometimes be inconsistent and overly general, whereas corpus-based methods offer accurate, evidence-supported insights but do not feature automation. P10 Artificial intelligence provides personalized feedback and general responses but may not fully understand the context. However, corpus tools do not offer personalized feedback; instead, they ensure proper language use and allow the user to make discoveries on their own." P11
AI Tools are More Effective with Training	However, I believe that if these AI tools are trained (fine-tuned) locally on a server to become a linguistics-focused machine with specialization, they would produce good results.P7 If we want to receive personalized feedback, we need to give the command 'learn' to the tool we use and provide it with examples. P9
AI Tools are as Effective as Corpus Tools	Actually, AI tools are at a level where they can compete with corpus tools in this regard. However, the fact that they can provide feedback independent of the content is one of their drawbacks. In this sense, they still need improvement.. P4
AI Tools are More Effective if There is No Mistake	(...) Artificial intelligence can sometimes make mistakes in personalized feedback, but when it doesn't, it is very effective and fast. P3
Corpus Tools are More Effective	Corpora are more effective.(...) P3
Both Type of Tools are Not Enough	Bence hem yapay zeka araçları hem de corpus araçları kişiselleştirme açısından kötüler. Henüz bu alanda önlerinde çok uzun bir yol olduğunu düşünüyorum. İkisinde konuyu istenen düzeye indirgeyemiyorlar. P2
AI Tools are Helpful According to Ideas	In my opinion, both AI tools and corpus tools are poor in terms of personalization. I believe they still have a long way to go in this area. Neither of them can simplify the topic to the desired level. P1

4.5.7. Findings Related to the Codes Discovered in the Interviews for Question 7

Within the scope of Question 7, findings were obtained regarding the participants' suggestions for the integration of artificial intelligence tools with corpus tools. A total of 10 codes were discovered. These codes are "Using Both Tools in a Hybrid Way", "AI Tools Access to Corpus Databases", "Training AI Tools with Corpus Tools", "Collaboration with Experts", "Integrating AI Tools into Corpus Tools", "Contextual Feedback", "Training AI on Specific Topics", "Controlling Outputs of Corpus Tools with AI Tools", "Controlling Outputs of AI Tools with Corpus Tools" and "Knowing Both Tool Due to Using AI More Effective".

The table for the representation of the codes discovered for Question 7 is given below.

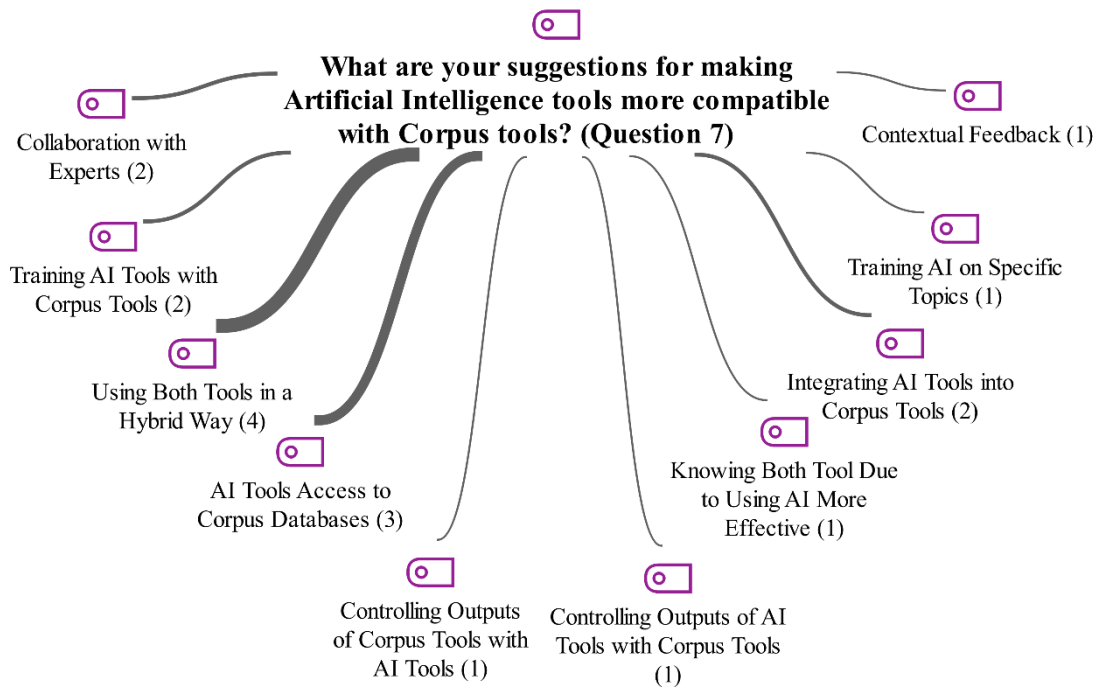
Table 43: Representation of the Codes Discovered for Question 7

Question	Codes	Responses	<i>f</i>
What are your suggestions for making Artificial Intelligence tools more compatible with Corpus tools?	Using Both Tools in a Hybrid Way	P5, P8, P0, P11	4
	AI Tools Access to Corpus Databases	P8, P9, P10	3
	Training AI Tools with Corpus Tools	P3, P10	2
	Collaboration with Experts	P4, P10	2
	Integrating AI Tools into Corpus Tools	P2, P6	2
	Contextual Feedback	P10	1
	Training AI on Specific Topics	P7	1
	Controlling Outputs of Corpus Tools with AI Tools	P4	1
	Controlling Outputs of AI Tools with Corpus Tools	P3	1
	Knowing Both Tool Due to Using AI More Effective	P1	1

Among the codes discovered with the scope of Question 7 ,the code "Using Both Tools in a Hybrid Way" was coded 4 times, "AI Tools Access to Corpus Databases" 3 times, "Training AI Tools with Corpus Tools", "Collaboration with Experts" and "Integrating AI Tools into Corpus Tools" each 2 times, and finally, the codes "Contextual Feedback", "Training AI on Specific Topics", "Controlling Outputs of Corpus Tools with AI Tools", "Controlling Outputs of AI Tools with Corpus Tools" and "Knowing Both Tool Due to Using AI More Effective" were each coded 1 time.

The diagram for the codes discovered for the question is given below.

Figure 8: Codes Discovered in the Question 7



The coded sections table for the codes discovered within the scope of the question is given below.

Table 44: Coded Section Table for Question 7

Codes	Coded Sections
Using Both Tools in a Hybrid Way	While corpus tools provide appropriate use of the language, AI analyses spelling errors. By combining the two tools, both personal and more effective feedback can be provided. In addition, by providing the accuracy of the sources in the text, the use of incorrect sources is prohibited. In this way, more reliable and academic results are obtained and time is saved. P5 I think the best results can be achieved by integrating these two tools. For example, an AI tool could provide feedback while also showing examples from the relevant academic corpus. This way, feedback would be both fast and contextually appropriate. P8 Hybrid Feedback Systems P10 Both can be developed under a single platform to provide easy and reliable results. P11
AI Tools Access to Corpus Databases	Also, if artificial intelligence had access to the corpus database, it could verify whether the expressions it suggests are truly valid in the literature. Such a combination would be very useful for both students and academics. P8 Maybe if we transfer the results obtained from the corpus to AI and have it write using this data, we could achieve a good outcome. P9 Integration of Corpus Data into AI Models P10
Training AI Tools with Corpus Tools	First, what we need to do is teach the AI model well with good examples, and while creating these examples, corpora can be utilized. P3 Adaptive Learning from Corpus Feedback P10
Collaboration with Experts	This topic falls within the scope of Natural Language Processing (NLP) and Large Language Models (LLM).". P4 Collaboration with Researchers and Linguists P10
Integrating AI Tools into Corpus Tools	I think while both have their strengths and weaknesses, the effective combined use of them should be considered connected to the article writer's ability to understand and internalize the subject. I also believe that these two tools will be closely integrated in the near future P2 Corpus interfaces operate in a system that uses tabs with commands. By simplifying the interface of these tools and incorporating AI support, the desired operations could be performed by writing in text form to obtain results. Such a system could provide results based on the articles we upload as well as find similar articles on its own.. P6
Contextual Feedback	Contextual Feedback (means context specific) P10
Training AI on Specific Topics	My answer will be somewhat repetitive of previous responses, but AI tools that we generally see on the internet can provide much more accurate answers when subjected to specialized training on a local computer. P7

Table 44 (Continued)

Codes	Coded Sections
Controlling Outputs of Corpus Tools with AI Tools	"I haven't tried this before, but AI tools could be developed to the point where they can identify the most frequently repeated 3-, 4-, 5-, 6-, or 7-word phrases or even sentences in a paper. After making such a request, researchers could write their articles more easily with the obtained results. You might say this approach already exists in the corpus tools we use, but those tools still include common words like 'the,' 'of,' 'in,' 'at' within the phrases. Therefore, the aspect that needs improvement in corpus tools is increasing context awareness.. P4
Controlling Outputs of AI Tools with Corpus Tools	Then, it would be efficient to review the content generated by artificial intelligence and correct its errors using corpus tools.. P3
Knowing Both Tool Due to Using AI More Effective	We only need to know more the use of them both so that we can master the use of AI tools in order for them to give us accurate feedbacks.. P1

4.5.8. Findings Related to the Codes Discovered in the Interviews for Question 8

In Question 8, 4 options were presented for the type of feedback that the participants would prefer to receive from their professors. These options were coded as "Constructive Feedback", "Formal Feedback", "Formative Feedback" and "Summative Feedback".

The table for the representation of the codes discovered for Question 8 is given below.

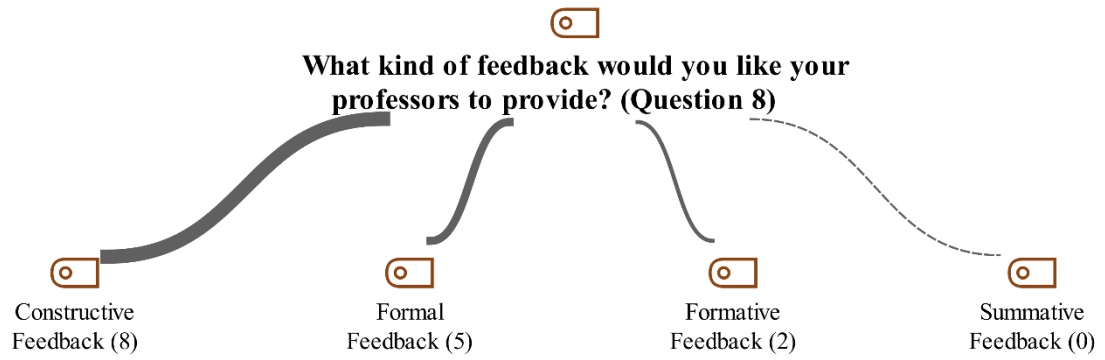
Table 45: Representation of the Codes Discovered for Question 8

Question	Codes	Responses	<i>f</i>
What kind of feedback would you like your professors to provide?	Constructive Feedback	P1, P2, P3, P4, P5, P9, P10, P11	8
	Formal Feedback	P1, P2, P7, P8, P9	5
	Formative Feedback	P1, P6	2
	Summative Feedback		0

Among the codes discovered within the scope of Question 8, the code "Constructive Feedback" was coded 8 times, "Formal Feedback" 5 times, and "Formative Feedback" 2 times. The "Summative Feedback" option was not coded because it was not preferred at all.

The diagram for the codes discovered for the question is given below.

Figure 9: Codes Discovered in the Question 8



DISCUSSION

According to the results from the quantitative findings of the research, the respondents, who are predominantly master's students and a smaller group of PhD candidates, represent a variety of academic disciplines, mainly engineering and applied sciences, with a fairly balanced gender distribution across the different survey stages. At the outset of the semester, a substantial majority of participants were already aware of ChatGPT, and a large proportion of those had prior experience using the tool. Initial usage of ChatGPT was primarily for academic writing and translation, including tasks such as language correction and text enhancement, followed by research and literature review activities, assignment support, and programming assistance. While many expressed high to moderate satisfaction with ChatGPT, citing its comprehensive responses and time-saving benefits, a significant number also raised concerns regarding its accuracy, reliability, and domain-specific limitations, underscoring a need for verification and critical engagement. A notable portion of participants had not published in English prior to the course. Following the course FBE 5008, almost all participants reported using ChatGPT. There was a strong consensus that ChatGPT was easy to use, could be used effectively, and was beneficial for grammar and translation. Participants generally reported gaining sufficient knowledge to use it self-sufficiently, along with more practical experience and an ability to generate more examples and undertake concrete exercises. They found it particularly helpful for tasks such as finding ideas in texts, understanding grammatical usage, checking word appropriateness, and correcting errors. Overall, attitudes towards ChatGPT's usability and educational potential became more favorable post-course. When reflecting on the impact of ChatGPT on the "new research perception" in article writing, participants overwhelmingly highlighted positive aspects such as increased efficiency, time-saving, language and grammar support, idea generation, and research assistance. However, significant concerns were also voiced regarding the potential for over-reliance and laziness, issues with accuracy and reliability, loss of originality, and limited domain knowledge. Many participants stressed the importance of conditional usage, emphasizing the need for proper usage guidelines, viewing ChatGPT as a tool rather than a replacement, and the necessity of verification, indicating a complex perception that balanced its benefits against its pitfalls. In stark contrast to ChatGPT, the vast majority of participants at the beginning of the semester had no prior awareness of the term "corpus linguistics" or experience with specific corpus science websites and tools like COCA, MICUSP, AntConc, or Sketch Engine. A large proportion of these students also reported no prior English-language publications. Consequently, their self-reported knowledge (theoretical, methodological, and practical) regarding corpus tools was very low before the course. While there was some nascent belief that corpus tools could be useful for tasks like understanding grammatical usage, their perceived ability to use these tools for specific linguistic analyses such as

finding collocations or synonyms was minimal. Initial open-ended responses indicated that while students had little to no prior knowledge, they were open to learning and perceived potential benefits, with some suggesting such instruction should occur earlier in academic careers. After the FBE 5008 course, there was a marked increase in engagement with corpus resources. A substantial number of participants reported visiting websites like COCA and Skell, and usage of tools such as AntConc and Sketch Engine became nearly universal among respondents. This increased exposure was accompanied by significantly more positive attitudes and self-perceived competence. Participants generally found corpus tools easy to use and felt they could use them effectively. They reported gaining enough knowledge for self-sufficiency, along with more theoretical background and considerable practical experience, including making more examples and doing more concrete exercises. Post-course, participants widely recognized the utility of corpus tools for a variety of academic and linguistic tasks. There was strong agreement on their usefulness for seeing grammatical usage, checking word presence and appropriateness, understanding collocations, and checking spelling. Furthermore, students felt capable of using these tools for finding keywords, sorting word frequencies, identifying target words, locating field-specific phrases, finding collocations, and identifying Ngrams and word clusters, indicating a significant development in their practical skills. The perceived necessity of corpus tools for vocabulary learning also saw high endorsement. Reflections on the impact of corpus use in academic writing after the course were largely positive. Participants frequently cited practical applications such as support in literature reviews and improved writing efficiency, an enhanced awareness of academic language patterns and discipline-specific norms, and increased confidence and autonomy in their writing. Many also reported an enhanced critical and analytical perspective on language use. While some initial challenges with tool interfaces and the time investment required to learn were noted, along with minor concerns about potential loss of originality or formulaic writing, the overall sentiment was that corpus tools equipped them with valuable skills for future academic endeavors, including thesis writing and potential teaching applications. In conclusion, this research demonstrates a significant shift in graduate students' awareness, usage, and perceptions of both AI writing assistants like ChatGPT and specialized corpus linguistics tools following targeted instruction. While ChatGPT was met with initial familiarity and mixed satisfaction, concerns about reliability and originality persisted alongside appreciation for its efficiency. Corpus tools, initially largely unknown, were embraced for their capacity to enhance linguistic awareness, analytical skills, and writing autonomy. The findings collectively suggest that while such tools offer considerable potential in academic settings, fostering critical engagement, ethical considerations, and an understanding of their respective strengths and limitations is crucial for their effective integration into graduate-level research and writing practices.

In the qualitative analysis process of the study, the findings were compiled under eight themes corresponding to eight questions.

When the findings related to the first question are examined, it is observed that more than half of the participants believe that AI tools are more effective in providing feedback while writing academic papers. For this multiple-choice question, two participants selected more than one option.

Regarding the second question, the findings reveal that again more than half of the participants emphasized the speed of AI tools. Nearly half of the participants also stated that using both types of tools simultaneously is more effective. In addition, participants noted that AI tools have a facilitating and supportive effect for beginners or inexperienced users.

Based on the findings obtained for the third question, when corpus and AI tools are compared in terms of consistency and reliability, it is observed that participants generally consider corpus tools to be much more consistent and reliable, while outputs from AI tools are often unexpected and erroneous.

In terms of comparing feedback provided by AI and corpus tools in terms of speed and accuracy, the participants indicated that AI tools are much faster, whereas corpus tools provide more accurate and precise feedback.

For the fifth question, the participants' perceptions about the effectiveness of AI tools in different usage contexts compared to corpus tools were examined. Participants stated that AI tools can be as effective as corpus tools in providing feedback on academic writing. While participants emphasized the weaknesses of AI tools in the context of conducting a literature review, it was also observed that they expressed the view that the effectiveness and role of AI tools will increase over time. Similarly, for content development, participants also indicated that the effectiveness and role of AI tools will continue to grow over time.

The findings related to the sixth question show that nearly half of the participants found AI tools to be more effective in providing individualized feedback.

The findings related to the seventh question compiled the participants' suggestions for combining AI and corpus tools to generate more efficient feedback. Suggestions included providing AI tools access to corpus databases, training AI tools with corpus tools, collaborating with subject-matter experts, and integrating AI capabilities into corpus tools. The most prominent recommendation was the hybrid use of both tools.

Under the framework of the eighth question, findings were obtained regarding the type of feedback participants prefer to receive from their professors. Participants were presented with four options, and some selected more than one, thus offering richer insights. Most participants indicated a preference for receiving “Constructive Feedback.” Nearly half of the participants stated a preference for “Formal Feedback.” Two participants preferred “Formative Feedback,” while none indicated a preference for “Summative Feedback.”



CONCLUSION

Limitations of the Study

The study that was conducted had some limitations, one major one would be the time constraints. It should be noted that the data were gathered from different groups of students each semester. Even though this course is included in the institute's curriculum for each semester, students have only one course for each semester to improve their academic writing skills. It would be more beneficial if this course could be split into two parts for each semester, and continue from where it is left of. As there are a lot of significant things to learn to improve academic writing, constricting it single semester made certain things rushed. For example, students had only about 60 days to learn Corpus tools and ChatGPT and incorporate them into their academic writing. At certain times, some students could not comprehend the interfaces of Corpus tools and ChatGpt, in order to explain it to them, manual group sessions were done after the presentation to show them how to use these tools properly to get feedback for their academic writing.

Another limitation as previously stated was that every group had only one semester to get familiar with these tools and apply them. A whole academic year of incorporating would be a lot beneficial and would show a better comparison between AI tools and Corpus tools and how those tools affected the academic writing of the students. Data would be gathered in the first semester without the use of those tools and just by providing manual feedback, but at the same time making students familiar with the interfaces of those tools, and at the end of the first semester students would write an academic paper simply without using those tools. In the second semester, Corpus and ChatGpt would be applied for feedback and another academic paper would be written, and then a comparison would be done to see how much the academic writing of the students was improved before those tools and after.

Further suggestions for the Research

While different Corpus tools were used for this study, as AI tools only ChatGPT was used. The version of ChatGPT was a 3.5 free version, the tool was updated during the study and also had a more refined version which is 4.0, but was paid. As time goes on it is without a doubt ChatGPT will

be improved a lot. The 4.0 version that was released during this period could be more effective for providing feedback as it is more refined. Also, it should be noted that at the time ChatGPT was the most popular and most effective AI tool. During the study, new AI bots were released and the most prominent one was the Chinese model "Deepseek" which is in direct competition with OpenAI's ChatGPT. Further studies could get better results for academic writing feedback from AI bots because of its constant updates and improvements and also further studies should look into the alternatives to ChatGPT as they could be more efficient than the former for academic writing feedback.



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APPENDIXES

Appendix A: Permission Document

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HİZMETE ÖZEL
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Hukuk Müşavirliği

Sayı : E-82554930-050.01.04-610034
Konu : Etik Kurul Kararı (Hürriyet AZAKLI)

20.01.2025

Sn. Hürriyet AZAKLI

İlgi : 17.01.2025 tarihli ve E-26014373-050.06.04-608751 sayılı yazı.

KTÜ-Sosyal Bilimler Enstitüsü Batı Dilleri ve Edebiyatı Anabilim Dalı Uygulamalı Dil Bilimi Tezli Yüksek Lisans Programı öğrencisi Hürriyet AZAKLI'nın "**The Investigation of the Effects of Corpus versus AI-assisted Multidimensional Feedback Applications in EAP Engineering Students' Writing Performance**" adlı yüksek lisans tezi kapsamında çalışması için gerekli olan Etik Kurul incelemesi yapılmış ve başvuruza onay verilmiştir.
Bilgilerinize ve gereğini rica ederim.

Prof. Dr. Ali TEMİZ
Rektör Yardımcısı

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Appendix B: Questionnaire for ChatGPT Before Semester

KTÜ 5008: Bilimsel Makale Yazmada Yapay Zeka Araçlarının Kullanımına Yönelik Algılarının Belirlenmesi

Değerli arkadaşlar, bu anket son dönemlerde kendinden söz ettirmiş, OpenAI tarafından geliştirilen ve içinde dil modeli bulunduran yapay zeka sohbet robotu ChatGPT'nin kullanımı hakkındaki düşüncelerinizi belirlemek için hazırlanmıştır. Cevaplarınız araştırma amaçlı kullanılacak ve gizli tutulacaktır.

"FBE 5008: Scientific Article Writing in English"

* Zorunlu soruyu belirtir

Gönüllülük Beyanı

Bu ankete gönüllü olarak katılmanız esastır.

1. Bu ankete gönüllü olarak katılıyorum. *

Yalnızca bir şıkla işaretleyin.

☐ Evet

Appendix B: Questionnaire for ChatGPT before Semester (Continue)

2. Cinsiyetiniz? *

Yalnızca bir şıkı işaretleyin.

- ☐ Erkek
☐ Kadın

3. Bölümünüz *

4. Öğrenim Dereceniz *

Yalnızca bir şıkı işaretleyin.

- ☐ Yüksek Lisans
☐ Doktora

5. Daha önce İngilizce yayın (makale-tez-ödev ...) yaptınız mı? *

Yalnızca bir şıkı işaretleyin.

- ☐ Evet
☐ Hayır

6. FBE 5008 kodlu dersi almaya başlamadan önce bir yapay zeka aracı olan "ChatGPT" terimini duymuş muydunuz? *

Yalnızca bir şıkı işaretleyin.

- ☐ Evet
☐ Hayır

Appendix B: (Continue)

7. Cevabınız evet ise FBE 5008 kodlu dersi almaya başlamadan önce ChatGPT yapay zeka aracını kullanma fırsatınız oldu mu?

Yalnızca bir şıkla işaretleyin.

- ☐ Evet
☐ Hayır

8. Eğer cevabınız "Evet" ise ne için ve nasıl kullandınız? Kısaca açıklayınız?

9. Söz konusu bu yapay zeka aracı, beklentilerinizi karşıladı mı? Kısaca açıklayınız?



Appendix C: Questionnaire for Corpus tools before Semester

Lisansüstü Mühendislik Öğrencilerinin Bilimsel Makale Yazmada Derlem Araçlarının Kullanımına Yönelik Algılarının Belirlenmesi

Değerli Arkadaşlar

Bu anket, Corpus (Derlem ve Derlem araçları) kullanımı hakkındaki düşüncelerinizi belirlemek için hazırlanmıştır. Cevaplarınız araştırma amaçlı kullanılacak ve gizli tutulacaktır.

"FBE 5008: Scientific Article Writing in English"

Ali Şükrü ÖZBAY

* Zorunlu soruyu belirtir

Gönüllülük Beyanı

Bu ankete gönüllü olarak katılmanız esastır.

1. Bu ankete gönüllü olarak katılıyorum. *

Yalnızca bir şıkkı işaretleyin.

☐ Evet

2. Cinsiyetiniz *

Uygun olanların tümünü işaretleyin.

☐ Kadın

☐ Erkek

Appendix C: Questionnaire for Corpus tools before Semester (Continue)

3. Bölümünüz *

4. Öğrenim Dereceniz *

Uygun olanların tümünü işaretleyin.

☐ Yüksek Lisans

☐ Doktora

5. Lisansüstü öğrenim başlangıç yılınız *

6. FBE 5008 kodlu dersi almaya başlamadan önce "Corpus Linguistics" (Derlembilim) terimini hiç duymuş muydunuz? *

Yalnızca bir şıkkı işaretleyin.

☐ Evet

☐ Hayır

7. Eğer cevabınız "evet" ise ne zaman ve nerede duyduğunuzu belirtir misiniz ?

8. Daha önce İngilizce yayın yaptınız mı?

Yalnızca bir şıkkı işaretleyin.

☐ Evet

☐ Hayır

Appendix C: Questionnaire for Corpus tools before Semester (Continue)

9. FBE 5008 kodlu dersi almaya başlamadan önce aşağıda verilen derlembilim sitelerini hiç ziyaret ettiniz mi? *

Her satırda yalnızca bir şıkki işaretleyin.

	Evet	Hayır
COCA	☐	☐
Skell	☐	☐
Frazeit	☐	☐
MICUSP	☐	☐
BNC	☐	☐
Diğerleri	☐	☐

10. FBE 5008 kodlu dersi almadan önce aşağıdaki derlem araçlarını kullanıyor muydunuz? *

Her satırda yalnızca bir şıkki işaretleyin.

	Evet	Hayır
AntConc	☐	☐
Sketch Engine	☐	☐
Wordsmith	☐	☐
Voyant Tools	☐	☐
LancsBox	☐	☐
vd	☐	☐

Appendix C: Questionnaire for Corpus tools before Semester (Continue)

11. FBE 5008 kodlu dersi almadan önce "derlem araçlarını" kullanabilme konusunda *

Her satırda yalnızca bir şıkki işaretleyin.

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
Kendime yetecek kadar bilgiye sahiptim.	☐	☐	☐	☐	☐
Daha çok teorik bir arka plana sahiptim.	☐	☐	☐	☐	☐
Daha çok metodolojik bilgilere sahiptim	☐	☐	☐	☐	☐
Daha çok örneklendirme yapardım.	☐	☐	☐	☐	☐
Kendi başıma pratik yapmak için daha somut alıştırmalar yapardım.	☐	☐	☐	☐	☐
Diğerleri	☐	☐	☐	☐	☐

Appendix C: Questionnaire for Corpus tools before Semester (Continue)

12. FBE 5008 kodlu dersi almadan önce derlem araçlarının kullanımının aşağıdaki *
eylemler için yararlı olabileceğini düşünüyordum:

Her satırda yalnızca bir şıkki işaretleyin.

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
Bir fikir bulma	☐	☐	☐	☐	☐
Bir kelimenin / bir ifadenin dilsel kullanımını görme	☐	☐	☐	☐	☐
Bir kelimenin / ifadenin olup olmadığına bakma	☐	☐	☐	☐	☐
Bir kelimenin / bir ifadenin anlamını kontrol etme	☐	☐	☐	☐	☐
Bir kelimenin / ifadenin uygun olup olmadığına bakma	☐	☐	☐	☐	☐
Bir kelimenin / bir ifadenin gramer olarak nasıl kullanıldığını görme	☐	☐	☐	☐	☐
İki kelimeyi / ifadeyi karşılaştırma	☐	☐	☐	☐	☐
Kelimenin yazımını	☐	☐	☐	☐	☐

kontrol etme

Diğerleri	☐	☐	☐	☐	☐
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Appendix C: Questionnaire for Corpus tools before Semester (Continue)

13. FBE 5008 kodlu dersi almadan önce derlem araçlarını aşağıdaki işler için kullanabiliyordum *

Her satırda yalnızca bir şıkki işaretleyin.

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
Kelime bulmak için.	☐	☐	☐	☐	☐
Belirli bir alana özel ifadeleri bulmak için	☐	☐	☐	☐	☐
Eşdizimleri (collocation) bulmak için.	☐	☐	☐	☐	☐
Eş anlamlılarını bulmak için	☐	☐	☐	☐	☐
Karşılaştırma yapmak için	☐	☐	☐	☐	☐
Diğerleri	☐	☐	☐	☐	☐

Appendix C: Questionnaire for Corpus tools before Semester (Continue)

14. Derlem kullanımı ile ilgili eklemek istediğiniz bir şey varsa buraya yazabilirsiniz.

Appendix D: Questionnaire for ChatGPT After Semester

KTÜ 5008: Bilimsel Makale Yazmada Yapay Zeka Araçlarının Kullanımına Yönelik Algılarının Belirlenmesi

Değerli arkadaşlar, bu anket son dönemlerde kendinden söz ettirmiş, OpenAI tarafından geliştirilen ve içinde dil modeli bulunduran yapay zeka sohbet robotu ChatGPT'nin kullanımı hakkındaki düşüncelerinizi belirlemek için hazırlanmıştır. Cevaplarınız araştırma amaçlı kullanılacak ve gizli tutulacaktır.

"FBE 5008: Scientific Article Writing in English"

* Zorunlu soruyu belirtir

Gönüllülük Beyan (Bu ankete gönüllü olarak katılmanız esastır=

1. Bu ankete gönüllü olarak katılıyorum. *

Yalnızca bir şıkla işaretleyin.

☐ Evet

2. Cinsiyetiniz? *

Yalnızca bir şıkla işaretleyin.

☐ Erkek

☐ Kadın

Appendix D: Questionnaire for ChatGPT After Semester (Continue)

3. Bölümünüz? *

4. Öğrenim Dereceniz? *

Yalnızca bir şıkkı işaretleyin.

☐ Yüksek Lisans

☐ Doktora

5. FBE 5008 kodlu dersini almaya başladıktan sonra ChatGpt hiç kullandınız mı? *

Yalnızca bir şıkkı işaretleyin.

☐ Evet

☐ Hayır

Appendix D: Questionnaire for ChatGPT After Semester (Continue)

6. FBE 5008 kodlu dersi almaya başladıktan sonra "ChatGPT" kullanabilme hakkından *
genel düşünceleriniz nelerdir?

Her satırda yalnızca bir şıkı işaretleyin.

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
ChatGPT kullanmak kolaydır.	☐	☐	☐	☐	☐
ChatGPT etkin bir şekilde kullanabiliyorum.	☐	☐	☐	☐	☐
ChatGPT kullanmak kelimeleri öğrenmek için gereklidir.	☐	☐	☐	☐	☐
ChatGPT gramer için faydalıdır.	☐	☐	☐	☐	☐
ChatGPT çeviri için faydalıdır.	☐	☐	☐	☐	☐
ChatGPT, İngilizce olan diğer derslerde de kullanılabilir	☐	☐	☐	☐	☐

Appendix D: Questionnaire for ChatGPT After Semester (Continue)

7. FBE 5008 kodlu dersi almaya başladıktan sonra "ChatGPT" ile nasıl bir deneyim kazandınız? *

Her satırda yalnızca bir şıkki işaretleyin.

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
Kendime yetecek kadar bilgiye sahip oldum.	☐	☐	☐	☐	☐
Daha çok teorik bir arka plana sahip oldum.	☐	☐	☐	☐	☐
Daha çok uygulama konusunda deneyim sahibi oldum.	☐	☐	☐	☐	☐
Daha çok örneklendirme yaptım.	☐	☐	☐	☐	☐
Kendi başıma pratik yapmak için daha somut alıştırmalar yaptım.	☐	☐	☐	☐	☐

Appendix D: Questionnaire for ChatGPT After Semester (Continue)

8. FBE 5008 kodlu dersi almaya başladıktan sonra "ChatGPT" kullanımının aşağıdaki eylemler için yararlı olabileceğini düşünüyorum. *

Her satırda yalnızca bir şıkı işaretleyin.

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
Metin içinde bir fikir bulmak	☐	☐	☐	☐	☐
Metin içinde bir kelimenin / bir ifadenin dilbilgisel (gramatik) kullanımını görmek	☐	☐	☐	☐	☐
Metin içinde bir kelimenin / ifadenin uygun olup olmadığına bakmak	☐	☐	☐	☐	☐
Metin içinde bir kelimenin / bir ifadenin eşgüdümlü diğer kelimeler ile nasıl kullanıldığını görmek	☐	☐	☐	☐	☐
Metin içinde kelimenin yazımını kontrol etmek	☐	☐	☐	☐	☐

Appendix D: Questionnaire for ChatGPT After Semester (Continue)

9. FBE 5008 kodlu dersi almaya başladıktan sonra "ChatGPT" aşağıdaki işler için *
kullanabiliyorum

Her satırda yalnızca bir şıkla işaretleyin.

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
Metin içinde kullanılan belirli bir alana özel ifadeleri bulmak için	☐	☐	☐	☐	☐
Metin içinde yapılan hataları düzeltmek için	☐	☐	☐	☐	☐
Metnin içinde bulunan dilbilgisel (gramar) hatalarını düzeltmek için	☐	☐	☐	☐	☐

Appendix D: Questionnaire for ChatGPT After Semester (Continue)

10. Yukarıda sorduğumuz sorular dışında, makale yazımında "ChatGPT Kullanımı" * sizlerde oluşturduğu "yeni araştırma algısı" ile ilgili olarak olumlu/olumsuz düşüncelerinizi bizimle paylaşır mısınız?

Appendix E: Questionnaire for Corpus After Semester

Lisansüstü Mühendislik Öğrencilerinin Bilimsel Makale Yazmada Derlem Araçlarının Kullanımına Yönelik Algılarının Belirlenmesi

Değerli Arkadaşlar

Bu anket, Corpus (Derlem ve Derlem araçları) kullanımı hakkındaki düşüncelerinizi belirlemek için hazırlanmıştır. Cevaplarınız araştırma amaçlı kullanılacak ve gizli tutulacaktır.

"FBE 5008: Scientific Article Writing in English"

Ali Şükrü ÖZBAY

** Zorunlu soruyu belirtir*

Gönüllülük Beyanı

Bu ankete gönüllü olarak katılmanız esastır.

1. Bu ankete gönüllü olarak katılıyorum. *

Yalnızca bir şıkkı işaretleyin.

☐ Evet

2. Cinsiyetiniz *

Uygun olanların tümünü işaretleyin.

☐ Kadın

☐ Erkek

Appendix E: Questionnaire for Corpus After Semester (Continue)

3. Bölümünüz *

4. Öğrenim Dereceniz *

Uygun olanların tümünü işaretleyin.

☐ Yüksek Lisans

☐ Doktora

5. Lisans üstü öğrenim başlangıç yılınız *

6. FBE 5008 kodlu dersini almaya başladıktan sonra aşağıda verilen derlembilim sitelerini hiç ziyaret ettiniz mi? *

Her satırda yalnızca bir şıkı işaretleyin.

	Evet	Hayır
COCA	☐	☐
Skell	☐	☐
Frazeit	☐	☐
MICUSP	☐	☐
BNC	☐	☐
Diğerleri	☐	☐

Appendix E: Questionnaire for Corpus After Semester (Continue)

7. FBE 5008 kodlu dersi almaya başladıktan sonra aşağıdaki "Derlem araçlarının" *
hangilerini kullandınız?

Her satırda yalnızca bir şıkla işaretleyin.

	Evet	Hayır
AntConc	☐	☐
Sketch Engine	☐	☐
Wordsmith	☐	☐
Voyant Tools	☐	☐
LancsBox	☐	☐
vd	☐	☐

Appendix E: Questionnaire for Corpus After Semester (Continue)

8. FBE 5008 kodlu dersi almaya başladıktan sonra "Derlem araçlarını" kullanabilme *
hakkından genel düşünceleriniz nelerdir.

Her satırda yalnızca bir şıkla işaretleyin.

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
Derlem araçlarını kullanmak kolaydır.	☐	☐	☐	☐	☐
Derlem araçlarını etkin bir şekilde kullanabiliyorum.	☐	☐	☐	☐	☐
Derlem araçları kullanmak kelimeleri öğrenmek için gereklidir.	☐	☐	☐	☐	☐
Derlem araçları gramer için faydalıdır.	☐	☐	☐	☐	☐
Derlem araçları çeviri için faydalıdır.	☐	☐	☐	☐	☐
Derlem araçları İngilizce olan diğer derslerde de kullanılabilir	☐	☐	☐	☐	☐

Appendix E: Questionnaire for Corpus After Semester (Continue)

9. FBE 5008 kodlu dersi almaya başladıktan sonra "Derlem araçlarını" kullanabilme konusunda *

Her satırda yalnızca bir şıkki işaretleyin.

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
Kendime yetecek kadar bilgiye sahip oldum.	☐	☐	☐	☐	☐
Daha çok teorik bir arka plana sahip oldum.	☐	☐	☐	☐	☐
Daha çok uygulama konusunda deneyim sahibi oldum.	☐	☐	☐	☐	☐
Daha çok örneklendirme yaptım.	☐	☐	☐	☐	☐
Kendi başıma pratik yapmak için daha somut alıştırmalar yaptım.	☐	☐	☐	☐	☐

Appendix E: Questionnaire for Corpus After Semester (Continue)

10. FBE 5008 kodlu dersi almaya başladıktan sonra "Derlem araçlarının" kullanımının *
aşağıdaki eylemler için yararlı olabileceğini düşünüyorum.

Her satırda yalnızca bir şıkla işaretleyin.

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
Metin içinde bir fikir bulmak	☐	☐	☐	☐	☐
Metin içinde bir kelimenin / bir ifadenin dilsel (gramatik) kullanımını görmek	☐	☐	☐	☐	☐
Metin içinde bir kelimenin / ifadenin olup olmadığına bakmak	☐	☐	☐	☐	☐
Metin içinde bir kelimenin / bir ifadenin anlamını kontrol etmek	☐	☐	☐	☐	☐
Metin içinde bir kelimenin / ifadenin uygun olup olmadığına bakmak	☐	☐	☐	☐	☐
Metin içinde bir kelimenin / bir ifadenin eşgüdümü diğer kelimeler ile nasıl	☐	☐	☐	☐	☐

Appendix E: Questionnaire for Corpus After Semester (Continue)

kullanıldığını
görmek

Metin içinde
iki kelimeyi /
ifadeyi
karşılaştırmak

☐☐☐☐☐

Metin içinde
kelimenin
yazımını
kontrol etmek

☐☐☐☐☐

Appendix E: Questionnaire for Corpus After Semester (Continue)

FBE 5008 kodlu dersi almaya başladıktan sonra "Derlem araçlarını" aşağıdaki işler için kullanabiliyorum

*

Her satırda yalnızca bir şıkı işaretleyin.

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
Metin içinde anahtar kelimeleri bulmak için	☐	☐	☐	☐	☐
Metin içinde kelime sıklık sıralaması yapmak için	☐	☐	☐	☐	☐
Metin içinde hedef kelime bulmak için.	☐	☐	☐	☐	☐
Metin içinde kullanılan belirli bir alana özel ifadeleri bulmak için	☐	☐	☐	☐	☐
Metin içinde eşdizimleri (collocation) bulmak için.	☐	☐	☐	☐	☐
Metin içinde kelimelerin eş anlamlılarını bulmak için	☐	☐	☐	☐	☐
Metin içinde kullanılan kelime gruplarını karşılaştırmak için	☐	☐	☐	☐	☐

Appendix E: Questionnaire for Corpus After Semester (Continue)

Metin içinde
kullanılan çoklu
kelime gruplarını
belirlemek için (Ngram)

☐ ☐ ☐ ☐ ☐

11. Yukarıda sorduğumuz sorular dışında, makale yazımında "Derlem kullanımının" sizlerde oluşturduğu "yeni araştırma algısı" ile ilgili olarak olumlu/olumsuz düşüncelerinizi bizimle paylaşır mısınız?

Appendix F: Semi-Structured Interview

Mülakat soruları

Makale yazarken, yazılarınıza geri dönüt sağlamak için daha çok hangisinin etkili olduğunu düşünüyorsunuz?

When writing an article, which method do you think is more effective for providing feedback on your work?

Derlem araçları/Corpus Tools ☐ Yapay Zeka araçları/ Artificial Intelligence Tools ☐

Geri dönüt açısından Yapay Zeka araçları ve derlem(corpus) araçlarını kıyasladınız mı? Bu araçların sunduğu geri dönütler akademik makale yazma sürecine katkısını nasıl değerlendirirsiniz?

Compared to the feedback provided by Artificial Intelligence tools, how would you assess the contribution of feedback from Corpus tools to the academic writing process?

Tutarlılık ve güvenilirlik açısından, Yapay Zeka araçları mı Derlem (corpus) araçları mı daha güvenilir dönüt sağlar? Deneyimlerinizi paylaşır mısınız?

In terms of consistency and reliability, do Artificial Intelligence tools or Corpus tools provide more reliable feedback? Could you share your exp

Akademik yazım açısından, Derlem (Corpus) araçları ve Yapay Zeka araçlarını sağladıkları geri dönüt hızı ve doğrulukları bakımından kıyaslayabilir misiniz?

Could you compare Corpus tools and Artificial Intelligence tools in terms of the speed at which they provide feedback and their accuracy for academic writing?

Sizce Yapay Zeka araçları, içerik geliştirme, literatür taraması ve yazımlara geri dönüt sağlamada, derlem (corpus) araçları kadar etkili olabilir mi?

Do you think Artificial Intelligence tools can be as effective as Corpus tools in content development, literature review, and providing feedback on writing?

Yapay zeka araçları, genel olarak kişileştirmiş dönüt sağlama konusunda (corpus) ile kıyasla nasıldır?

How do Artificial Intelligence tools compare to corpus-based approaches in providing personalized writing feedback?

Yapay Zeka araçlarının, derlem(corpus) araçlarıyla birleştirilerek daha verimli bir geri dönüt sağlanabilmesi için önerileriniz nelerdir?

What are your suggestions for making Artificial Intelligence tools more compatible with Corpus tools?

Hocalarınızın size ne tür bir geri dönüt sağlamasını istersiniz?

What kind of feedback would you like your professors to provide?

□ Formative Feedback/ Formativ Geri Dönüt/ Biçimlendirme-yetiştirmeye yönelik değerlendirme

(Formative feedback: is given at a time when the student may correct or improve their performance, e.g.mid-clerkship

Formatif geri dönüt: Öğrencinin performansını düzeltmesi veya geliştirmesi için fırsat bulabileceği bir zamanda, summatif değerlendirmeden, örneğin staj ortamı.

□ Formal/ Formal Geri Dönüt

(Formal feedback :is planned and systematically scheduled into the process. Usually associated with assessment tasks, formal feedback includes the likes of marking criteria, competencies or achievement of standards

Formal geri dönüt: süreç içine planlı ve sistematik bir şekilde yerleştirilir. Genellikle değerlendirme görevleriyle ilişkilidir ve işaretleme kriterleri, yeterlilikler veya standartların gerçekleştirilmesi gibi unsurları içerir.)

□ Summative/ Summatif değerlendirme/Değer biçmeye yönelik değerlendirme

(Summative feedback: is given at the closure of the learning experience and often accompanies a graded assessment.

Summatif geri dönüt: öğrenme deneyiminin sonunda verilir ve genellikle notlandırılmış bir değerlendirme ile birlikte sunulur.

□ Constructive/ Yapıcı Geri Dönüt

(Constructive feedback: is supportive feedback given to individuals to reinforce positive actions and offer support to correct any failings or identified areas for improvement.Yapıcı geri dönüt:Bireylere olumlu davranışları pekiştirmek ve eksiklikleri ya da iyileştirilmesi gereken alanları düzeltmek için destek sunmak amacıyla verilen geri dönüt türüdür.)

Appendix G: Prompts that were given to Students for ChatGPT

Üniversite öğrencilerin ChatGPT kullanarak, İngilizce akademik yazılarını düzeltmeleri ve geliştirmeleri için kullanılabilecek bazı komutlar.

Yazılacak Makalerinin kısımlarına bağlı olarak ChatGpt'den Geribildirim almak için kullanılabilecek komut listesi

How should the introduction part of an article be written?

What tips can you provide for writing an effective introduction part for an article?

How can I improve the Introduction Section of my text?

Please provide general feedback on the Introduction section of my text. What are some pros and cons of my text?

How should the Literature Review of an article be structured?

What tips can you provide for writing a better Literature Review?

How can I improve my Literature Review Section?

Please provide general feedback on the Literature Review section of my text. What are some pros and cons of my text?

How should the Methodology section be written for an article?

What are some tips for writing the Methodology section?

How can I improve my Methodology section?

Please provide general feedback on the Methodology section of my text. What are some pros and cons of my text?

How should the Discussion section of an article be written?

What are some essential tips for writing a better Discussion Section?

How can I improve my Discussion Section?

Please provide general feedback on the Discussion section of my text. What are some pros and cons of my text?

How should the Conclusion section of an article be written?

What tips can you provide for writing a better Conclusion Section?

How can I improve my conclusion Section?

Please provide general feedback on the Conclusion section of my text. What are some pros and cons of my text?

Yazılacak Makalelerde Grammar ve yazım hatalarını düzeltmek için kullanılabilecek komut listesi

I will give you a paragraph of a text. Please correct spelling errors in the text.

I will give you a paragraph of a text. Please correct punctuation errors in the text.

I will give you a paragraph of a text. Please correct tense errors in the text.

I will give you a paragraph of a text. Please correct Word order errors in sentences, if there are any.

I will give you a paragraph of a text. Please correct all spelling and grammar errors in the text:

ChatGpt'nin üreteceği cevaplara bağlı olarak verilebilecek ek komutlar:

Could you provide additional feedback? (Geribildiriminizi kısa bulduysanız ve biraz daha geniş tutmasını istiyorsanız)

Could you elaborate your response? (Ürettiği cevabı detaylandırmasını istiyorsanız)

Your answers seems to be incorrect, could you check again please? (Ürettiği cevabın hatalı yanlış olduğunu düşünüyorsanız ve cevabını kontrol etmesini istiyorsanız)

Could you please show the errors you found in Bold Style? (Belirttiğiniz hataları bulması istediğinizde ve bulması durumunda onları metin içinde işaretlemesini istediğinizde kullanabileceğiniz komut. Bu komutu bazen doğru uygulayamayabiliyor.

Could you please highlight the erros you found? (Bir üstteki hataları işaretlemesini istediğiniz komutun farklı dile getiriliş biçimi)

ChatGpt'ye vereceğiniz metinde bulmasını isteyeceğiniz bazı terimler için komutlar:

Please, highlight the terms used in the text that I will provide you.

Not:

Unutmayın, ChatGPT kullanırken çok detaylı veya karışık cümle yapıları kurmaya gerek yok.

Karşınızda bir insan varmış ve onunla muhabbet ediyormuş gibi hayal edin.

Verdiği cevaplar yanlış veya kesinlikle doğru olmadığına eminseniz, tekrar gözden geçirmesini isteyebilirsiniz ve ona göre komut verebilirsiniz.

ChatGPT'nin ürettiği cevaplar hatasız değildir. Bu yüzden ürettiği cevapları kendiniz ayrıyeten gözden geçirmeniz tavsiye ediliyor.

Appendix H : Feedback Mechanism

GPT-4 was integrated into the course to support students in generating prompts, analyzing multi-word combinations, and synthesizing terminology specific to their field and the students were trained on how to use AI to complement the findings from AntConc by generating examples and insights related to their research writing. Demonstrations of the AI tool were provided to ensure students understood its functions. A brief presentation and classroom-based activities were conducted to introduce students to AI tools. For use with ChatGPT, the teacher provided prompts that were tested multiple times to ensure their effectiveness. By using these prompts, students were able to engage with AI tools to address their specific questions. Sample prompts are given below.

Sample Prompts for use with ChatGPT

A. Prompts for Section-Specific Feedback on Academic Articles

Article Section	Purpose	Example Prompts
Introduction	Writing guidance & feedback	1. How should the introduction part of an article be written?
Lit. Review	Structure, clarity & feedback	2. How should the Literature Review be structured?
Methodology	Guidance on form and precision	3. What are some tips for writing the Methodology section?
Discussion	Dev. of argument & analysis	4. How should the discussion section of an article be written?
Conclusion	Summarization & impact	5. Please provide general feedback on the conclusion section.

B. Prompts for Grammar and Spelling Correction

Error Type	Example Prompts
Spelling	1. I will give you a paragraph of a text. Please correct spelling errors in the text.
Punctuation	2. I will give you a paragraph of a text. Please correct punctuation errors in the text.
Verb Tense	3. I will give you a paragraph of a text. Please correct tense errors in the text.
Word Order	4. I will give you a paragraph of a text. Please correct word order errors in sentences.

In addition, students were also guided to create specific, context-driven prompts related to their research topic or field of study, focusing on generating sample sentences, improving academic phrasing, or suggesting lexical choices based on corpus findings. Table 6 below shows the sample prompts used by the students.

Sample Prompts for use by Students

Prompt Instruction	Discipline	Action
1 Generate a sample sentence using the phrase "According to recent research in Geology Engineering" incorporating a hedging structure.	Geology Engineering	Create a sample sentence with hedging structure
2 Suggest alternative phrasings for "The findings of this study indicate" that could fit a Geology Engineering research paper.	Geology Engineering	Provide alternative phrasings for the sentence

I will provide you a article from a student. Please give a general feedback on it, and recommend improvements and show some punctuation errors.

Thank you for sharing the article. Below is a general evaluation of the **content, language, and structure**, followed by specific **recommendations for improvement** and a list of **punctuation and grammar issues**.

General Feedback

Strengths:

- The topic is relevant and scientifically significant, focusing on rice drought stress—a critical area in agricultural biotechnology.
- Key concepts like **drought stress, ROS, ABA**, and **transcription factors (TFs)** are mentioned, showing awareness of important molecular mechanisms.
- The paper attempts to connect broader biological concepts with a specific research focus on **OsMYB15** in rice, which is excellent.

Areas for Improvement

1. Clarity and Sentence Structure

- Several sentences are **grammatically awkward**, which affects readability and professional tone.
- Passive vs. active voice is inconsistently used.
- There is frequent **repetition** (e.g., “drought stress” is repeated unnecessarily) and some **redundancy**.

2. Vocabulary and Terminology

- Words like “releted” (should be “related”), “is a aminoacid” (should be “is an amino acid”), and “response to accumulation” (should be “responds to the accumulation”) detract from the scientific credibility.
- Avoid vague phrases like “plenty of water” – use more precise terms such as “abundant water availability.”



3. Logical Flow

- The transition between general background and the study’s focus on OsMYB15 is abrupt. Introduce the study aim more smoothly.
- Paragraphs are **dense**; consider separating concepts (e.g., ROS effects, proline accumulation, transcription factor families) into distinct paragraphs.

4. Scientific Style

- Use more **formal academic tone**. Avoid casual phrases like “The proline is a aminoacid and absorbs water...”—reword to something like: “Proline, an amino acid, functions as an osmoprotectant by absorbing water and maintaining cellular hydration.”

Specific Grammar & Punctuation Corrections

Here are **selected corrections** from your text with explanations:

1. Original:

“Rice is an important worldwide consumed crop and providing health beneficial nutrition.”

Corrected:

“Rice is an important crop consumed worldwide and provides health-beneficial nutrition.”

2. Original:

“Temperature conditions of our country is suitable to rice agriculture but there is lack of water.”

Corrected:

“The climatic conditions of our country are suitable for rice cultivation, but there is a lack of water.”

3. Original:

“Drought stress injury causes oxidative stress and reduces seed germination and plant growth and development.”

Corrected:

“Drought stress induces oxidative damage and reduces seed germination, as well as plant growth and development.”

4. Original:

“The proline is a aminoacid and absorbs water in cell and maintain water content in plant.”

Corrected:

“Proline, an amino acid, absorbs water within cells and helps maintain the plant’s water content.”

5. Original:

“Drought responsive gene, which find AtMYB12 in Arabidopsis thaliana...”

Corrected:

“The drought-responsive gene AtMYB12 in *Arabidopsis thaliana*...”

Appendix H: Feedback Mechanism (Continue)

6. Punctuation Issues:

- Missing commas after introductory clauses:
"In response to drought stress plants accumulate proline." →
"In response to drought stress, plants accumulate proline."
- Incorrect conjunctions or lack of conjunctions:
"destroy DNA, protein and lipids" →
"destroy DNA, proteins, and lipids" (use Oxford comma for clarity)

✔ Suggested Improvements

- **Introduce the significance of OsMYB15** earlier. This can help the reader understand its relevance throughout the paper.
- **Add references** or mention key studies to support the claims (e.g., about MYB functions, ABA signaling).
- Consider **splitting the text into shorter paragraphs**—each focusing on a specific mechanism or gene.
- Use a **scientific spelling/grammar checker** like Grammarly Premium or DeepL Write for refinement.
- If this is part of a research article, consider following the **IMRAD structure**: Introduction, Methods, Results, and Discussion.

Please give a general feedback on it, and recommend improvements and show some punctuation errors.

Thank you for providing the student's article. Here's a detailed evaluation based on **content, language, structure, and technical correctness**, along with a list of **punctuation and grammar errors and recommendations**.

● General Feedback

✔ Strengths:

- The topic is **relevant and timely**, focusing on **renewable energy**, especially **wind energy**, which is vital for sustainable development.
- The paper attempts to introduce **statistical analysis** of wind speed distribution—a necessary step in wind energy planning.
- The author references **scientific methods and past studies**, which shows awareness of existing literature.

● Areas for Improvement

1. Language Clarity and Grammar

The article contains **frequent grammar, word choice, and sentence structure issues**, making it difficult to read and understand. Many sentences are **ungrammatical or confusing** due to incorrect verb tenses, missing articles, or awkward phrasing.

2. Punctuation and Flow

Punctuation is **frequently missing or misused**. Long sentences lack commas or periods, causing **run-on sentences** that hurt readability.

Appendix H: Feedback Mechanism (Continue)

♦ **Original:**

We believe of this article shed light on that achieve the most proper wind speed distribution for a site.

✔ **Corrected:**

We believe this article will shed light on identifying the most suitable wind speed distribution model for a given site.

♦ **Original:**

In section 3, we assessment of wind energy in Malaysia.

✔ **Corrected:**

In Section 3, we assess wind energy in Malaysia.

✔ **Suggestions for Improvement**

1. **Use consistent verb tenses** (mostly past or present simple, depending on context).
2. **Clarify technical details** — explain why Weibull is used more than others and what the implications are.
3. **Reorganize content:**
 - Start with a **clear problem statement** and **objective**.
 - Explain background **methods** more smoothly.
 - Only include summary of article structure (like “Section 2...” if the style requires it (like in formal reports or theses).
4. **Revise grammar thoroughly** — use grammar tools (e.g., Grammarly or DeepL Write), or consider peer review.
5. Add **citations** if this will be a formal academic submission.
6. Break long and dense paragraphs into **shorter, thematic units**.

Appendix H: Feedback Mechanism (Continue)

2. Punctuation and Flow

Punctuation is **frequently missing or misused**. Long sentences lack commas or periods, causing **run-on sentences** that hurt readability.

3. Cohesion and Organization

- The transition between **general introduction** and **case-specific analysis** (Chuping and Kangar in Perlis, Malaysia) is abrupt.
- Sections like "In section 2, we analyze..." read more like a table of contents. These should be replaced with smoother academic transitions or preview statements.

4. Technical Accuracy

- The explanation of **Weibull distribution and statistical modeling** needs more clarity and better English structure to reflect scientific accuracy.
- Some statements are **incorrect or unclear** (e.g., "Renewable energy play an important role" and "wind speed a period of time is represented...").

Key Grammar and Punctuation Issues

Here are **specific corrections and issues** from the text:

♦ Original:

Energy is important resource for industrialization and economic development. Also energy play an important role for government development.

✔ Corrected:

Energy is an important resource for industrialization and economic development. It also plays a vital role in government development.

♦ Original:

Fossil fuels are main sources to provide request of world energy and fossil fuel reserves have negative effect for environment.

✔ Corrected:

Fossil fuels are the main sources of the world's energy demand but have a negative impact on the environment.

♦ Original:

Renewable energy play an important role to provide sustainable development...

✔ Corrected:

Renewable energy plays an important role in achieving sustainable development...
↓

Appendix H: Feedback Mechanism (Continue)

♦ **Original:**

It should is performed long-term meteorological observation...

✔ **Corrected:**

Long-term meteorological observations should be conducted...

♦ **Original:**

Wind speed frequency distribution been applied by various probability density functions...

✔ **Corrected:**

Wind speed frequency distributions have been modeled using various probability density functions...

♦ **Original:**

Celik that both 2-parameter Rayleigh and Weibull distributions uses and find Weibull distribution are results more straight...

✔ **Corrected:**

Celik used both 2-parameter Rayleigh and Weibull distributions and found that the Weibull distribution produced more accurate results...

Appendix I: Corpus Feedback

A comparison of conventional control and model predictive control methods in Grid-connected cascade H-bridge multilevel inverters for renewable source energies

Abstract:

The need to improve power converters ~~that are~~ used in renewable energy systems or in ~~electrical~~ **electric** vehicles is taking a bigger place in the research field because of rapid growth ~~demands~~ in demand and the necessity of increasing efficiency and stability. Multilevel inverters (MLIs), which are part of the power converters, are essential in renewable energy integration to make the gained power able to be used properly in different applications. Cascaded H-Bridge (CHB) multilevel inverters play a critical role in these applications due to their high-quality output, the ability to handle different values of DC sources and the low percentage of total harmonic distortion (THD). Conventional control methods that are used to control pulse modulation like PID controllers have been considered an effective control strategy for CHB inverters because of their simplicity and flexibility; however, they face many performance limitations due to the increasing diversity of energy sources, the growing demand ~~of~~ **for** energy and ~~it is not that~~ **their** practical with increasing grid dynamics. Model Predictive Control (MPC) is transcending the constraints of conventional methods. It offers advantages including straightforward implementation, the ability to handle nonlinearities and constraints, and flexible multi-objective optimization. This paper presents a comparative analysis between the PID controller to control the modulation of the inverter and the Finite-Control-Set Model Predictive Control (FCS-MPC) across 5-level and 9-level CHB inverters, which are connected to the grid. The outcome finds that the FCS-MPC method achieves a significant reduction in total harmonic distortion (THD), achieves better optimal state selection and provides greater stability in dealing with network changes compared to **the** PID controller. The results underscore the importance of MPC methods to address critical challenges in CHB inverter control, resulting in superior power quality, higher efficiency, and greater system reliability, facilitating broader adoption in different applications that use different topologies of MLIs.

Feedback: Overall good use of corpora for field-specific use.

There are some grammatical mistakes in the paper.

Overall fitting to the guidelines for writing an abstract

Plants affected by stress factors may undergo physiological and metabolic changes, and the growth and development of plants may be negatively affected or ~~may even~~ **lead to the death of the plant** ~~plant's death~~. As a result, negative effects are also observed in the quantity and quality of plant products obtained (Choudhary et al., 2021). Under drought stress, the production of ROS increases in plants (Sachdev et al., 2021). In case of an increase in cellular ROS concentration, the balance between antioxidant defense systems and ROS production is disrupted, and plants enter oxidative stress as a result of an increase in ROS ~~in~~ **within** the organism ~~in the form of~~ **leading to a** -chain reactions (Das and Roychoudhury, 2014). The increase in ROS production under stress can lead to many damages, including peroxidation of lipids, oxidation of proteins, nucleic acid damage, enzyme inhibition, activation of programmed cell death (apoptosis) and cell death. On the other hand, ROS function as signaling molecules in plants (Waszczak et al., 2018), controlling growth, development, responses to biotic and abiotic environmental stimuli, and programmed cell death (Bailey-Serres and Mittler 2006). The main component of extracellular ROS production is the NADPH oxidase (NOX) family, which has not changed in the evolutionary process. NADPH oxidase is activated during the respiratory burst. The active NADPH oxidase produces superoxide, which is then converted to H₂O₂ and plays a role in plant signaling. Plant NADPH oxidases belong to the respiratory burst oxidase homolog (RBOH) family, which includes 10 members in the model plant *Arabidopsis thaliana*. RBOHD, which is overexpressed, plays an important role in apoptosis control, lignification in plant cell walls due to increased cellulose content due to cell wall damage, and regular signaling in

response to biotic and abiotic stresses. RBOHD is a calcium-dependent NADPH oxidase that produces superoxide. On the other hand, H₂O₂ production is closely linked to polyamine catabolic processes, since the production of H₂O₂, an important ROS variant, is dependent not only on the activity of NADPH oxidases (NOX) but also on amine oxidase enzymes (Cona et al., 2006a, 2006b). Some studies have documented that apoplastic polyamine oxidase of the tobacco plant and polyamine oxidase encoded by AtPAO3 gene of Arabidopsis plant contribute to H₂O₂ production (Moschou et al., 2008; Wu et al., 2010). Many studies confirm that NOX homologs are essential for ROS accumulation in plants (Kwak et al., 2003; Sagi et al., 2004; Torres et al., 2005). Almost all of these studies used NADPH oxidase gene mutants, and ROS accumulation, especially H₂O₂, was reduced in these plants. (Papadakis and Roubelakis-Angelakis (2005)) suggested that the cross-link between polyamines and NOX regulates protoplast regeneration in a tobacco plant. Andronis et al. (2014) found that exogenously applied polyamines stimulated NADPH oxidase-dependent oxygen consumption in Arabidopsis. Various researchers claimed that there may be a very strong relationship between polyamines and H₂O₂ and that this relationship may also be related to NADPH oxidase (Andronis et al., 2014; Demiralay et al., 2022). However, the relationship between NADPH oxidase and polyamines has not yet been fully elucidated.

Feedback: Overall good introduction paragraph, Some minor grammar mistakes. Fitting to the guidelines of introductions section

CURRICULUM VITALE

Hürriyet AZAKLI He completed his primary and secondary education at Ata College, graduating in 2016. In 2020, he received his Bachelor's degree in English Language and Literature from Karadeniz Technical University. In 2022, he began his Master's studies in the Department of Linguistics at the Graduate School of Social Sciences, Karadeniz Technical University. During this period, he worked as an interpreter and translator at international events held in Trabzon.

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