Future of the ChatGPT in Higher Education: New Insights From Young Researchers

Yükseköğretimde ChatGPT'nin Geleceği: Genç Araştırmacılardan Yeni Bakış Açıları

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Abstract

This study investigates the perspectives of young researchers employed in higher educational institutions in İstanbul regarding the future use of ChatGPT. Qualitative research methodology was used in this study. To gather information, in-depth interviews were conducted with 20 young researchers from the fields of science and engineering, social sciences, and health sciences. The obtained data was analyzed using thematic analysis, which uncovered five main themes: future expectations, ethical practices, integration of ChatGPT into education and research, future concerns arising from ChatGPT, and benefits achieved from ChatGPT usage. The findings indicate that the employment of ChatGPT will be unavoidable in the future, and the discussion emphasizes the necessary steps for fostering its utilization. These steps are presented in a process framework. The process framework focuses on what actions to take and how to implement them. Accordingly, it has been identified that both students and academics need to be trained on the ethical and effective use of ChatGPT. After these trainings, ChatGPT should be integrated into education and teaching with various usage guides and application instructions. This research offers valuable insights into what can be done to promote the ethical, effective, and proper utilization of AI tools like ChatGPT in higher education.

Keywords: Artificial Intelligence (AI), ChatGPT, Future of ChatGPT, Higher Education, Young Researchers

Özet

Bu çalışma, İstanbul'daki Yükseköğretim kurumlarında çalışan genç araştırmacıların ChatGPT'nin gelecekteki kullanımına ilişkin görüşlerini araştırmaktadır. Bu çalışmada nitel araştırma yöntemi kullanılmıştır. Veri toplamak üzere fen bilimleri, sosyal bilimler ve sağlık bilimleri alanından faaliyet gösteren 20 genç araştırmacıyla derinlemesine görüşmeler yapılmıştır. Elde edilen veriler, tematik analiz yöntemi ile analiz edilmiş ve beş ana tema ortaya çıkmıştır. Bunlar: Gelecek beklentileri, etik uygulamalar, ChatGPT'nin eğitim ve araştırmaya entegrasyonu, ChatGPT'den kaynaklanan gelecekteki endişeler ve ChatGPT kullanımından elde edilen faydalardır. Bulgular, ChatGPT'nin gelecekte kullanımının kaçınılmaz olacağını göstermekte ve kullanımını teşvik etmek için gerekli adımları vurgulamaktadır. Bu adımlar bir süreç çerçevesinde sunulmaktadır. Süreç çerçevesinde ne yapmalıyız ve nasıl yapmalıyız sorularına odaklanılmıştır. Bu doğrultuda ChatGPT'nin etik ve etkili kullanılması hakkında hem öğrencilere hem de akademisyenlere eğitim verilmesi gerektiği görülmüştür. Bu eğitimlerden sonra ChatGPT'nin eğitim ve öğretime çeşitli kullanım rehberleri ve uygulama yönergeleri ile entegre edilmesi gerekmektedir. Sonuç olarak bu araştırma, ChatGPT gibi yapay zeka araçlarının Yükseköğretimde etik, etkili ve uygun şekilde kullanımını teşvik etmek için neler yapılabileceğine dair değerli görüşler sunmaktadır.

Anahtar Kelimeler: Yapay Zeka (YZ), ChatGPT, ChatGPT'nin Geleceği, Yükseköğretim, Genç Araştırmacılar

In 2023, the term "Artificial Intelligence (AI)" was selected as the word of the year by Collins Dictionary, and its popularity continues in 2024 (Akıllı, 2024). ChatGPT, a popular chatbot with a conversational AI interface, is a prime example of this trend. A chatbot is a software program that employs user input to simulate human-like interactions (Opara et al., 2023). It engages in natural conversations with users through text or voice messages (Kohnke et al., 2023). ChatGPT, which was developed by OpenAI, is a language model that allows people to communicate with a computer in a natural manner. Its capacity to produce original results makes it a Generative AI (Sabzalieva, 2023). ChatGPT has been widely adopted in various sectors of life. Emerging research indicates its significant potential in fields (Xing et al., 2024), such as biotechnology (Holzinger et al., 2023), brain surgery

research (Budler et al., 2023; De Angelis et al., 2023; Moons & Van Bulck, 2023), bioinformatics (Cahan & Treutlein, 2023), education (Mogali, 2024), and customer service (Koç et al., 2023). ChatGPT has captured the interest of researchers and has prompted educators, researchers, and educational institutions to pay close attention to its role in education. The proper integration of such technologies into education and research can support teaching, learning, and research activities and highlight the benefits of digital technologies (Kiryakova & Angelova, 2023).

AI has been utilized in academia for a certain duration, and large language models, particularly ChatGPT, possess significant potential in academic writing. These models facilitate researchers' work by providing innovative solutions in areas such as data analysis, literature review, writing assistance, and academic publishing (Akıllı, 2024). ChatGPT's ability to produce contextually relevant and coherent responses and outperform other language models in various benchmark datasets (Looi, 2023). For instance, word processors that highlight spelling errors, automatic email replies, Virtual Learning Environments (VLEs) that store teaching materials, plagiarism detection software that identifies similarity or originality in student assessments, and digital analytics and software that help educators navigate data piles (Marron, 2023) are some examples of AI applications in academia. However, there are risks associated with AI, such as quality and reliability issues, dependency, and skill loss (Akıllı, 2024). Many researchers are highlighting the negative consequences stemming from ChatGPT's rapid advancement and extensive application (Rozado, 2023; Sasuke & Takemoto, 2023). The academic debates surrounding the social, ethical, and moral issues raised by ChatGPT applications (Ray, 2023) are particularly noteworthy, especially those related to academic publishing (Graham, 2023; Liebrenz et al., 2023). Despite its unprecedented success, ChatGPT has become a double-edged sword in the academic field, generating debate (Lo, 2023; Hisan & Amri, 2022).

Recent events, such as the COVID-19 pandemic, have compelled even the most hesitant academic institutions to adopt technology. Most institutions have updated their missions to focus on educating the new generation on the responsible use of technology, rather than excluding it entirely from the classroom. In light of the technological advancements that necessitate the integration of AI in educational, research, and learning activities, this study aims to gather the views of young researchers on the future use of ChatGPT. The primary reason for focusing on young researchers in this study is to better understand the long-term impacts of AI tools, particularly ChatGPT, within academia. Young researchers, being at the early stages of their careers, are viewed as the group most likely to adopt the integration of technology into educational and research processes quickly and to be the most significantly impacted by it. Furthermore, this group represents those who can most benefit from the opportunities that AI tools like ChatGPT offer in terms of both academic productivity and career development. Due to their early career status, young researchers are expected to be more open to innovative technologies and play a crucial role in shaping the future impact of these tools on academic practices. The engagement of young researchers with AI technologies has the potential to catalyze novel methodologies and applications that advance research efficiency and creativity (Abdelhafiz et al., 2024; Aithal & Aithal, 2023). Young researchers are increasingly aware of the ethical implications of AI, including issues related to bias, plagiarism, and data privacy (Higgs & Stornaiuolo, 2024; Sallam et al., 2024). Their perspectives, therefore, can contribute to the creation of guidelines that ensure responsible AI use and foster a culture of ethical research practices. As future educators and researchers, young researchers are also positioned to influence how AI is integrated into academic curricula, promoting AI literacy within academia (Kim, 2023; Aithal & Aithal, 2023). Lastly, their perspectives and experiences with AI tools can shape educational strategies in higher education, equipping students for a research environment increasingly centered on technological innovation. Thus, by focusing on young researchers, we aim to gain a deeper understanding of this group's needs, expectations, and ethical concerns. Through this approach, we seek to offer a more comprehensive and forward-looking perspective on the integration of ChatGPT in higher education.ChatGPT was selected as the AI interface for the study due to its widespread preference in higher education for educational and research objectives, as well as the significant concerns associated with its use. Investigating the intricate relationship between researchers' perspectives on ChatGPT usage and its practical application in research has emerged as a noteworthy area of inquiry (Xing et al., 2024). Consequently, the research is focused on the following research questions:

RQ-1. What are the future expectations of young researchers regarding ChatGPT's support in higher education for teaching, research, and learning activities?
RQ-2. What should have done to use ChatGPT more effectively and ethically in higher education according to young researchers?

In this study, we first reviewed the existing literature on the use of ChatGPT in higher education. Following this, the methodology of the study was outlined, with a detailed explanation of the thematic analysis approach. The findings derived from the analysis were presented, incorporating participant quotations to illustrate key insights. These results were then discussed in the context of the current literature. Consistent with previous studies, while ChatGPT presents unique benefits alongside certain limitations, our findings suggest that the future adoption of such technologies is likely inevitable. By offering recommendations to foster ethical and effective usage, this study contributes to the field through a proposed framework that guides the integration of ChatGPT into educational practices.

Literature Review

ChatGPT is a variant of GPT-3 (Generative Pre-trained Transformer 3) and developed by OpenAI. It is specifically designed to generate human-like text in a conversational style and was introduced in 2021 (Cotton et al., 2023). Extending far beyond the discipline of computer science, ChatGPT has garnered significant attention worldwide across various fields and has become a focal point for researchers (Javaid et al., 2023). In this context, studies conducted on ChatGPT between 2023 and 2024 were investigated through the Web of Science database using the keyword "ChatGPT." The results of the review, which is summarizing the most researched topics and sample papers are presented in ▮▮ Table 1.

The literature review has shown that studies concentrate on ChatGPT usage in higher education, ChatGPT's usage in business, ChatGPT's usage in healthcare, ChatGPT's effects on human skills, ChatGPT's use in law, and individual usage of ChatGPT. When examining studies on the use of ChatGPT in higher education, it is evident that research topics generally focused on the opportunities and challenges of using ChatGPT, adoption of ChatGPT in higher education, intention to use ChatGPT in higher education, and the implementation of ChatGPT in higher education.

When examining studies on the opportunities and challenges associated with ChatGPT use in higher education, Rasul et al. (2023) identify several benefits, including the facilitation of learning, providing personalized feedback, supporting research and data analysis, and assisting the development of innovative assessments. However, they also highlight threats related to issues of academic integrity, security concerns, the potential for generating misinformation, and limitations in assessing learning outcomes. Based on their findings, Rasul et al. (2023) offer several recommendations, such as prioritizing education on the responsible and ethical use of ChatGPT, developing new assessment strategies,

▮▮ Table 1
Literature Summary of ChatGPT

Area of Study	Focus	Sample Papers
ChatGPT Usage in Higher Education	Opportunities and challenges of using ChatGPT in higher education and potential risks and plunders of these tools	Bhullar et al., (2024); Zeb et al., (2024); Maita et al., (2024); Xie & Ding, (2023)
	Adoption and integration of ChatGPT in higher education	Duong et al. (2023); Duong et al., (2024); Gao et al., (2024)
	Intention to use ChatGPT in higher education	Ahadzadeh et al. (2024); Salifu et al., (2024)
	ChatGPT implementation in higher education	Halaweh (2023); Vecchiarini & Somià (2023)
ChatGPT Role on Human Skills	Comparison of ChatGPT skills and human skills	Giordano et al., (2024); Sedaghat (2024)
	ChatGPT's role in reducing human biases in decision-making	Li et al., (2024), Aljaz, (2024)
	ChatGPT's role in problem solving	Jing et al., (2024)
	ChatGPT's role in data analysis	Hamilton et al., (2023); DeJeu, (2024); Hitch, (2024)
ChatGPT Usage in Business	ChatGPT usage effect on firm performance	Talaei-Khoei et al., (2024); AlQershi et al., (2024)
	ChatGPT's potential role in supply chains	Haddud (2024); Frederico (2023)
	ChatGPT usage in human resources development	Ardichvili et al., (2024)
	ChatGPT usage effect on consumer behaviour and marketing	Paul et al., (2023); Koc et al., (2023); Abadie et al., (2024)
	ChatGPT's application in marketing	Tafesse, W., & Wien, A. (2024).
	Chat GPT Usage in firms and ecological sustainability	Yu et al., (2024)
	Opportunities and challenges associated with implementing ChatGPT in the context of hospitality and tourism sector	Battour et al., (2024); Dwivedi et al., (2024)
	ChatGPT usage in business model innovation	Kanbach et al., (2024)
ChatGPT Usage in Healthcare	ChatGPT usage in clinical practice and medical education	Tangadulrat et al., (2023); Raile (2024)
	ChatGPT usage in medical reports	Tepe & Emekli (2024); Ho et al., (2023)
	ChatGPT usage in production of clinical medical devices	Li et al., (2024)

addressing bias and misinformation, and integrating AI literacy as a component of graduate-level competencies. Lin (2024) discusses the role of ChatGPT in higher education, highlighting its potential to assist researchers with daily inquiries, lesson planning, and resource development. Lin also addresses challenges such as academic integrity, misinformation, and the need for updated academic policies (Lin, 2024). Costa et al. (2024) analyze the benefits and challenges of using ChatGPT for academic writing among scholars and provide recommendations for its ethical and effective use. Their findings underscore the necessity for higher education to continually explore new assessment models and teaching methods to better respond to technological advancements like ChatGPT in the age of AI (Costa et al., 2024). Nepal (2024) focuses on the use of ChatGPT in academic and research contexts, finding that it supports tasks such as reviewing, drafting, writing assistance, and text enhancement. Furthermore, ChatGPT has been found to enhance personalized learning, support intelligent course systems, and facilitate language acquisition (Nepal, 2024). Sullivan et al. (2023) specifically focus on Australia, New Zealand, the United States, and the United Kingdom to examine the potential drawbacks of ChatGPT usage in higher education. The findings highlight negative outcomes such as concerns over academic integrity and the limitations of AI-generated outputs (Sullivan et al., 2023).

Another focal point in ChatGPT research within higher education has been its adaptation. Chen et al. (2024) explore the barriers facing ChatGPT in higher education, the opportunities for future development, and offer recommendations on how ChatGPT can be integrated into existing educational materials. Their recommendations emphasize the need to establish ethical standards, resolve ethical dilemmas to safeguard personal rights and data privacy, and implement oversight mechanisms (Chen et al., 2024). Nazari and Saadi (2024) underscore the importance of examining effective communication strategies in light of the increasing use of ChatGPT in higher education. They highlight the critical role of prompt skills for faculty members utilizing ChatGPT as part of their integration within university settings (Nazari & Saadi, 2024).

A further area of focus in higher education research has been the intention to use ChatGPT. Shahzad et al. (2024) conducted a study in China and examine the awareness, acceptance, and adoption of ChatGPT in higher education. Based on data collected from 320 Chinese university students, the study finds that awareness of ChatGPT significantly influences the intention to adopt it. Perceived ease of use, usefulness, and intelligence significantly mediate the relationship between ChatGPT awareness and the intention to adopt ChatGPT (Shahzad et al., 2024). Similarly, Strzelecki et al. (2024) conducted a study to explore Polish academics' intentions to use ChatGPT and identify the factors influencing this intention. The findings reveal that performance expectancy, effort expectancy, social

influence, facilitating conditions, hedonic motivation, habit, personal innovativeness, gender, and age are significant factors affecting the intention to use ChatGPT. Fatima (2023) aims to support academics in their decision-making processes regarding whether and how to use ChatGPT in teaching and learning. Within this scope, she emphasizes the importance of exploring innovative ways to address the challenges of institutional integration to ensure the effective use of ChatGPT in higher education. Despite existing challenges, the study suggests that addressing these issues thoughtfully could pave the way for responsible and effective integration (Fatima, 2023). Korkmaz et al. (2023) conducted a sentiment analysis of ChatGPT-themed tweets on Twitter to comprehensively assess users' emotions and thoughts during the first two months following ChatGPT's launch. Approximately 788,000 English-language tweets were analyzed. The findings indicate that a significant portion of early users found the ChatGPT experience successful and expressed satisfaction, although some users also exhibited negative emotions such as fear and concern.

Implementation of ChatGPT in higher education has been another topic explored in the literature. Mbwambo and Kaaya (2024) focus on applications, concerns, and recommendations regarding the use of ChatGPT in education. The study highlights the importance of ChatGPT's use in various educational applications, particularly in assisting students with writing tasks and supporting academics in creating learning materials (Mbwambo & Kaaya, 2024). Bettayeb et al. (2024) suggest that educational institutions can enhance student engagement, learning outcomes, and the responsible use of AI in education by addressing the challenges of ChatGPT, establishing ethical guidelines, and leveraging its strengths (Bettayeb et al., 2024). Baidoo-Anu and Ansah (2023) provide recommendations on maximizing the use of ChatGPT for teaching, learning, and research. They emphasize the need for policymakers, researchers, educators, and technology experts to collaborate in developing a usage guide. They further emphasize the critical importance of ensuring that emerging generative AI tools are employed in a safe and constructive manner to enhance educational quality and support student learning.

A comprehensive review of studies on the use of ChatGPT in higher education underscores the need for further research into its adoption and application by academics. This need arises from the imperative for academics to transform their teaching and assessment practices in alignment with ongoing technological advancements. The unique contribution of this study lies in its exploration of future expectations and perspectives specifically within the context of young researchers. Focusing on young researchers is critical to understanding the long-term impacts of technological innovations in academia, as they are positioned to become future academic leaders and decision-makers actively shaping the integration of AI in

education and research. The inclusion of young researchers from diverse disciplines—such as science and engineering, social sciences, and health sciences—provides a broad understanding of ChatGPT's potential impact across a wide academic spectrum. Moreover, data richness is achieved by gathering insights from academics and graduate students (master's and doctoral level) across both public and private universities, contributing in-depth understanding of ChatGPT's potential role within academia.

Methodology

This study utilized a qualitative research approach. Qualitative research methods are used to explore individuals' beliefs, experiences, attitudes, behaviors, and interactions, resulting in non-numerical data. (Pathak et al., 2013). With this approach, a more profound understanding of participants' attitudes, beliefs, or experiences can be achieved. A phenomenological design was employed in this study to explore and understand the perspectives and experiences of young researchers regarding the future of ChatGPT. This approach allowed for an in-depth examination of participants' subjective views, capturing the meanings and insights they associate with this technology in the context of higher education.

The research design is summarized in ▉ Figure 1.

Participants

The research sample was selected using a purposive sampling method, which was based on four criteria. The inclusion criteria for this study were: (1) Being a young researcher (under the age of 40), (2) Currently being an academic and/or pursuing a Master's or Ph.D. degree, (4) Working in İstanbul, (4) Using or having used ChatGPT for academic purposes.

Data were collected from 20 young researchers through semi-structured interviews. Among the participants, 11 were female and 9 were male; 9 were from a Foundation University, 11 were from a State University, 14 were Faculty Members/Instructors/Research Assistants, and 6 were Master's/PhD students; 11 were from Social Sciences, 5 from Health Sciences, and 4 from Science and Engineering. It was confirmed that all researchers participating in the study are affiliated with a higher education institution. The demographic information of the participants is shown in ▉ Table 2.
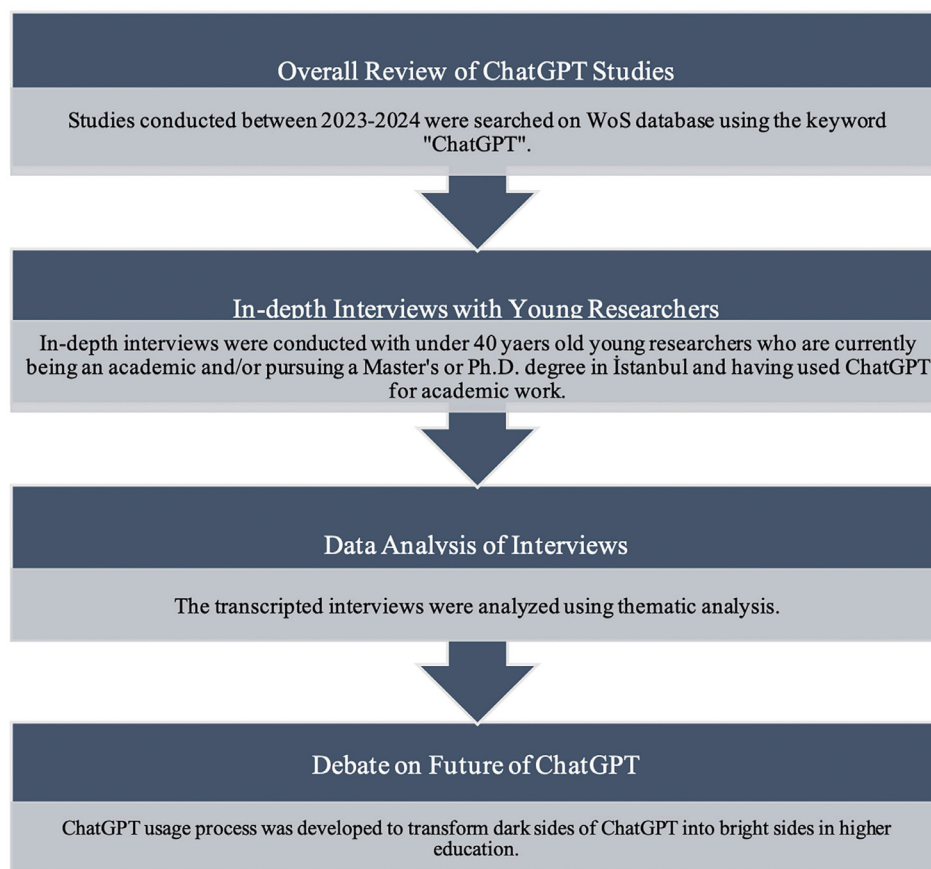
▉ **Figure 1**
Research Design

Overall Review of ChatGPT Studies

Studies conducted between 2023-2024 were searched on WoS database using the keyword "ChatGPT".

In-depth Interviews with Young Researchers

In-depth interviews were conducted with under 40 yaers old young researchers who are currently being an academic and/or pursuing a Master's or Ph.D. degree in İstanbul and having used ChatGPT for academic work.

Data Analysis of Interviews

The transcripted interviews were analyzed using thematic analysis.

Debate on Future of ChatGPT

ChatGPT usage process was developed to transform dark sides of ChatGPT into bright sides in higher education.

Table 2
Demographic Distribution of Participants

Participant No.	Gender	Education	Age	Title	State/ Foundation University	Research Area
P-1	Female	PhD	30	Lecturer	Foundation Uni.	Social Sciences
P-2	Female	PhD	35	PhD Student	Foundation Uni.	Social Sciences
P-3	Male	PhD	39	Dr. Lecturer	State Uni.	Health Sciences
P-4	Male	PhD	28	Dr. Lecturer	Foundation Uni.	Social Sciences
P-5	Female	PhD	35	Research Assistant	State Uni.	Social Sciences
P-6	Female	PhD	34	Dr. Lecturer	Foundation Uni.	Social Sciences
P-7	Male	PhD	30	PhD student	State Uni.	Social Sciences
P-8	Male	PhD	30	Research Assistant	State Uni.	Social Sciences
P-9	Female	PhD	29	PhD student	State Uni.	Social Sciences
P-10	Male	PhD	27	PhD student	State Uni.	Social Sciences
P-11	Female	PhD	32	PhD student	State Uni.	Social Sciences
P-12	Female	PhD	30	Research Assistant	State Uni.	Social Sciences
P-13	Female	PhD	35	PhD student	State Uni.	Health Sciences
P-14	Female	PhD	32	Dr. Lecturer	State Uni.	Health Sciences
P-15	Male	PhD (student)	32	Lecturer	Foundation Uni.	Health Sciences
P-16	Male	PhD (student)	31	Lecturer	Foundation Uni.	Science and Engineering
P-17	Male	PhD. (student)	32	Lecturer	Foundation Uni.	Science and Engineering
P-18	Female	PhD.	37	Asst. Prof.	Foundation Uni.	Science and Engineering
P-19	Male	PhD.	37	Asst. Prof.	Foundation Uni.	Science and Engineering
P-20	Female	PhD.	38	Asst. Prof.	State Uni.	Health Sciences

This research examines the perceptions of "Young Researchers" at a higher education institution in İstanbul regarding the potential use of ChatGPT in their research. Due to factors such as research budget, time constraints, and physical accessibility, the study was conducted solely within universities in İstanbul. Restricting the research to İstanbul represents a limitation of this study. Although some interviews were conducted online, selecting participants residing in the same city allowed for a shared urban dynamic and cultural context, which in turn enhanced consistency and homogeneity in data analysis. İstanbul was selected as the research site due to its status as the city with the highest concentration of universities in Türkiye, hosting a total of 57 institutions, including 13 public and 44 private universities (Wikipedia, 2024).

To obtain a comprehensive understanding of the topic, a diverse range of research perspectives was sought by posing interview questions to academics and Master's/Ph.D. students actively engaged in their respective fields. The definition of "Young Researcher" provided by TÜBİTAK (2024) was adopted for the classification of participants and researchers under the age of 40 were included in the study.

Data Collection Tool

A semi-structured interview form were employed for data collection. The questions in the semi-structured interview form were developed based on a literature review (e.g. Bhullar et al., 2024; Zeb et al., 2024; Vecchiarini & Somià , 2023; Maita et al., 2024;Gao et al., 2024; Xie & Ding, 2023; Halaweh, 2023). Examples of the questions asked to uncover the future use of ChatGPT are as follows:

-What are your experiences and observations when using ChatGPT? How will these experiences shape your future use of the tool?
-What improvements could be made to enhance the effectiveness and efficiency of ChatGPT in the fields of education and research?
-How should we maintain balance in the future use of ChatGPT? What can be done to maximize its positive aspects and minimize its negative ones?

A total of 20 researchers from İstanbul were interviewed, either in person or online via platforms such as Zoom or Google Meet. Interviews were conducted face-to-

face with 18 participants, while 2 participants were interviewed online due to transportation limitations. Shapka et al. (2016) suggest that data quality is not affected by the interview method (online or face-to-face). According to Wakelin et al. (2024), online interviews should not be regarded as a "weaker alternative" to face-to-face interviews but rather as a valuable option that contributes to the accumulation of knowledge.

Approval of the Ethics Committee was received from Yıldız Technical University Social and Humanities Research Ethics Committee on 16.07.2024 with Meeting Number 2024.07.

Data Analysis

The transcribed texts were analyzed using thematic analysis. Thematic analysis is a qualitative method for analyzing data that involves searching for repeated ideas (expressed as themes) within a data set (Riger and Sigurvinsdottir, 2016). For creating themes, Lincoln and Guba (1985) and Braun and Clarke, (2006)'s process was applied. To ensure the validity and reliability of the thematic analysis, the four fundamental criteria proposed by Lincoln and Guba (1985) were emphasized: credibility, transferability, dependability, and confirmability. The analysis process was implemented as follows:

Phase 1. Familiarizing with the data: The data collected in the study were examined in detail to ensure familiarity with the information. During data collection, initial impressions of the data were formed, and noteworthy points were simultaneously recorded. Reliability was ensured through methods such as prolonged engagement and triangulation.

Creswell and Poth (2017) highlight that prolonged engagement is a critical step in ensuring reliability in qualitative research processes. By extending the duration of data collection, researchers can gain a better understanding of participants and context, thereby facilitating a deeper comprehension of the data. Familiarity with the culture from which the data is collected is essential in this regard (Lincoln & Guba, 1985; Erlandson, 1993). In the context of this study, collecting data from academics ensures prolonged engagement due to the researchers' familiarity with the existing academic culture. Researchers, being acquainted with factors such as the dynamics, norms, values, and challenges of academia, are well-positioned to interpret the data and develop an in-depth understanding. Academics, being familiar with the language, expectations, and routines of the academic environment, are able to make more effective observations and provide more accurate interpretations during the research process. Their expertise in their field helps them contextualize participants' behaviors and discourse correctly. Additionally, because academics share common experiences with their peers, the process of building trust can occur more quickly. Being from the same profession facilitates the establishment of empathy between the researcher and participants, helping participants feel more comfortable during the research process. In this context, interviews with participants were conducted for 50-70 minutes. This duration allowed for sufficient time in the research field, providing an opportunity for in-depth understanding of the participants and the context.

Triangulation is a technique used in qualitative research to enhance reliability and validity by examining the same phenomenon from multiple perspectives through diverse data sources, methods, researchers, or theoretical frameworks (Lincoln & Guba, 1985). In this study, source triangulation was employed. Source triangulation aims to examine the same phenomenon using information obtained from different participants or various types of data. Individual perspectives and experiences can be cross-validated by comparing them with others, thereby creating a comprehensive picture of participants' attitudes, needs, or behaviors based on contributions from a variety of individuals (Shenton, 2004). In this context, data were collected from both graduate students and academics who engage in research as a profession. Efforts were made to include researchers from various disciplines. Another focal point within the triangulation framework was site triangulation. According to Lincoln and Guba (1985), collecting data from different institutions enhances the reliability of findings. In line with this, data were gathered from individuals either studying at or employed by both public and private universities. During the interviews, two researchers were involved—one conducting the interviews and the other observing them. In this way, the same data were observed by multiple researchers and independently analyzed. Lincoln and Guba (1985) suggest that this method, by integrating multiple perspectives, helps reduce bias and increase the reliability of the results.

Phase 2. Generating initial codes: At this stage, the researchers began coding the collected data in detail. A coding guide was developed to structure this process, and coding was conducted accordingly. Each data set was independently analyzed by two researchers during the coding phase. Subsequently, the two researchers convened to review the codes and engage in discussion to reconcile their interpretations. The coding guide is presented in ▮▮ Table 3.

Table 3
Coding Guide

Research Question	Interview Question Examples	Code Examples
RQ-1. What are the future expectations of young researchers regarding ChatGPT's support in higher education for teaching, research, and learning activities?	In which areas is ChatGPT utilized within the context of higher education?	Educational Support: Assistance directly related to teaching, such as preparing course materials and answering student questions.
	What improvements could be made to enhance the effectiveness and efficiency of ChatGPT in the fields of education and research?	Research Support: Support for research activities, including data analysis and literature review.
	What is your assessment of the integration of ChatGPT into educational processes? In your view, what strategies could facilitate an effective implementation of this integration?	

Phase 3. Searching for themes: At this stage, researchers consolidated meaningful data clusters derived from the codes to form sub-themes and main themes. Themes are not necessarily based on quantitative metrics; instead, they are intended to capture topics of substantive relevance to the core research question (Braun & Clarke, 2006). Consistent with the coding process, each data set was independently analyzed by two researchers, who subsequently convened to discuss and reconcile their interpretations. Themes may emerge inductively from the data or deductively from existing theories and prior research (Boyatzis, 1998). In this study, to facilitate the organization of data, comprehensive sample codes were developed within a conceptual framework, as implemented by Novel et al. (2017) in the coding process. These deductive codes largely aligned with the interview questions (see Table 3). Sub-themes and themes were developed using an inductive approach. Inductive analysis is a coding process that does not attempt to fit the data into a predefined coding framework or the researcher's analytic preconceptions (Braun & Clarke, 2006). Braun and Clarke (2006) suggest that tables, templates, codebooks, or mind maps can be utilized to illustrate the emergence of themes. In this study, the process of transforming codes into themes is exemplified in Table 4.

Table 4
Example of Transforming Codes into Sub-Themes and Themes

Quotes	Codes	Sub-Themes	Themes
…they can even develop the course content together. In fact, that's what I did. I asked ChatGPT how to develop the content of a course curriculum, and based on its response, I decided to revise my own curriculum (P-3). I always utilize ChatGPT when creating my course content. For example, for one of my courses, I ask it to analyze the curricula of leading universities worldwide, and then I update my own course plan based on these programs (P-12). Nowadays, engaging Generation Z in lessons is quite challenging. To make the beginning of my classes more engaging, I ask ChatGPT for suggestions on interesting ways to start a lesson related to the topic. I get very useful results (P-8).	Educational Support Codes: Developing course content in collaboration with ChatGPT	Usage in Education, Teaching, and Research Activities	Integration of ChatGPT into Education and Research
Firstly, I believe that individuals equipped with skills to use ChatGPT for academic research should be developed, and subsequently, this training should be offered in the form of a course spanning, for example, 10-12 hours over 2-3 weeks, rather than as a formal class in higher education (P-10). Courses or training programs focusing on the correct and ethical use of AI applications such as ChatGPT could be added to curricula. However, the priority should be on providing foundational training in software (P-4). Perhaps it would be beneficial to include a course or courses on AI and related technologies within university curricula, or to integrate these topics within sustainability courses, to ensure more accurate and effective use (P-1).	Research Support Codes: Adding courses related to AI to curricula, providing materials to encourage usage, and ensuring technical infrastructure		

Phase 4. Reviewing themes: At this stage, researchers evaluated whether the themes formed a cohesive whole and meaningfully represented the data. Accordingly, coded data segments corresponding to each theme were reviewed during team meetings, and certain themes were consolidated. This process facilitated the development of a structured pattern that aligned closely with the research question.

Phase 5. Defining and naming themes: At this stage, researchers defined the meaning of each theme and assigned clear, descriptive names that accurately reflected their content. During this process, the contribution of each theme to addressing the research questions was articulated. Additionally, existing literature was consulted to inform the naming of themes. References to studies related to these themes are summarized in ▌▌ Table 5.

Phase 6. Producing the report: In the final stage of analysis, the thematic findings were systematically compiled into a comprehensive report. To convey the findings effectively, detailed analyses of the themes are presented in ▌▌ Table 6. Additionally, a process framework was developed based on the identified themes, as illustrated in ▌▌ Figure 2. Descriptive representations of participant perspectives that contributed to the emergence of themes are included in the Findings section. Finally, the findings have been substantiated with references to relevant literature, providing further support and context.

Findings

In our research, young researchers conducting their studies at a higher education institution in İstanbul were asked about their views on the future use of ChatGPT. The findings obtained are presented in ▌▌ Table 6.

As a result of the transcription of the interviews, views on the future use of ChatGPT were analyzed under five themes. In response to the research question, "What are the future expectations of young researchers regarding ChatGPT's support in higher education for teaching, research, and learning activities?" the emerging themes were as follows: future expectations, future concerns arising from ChatGPT and benefits achieved from ChatGPT usage. In response to the research question, "What should have done to use ChatGPT more effectively and ethically in higher education according to young researchers?" the emerging themes were as follows: ethical practices and integration of ChatGPT into education and research.

Future Expectations

Under the theme of future expectations, two categories were identified: expectations regarding ChatGPT's features and expectations regarding the academic publishing process. As highlighted in the literature, the negative aspects of ChatGPT have also been a prominent concern in this study. The young researchers who participated in the study emphasized the need for improvement in ChatGPT's negative and insufficient features to enable more effective

▌▌ Table 5
Defining and Naming Themes

Research Question	Themes	Definition	Contribution	Relevant Literature Resources
RQ-1. What are the future expectations of young researchers regarding ChatGPT's support in higher education for teaching, research, and learning activities?	Expectations for the Future	Expresses the future expectations of young researchers regarding the potential role that ChatGPT could play in educational and research processes within higher education.	Defines dark and bright side of ChatGPT by the young researchers.	Bhullar et al., (2024); Zeb et al., (2024)
	Future Concerns Arising from ChatGPT	Reflects concerns and potential risks that may arise in the future associated with the use of ChatGPT.	Defines dark side of ChatGPT	Vecchiarini & Somià (2023)
	Benefits Achieved From ChatGPT Usage	Highlights the advantages and positive impacts gained through the use of ChatGPT.	Defines bright side of ChatGPT	Gao et al., (2024)
RQ-2. What should have done to use ChatGPT more effectively and ethically in higher education according to young researchers?	Ethical Practices	Outlines clear guidelines on how and for what purposes ChatGPT can be used, along with ethical practices and protocols developed to help students and academics avoid unethical use.	Defines what to do to use ChatGPT more effectively and ethically in higher education.	Maita et al., (2024)
	Integration of ChatGPT into Education and Research	Describes how ChatGPT can contribute to educational and research processes through various applications, such as creating supplementary materials for course content, facilitating data analysis in research, and providing rapid access to information.	Defines how to use effectively and ethically ChatGPT in higher education.	Xie & Ding, (2023) Halaweh (2023)

Table 6
Perspectives on the Future of ChatGPT Usage

First Order	Second Order	Theme
-Showing the source of the information transparently, -Accessing much larger databases, integrating the statistical tools, -Providing statistical support especially for those working in the field of Social Sciences, -Providing modular support in coding, -Increasing the perceived ease of use, -Integrating ChatGPT with other tools (e.g. television, smartwatch, etc.), -Developing specialized interfaces for different fields of expertise within ChatGPT, -Offering visualization options available in the paid version in the free version as well, -Providing local language support, -Providing a link to the source it provides.	Expectations Regarding ChatGPT Features	Expectations for the Future
-Academic journals should offer this technology with the help of plugins, -Establishing a mechanism to monitor ChatGPT in publications (e.g., Turnitin), -Academic journals should legitimize the use of ChatGPT, -Using it as a tool for theory building or literature review, -If ChatGPT is used in an article, it should be checked by the author from different perspectives.	Expectations Regarding the Academic Publishing Process	
-Clearly stating the purpose for which ChatGPT was used in the publication (e.g., grammar, translation, analysis) within the text or in the references, -Establishing ethical standards applicable to everyone, -Encouraging institutions and organizations to promote ethical use of ChatGPT.	Practices Regarding Publication Ethics	Ethical Practices
-Establishing mechanisms to ensure that the ethical nature of ChatGPT usage is not largely dependent on individual moral values, -Implementing an identification system for ChatGPT to track who is conducting what type of research and to identify malicious users.	Practices Regarding Individual Use	
-Enhancing the ChatGPT database to update university curricula, -Adding courses related to AI to curricula, providing materials to encourage usage, and ensuring technical infrastructure, -Developing course content in collaboration with ChatGPT, -Generating alternative exam questions using ChatGPT, -Integrating AI applications, such as literature reviews, visual creation, and translation support, into scientific research courses, -Encouraging the use of AI, particularly in the context of postgraduate project development, -Supporting the creation of a unified curriculum for common courses offered at various universities, -Providing training in "machine learning" and subsequently AI, especially in the field of engineering.	Usage in Education, Teaching, and Research Activities	Integration of ChatGPT into Education and Research
-Organizing comprehensive training for students at various educational levels (middle school, high school, university), -Providing comprehensive training for academics on the use of ChatGPT, -Offering free e-government courses by the government to enhance digital literacy.	Support from Institutions and Organizations	
-Fear of ChatGPT usage not being accepted by journal editors and reviewers, -Concerns that those who adapt to and embrace this technology will increase their publication speed and volume, while those resisting it may fall behind, -The possibility of ChatGPT generating publications that could be accepted by less prestigious journals, -Threats to originality, -Concerns about plagiarism.	Academic Concerns	Future Concerns Arising from ChatGPT
-The potential to dull creative thinking, -The risk of diminishing the ability to search and find information, -The potential of an addiction due to the convenience it provides, -The possibility of reducing the need for certain professional skills by delegating tasks to ChatGPT, -Weakening writing skills, -The perspective of the research group regarding the use of ChatGPT, -Uninformed use by researchers who lack expertise in the field and the topic they are studying.	Personal Concerns	
-Learning to ask the right questions, -Developing critical thinking skills, -Enhancing digital literacy/technology literacy, -Improving interpretation and critical analysis skills, -Increasing problem-solving abilities and AI literacy, -Enhancing the ability to construct meaningful sentences and give precise commands.	Competency Development as a Result of ChatGPT Usage	Benefits Achieved From ChatGPT Usage

use in the future. In particular, the transparency of information sources and access to broader databases were the most emphasized issues.

"I think it could provide much better information if it had access to various databases. For example, it would be great if it could tell us what is being used in courses at top universities, what resources are accessed, what topics are being researched, or which topics have been studied in theses from prestigious universities, and what has been published in top journals. If it could provide us with all this information, it would be very beneficial." (P-9)

Young researchers have noted that ChatGPT will be an important tool in the future, especially in the field of research. It is particularly believed that ChatGPT will facilitate the literature review and theory-building parts of article writing. In this context, it has been suggested that for ChatGPT to be legitimized in academic publishing processes, journals should provide add-ons to integrate this technology and establish a mechanism to monitor ChatGPT.

"In two years, we'll see that AI is being used across all databases. So, will these journals resist this change two years from now? No, they will accept it and will have to adapt to it." (P-11)

Future Concerns Arising from ChatGPT

Within the scope of the study, it was observed that young researchers in Türkiye have various concerns about the future use of ChatGPT. The theme of future concerns was addressed and two categories were identified: academic concerns and personal concerns. It was particularly noted that academic concerns were emphasized. In this regard, it is anticipated that those who adapt to and embrace this technology will increase the speed and number of their publications, while those who resist may fall behind in this race. Additionally, the policies of journals regarding the use of ChatGPT were highlighted as an important aspect. The lack of a proper monitoring mechanism for ChatGPT also contributes to the growing concerns.

"Academics/researchers who cannot keep up with applications like ChatGPT will struggle because their publication speed will lag behind others. Frankly, let me say that my publication speed has increased since I started using ChatGPT. Researchers or scientists like me, who show high adaptation to ChatGPT, will surpass others, especially in fields like social sciences. I will be submit multiple papers to the journals where others send only one paper, or people like me will submit more, while others may fall behind, I don't know, I'm just thinking out loud right now, or maybe they will become discouraged and slow down even more." (P-3)

When assessing the impact of ChatGPT in terms of personal concerns, one of the key points highlighted is that the use of ChatGPT may damage certain skills. Some participants expressed that ChatGPT creates dependency and leads to laziness.

"You know, when you know that someone is there to pick up after you, you tend to be more careless. I especially felt that there would be a diminishing effect on my English skills. I even thought that maybe I shouldn't let it be done this much." (P-7)

"Let me put it this way, I might have been one of the first users, and back then it was really like my right hand. At one point, ChatGPT even crashed and all my search history was deleted. I was quite distressed, and my hands were trembling because it had made me dependent on it." (P-9)

Benefits Achieved from ChatGPT Usage

In the context of perspectives on the future use of ChatGPT, the final theme highlights the benefits provided by its usage. While some drawbacks have been identified in the use of ChatGPT, it has been noted that, when employed responsibly and ethically, it can foster the development of certain essential skills. Specifically, the abilities to frame appropriate inquiries, engage in critical thinking, and demonstrate digital literacy have been particularly underscored.

"If a researcher lacks critical thinking skills, I think they should leave academia and research because you can't really do science without this competency. If this skill is not provided, people—especially students—won't be able to adapt to the future job market in any sector or academic career without it. The World Economic Forum also says this. We see it in numerous other reports as well. In this context, I believe that the use of ChatGPT, which is becoming increasingly common, is actually contributing to the development of critical thinking skills. This is because individuals interpret the responses they get from ChatGPT, approach them with a critical perspective, and then use them." (P-3)

"I think what we need the most here is the engineering of expressing our concerns because being able to use ChatGPT correctly and effectively depends on asking the right question—so first, we need to express our issue clearly. This is actually a process. As the use of ChatGPT increases, you start learning how to do this. You learn what to ask, how to ask it, and you improve yourself." (P-16)

Ethical Practices

Another theme that emerged from the findings was ethical practices. Ethical practices were addressed under two categories: practices regarding publication ethics and practices regarding individual use. In the future, practices related to publication ethics will be crucial in ensuring the ethical use of ChatGPT. In this context, the young researchers who participated in the study emphasized the importance of specifying the context in which ChatGPT is used in publications and establishing a certain ethical standard for its use in academic work.

"Because think about it, ChatGPT doesn't know whether the person using it is a student or an academic, or why they are using it. Therefore, it's very difficult to prevent misuse. For example, someone else could use it. Consequently, it has to provide the information. However, if there were an identity verification system, showing whether someone is a student or an academic, along with their history, what they are researching, and who is researching what, it might be possible to prevent some degree of misuse." (P-12)

Integration of ChatGPT into Education and Research

Based on the collected data, the integration of ChatGPT into education and research was addressed as a separate theme. In this context, the focus was on the use of ChatGPT in educational, teaching, and research activities, as well as the support of institutions and organizations. In terms of its use in education, teaching, and research activities, the necessity of creating course content with ChatGPT and particularly integrating such AI applications into scientific research courses was emphasized. Another topic of discussion was the addition of AI-related courses to curricula.

"I think training on technology use should start at the undergraduate level. For example, when I started my Master's, I realized that I didn't even know how to use Word well, whereas someone at that level should be using it proficiently. Today, these issues should have been figured out well before reaching the graduate level. Accordingly, curricula in schools should be revised to focus more on technology." (P-15)

"Courses or training programs that promote the correct and ethical use of AI applications like ChatGPT can be included in curricula. However, the primary focus should be on providing education in software development. Developing specific language processing/machine learning models tailored to particular fields is, in my opinion, more valuable. For instance, the Zemberek 1model, which was developed in the past, hasn't been updated since 2015. If it had been updated, we could have had our own version of ChatGPT by now. The Mukayese NLP model2, developed in 2022, is another example. I think the development of such models should be prioritized." (P-16)

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1 Zemberek-NLP is an open-source Turkish natural language processing library. It is specifically designed to understand and interpret the complex linguistic structure of Turkish. The library can perform various tasks such as morphological analysis of Turkish texts, grammar checking, sentence parsing, and more.

2 Mukayese is a platform under the Türkiye Open Source Platform, offering a Comparative Evaluation of models and software for machine learning and natural language processing within the Turkish Natural Language Processing project. It provides a comparative analysis using the Turkish Natural Language Processing Data Library.

Institutional and organizational support for promoting the use of ChatGPT was identified as another category under the theme of integration into education and research. It has been suggested that organizing comprehensive training sessions for students and academics on the use of ChatGPT would be beneficial for increasing the ethical and effective use of this technology in the future. In this regard, the support of institutions and organizations for such training programs would encourage the more conscious and responsible use of AI.

"First of all, since the topic is still very new, I think it's difficult to find a ChatGPT expert. In this context, I believe that individuals should first be trained to become proficient in the use of ChatGPT for academic research. Afterward, these trained individuals should offer courses, not as part of a higher education curriculum, but as courses lasting 10-12 hours over 2-3 weeks."(P-17)

Discussion

ChatGPT has the potential to completely transform teaching, learning, and research in higher education. Users have quickly discovered that this AI is not just a chatbot; they have experienced its ability to generate articles, summaries, essays, or code within seconds. However, alongside the opportunities it offers, ChatGPT has also raised a number of challenges and concerns, particularly regarding academic integrity, ethics, plagiarism, and competent usage. At this point, Cano et al. (2023) pose a crucial question: "Will we adapt to AI tools like ChatGPT, or will we resist them?". Building on this question, we discuss the perspectives of young researchers, who are at the beginning of their academic journeys, on the future use of ChatGPT. Various recommendations for the effective and efficient use of ChatGPT in higher education have been discussed.

According to our findings, ethical regulations are the most emphasized issue that young researchers mentioned for the future legitimization and widespread adoption of ChatGPT. Many studies in the literature (e.g. Zeb et al., 2024; Li et al., 2024; Cotton et al., 2024; Maita et al., 2024) highlight ethical issues such as privacy and data security concerns. From this point of view there is a need for balanced approach to human oversight and responsible use in higher education institutions. Furthermore, ethical issues also underscore problems related to academic integrity, assessment, and data protection. At this point, Xie and Ding, (2023) and Maita et al., 2024 mentioned that there is a need for more experimental studies and robust ethical policies for the proper, ethical, and effective use of ChatGPT. Moore (2023), emphasized the importance of teaching academic integrity and the responsible use of AI. He discussed the challenges of detecting AI-generated texts and mentioned that these concerns are just the beginning of future educational issues. There is a need for continuous discussion and adaptation of assessment methods to maintain academic integrity. Given the increased use of digital and

remote systems by universities compared to middle and high schools, higher education is expected to face greater challenges (Moore, 2023). In this context, developing implementation guides to use ChatGPT more efficient in education and research, would be beneficial (Bhullar et al., 2024; Wilson & Billam, 2023). In our country, the Council of Higher Education has published a guide on the ethical use of AI. The "Ethical Guidelines for the Use of Generative AI in Scientific Research and Publication Activities of Higher Education Institutions" provides important directives for the ethical use of these technologies, aiming to protect scientific integrity and reliability (Akıllı, 2024). This guide encourages the responsible use of AI in academic writing and emphasizes fundamental ethical principles such as transparency, honesty, diligence, fairness, and respect.

While ethical guidelines provide a roadmap for the proper use of AI, our findings support organizing various trainings on the subject would be beneficial. Specifically, training academics on this topic will help in transferring the acquired knowledge to new generations through university courses. In addition, it is necessary to include a mandatory course on ethics, research integrity, and critical thinking at universities. Although many universities cover these topics under scientific ethics and research methods courses, it is considered necessary to integrate information on the ethical use of AI into these courses. This will help future generations develop sensitivity to the subject. Besides ethical use, according to our findings, focusing on the effective use of ChatGPT is also important. Bhullar et al., (2024) indicate that, especially in developing countries, where English is not the native language, there is a need to focus on developing training programs that emphasize the effective use of ChatGPT to improve language proficiency. Cano (2023) emphasized that it is crucial to address how ChatGPT should be used in higher education and ensuring that these tools are used as complements rather than as additions to traditional teaching methods. In this context, instead of banning AI tools, it is necessary to use and understand new technologies to facilitate student learning and help optimize learning and research processes (Lim et al., 2023; Cano et al., 2023). Kleiman (2023) highlighted that with the advent of AI writing processes have changed and he suggested that writing processes in schools need to be reviewed. It is pointed out that this change parallels past changes in mathematics education, where calculators transitioned from being banned to becoming a requirement. However, questions arise regarding which uses of AI in writing should be considered appropriate and whether students need to master specific writing skills before being allowed to use AI tools.

Writing, critical thinking, and arithmetic are fundamental skills that students need to acquire. Research indicates that the use of AI can lead to a decline in students' performance in these basic skills (Karaali, 2023). In this regard, another concern about the future use of ChatGPT in our study is that it may dull certain existing skills-such as writing ability, creative thinking, and research skills. Our findings indicate that the ease provided by ChatGPT can lead to a dependency process. In line with our findings, Akıllı (2024) emphasized that, excessive reliance on ChatGPT by students and researchers can result in missing out on important learning opportunities like critical thinking, problem-solving, appropriate research techniques, and interactions with educators and peers, leading to skill loss. For example, participants have noted that constant support from ChatGPT in the article translation process could lead to a decrease in language skills over time. Elkefi et al. (2024) and Skavronskaya et al. (2023) support our findings and mentioned that the use of ChatGPT may lead to laziness in learning.

Our research indicates that participants believe the demand for certain professional skills will decrease due to ChatGPT, and that tasks will increasingly be delegated to ChatGPT in the future. PwC found that automation and digitalization could lead to the disappearance of 7.6 million jobs by 2030 (PWC, 2023). In this context, Sedaghat (2024) discussed the future of radiologists, suggesting that basic radiological examinations could be automated and performed by ChatGPT in AI-assisted hospitals, reducing the need for radiologists. However, it is noted that complex imaging procedures and examinations would still require the expert opinion of a radiologist. Although AI applications like ChatGPT are expected to transform many sectors, it is observed that technology cannot entirely replace certain tasks, especially those that cannot be automated. For example, Kirkova and Angelova (2023) found that while ChatGPT could support and automate educators' activities, it cannot fully replace mentors who provide guidance and perform in-depth evaluations of students' abilities and role models. In this regard, ChatGPT should be used as an advantage to save time and effort while performing routine tasks in the future.

Although the young researchers who participated in the study expressed various concerns about the future use of ChatGPT, most believe that the use of AI is inevitable and that it should be integrated into higher education after receiving appropriate, ethical, and effective training. Consistent with our findings, Liu et al. (2023) expressed that, AI is seen as a tool that can enhance teaching and learning experiences when used properly and aligned with educational goals (Liu et al., 2023). Accordingly, our study anticipates that the use of ChatGPT in educational, teaching, and research activities will increase, such as in curriculum updates, course content creation, exam question generation, and research methods. As noted by Bhullar et al. (2024), the key consideration here is to ensure that technology improves rather than hinders learning experiences and to provide unique AI integrations that reduce the risk of people forgetting to learn. At this point, we emphasize that the importance of balancing the use of ChatGPT with fundamental skills such as critical thinking, writing, and arithmetic is important.

Albeit the use of ChatGPT can lead to some laziness and erosion of certain skills in individuals, the findings from the research indicate that ChatGPT use also develops various skills. Young researchers participating in the study particularly noted improvements in their abilities to ask the right questions, critical thinking, and digital literacy as a result of using ChatGPT. Literature also highlights ChatGPT's role in enhancing critical skills such as critical thinking, problem-solving, and communication (Lund & Wang, 2023; Giordano et al., 2024).

ChatGPT has the potential to revolutionize human interaction with technology. According to our research, ChatGPT needs to develop certain features to become a more effective and reliable tool for researchers. Young participants in the study noted that some negative aspects of ChatGPT have led to limited use of this tool. It is believed that increasing transparency about the sources of information and providing access to broader databases will enhance its future utilization. Many studies list these features under the negative aspects of ChatGPT usage (e.g. Ray, 2023; Eardley, 2023).

Recent studies have shown that AI applications like ChatGPT are being used not only in higher education but also in business life (e.g. Duong et al., 2024; Talaei-Khoei et al., 2024; AlQershi et al., 2024). Our research highlights that integrating AI applications, such as ChatGPT, into educational, teaching, and research activities is believed to help students overcome challenges they may encounter in their careers after graduation. Our findings also suggest that the use of ChatGPT can influence career choices. Consistent with our findings, Duong et al. (2024) state that encouraging the use of ChatGPT can positively impact individuals' intentions to start digital ventures.

The study indicates that the future use of ChatGPT is inevitable. Based on the data obtained, insights have been gathered regarding the dark sides of ChatGPT, the bright sides of ChatGPT, and how ChatGPT should be used in the future. In this context, it is important to transform the dark sides of ChatGPT into bright sides to maximize the benefits of AI. Based on these findings, there is a need for a process to develop the future use of ChatGPT. The process for improving ChatGPT usage to transform its dark sides into bright sides is illustrated in ▮▮ Figure 2.

Conclusion

This study explores the perspectives of young researchers studying or working in higher education institutions in İstanbul regarding the future use of ChatGPT, emphasizing the importance of integrating AI applications into educational and research processes. The research findings indicate that ChatGPT is poised to become an indispensable tool in the field of education. However, the integration process also highlights the importance of ethical practices, drawing attention not only to the benefits of ChatGPT but also to potential concerns it may raise. Building on the call for more research on the efficacy of ChatGPT across several academic fields (Rawas, 2024; Bhullar et al., 2024), a process framework was developed to promote ChatGPT usage. In this framework, how to transform ChatGPT's dark sides into bright sides is schematized. Accordingly, it has been identified that both students and academics need to be trained on the ethical and effective use of ChatGPT. After these trainings, ChatGPT should be integrated into education and teaching with various usage guides and application instructions. Properly integrated ChatGPT applications are expected to save time and effort, enhance competencies such as asking the right questions and critical thinking. This study contributes to discussions on AI-supported education and research by examining the future impacts of AI in higher education comprehensively and from multiple perspectives.

▮▮ **Figure 2**
ChatGPT Usage Enhancement
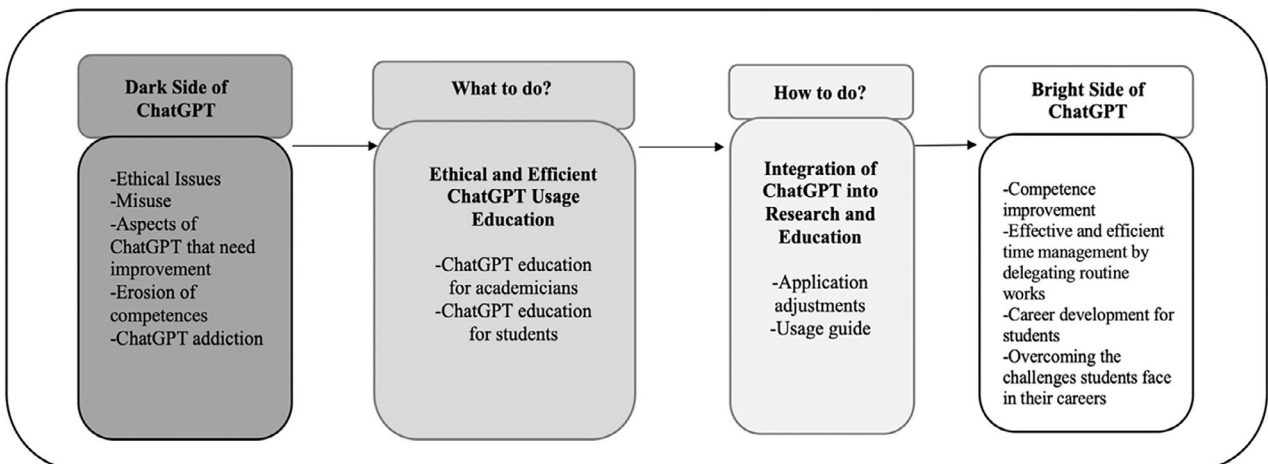
Recommendations for Future Research and Limitations

Although this study provides valuable insights into the development of ChatGPT usage in higher education, it has some limitations. First, since the research is limited to Türkiye, İstanbul, the generalizability of the findings is restricted. Second, the study focuses only on young researchers, excluding the perspectives of academics over the age of 40. Third, there is a limitation related to the research method. The data collected for the study were gathered at a single point in time, presenting a snapshot of young researchers' views. This situation can make it difficult to determine the sequence of events or distinguish cause-and-effect relationships. Based on these findings, several recommendations can be made for future researchers. First, expanding the study's scope to encompass data collection across various cities could yield a broader contextual understanding. Given that the topic addresses a globally utilized AI application, conducting comparative studies across countries would offer valuable contributions to the literature. This study focuses solely on young researchers; future studies could enrich the literature by collecting data from and comparing different researcher groups. Furthermore, a single research design was employed in this study; employing mixed-method designs that incorporate multiple methodologies could enhance methodological diversity in future research. Finally, this study utilized a cross-sectional design; conducting longitudinal studies would allow for a more in-depth exploration of the topic in future research. On the other hand for young researchers, the effective utilization of AI tools such as ChatGPT can provide a significant advantage by accelerating the research process and enhancing innovation potential. However, it is recommended that young researchers approach these tools as complementary components within the research process, consistently upholding critical thinking as paramount. Such an approach should be regarded as indispensable for ensuring both a productive and ethically sound research endeavor.

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