

Examining the Benefits of Using ChatGPT in Preparing Interview Questions

Mert Şen*, Oktay Bektaş**, Şevval Nur Şen***

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Abstract

The number of studies on using ChatGPT in scientific and qualitative research is increasing daily. This study investigates the usability of ChatGPT in the interview question preparation phase of qualitative research by taking into account its features such as text generation, ease of use, and being trained with a large data set. In the study, the researchers prepared interview questions for the research problem they identified and compared them with the questions prepared by ChatGPT. The study results show that ChatGPT can generate the variety and depth of questions that researchers need by using its extensive data set and various features. As a result, we determined that ChatGPT can provide valuable support to researchers in the interview question preparation stages. This support will allow researchers to use their time more effectively, develop their questions more comprehensively and in-depth, and improve the quality of the data obtained from the research.

Keywords: Artificial intelligence, ChatGPT, qualitative research, interview question.

About the Article

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 Research Assistant Dr., Inonu University, Faculty of Education, Türkiye

 Prof. Dr., Erciyes University, Faculty of Education, Türkiye

 Corresponding Author's: Research Assistant, Inonu University, Faculty of Education, Türkiye, E-mail: seval.ozkes@inonu.edu.tr

Introduction

"I want to do qualitative research, but I hesitate because the process is difficult and tiring. I do not know how to get information from someone on a particular topic. Preparing interview questions and conducting the right interview is very intimidating."

(Ali, 2024, Needs Analysis Interview)

Although these statements belong to a PhD student, they are pretty close to every qualitative researcher's thought at a particular time. When qualitative researchers want to work on a new topic, they may experience the same thoughts again. In every new research project, researchers apply the processes of learning the theoretical knowledge appropriate to the subject, conducting a literature review, preparing appropriate interview questions, getting expert opinions, and revising the questions according to expert opinion (Creswell & Creswell, 2018; Ezberci-Çevik, 2023; Patton, 2018). For a researcher who does not have the experience and competence to carry out these procedures, it may become difficult to conduct qualitative research. Therefore, artificial intelligence tools, which are increasingly important in science today and are discussed in various subjects, can assist qualitative researchers in solving these problems.

Although artificial intelligence technologies have existed for a long time, their widespread use began with ChatGPT, which OpenAI introduced in November 2022. This technology redefined the use of AI in everyday life (Gill & Kaur, 2023). ChatGPT can generate appropriate responses in near-natural human language by leveraging extensive data stores to understand and interpret user requests. ChatGPT's practical applications and ability to create a human-like language and complete complex tasks make it an essential innovation in artificial intelligence tools (Lund & Wnag, 2023). ChatGPT can access the internet, produce more accurate and detailed responses in text-based dialogs, understand more complex user queries, and utilize an extensive knowledge base (OpenAI, 2024). ChatGPT's possession of these features has led to an intensification of research focusing on its use in qualitative research.

Qualitative Research and ChatGPT

Artificial Intelligence (AI) Pedagogical Support denotes the application of AI tools to deliver targeted educational help, facilitating persons in completing activities they could not achieve autonomously but can accomplish with supervision (Cai et al., 2024). AI offers several advantages, including the customization of education to accommodate diverse learning styles (Verdú et al., 2017), the delivery of personalized and instantaneous feedback (Chang et al., 2023), the refinement of assessment methodologies, the enhancement of learning experiences (Ouyang et al., 2022), the cultivation of design and creativity skills (Cudzik et al., 2024), and the production of educational materials (Adetayo et al., 2024; Şen et al., 2024). Given these potentials, AI pedagogical help is expected to be an invaluable resource for qualitative researchers.

Since its launch, countless users have used ChatGPT to meet a range of purposes and requirements. Considering the capabilities of ChatGPT, it is possible to find various

studies on its use in qualitative research (Costa, 2023; Dengel et al., 2023; Hamilton et al., 2023; Khlaif et al., 2023; Morgan, 2023; Siiman et al., 2023; Şen et al., 2023; Taylor, 2023). ChatGPT can be a helpful tool for the researcher on large data sets in qualitative research thanks to its text interpretation capability; it can save time for researchers in data analysis, and it is easy to use (Hamilton et al., 2023; Morgan, 2023; Siiman et al., 2023; Şen et al., 2023). It offers advantages in consistency and bias reduction. However, using artificial intelligence in qualitative research brings limitations such as ethical problems, the interpretability of algorithms, and possible biases. For this reason, researchers should carefully evaluate the advantages of artificial intelligence and use it as a supportive tool (Costa, 2023; Şen et al., 2023). Dengel et al. (2023) stated that conducting interviews with artificial intelligence tools such as ChatGPT and BARD can provide researchers with different perspectives and can be used to test their interviews. Taylor (2023) stated that by using ChatGPT to convert the transcripts made by the researcher into analyzable text, he could clean interview transcripts in seconds with a <1%-word error rate and almost 0% syntactic error rate. Khlaif et al. (2023) discussed the role of ChatGPT in improving academic performance in scientific research. Khlaif et al. (2023) stated that the commands used by the researchers using ChatGPT affect the results, the reference list created by ChatGPT is weak, and the texts created should be revised and used from the researcher's perspective. The studies stated that the outputs of artificial intelligence tools such as ChatGPT should be used under the researcher's supervision, regardless of the step of qualitative research; otherwise, the desired results cannot be obtained. As can be understood from the literature, there are studies on ChatGPT's positive and negative uses. However, the authors of this study will deepen the literature in this sense by comparing the interview questions they prepared with the interview questions prepared by ChatGPT and offering a solution to the difficulties experienced by qualitative researchers in the interview question preparation process.

The primary methodological concern in using artificial intelligence for interview question development is ensuring that the generated questions align with qualitative research principles. While AI enhances efficiency and consistency, it may weaken researcher creativity (Hamilton et al., 2023). Over-reliance on AI without critical researcher oversight could compromise the epistemological rigor of qualitative inquiry. Therefore, this study not only explores the potential benefits of ChatGPT but also critically evaluates these methodological challenges, emphasizing its role as a complementary rather than a substitutive tool in qualitative research.

Interviews and Challenges in Qualitative Research

In qualitative research, various data collection tools include observation, interview, document, and phenomenon drama (Şen et al., 2023). Among these data collection tools used in qualitative research, interviews are the most frequently used data collection tool. Interview types can be structured, semi-structured, unstructured, focus group, and online (Ezberci-Çevik, 2023). A semi-structured interview is the most frequently used type in qualitative research (Brinkmann, 2021).

The interview process can be handled in three parts: before, during, and after. Determining the purpose of the interview, preparing the interview questions, selecting the participants, and setting the interview should be done before the interview. The preparation of interview questions after determining the purpose of the interview constitutes an integral part of qualitative research (Ezberci-Çevik, 2023). The interview form is a list of questions or topics to be addressed during the interview. The interview form should include questions and instructions suitable for the purpose, be prepared before the interviews, and ensure consistency in all interviews (Creswell & Creswell, 2018). By focusing on a specific topic, the interview form allows the interviewer to ask questions to elaborate on the subject and create a flexible dialog. Although the quality of the data obtained during the interview depends on the interviewer, the interviewer can direct the questions in a natural flow of conversation within the framework of predetermined topics (Patton, 2018). This study investigates the usability of ChatGPT for structured and semi-structured interview questions, as it involves a process of preparation in advance. Unstructured interviews were not included in the scope of this study, as they were designed more on the spur of the moment.

Numerous books and articles on qualitative interviewing in general and writing interview questions (Brett & Wheeler, 2021; Brinkmann & Kvale, 2014; Staller, 2022; Given, 2021; Patton, 2018). The value of the data collected during qualitative interviews depends on the researcher's competence and the interview questions' strength (Patton, 2018). Therefore, it is essential to ensure that the interview questions used by inexperienced researchers support their efforts to obtain a detailed answer to the research question (Roberts, 2020). No matter how the interview questions are asked, the primary purpose of the questions is to reveal the data to be used in the study. While preparing the interview questions, the researcher should think about the participants to be interviewed. Using theoretical or methodological language in the interview questions, as in academia, will not make sense to the participants. Therefore, the researcher must consider the participants' experiences, culture, and language when preparing the questions. Briefly, research questions can be prepared in three stages. First, the researcher should formulate theoretical and relevant interview questions. Second, the researcher should translate these theoretically informed ideas into a form the participants can understand. Finally, the data extracted from the participants' experiences and opinions should be integrated with theoretical frameworks to contribute to answering a scientific question (Staller, 2022). As mentioned above, the theoretical preparation process and the process of transforming the theory into a question at a level that the participants can understand are essential for preparing interview questions. For this reason, the research will also reveal the theoretical quality of the questions prepared by ChatGPT and their comprehensibility for the participants.

Purpose of the Study

The fact that ChatGPT passes exams with high difficulty levels, such as medicine (Ali et al., 2022; Fleming et al., 2023; Lewandowski et al., 2023) and foreign languages (de Winter, 2023) provides a perspective on the competencies of ChatGPT. Although there

are studies in which ChatGPT's text generation and visual generation (Handa et al., 2023) features are used in subjects such as medicine, literature (Kızıldağ, 2023), computers (Bordt & von Luxburg, 2023), and language learning (Lee et al., 2023), it is seen that studies on the ability to create interview questions for qualitative research have not been addressed. Considering the text generation capability of ChatGPT, it is essential to examine the interview question generation skills in qualitative research. Preparing interview questions in qualitative research has been a challenging process, especially for researchers who do not have enough experience (Hà & Nguyễn, 2023). In particular, studies conducted to overcome the deficiency in interview question writing show this is an ongoing problem (Brett & Wheeler, 2021; Brinkmann & Kvale, 2014; Staller, 2022; Given, 2021; Patton, 2018).

To prepare interview questions, steps such as researching sufficient theoretical knowledge, writing clear and understandable questions, and getting expert opinions should be completed (Ezberci-Çevik, 2023). Questions in interviews should be clear and understandable. When the questions are too general or vague, the responses' quality may decrease and may not provide enough information to answer the research questions (Patton, 2018). When the researcher's own biases or expectations are reflected in the questions, this may affect the participants' responses and reduce the accuracy of the responses (Alshenqeeti, 2014). In addition, questions should not push participants' boundaries and force them to discuss uncomfortable topics. The participants' emotional and psychological well-being should be considered (Brayda & Boyce, 2014). However, the literature has stated that researchers who experience these processes have difficulty conveying their ideas fully and asking appropriate questions (Hà & Nguyễn, 2023). Inexperienced researchers ask long, closed, vague, or leading questions (Ballena, 2021; Roberts, 2020). The prepared questions should be asked in the correct order. When a researcher investigates a topic, thought and emotion questions can be asked first. Then, the researcher can ask information questions. Failure to ask questions in the correct order may affect the interview quality (Patton, 2018). Although this is obvious, new researchers may make the mistake of directing the research questions to the participants when preparing questions. This approach is inconvenient for the participants and reduces efficiency (Staller, 2022). For these reasons, it can be stated that the problem of preparing interview questions in qualitative research remains current. To solve this problem, can researchers improve the quality of interview questions through ChatGPT after preparing interview questions? After preparing the interview questions, can they apply to ChatGPT instead of submitting their questions to expert opinion? How effective can ChatGPT be in the interview question preparation phase? To what extent does ChatGPT include open-ended and closed-ended questions in its questions? The lack of research in the literature to answer these questions was the starting point for conducting this study. All these questions were tried to be answered in this study so that future researchers can use ChatGPT. In the existing literature, various guide studies outline the stages of developing interview questions in qualitative research. However, there is a significant gap in research regarding integrating artificial intelligence tools into this process. The limited number of studies in this area highlights

a methodological gap in understanding how AI can contribute to developing interview questions. This study aims to address this gap by examining how artificial intelligence tools can be utilized in formulating interview questions, thereby offering a novel contribution to the literature. This research seeks to establish a more systematic, efficient, and objective framework for interview question development by providing an alternative perspective to traditional approaches.

In this context, it is necessary to examine the usability of generative artificial intelligence tools trained with an extensive database when preparing interview questions. Determining the differences and similarities between the questions prepared by ChatGPT and the questions prepared by the researchers and examining the prompts written by the researchers to ChatGPT will contribute to the literature. In addition, it is essential to address the differences between researchers who are experienced in using ChatGPT and inexperienced researchers' use of ChatGPT in preparing interview questions. The researchers aim to show that every researcher, whether experienced or inexperienced, can use ChatGPT. Considering the importance of preparing interview questions in the qualitative research process, it is thought that examining the use of ChatGPT to prepare interview questions in qualitative research will contribute to the literature. In this context, the questions of the study were designed as follows:

- 1- How is the content of the questions prepared by the researchers for the research question "What are the opinions of scientists towards the use of ChatGPT?"?
- 2- How is the content of the questions prepared by ChatGPT for the research question "How are scientists' opinions on the use of ChatGPT?"?
- 3- How does the researchers' experience using ChatGPT contribute to preparing questions via ChatGPT?
- 4- What are the similarities and differences between the questions prepared by ChatGPT and the questions prepared by the researchers?
 - a. What are the similarities and differences between the questions prepared by the first researcher?
 - b. What are the similarities and differences between the questions prepared by the second researcher?
 - c. What are the similarities and differences between the questions prepared by the third researcher?
- 5- How do the researchers use ChatGPT as an auxiliary tool in preparing interview questions?

Method

Research Design

In this study, in which the researchers questioned their experiences of using ChatGPT (CG) while preparing interview questions, the self-study design of the qualitative

research method was preferred. In self-study, the researcher enters the process of research and inquiry for self-practice (Nacaroğlu & Eroğlu, 2023). This research selected self-study because it emphasizes the researchers' experiences with ChatGPT (CG) for interview question preparation. In contrast to phenomenology, which investigates the collective experiences of several individuals to reveal the essence of a phenomenon, self-study enables researchers to analyze their own experiences critically. Action research generally addresses a practical issue through repetitive cycles of action and reflection, frequently engaging larger participant groups. Conversely, self-study is more introspective, emphasizing individual learning and methodological insights (Nacaroğlu & Eroğlu, 2023). This renders it the most suitable method for examining the researchers' experiences with CG.

Study Group

Researchers

All three researchers specialize in qualitative research. The initial researcher (R1) serves as a research assistant and PhD candidate at a public institution; for the past four years, he has been rigorously engaged in qualitative research and phenomenon theater. He performs research that advocates for artificial intelligence in qualitative investigations and has been utilizing ChatGPT since November 2022. The second researcher (R2) is a faculty member at a public institution, possessing substantial experience in qualitative research and pedagogy, although he has minimal familiarity with ChatGPT. The third researcher (R3) is a research assistant who does studies to facilitate the application of artificial intelligence in qualitative research methodologies. Since November 2022, she has utilized ChatGPT intermittently and possesses limited experience in qualitative research, although she has modest proficiency in employing ChatGPT.

Data Collection Tool

This study utilized documents as instruments for data gathering. The study documents comprise the questions formulated by the researchers and the methodologies employed with CG to develop interview questions. Each researcher autonomously formulated interview questions about the research inquiry "How do scientists perceive the utilization of CG?" and thereafter developed interview questions employing CG. The researchers utilized the ChatGPT-4 model for its functionalities, including document uploading and Internet access. GPT-4 enables users to develop their GPTs (OpenAI, 2024). Nonetheless, a GPT was not explicitly created for this research subject.

Data Collection Process

A needs analysis was conducted with four doctoral and master's students before the research to identify challenges in formulating interview questions. The researchers convened to establish the topic for the interview questions. The researchers' diverse specializations, including science education, art education, and elementary education, influenced the selection of issues addressed. The discussions centered on ChatGPT, a contemporary topic that is the focus of this article. It was concluded that investigating

scientists' perspectives on using ChatGPT is essential, necessitating the preparation of relevant questions for this subject. The researchers conducted interviews to ascertain the research question, "How do scientists think about the use of ChatGPT?" The researchers' diverse disciplinary backgrounds facilitated the formulation of broader questions encompassing multiple perspectives. This ensured that the topic was addressed in a thorough and multifaceted manner. Subsequently, each researcher independently formulated their interview questions using the established steps for interview question preparation. Due to the researchers' native language being Turkish, they utilized CG in that language. Following the preparation of their questions, the first researcher independently formulated interview questions utilizing the CG via their CG account. The researchers finalized the interview questions by revising both their own and those prepared by CG. Each researcher evaluated the questions developed by CG and independently determined which to incorporate into their research.

Data Analysis

The study employed inductive content analysis for data analysis. The data acquired in the study were examined through three distinct methods. The researchers initially formulated the questions. The dialogues between the researchers and the CG, along with the concluding inquiries, were collectively analyzed by both parties. Due to the absence of relevant studies in the literature, the researchers refrained from employing pre-existing themes and categories in their analysis. The researchers individually assessed the prepared questions, and the analysis was finalized by achieving consensus following the refinement of the generated codes.

Validity and Reliability

The strategies employed to enhance the internal validity of the research are thoroughly detailed in the data collection section. The researcher questions and CG outputs, which form the documents utilized in the study, were presented to the reader unaltered. The findings section presents the data obtained from the researcher's questions and the CG, including direct quotations without alterations. The relevant sections thoroughly detailed the research design, study group, data collection tools, implementation process, data analysis, organization of findings, and the researchers' roles to enhance external validity. To enhance the internal reliability of the research, the researchers independently executed the procedures outlined in the data analysis section and completed the analysis following the arrangements. The data were appropriately discussed in the results section to enhance the external reliability of the research. The researchers discussed the consistency of the results and findings sections, ultimately reaching a consensus. An expert in qualitative research verified the consistency between the conclusion discussion section and the findings section.

Findings

The results were organized into three distinct categories based on the findings from the first, second, and third researchers. Each researcher section will include the questions

formulated by the researcher, the methodology for utilizing ChatGPT, the questions generated by ChatGPT, a comparison between the researcher's and ChatGPT's questions, and the conclusions drawn from the final version of the interview questions.

Findings for the First Researcher

The first researcher (R1) prepared 10 main questions (M1–M10) for the research problem “How do scientists think about the use of ChatGPT?”. The researcher prepared questions for use, advantages, disadvantages, user experience, ethics, solutions to concerns, future vision, auxiliary tools, and the scientific research process. The questions prepared by the first researcher describe the use of ChatGPT by scientists in different fields. [Figure 1](#) shows the questions prepared by R1.

Figure 1

Questions prepared by the first researcher

	Prepared Questions	Theme
M1	As a scientist, what are your thoughts on the use of ChatGPT in science?	Intended use
M2	What are the advantages of using ChatGPT in science? Explain them.	Disadvantages
M3	What are the disadvantages of using ChatGPT in science? Explain.	Advantages
M4	What kind of suggestions would you make based on your experiences using ChatGPT?	User experience
M5	What are your thoughts about the ethical dimension of using ChatGPT in science?	Ethics
M6	Does the use of ChatGPT in science raise concerns for you?	Anxiety
M7	How do you think concerns about the use of ChatGPT in science can be addressed?	Solution to Anxiety
M8	What are your thoughts on the future of ChatGPT use in science?	Future vision
M9	How can you use ChatGPT as a helpful tool in science?	Auxiliary tool
M10	In what steps can ChatGPT be used in the scientific research process?	Scientific research process

First Researcher's Interview Question Preparation Process with ChatGPT

After R1 prepared the questions, he had CG prepare the questions. The summary of R1's correspondence with CG is given [in Figure 2](#).

Figure 2.*R1's correspondence*

R1: The research topic is "How do scientists think about the use of ChatGPT?" The question will be answered. Write me interview questions about this topic.

CG: I can list some interview questions that you can use for your research on "scientists' opinions on the use of ChatGPT" as follows:
Questions numbered (1, 2, 3,... 10) were generated.

R1: What else?

CG: Questions numbered (11, 12,... 20) were produced.

R1: (The researcher uploaded a 14-page Turkish-language PDF on preparing qualitative interview questions.) There is qualitative question preparation information here. Prepare it again by considering these.

CG: Based on the guidelines for creating qualitative research questions given in your file, some sample questions that could be prepared for the topic "Scientists' opinions on the use of ChatGPT" could be as follows:
Questions numbered (21, 22,... 29) were generated.

R1: I revised the questions you suggested, prepared the questions, and finalized my questions. The research topic was determined to be "How do scientists think about the use of ChatGPT?". Can you check the appropriateness of the questions I prepared? If you have any suggestions, write them down. Specify the places that need to be changed. The questions are given below:
The final prepared questions were copied (n=12) ...

CG: Your questions comprehensively address the topic of "scientists' thoughts on the use of ChatGPT." Most of your questions are open-ended and designed to allow participants to provide broad and detailed answers about their own experiences and opinions. However, we can strengthen your questions with some minor edits and additions:
Questions 1, 3, 4, 7, 9, and 11 have been edited. One new question has been added.

R1: This is the final version of my interview questions. In what order do you think I should ask these questions?

CG: An effective order of asking your interview questions would be to make the participants feel comfortable, to help them warm up to the topic, and then move on to more in-depth questions. The following sequence is suggested based on these principles:
(The questions are ordered.)
This sequence will guide the flow of the interview naturally and logically, while at the same time increasing the comfort of the participants and the efficiency of the interview.

Analysis of R1's methods revealed the generation of 30 queries using CG to formulate interview questions. Initially, R1 elucidated and formulated inquiries about the study subject. After the initial inquiries, he requested the CG to formulate more questions. Subsequently, he uploaded a PDF delineating the concepts of formulating qualitative interview questions to the CG and requested that the CG utilize this information to generate new questions. Subsequently, upon finishing the interview questions, he sent them to the CG for evaluation of their appropriateness. Upon revising the questions, he inquired with the CG regarding which questions to pose and finalized the process by implementing the requisite modifications. CG proposed several recommendations to R1. CG specified the theme to which her inquiries pertained. The inquiries were formulated as open-ended and articulated in clear and comprehensible language. Furthermore, CG composed an elucidative text after the questions. All questions generated by CG are included in Supplement 1. Figure 3 illustrates examples of the queries generated by CG.

Figure 3.

Questions prepared by the first researcher for CG

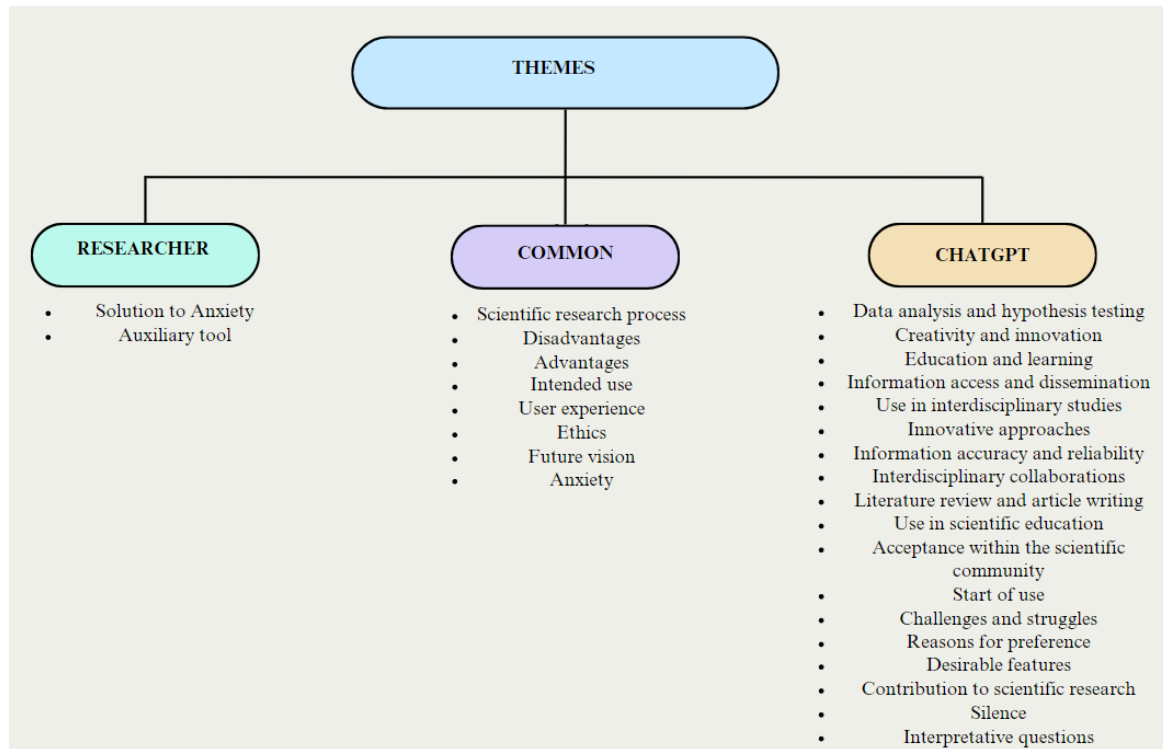
	Prepared Questions	Theme
CG1	How do you evaluate the use of ChatGPT in scientific research? In which areas do you think it is particularly useful?	ChatGPT's role in scientific research
CG2	How do you see the potential of ChatGPT in scientific processes such as data analysis and hypothesis testing?	Data analysis and hypothesis testing
CG3	Do you think ChatGPT can contribute to science in terms of creativity and innovative ideas?	Creativity and innovation
CG7	What are your views on the impact of ChatGPT on research methodologies and processes?	Research Methodology
CG13	What are your concerns about the accuracy and reliability of the information produced by ChatGPT?	Information accuracy and reliability
CG16	What do you think about the contribution of ChatGPT to academic publication processes, especially in the literature review and manuscript writing stages?	Literature review and article writing
CG19	Is there a general acceptance or resistance among your colleagues to the use of ChatGPT and similar AI tools? What are the general trends in this regard?	Acceptance within the scientific community
CG20	Based on your own experience, what are your suggestions on how ChatGPT can be used most efficiently by scientists?	Personal perspective and advice
CG22	When you describe the contribution of ChatGPT to your research, what do you see as the most important advantages of using this technology?	Advantages
CG27	Based on what we have discussed so far, how can we summarize the contribution of ChatGPT to scientific research?	Contribution to scientific research
CG30	What are the biggest challenges or limitations you face when using ChatGPT?	Challenges and limitations

The questions generated by CG demonstrate adequate proficiency in grammar and theoretical understanding. CG explicitly articulated the concept of the questions she formulated and appropriately devised the open-ended inquiries. CG generated inquiries regarding themes including the role in scientific research, data analysis and hypothesis testing, creativity, education and learning, ethics and reliability, access to scientific knowledge, methodology, interdisciplinary collaboration, future predictions, personal experiences, purpose of use, frequency of use, literature review and article composition, innovative approaches, scientific acceptance, as well as advantages and disadvantages. The themes in the questions created by CG are deemed suitable for the research inquiry.

[Figure 4](#) shows the themes of the questions prepared by R1 and the themes of the questions prepared by CG. R1 and CG produced common questions in eight themes. While R2 produced queries in two themes CG did not address, CG produced questions in 18 themes R1 did not address.

Figure 4.

Themes addressed in the prepared questions



In the concluding phase of formulating interview questions, R1 utilized the interview questions (Q1–Q13) with the question pool generated by ChatGPT. R1 employed 13 questions in his research to determine the final interview questions (Supplement 2). Analysis of the questions formulated by R1 reveals that he employed his questions, utilized them in conjunction with the CG, and relied solely on the CG's questions. R1 utilized six of his questions, six from CG, and one question each from his own and CG's set, totaling 13 questions prepared. R1 utilized questions Q6, Q9, Q12, and Q13, which CG wrote after modifying the content and grammar. By CG's recommendations, R1 modified the content of questions Q3 and Q4 and made grammatical revisions to questions Q1, Q3, Q4, Q7, and Q10 based on CG's inquiries. Table 1 presents examples of R1's operations concerning the queries.

Table 1

Final interview questions of the first researcher

No	Question	Question Source	Arrangements	Theme
Q1	What are your thoughts on using ChatGPT in scientific research as a scientist?	M1	In the questions prepared by CG, the expression "in science" was replaced with the expression "in your scientific research," as it was inspired by the concept of "in your scientific research."	Intended use
Q6	What are the challenges you have encountered during the use of ChatGPT?	CG30	The question proposed by CG was simplified.	Difficulty of use
Q12	<p>In which steps and how do you use ChatGPT in the scientific research process?</p> <p>Probe: In which steps and how do you use ChatGPT in the methodology determination process?</p> <p>Probe: In which steps and how do you use ChatGPT in the literature review process?</p> <p>Probe: In which steps and how do you use ChatGPT in the data analysis process?</p> <p>Probe: Which steps are needed, and how do you use ChatGPT in the data collection?</p> <p>Probe: In which steps and how do you use ChatGPT in the data interpretation process?</p>	M10- CG2- CG7- CG16	CG's questions were added to this question as probe questions. The correction suggested by CG was included in the question.	<p>Scientific research process</p> <p>Literature review,</p> <p>Data analysis,</p> <p>Data collection,</p> <p>Data interpretation,</p> <p>Methodology selection</p>

R1 completed 13 interview questions for his research in cooperation with CG. He directly benefited from 10 of the 30 questions created by CG. He also developed the interview questions by indirectly benefiting from CG's suggestions and questions. R1's final interview questions included the themes of the purpose of use, advantages, disadvantages, user experience, presenting new ideas, concerns, ethics, reliability, future vision, scientific research process, literature review, data analysis, data collection, data interpretation, and methodology selection, acceptance within the scientific community, and difficulty of use.

Findings for the Second Researcher

The Second Researcher (R2) has prepared 11 main questions (O1...O11) and three follow-up questions for one question for the research problem of ‘What are scientists’ thoughts on using ChatGPT?’ The researcher has prepared questions addressing themes such as literature review, defining the research problem, identifying gaps in the literature, selecting a methodology, providing theoretical support, determining the sample or participants, choosing data collection tools, conducting data analysis, interpreting data, ethical concerns, and researcher biases. The questions prepared by the second researcher consist of descriptive inquiries that outline the steps of the scientific research process regarding scientists’ use of ChatGPT. The questions prepared by R2 are included in Figure 5.

Figure 5.

Questions prepared by the second researcher

	Prepared Questions	Theme
O1	Do you think ChatGPT will make it easier for you to search the literature? Why?	Do a literature search
O2	Do you think ChatGPT can identify your problems in your work? Why?	Determining the research problem
O3	Do you think ChatGPT can fully identify the gap in the literature regarding your study? Why?	Recognizing the gap in the literature
O4	Do you believe that ChatGPT will form your theoretical foundation? Why?	Providing theoretical support
O5	Do you think ChatGPT will help you determine your research method? Why?	Method determination
O6	Do you think ChatGPT can guide you in determining your sample or participants? Why?	Sample/Participant Determination
O7	Do you think ChatGPT can build your data collection tools? Why?	Data collection tools
O8	Do you believe that ChatGPT can analyze your data? Why?	Data analysis
O9	Do you think ChatGPT can guide you in interpreting your data? Why?	Data Interpretation
O10	Do you think that the section created by ChatGPT will constitute plagiarism? Why?	Ethical Concern
O11	Do you think there will be differences in how scientists navigate ChatGPT? Why? Probe: Do you think that two different scientists would create a different/similar introduction using ChatGPT on the same subject? Why? Probe: Do you think that two different scientists would create different/similar questions for a data collection tool using ChatGPT on the same subject? Why? Probe: Do you think that two different scientists using ChatGPT on the same subject will create the results-discussion section differently/similarly? Why?	Investigator differences

Second Researcher’s Process for Preparing Interview Questions with ChatGPT

After preparing the questions, R2 had ChatGPT formulate his questions. A summary of the correspondence between R2 and CG is provided below.

Figure 6.*R2's correspondence*

R2: I want to investigate scientists' thoughts on the use of ChatGPT. Can you formulate interview questions in this context?
CG: Sure, here are some questions you can use to ask scientists for their opinions about the use of ChatGPT:
Questions numbered (1, 2,... 12) were generated.
R2: Can you add questions that relate the scientist's scientific work process to the use of ChatGPT?
CG: Questions numbered (13, 14,... 24) were generated.
R2: Do you think that two different scientists using ChatGPT on the same topic would create a different/similar conclusion-discussion part? Why?
CG: I think that if two different scientists create the conclusion-discussion part using ChatGPT on the same topic, these sections can be both similar and different. The reasons for this can be the following: (Here, the process was stopped midway because he commented on the topic instead of creating a question.)
R2: Write questions that bring out the differences in the directions that scientists give when using ChatGPT.
CG: Questions numbered (25, 26,... 40) were generated.
R2: Write questions about the differences that will emerge in a scientific study that two different scientists want to create on the same topic using ChatGPT.
CG: Questions numbered (41, 42,... 56) were generated.
R2: Generate questions about the similarities and differences between two different scientists' use of ChatGPT.
CG: Questions numbered (57, 58,...74) were generated.
R2: Generate questions about whether more than one scientist would use ChatGPT in the same way.
CG: Questions numbered (75, 76,...92) were generated. These questions can be used to understand the similarities and differences in the way multiple scientists use ChatGPT. This can help users review their approach and make potential improvements.

R2 generated a total of 92 questions using CG to prepare interview questions. Initially, R2 outlined the research question and generated questions related to it. Then, he made more specific requests to produce questions in his commands. After question CG24, the researcher wanted to create questions focusing on 'the differences in how two different scientists use ChatGPT on the same topic,' but he could not obtain the types of questions he wanted. Therefore, he wrote prompts with content similar to CG's in different ways. For each prompt written by R2, CG generated 12 questions. The questions were classified according to their theme, and two alternative questions were produced for each. Additionally, CG wrote an informative paragraph at the end of the questions it generated. All the questions created by CG are included in [Supplement 3](#). For example, the questions generated by CG are shown in Figure 7.

Figure 7.

Questions prepared by the second researcher for CG

	Prepared Questions	Theme
CG1	What do you think about ChatGPT, and what role do you expect such AI tools to play in the scientific world?	General Introductory Questions
CG2	How do you evaluate the use of ChatGPT in scientific research?	General Introductory Questions
CG3	What kind of contribution do you think ChatGPT can make to scientific data analysis and research processes?	Technical Assessment Questions
CG4	What do you think about the accuracy and reliability of such AI systems?	Technical Assessment Questions
CG17	How do you intend to use ChatGPT to process or analyze large data sets?	Data Processing and Analysis
CG19	What impact can ChatGPT have on the scientific article writing, editing, or publication process?	Publishing and Communication
CG39	How do you approach ethics and responsibility issues when using ChatGPT?	Ethics and Responsibility
CG44	How do you expect ChatGPT to contribute to your hypothesis generation and theory development processes?	Hypothesis and Theories
CG48	What different perspectives can ChatGPT provide in interpreting the results?	Interpretation of Results
CG67	What are the main challenges and limitations you encounter when using ChatGPT?	Challenges and Limitations
CG83	How do you rate the responses you receive from ChatGPT?	Evaluation of Responses

Upon examination of Figure 7, it is evident that the questions generated by CG demonstrate an adequate level of grammatical accuracy and theoretical understanding. CG explicitly articulated the topic underlying the questions and formulated them in an open-ended and comprehensible fashion. The themes explored by CG encompass intended use, interaction and collaboration, education and learning, ethics, future vision, scientific research process, methodology, data analysis, hypotheses, data interpretation, theoretical support, innovation and problem-solving, publication and communication, and education and training. The subjects included mentoring, scientific creativity and discovery, engagement with artificial intelligence, sources of data and information, difficulties and solutions, and constraints. These themes might be articulated as inquiries pertinent to the specified research subject. Due to R2's inability to obtain the desired questions, CG generated other questions aligned with comparable themes based on the new prompts he composed. Despite the apparent range in question types, CG has exhibited repetitiveness in specific themes, albeit not identical. In the following example, CG employed a consistent theme in the Data Collection and Analysis Process theme. In the formulated questions, two inquiries, CG45 and CG17, are posed differently concerning their application in data analysis. Moreover, a comparable scenario can be observed with CG46 and CG18 regarding their application in extensive data sets.

Figure 8.

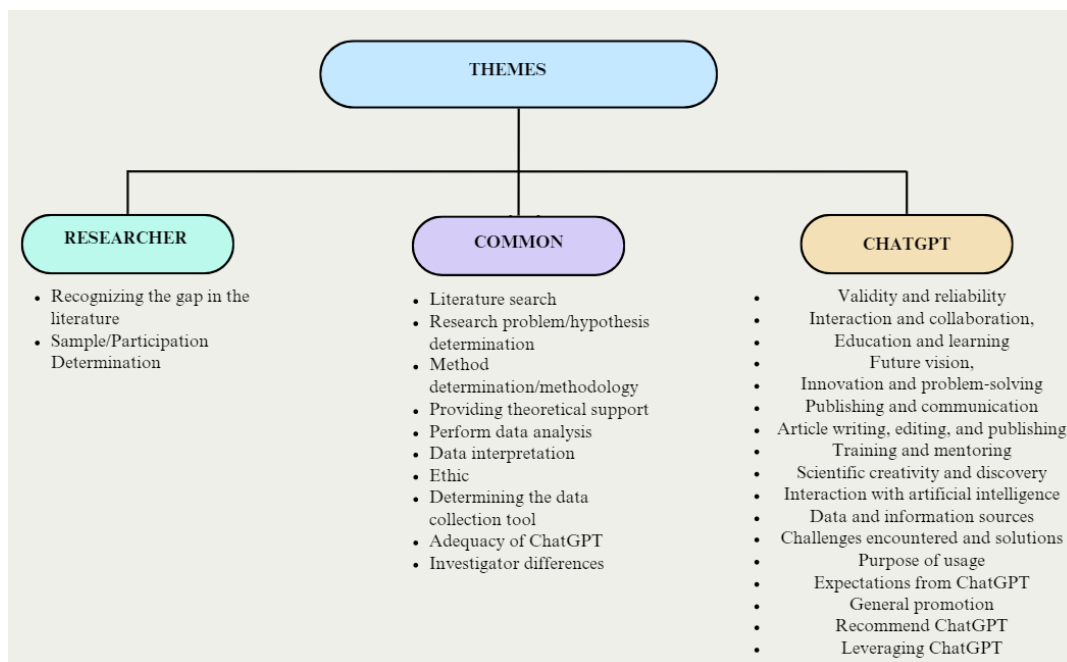
Similar Question Examples

<p style="text-align: center;">Data Processing and Analysis</p> <p>CG17. How do you intend to use ChatGPT to process or analyze large data sets?</p> <p>CG18. How do you think ChatGPT can benefit the process of extracting information from complex data sets?</p>
<p style="text-align: center;">Data Processing and Analysis</p> <p>CG45. What type of data do you intend to collect and analyze using ChatGPT?</p> <p>CG46. What differences do you foresee in ChatGPT's role in the data collection and analysis process?</p>

Figure 9 reveals the themes of the questions formulated by R2 alongside those developed by CG. R2 and CG produced shared inquiries across ten themes. R2 generated questions on two themes not addressed by CG, whereas CG formulated questions on 17 themes not mentioned by R2.

Figure 9.

Themes addressed in the prepared questions



In the concluding phase of formulating interview questions, R2 employed a blend of his inquiries and the question pool produced by ChatGPT. After completing the interview questions, R2 employed 29 questions in his research (Supplement 4). An examination of the inquiries formulated by R2 identifies three categories: those utilized without alterations, those employed alongside his inquiries and CG's queries, and those that solely incorporated CG's questions. Of the 29 questions prepared by R2, 10 were original, while 19 were derived from CG's questions. R2 delineated the questions numbered Q2, Q3, Q5, Q6, Q15, Q16, and Q17, which CG formulated into distinct

inquiries due to their integrated presentation. Table 2 presents examples of the modifications implemented by R2 in the questions.

Table 2

The second researcher's final interview questions

No	Question Asked	Question Source	Edits Made	Theme
Q1	Will ChatGPT make it easier for you to search the literature? Why?	O1	The question has not been changed	Use in the literature review
Q2	What kind of contribution can ChatGPT make to data analysis?	CG3	The question prepared by CG was, "What kind of contribution do you think ChatGPT can make in data analysis?" The question was divided into two separate questions because the data collection and analysis processes differed.	Data Analysis
Q3	What kind of contribution can ChatGPT make to data collection processes?			Data collection process

Table 2 indicates that R2 has completed all procedures and finalized the 29 interview questions for his research in collaboration with CG. He employed 19 of the 92 questions developed by CG. R2 elaborated on themes not covered in his questions through the use of CG, thus refining the final form of his inquiries. The final interview questions for R2 encompass themes including literature review usability, data analysis, data collection, identification of literature gaps, researcher collaboration, teamwork impact, theoretical foundations, educational learning processes, ethics, sample and participant determination, future vision, adequacy of CG, innovation, problem-solving, article writing and editing, publication, researcher differences, scientific creativity and discovery, interaction with artificial intelligence, encountered challenges and solutions, method selection, definition of research problems or hypotheses, and data interpretation.

Finding for the Third Researcher

The Third Researcher (R3) has prepared six main questions (§1...§6) and two follow-up questions for the research problem of 'What are scientists' thoughts on using ChatGPT?' R3 has prepared questions regarding themes such as knowledge about ChatGPT, user experience, usage, purpose of use, contributions of ChatGPT, and advantages and disadvantages. The questions prepared by R3 consist of descriptive inquiries that characterize scientists' use of ChatGPT across various fields. The questions prepared by R3 are listed in Figure 10.

Figure 10.

Questions prepared by the third researcher

Prepared Questions	Theme
§1 Do you know about artificial intelligence/ChatGPT? Explain.	Getting information about ChatGPT
§2 Have you used any artificial intelligence tools for your research before? Probe: If yes, for what purpose did you use it? Probe: At what stage did you use it?	User experience and intended use
§3 What is your perspective on the use of artificial intelligence/ChatGPT in scientific research?	Using ChatGPT
§4 Do you think that artificial intelligence will help researchers when conducting scientific research? Probe: If yes, how can it contribute? Probe: If not, why?	ChatGPT's contribution
§5 What are the advantages of using artificial intelligence/ChatGPT in the scientific research process?	Advantages
§6 What are the disadvantages of using artificial intelligence/ChatGPT in the scientific research process?	Disadvantages

Third Researcher's Process for Preparing Interview Questions with ChatGPT

After R3 prepared the questions, she had CG prepare his questions. The summary of R3's correspondence with CG is below;

Figure 11.

R3's correspondence

R3: Hello. I am an academic. I'm curious about what scientists think about the use of ChatGPT, and I'm looking for an answer. That's why I'm doing research. In my research, "What do scientists think about the use of ChatGPT?" The answer to the question is sought. I want to collect the data for the research by interviewing. Can you prepare interview questions so that I can find answers to my research questions?

CG: Hello! For an academic study, addressing the topic "scientists' thoughts on the use of ChatGPT" could be a very interesting and valuable research area. When preparing interview questions for your research, it is important to delve deeper into participants' experiences with ChatGPT and understand the impact of this technology on their scientific work. Below are some suggested questions addressing various aspects of this topic: Questions numbered (1, 2, 3,...15) have been prepared.

R3: Thank you. Under some headings, it seemed like moving away from the question that the topic was "What do scientists think about the use of ChatGPT?". Can you prepare questions again in a way that will directly answer this question and be more precise?

CG: Questions numbered (16, 17, 18,... 29) have been prepared.

R3: The people we ask questions about may have used ChatGPT before or may have never used it. I think this should be taken into consideration, and both different groups should be brought together in the middle. Can you prepare again accordingly?

CG: Questions numbered (30, 31,...37) have been prepared.

R3: Ok. Now, can you write by ordering and simplifying without categorizing?

CG: Questions numbered (38,...45) have been prepared.

R3: Even so, I didn't like it. :(

CG: Thank you for your previous feedback, and I apologize for not meeting your expectations. Let's rearrange the questions in a better way: Questions numbered (46,... 53) have been prepared. This version offers a simpler and more direct approach compared to previous proposals. I hope it meets your expectations better this time.

R3 used CG to prepare interview questions, producing 53 questions. R3 initially introduced herself, specified the data collection tool, explained the research question,

and generated questions regarding it. She asked to make new questions after the first ones. R3 used more friendly language than R1 and R2. R3 requested arrangements from CG on issues such as moving away from the topic, participants' experience, and simplification. She stated that she did not like the parts in CG's edits and requested re-editing.

CG made various suggestions to R3. CG stated which theme the questions she generated belonged to and produced two alternative questions for each. He made arrangements according to R3's request and apologized for the incorrect feedback. Additionally, CG wrote an informative paragraph about the questions she generated at the end of the questions. All of the questions produced by CG are included in [Supplement 5](#). Examples of questions generated by CG are given in Figure 12.

Figure 12.

Questions prepared by the third researcher for CG

	Prepared Questions	Theme
CG1	How often and for what purposes do you use ChatGPT?	Purpose of usage
CG3	What are the biggest challenges and obstacles you encounter when using ChatGPT?	Challenges encountered
CG4	How do you use ChatGPT in your scientific research or publication process?	The scientific research process, publishing
CG5	What are the implications of ChatGPT on your scientific research methods or data analysis processes?	Research method, data analysis
CG10	Do you have ethical concerns about using ChatGPT? What are these concerns, if any?	Ethic
CG24	How do you evaluate the accuracy and reliability of the information produced by ChatGPT?	Validity and reliability
CG27	What approach do you take to attribution and citing when using information obtained from ChatGPT?	Reference and attribution
CG28	What expectations do you have for ChatGPT's future role in science?	future vision
CG31	In the context of whether or not you have used ChatGPT, what are your general perceptions and expectations of the role this technology can play in the field of science?	Perception and expectation
CG33	What do you think about ChatGPT's potential to increase effectiveness and efficiency in research processes, especially in areas such as data collection, literature review, or hypothesis development?	Data collection, literature review, and hypothesis development
CG41	How do you evaluate the contribution of ChatGPT to research processes?	ChatGPT's contribution

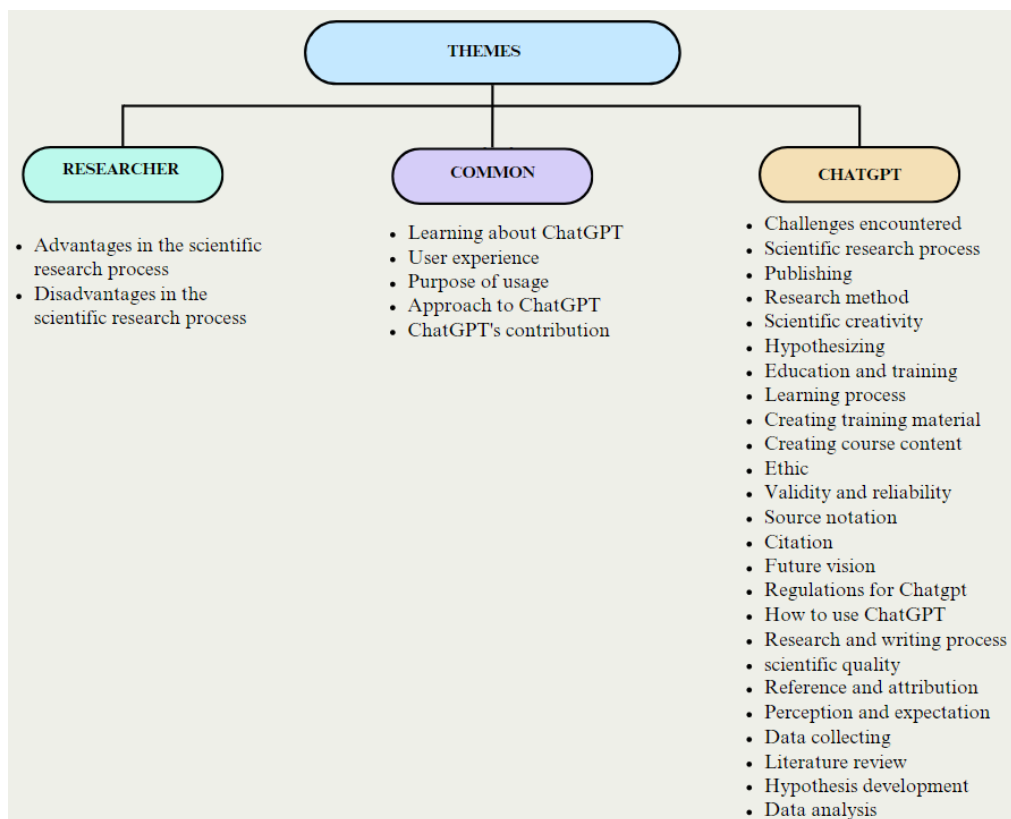
The questions produced by ChatGPT demonstrate a satisfactory standard of grammar and theoretical understanding. ChatGPT has explicitly articulated the themes for which it formulated the questions, presenting them in a comprehensible manner to be open-ended. The inquiries formulated by ChatGPT encompass a diverse array of themes, including intended usage, user experience, challenges faced, scientific research methodology, publication processes, research methodologies, data analysis, data collection, scientific creativity, hypothesis development, education and pedagogy, learning processes, creation of educational materials and course content, ethics, validity and reliability, amendments regarding ChatGPT, utilization of ChatGPT, citation and referencing, future perspectives, attitudes towards ChatGPT, and prospective visions. These themes can be characterized as inquiries into the requisite competency pertinent to the research question. Due to R3's failure to acquire the intended queries, ChatGPT

has formulated alternative inquiries based on analogous themes to the revised prompts provided by R3.

Upon examining Figure 13, the topics of the questions formulated by R3 and those devised by CG are evident. R3 and CG produced shared inquiries spanning five themes. R3 generated inquiries on two issues not addressed by CG, whereas CG formulated questions on 25 themes not referenced by R3.

Figure 13.

Themes mentioned in the prepared questions



In the last round of formulating the interview questions, R3 utilized both his prepared questions and the question pool generated by ChatGPT. R3 employed eight inquiries in his research to settle the interview questions (Supplement 6). Upon examination of the questions formulated by R3, it is evident that he employs them unchanged, utilizes them in conjunction with CG, and exclusively utilizes CG's questions. R3 formulated three questions from his inquiries, three from CG's, and two from his and CG's queries. R3 has divided the questions formulated by ChatGPT, specifically Q2, Q3, Q5, Q6, Q15, Q16, and Q17, into distinct inquiries due to their integrated presentation. Table 3 illustrates the procedures executed by R3 on the inquiries.

Table 3.

Final interview questions from the third researcher

No	Question Asked	Question Source	Edits Made	Theme
Q1	Do you know about artificial intelligence/ChatGPT? Explain.	Ş1	No changes have been made to the question.	Learning about ChatGPT
Q2	Have you used ChatGPT before? Probe: What kind of results did you get from this experience?	Ş2, CG38	R3 made a grammatical change in the research question and revised its probe.	User experience
Q8	Do you have ethical and reliability concerns about using this technology in science?	CG10, CG11	Two questions were combined and asked as a single question.	Ethics and reliability

R3, who completed all the procedures according to Table 3, completed the eight interview questions he will use in his research in cooperation with CG. She directly benefited from six of the 53 questions CG created. R3's final interview questions included the themes of knowledge about ChatGPT, user experience, the purpose of use, approach to CG use, way of using CG, ease and difficulties in use, advantages and disadvantages, ethics, and reliability.

Discussion

Content of the Prepared Questions

Researchers have developed questions to investigate the utilization of ChatGPT by scientists, emphasizing themes such as the purpose of use, user experience, ethical considerations, concerns, future perspectives, auxiliary tool functions, the scientific research process, literature review, data analysis, data collection, data interpretation, identification of literature gaps, definition of research problems, methodology determination, researcher variability, awareness of ChatGPT, its applications, contributions, and the associated advantages and disadvantages. The themes of the prepared questions align with studies in the literature regarding the application of ChatGPT in scientific contexts. Costa (2023), Dengel et al. (2023), Gill and Kaur (2023), Hill-Yardin et al. (2023), Huang and Tan (2023), Khlaifi et al. (2023), Obaid et al. (2023), Sun (2023), Şen et al. (2023), Tang et al. (2023). R1 and R3 developed questions focused on the general application of ChatGPT in scientific contexts, whereas R2 created questions that addressed the scientific research process. The flexible nature of qualitative research design allows each researcher to formulate questions that reflect their perspective (Yücel & Kızıkan, 2023). ChatGPT and the researchers formulated questions based on the themes present in the scientific literature. This indicates that both

parties can formulate questions by engaging with pertinent and contemporary issues related to the topic. Nonetheless, including similar themes in the questions prepared by the CG for each researcher in our study proves that the CG can formulate questions impartially. This study posits that researchers may hold varying perspectives on a topic due to their distinct past experiences. The aforementioned perspectives will enhance research grounded in the interpretive paradigm; however, the CG may operate independently of the researchers.

Question Preparation Duration and Language

The analysis of the themes presented in the questions formulated by ChatGPT indicates alignment with topics identified in existing literature regarding the application of ChatGPT in scientific contexts (Costa, 2023; Gill & Kaur, 2023; Hill-Yardin et al., 2023; Huang & Tan, 2023; Obaid et al., 2023; Qasem, 2023; Sun, 2023; Şen et al., 2023; Tang et al., 2023; Xiou & Zhi, 2023). ChatGPT has produced a variety of questions across both standard and unique themes for researchers. The questions formulated by ChatGPT that aligned with the theoretical framework were straightforward, grammatically accurate, and designed to be open-ended for participant responses. In this context, ChatGPT has fulfilled the requirements for developing qualitative interview questions (Ezberci-Çevik, 2023; Creswell & Creswell, 2018; Patton, 2018). Moreover, its text-generation capability demonstrates that the questions were articulated in clear and understandable language (Bordt & von Luxburg, 2023; Handa et al., 2023; Kızıldağ, 2023; Lee et al., 2023). ChatGPT, similar to the researchers, adhered to the standards of grammar and clarity required for effective communication. This indicates that ChatGPT, similar to the researchers, adjusted to methodological frameworks and formulated questions that enabled participants to articulate their thoughts openly.

Given the duration typically associated with the preparation of interview questions in qualitative research, it is crucial that CG effectively develop these questions in a significantly reduced timeframe. The language employed by the researcher in the conducted procedures does not disadvantage the researcher. Multiple studies corroborate this finding, indicating that there are no challenges associated with the use of ChatGPT across various languages (Şen et al., 2023; Wang et al., 2023). This study advocates using ChatGPT to prepare interview questions, highlighting advantages such as efficient time management, appropriate language use, and comprehensive content generation. The authors of this study contend that researchers ought to compare their prepared questions with those generated by ChatGPT to finalize the questions. The comparison process is significant as it highlights the utility of ChatGPT in this context.

User Experience

R1, who utilized CG more extensively than the other two researchers, experienced tremendous advantages from its features. R1 achieved the desired outputs more rapidly during his conversation while utilizing CG. He trained CG in the desired direction using CG's document reading feature (OpenAI, 2024). In contrast to R2 and R3, R1 employed ChatGPT to evaluate the final version of the prepared questions and establish their

sequence. R2, with limited experience using ChatGPT, made multiple attempts to formulate prompts to obtain the desired outputs. R3 employed a more personal language in interactions with ChatGPT compared to R1 and R2 and modified ChatGPT's responses as needed to generate new outputs. Analysis of the interview question preparation process among R1, R2, and R3, about their experience with CG, revealed that R1, possessing greater familiarity with CG, could identify desired interview questions with fewer prompts and effectively utilize various features of CG. Despite R2 and R3 having less usage experience than R1, they were able to acquire the desired interview questions through the use of additional prompts. Lee and Park (2023) found that ChatGPT literacy notably enhances user satisfaction and partially impacts the information acquisition process. Experience with CG enhances the researcher's ability to formulate interview questions effectively. Researchers with limited experience in usage can effectively utilize CG when formulating interview questions. This study emphasizes that researchers should continue utilizing ChatGPT despite their limited experience.

Benefiting from ChatGPT

CG addressed the themes each researcher prepared and formulated questions related to further themes. CG identified the theme associated with the questions he presented to the researchers and various alternatives. The broader range of themes in CG can be attributed to its training on a more extensive data set. Researchers conducted a literature review and formulated their questions before developing the interview questions; however, CG possesses resources that researchers cannot match in this context (OpenAI, 2024). In this context, CG offers researchers a perspective by addressing themes previously explored by them. This study identifies both similarities and differences between ChatGPT and the questions formulated by the researcher. This situation is advantageous as it offers data richness and diverse perspectives inherent in qualitative research.

The final questions prepared by the researchers indicate that CG's inquiries provided both direct and indirect benefits. The researchers revised their questions and the control group's questions regarding content and grammar, utilized the control group for comparative purposes, and incorporated additional questions on themes not addressed in their final inquiries by employing the control group. Researchers actively utilize CG in the preparation and finalization of interview questions. The authors suggest that CG may aid researchers in formulating interview questions due to its capacity for generating human-like language and executing complex tasks (Lund & Wang, 2023).

Results

This research has concluded that ChatGPT can be utilized as a valuable auxiliary tool by scientists during their research processes, particularly in preparing interview questions. The study's findings demonstrate that, by leveraging its extensive dataset and various features, ChatGPT can generate questions with the diversity and depth required

by researchers. This allows researchers to broaden their perspectives and create more comprehensive interview questions. Although various studies have identified limitations of ChatGPT, such as presenting outdated or incomplete information, lack of contextual awareness, issues with maintaining context in extended conversations, limited domain-specific expertise, inability to interact with external systems, limitations in different languages, limited creativity, and overgeneralization limitations, the results of this study do not encounter these limitations (AlZu'bi, Mughaid, Quiam, & Hendawi, 2024; Ray, 2023; Rice, Crouse, Winter, & Rice, 2024). Researchers were able to prepare questions in their native language, Turkish, that were current, contextually consistent, domain-specific, creative, and tailored to their specific requests throughout the process. Additionally, it was observed that ChatGPT could provide consistent responses to previous commands regardless of the length of the conversation and utilize PDFs uploaded by researchers. In this context, the researchers argue that these limitations of ChatGPT can be overcome when used effectively in preparing interview questions.

Researchers' experiences have shown that the use of ChatGPT can be flexible according to users' needs and expectations, and there are many ways in which researchers can benefit from ChatGPT while developing their questions. Notably, more experienced researchers can utilize the opportunities offered by ChatGPT more efficiently, preparing more effective questions with less effort. Moreover, the similarities and differences between the questions prepared by ChatGPT and those by researchers highlight that ChatGPT will not replace human researchers but can significantly contribute to the research process. ChatGPT can assist researchers in broadening their perspectives and developing questions from different angles, enhancing their research quality.

This research demonstrates that CG supports scientific inquiry significantly, particularly during the qualitative research and interview question preparation phases. The support offered by CG enables researchers to utilize their time more efficiently, formulate their research questions more thoroughly, and enhance the quality of the data collected in their studies.

Limitations

The limitations of this study primarily stem from linguistic, methodological, and sample-related constraints. Since the research was conducted in Turkish, the native language of the researchers, the findings and interpretations are inherently shaped by linguistic and cultural nuances specific to this context. Additionally, the interview questions were designed by the researchers within the framework of their chosen research topic, which may have influenced the scope and focus of the inquiry. Furthermore, the study was based on the personal experiences of only three researchers, limiting the generalizability of the findings and necessitating caution in drawing broader conclusions.

Recommendations

The results of this study indicate that CG is an excellent instrument for formulating interview questions in qualitative research. Both seasoned and novice qualitative researchers can utilize the CG as an advantageous resource for formulating interview questions. The CG is trained on data sets and algorithms, so in some cases, it may provide incomplete or outdated information. Researchers should critically evaluate and validate the information obtained, considering such limitations.

Qualitative research frequently involves sensitive subjects; thus, safeguarding participants' privacy and ensuring data confidentiality is a crucial ethical obligation. In AI-assisted research, particularly when utilizing ChatGPT (CG) for generating interview questions, it is essential to ensure that the questions avoid language that may be intrusive, coercive, or leading. Researchers should rigorously evaluate AI-generated questions for methodological soundness and adherence to ethical principles to mitigate potential harm to participants. Questions must not infringe upon participants' privacy, subject them to distressing or manipulative circumstances, or undermine the principle of voluntary participation in research. AI models are trained on datasets that may reflect particular cultural or socio-political contexts, potentially resulting in biased or exclusionary language. Researchers must systematically review, modify, and evaluate the ethical validity of AI-generated content prior to implementation to mitigate ethical risks. To ensure ethical sensitivity in qualitative research, researchers must avoid dependence on AI-generated questions. Instead, they must engage in an ongoing process of ethical oversight, critical evaluation, and necessary revisions to uphold research integrity and safeguard participant well-being.

Researchers utilizing ChatGPT (CG) or analogous AI tools must explicitly disclose this in the methodology portion of their studies and furnish a comprehensive account of the AI integration within the research process. This should encompass the objectives and parameters of CG utilization, the degree of human supervision and alterations made to AI-generated content, the data sources and training methodologies that inform the AI model, and the constraints of the algorithm. Researchers must specify if CG was utilized solely as a supportive instrument or if it actively contributed to data collection while highlighting the impact of human intervention on the results. Considering that AI-generated information may exhibit biases or contextual inaccuracies, researchers must elucidate how these constraints were addressed and what validation procedures were implemented to guarantee the reliability and accuracy of the findings. Enhancing openness in AI-assisted research requires a methodical explanation of CG utilization, which will bolster the academic rigor of the study and foster a critical awareness of AI's role in scientific inquiry.

The CG correspondence in this study was conducted in the researchers' native language (Turkish). By utilizing the multilingual capacity of ChatGPT, researchers can prepare interview questions in different languages and cultural contexts. However, additional research and expert opinions are important to understand the specific dynamics of each

language and culture. Since researchers with more experience in using the CG can benefit more efficiently from the opportunities offered, it is recommended that researchers familiarize themselves with the use and features of the CG before preparing interview questions. Preparing interview questions for a single study topic can be considered a limitation. For this reason, research can be conducted on the ability of CG to prepare interview questions for different topics.

References

- Ali, R., Tang, O. Y., Connolly, I. D., Fridley, J. S., Shin, J. H., Sullivan, P. L., . . . Asaad, W. F. (2022). Performance of ChatGPT, GPT-4, and Google Bard on a neurosurgery oral boards preparation question bank. *Neurosurgery*, 93(5), 1090–1098. doi:10.1227/neu.0000000000002551
- Adetayo, A. J., Enamudu, A. I., Lawal, F. M., & Odunewu, A. O. (2024). From text to video with AI: the rise and potential of Sora in education and libraries. *Library Hi Tech News*. Available at: <https://www.emerald.com/insight/content/doi/10.1108/lhtn-02-2024-0028/full/html> (accessed 23 February 2025)
- AlZu'bi, S., Mughaid, A., Quiam, F., & Hendawi, S. (2024). Exploring the capabilities and limitations of ChatGPT and alternative big language models. In *Artificial Intelligence and Applications*, 2(1), 28-37. <https://doi.org/10.47852/bonviewAIA3202820>
- Ballena, C. T. (2021). Qualitative research interviewing: Typology of graduate students' interview questions. *Philippine Social Science Journal*, 4(3), 96-112. <https://doi.org/10.52006/main.v4i3.376>
- Brett, B. M., & Wheeler, K. (2021). *How to Do Qualitative Interviewing*. SAGE.
- Brinkmann, S. (2021). Görüşme. N. K. Denzin, & Y. S. Lincoln (Ed.). *SAGE Nitel Araştırmalar Kılavuz Kitabı* (S. Yeşilçınar, & G. Ekici, Trans.). Vizetek.
- Brinkmann, S., & Kvale, S. (2014). *InterViews: Learning the Craft of Qualitative Research Interviewing* (3 b.). SAGE.
- Cai, L., Msafiri, M. M., & Kangwa, D. (2024). Exploring the impact of integrating AI tools in higher education using the Zone of Proximal Development. *Educ Inf Technol*. <https://doi.org/10.1007/s10639-024-13112-0>
- Chang, D. H., Lin, M. -C., Hajian, S., & Wang, Q. Q. (2023). Educational design principles of using AI Chatbot that supports self-regulated learning in education: Goal setting, feedback, and personalization. *Sustainability* (Switzerland), 15(17), 12921. <https://doi.org/10.3390/su151712921>
- ChatGPT (2024). *ChatGPT nedir?*. Available at: <https://chat.openai.com/chat> (accesed 9 January 2024)
- Costa, A. P. (2023). Qualitative research methods: Do digital tools open promising trends? *Revista Lusófona de Educação*(59), 67-76. <https://doi.org/10.24140/issn.1645-7250.rle59.04>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. SAGE Publications.
- Cudzik, J., Nyka, L., & Szczepański, J. (2024). Artificial intelligence in architectural education - green campus development research. *Global Journal of Engineering Education*, 26(1), 20–25. Available

- at:<https://www.scopus.com/record/display.uri?eid=2-s2.0-85187284166&origin=inward&txGid=756621c01ab465efde9fb2d5e7ac0e80> (accessed 23 February 2025)
- De Winter, J. (2023). Can ChatGPT pass high school exams on English language comprehension? *International Journal of Artificial Intelligence in Education*. <https://doi.org/10.1007/s40593-023-00372-z>
- Dengel, A., Gehrlein, R., Fernes, D., Görlich, S., Maurer, J., Pham, H. H., . . . Eisermann, N. D. (2023). Qualitative research methods for large language models: Conducting semi-structured interviews with ChatGPT and BARD on computer science education. *Informatics*, 10(4), 78. <https://doi.org/10.3390/informatics10040078>
- Ezberci-Çevik, E. (2023). Görüşme (Mülakat). O. Bektaş, & T. G. Şahin (Ed.), *Nitel Araştırma Süreci ve Uygulamaları*. Asos Yayınları.
- Fleming, S. L., Morse, K., Kumar, A. M., Chiang, C. C., Patel, B., Brunskill, E. P., & Shah, N. (2023). Assessing the Potential of USMLE-Like Exam Questions Generated by GPT-4. *medRxiv*. <https://doi.org/10.1101/2023.04.25.23288588>
- Gill, S. S., & Kaur, R. (2023). ChatGPT: Vision and challenges. *Internet of Things and Cyber-Physical Systems* 3(3), 262-271. <https://doi.org/10.1016/j.iotcps.2023.05.004>
- Given, L. M. (2021). *100 Soruda Nitel Araştırma*. (A. Bakla , & İ. Çakır, Trans.) Anı Yayıncılık.
- Hà, T. A., & Nguyễn, M. Q. (2023). Research on making interview questions among Vietnamese students: difficulties, reflection, and solutions – a perspective of learning by doing. *Reflective Practice*, 25(1), 40-57. <https://doi.org/10.1080/14623943.2023.2284324>
- Hamilton, L., Elliot, D., Quick, A., Smith, S., & Choplin, V. (2023). Exploring the use of AI in qualitative analysis: A comparative study of guaranteed income data. *International Journal of Qualitative Methods* (22). <https://doi.org/10.1177/16094069231201504>
- Handa, P., Chhabra, D., Goel, N., & Krishnan, S. (2023). Exploring the role of ChatGPT in medical image analysis. *Biomedical Signal Processing and Control* (86). <https://doi.org/10.1016/j.bspc.2023.105292>
- Hill-Yardin, E. L., Hutchinson, M. R., Laycock, R., & Spencer, S. J. (2023). A Chat(GPT) about the future of scientific publishing. *Brain, Behavior, and Immunity* (110), 152–154. <https://doi.org/10.1016/j.bbi.2023.02.022>
- Huang, J., & Tan, M. (2023). The role of ChatGPT in scientific communication: writing better scientific review articles. *Am J Cancer Res*, 13(4), 1148–1154. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10164801/> (accessed 23 February 2025)
- Khlaif, Z. N., Mousa, A., Hattab, M. K., Itmazi, J., Hassan, A. A., Sanmugam, M., & Ayyoub, A. (2023). The potential and concerns of using AI in scientific research: ChatGPT performance evaluation. *JMIR Medical Education*, 9, e47049. <https://doi.org/10.2196/47049>
- Kızıldağ, H. (2023). Can artificial intelligence become a fairy tale creator/narrator? Chatgpt tales. *Turkish Studies - Language and Literature*, 18(3), 1759-1775. <http://dx.doi.org/10.7827/TurkishStudies.71763>

- Lee, S., & Park, G. (2023). Exploring the impact of ChatGPT literacy on user satisfaction: The mediating role of user motivations. *Cyberpsychology, Behavior, and Social Networking*, 26(12), 913-918. <http://doi.org/10.1089/cyber.2023.0312>
- Lee, U., Jung, H., Jeon, Y., Sohn, Y., Hwang, W., Moon, J., & Kim, H. (2023). Few-shot is enough: exploring ChatGPT prompt engineering method for automatic question generation in English education. *Education and Information Technologies*. <https://doi.org/10.1007/s10639-023-12249-8>
- Lewandowski, M., Łukowicz, P., Świetlik, D., & Barańska-Rybak, W. (2023). An original study of ChatGPT-3.5 and ChatGPT-4 dermatological knowledge level based on the dermatology specialty certificate examinations. *Clinical and Experimental Dermatology*, 11ad255. <https://doi.org/10.1093/ced/llad255>
- Lund, B. D., & Wnag, T. (2023). Chatting about ChatGPT: How may AI and GPT impact academia and libraries? *Library Hi Tech News*, 40(3), 26–29. <https://doi.org/10.1108/LHTN-01-2023-0009>
- Merriam, S. B. (2018). *Nitel araştırma desen ve uygulama için bir rehber*. (S. Turhan, Trans.). Nobel Yayıncılık.
- Morgan, D. L. (2023). Exploring the use of artificial intelligence for qualitative data analysis: The Case of ChatGPT. *International Journal of Qualitative Methods* (22). <https://doi.org/10.1177/16094069231211248>
- Nacaroğlu, O., & Eroğlu, S. (2023). Bireysel Araştırma. O. Bektaş, & T. G. Şahin (Ed). *Nitel Araştırma Süreci ve Uygulamaları* (s. 135-156). Asos Yayınları.
- Obaid, O. I., Ali, A. H., & Yaseen, M. G. (2023). Impact of Chat GPT on scientific research: Opportunities, risks, limitations, and ethical issues. *Iraqi Journal for Computer Science and Mathematics*, 4(4), 13-17. <https://doi.org/10.52866/ijcsm.2023.04.04.002>
- OpenAI. (2024). GPT-4. Available at: <https://openai.com/>; <https://openai.com/research/gpt-4> (accessed 11 January 2024).
- Patton, M. Q. (2018). *Nitel araştırma ve değerlendirme yöntemleri*. (M. Bütün, & S. B. Demir, Trans.) Pegem Akademi.
- Qasem, F. (2023). ChatGPT in scientific and academic research: future fears and reassurances. *Library Hi Tech News*, 40(3), 30–32. Available at: <https://www.emerald.com/insight/content/doi/10.1108/LHTN-03-2023-0043/full/html>
- Ouyang, F., Zheng, L., & Jiao, P. (2022). Artificial intelligence in online higher education: A systematic review of empirical research from 2011–2020. *Education and Information Technologies* (27), 7893–7925. <https://doi.org/10.1007/s10639-022-10925-9>
- Rahaman, M. S., Ahsan, M. T., Anjum, N., Tereno, H. J., & Rahman, M. M. (2023). From ChatGPT-3 to GPT-4: A Significant Advancement in AI-Driven NLP Tools. *Journal of Engineering and Emerging Technologies*, 2(1), 1-11. <https://doi.org/10.52631/jeet.v2i1.188>
- Ray, P. P. (2023). ChatGPT: A comprehensive review of background, applications, key challenges, bias, ethics, limitations, and future scope. *Internet of Things and Cyber-Physical Systems*, 3, 121–154. <https://doi.org/10.1016/j.iotcps.2023.04.003>

- Rice, S., Crouse, S. R., Winter, S. R., & Rice, C. (2024). The advantages and limitations of using ChatGPT to enhance technological research. *Technology in Society*, 76, 102426. <https://doi.org/10.1016/j.techsoc.2023.102426>
- Roberts, R. E. (2020). Qualitative interview questions: Guidance for novice researchers. *The Qualitative Report*, 25(9), 3185–3203.
- Siiman, L. A., Rannastu-Avalos, M., Pöysä-Tarhonen, J., Häkkinen, P., & Pedaste, M. (2023). Opportunities and challenges for AI-assisted qualitative data analysis: An example from collaborative problem-solving discourse data. *Innovative Technologies and Learning* (14099), 87-96. https://doi.org/10.1007/978-3-031-40113-8_9
- Staller, K. M. (2022). Confusing questions in qualitative inquiry: Research, interview, and analysis. *Qualitative Social Work*, 21(1), 227-234. <https://doi.org/10.1177/14733250221080533>
- Sun, H. (2023). Ethical consideration of the use of generative artificial intelligence, including ChatGPT in writing a nursing article. *Child Health Nurs Research*, 29(4), 249-251. <https://doi.org/10.4094/chnr.2023.29.4.249>
- Şen, M., Şahin, T. G., Bektaş, O., & Aydemir, H. (2023). Veri Toplama Aracı Olarak Yaratıcı Dramayı Kullanmak: Fenodrama. O. Bektaş, & T. G. Şahin (Ed.). *Nitel Araştırma Süreci ve Uygulamaları* (s. 255-298). Asos Yayınları.
- Şen, M., Şen, Ş. N., & Şahin, T. G. (2023). A new era for data analysis in qualitative research: ChatGPT! *Shanlax International Journal of Education*, 11(1), 1–15. <https://doi.org/10.34293/education.v11i1S1-Oct.6683>
- Şen, M., Şen, Ş. N., & Şahin, T. G. (2024). A Study on Chatgpt's Skill in Writing Creative Drama Plan. *Journal of History School* (72), 2517–2553. <https://doi.org/10.29228/joh.74842>
- Tang, A., Li, K. K., Kwok, K. O., Cao, L., Luong, S., & Tam, W. (2023). The importance of transparency: Declaring the use of generative artificial intelligence (AI) in academic writing. *Journal of Nursing Scholarship*, 1-5. <https://doi.org/10.1111/jnu.12938>
- Taylor, Z. (2023). Using Chat GPT to Clean Interview Transcriptions: A Usability and Feasibility Analysis. Available at SSRN: <https://ssrn.com/abstract=4437272> or <http://dx.doi.org/10.2139/ssrn.4437272>
- Verdú, E., Regueras, L. M., Gal, E., Castro, J. P., Verdú, M. J., & Kohen-Vacs, D. (2017). Integration of an intelligent tutoring system in a course of computer network design. *Educational Technology Research and Development* (65), 653–677. <https://doi.org/10.1007/s11423-016-9503-0>
- Wang, X., Anwer, N., Dai, Y., & Liu, A. (2023). ChatGPT for design, manufacturing, and education. *Procedia CIRP*, 119, 7-14. <https://doi.org/10.1016/j.procir.2023.04.001>
- Xiou, Y., & Zhi, Y. (2023). An exploratory study of EFL learners' use of ChatGPT for language learning tasks: Experience and perceptions. *Languages*, 8(3), 212. <https://doi.org/10.3390/languages8030212>
- Yücel, A. G., & Kızıkan, O. (2023). Nitel Araştırmanın Temelleri. O. Bektaş, & T. G. Şahin (Ed.). *Nitel Araştırma Süreci ve Uygulamaları* (s. 21-42). Asos Yayınları.

Genişletilmiş Türkçe Özet

Giriş

Yapay zeka teknolojileri uzun zamandır mevcut olsa da, bu teknolojilerin geniş çaplı kullanımı OpenAI'nin Kasım 2022'de sunduğu ChatGPT ile başlamıştır. ChatGPT, doğal dil işleme teknolojilerini kullanarak kullanıcı taleplerini anlamakta ve doğal insan dilinde yanıtlar üretebilmektedir (OpenAI, 2024). Özellikle GPT-4 sürümü, geniş bilgi tabanı, karmaşık sorguları anlama, metin üretimi ve dil işleme becerileriyle öne çıkmaktadır. ChatGPT'nin bu özellikleri, nitel araştırmalarda görüşme soruları hazırlama gibi karmaşık süreçlerde etkili bir araç olarak kullanılabilceğini göstermektedir (Lund & Wnag, 2023).

Yapay zeka (YZ) araçlarının özellikle ChatGPT gibi gelişmiş modellerin, nitel araştırmalarda etkisi giderek artmaktadır (Costa, 2023; Dengel vd., 2023; Hamilton vd., 2023; Khlaif vd., 2023; Morgan, 2023; Siiman vd., 2023; Şen vd., 2023; Taylor, 2023). Bu çalışma, araştırmacıların görüşme soruları oluştururken karşılaştıkları zorlukları azaltmak ve süreci daha etkili hale getirmek için ChatGPT'nin sağladığı katkıları değerlendirmeyi amaçlamaktadır. Araştırma, üç farklı araştırmacının deneyimlerinden yola çıkarak ChatGPT'nin nitel görüşme soruları hazırlama becerisini incelemiş ve bu süreçte araştırmacıların kendi soruları ile ChatGPT tarafından üretilen soruları karşılaştırmıştır.

Çalışmanın temel amacı, ChatGPT'nin nitel araştırma sürecindeki potansiyel kullanımını değerlendirmek ve bu aracın görüşme soruları hazırlama aşamasındaki etkisini incelemektir. ChatGPT'nin geniş veri seti ve kullanıcı taleplerini doğal insan dilinde anlama yeteneği, bu süreci hem daha verimli hem de daha kapsamlı hale getirebilir. Bu kapsamda, şu sorulara yanıt aranmıştır:

1. Araştırmacıların "Bilim insanlarının ChatGPT kullanımına yönelik düşünceleri nasıldır?" araştırma sorusuna yönelik hazırladığı soruların içeriği nasıldır?
2. ChatGPT'nin "Bilim insanlarının ChatGPT kullanımına yönelik düşünceleri nasıldır?" araştırma sorusuna yönelik hazırladığı soruların içeriği nasıldır?
3. Araştırmacıların ChatGPT kullanma deneyimlerinin, ChatGPT üzerinden soru hazırlama sürecine katkıları nasıldır?
4. ChatGPT'nin hazırladığı sorular ile araştırmacıların hazırladığı sorular arasındaki benzerlik ve farklılıklar nelerdir?
5. Araştırmacılar ChatGPT'yi görüşme sorusu hazırlarken yardımcı bir araç olarak nasıl kullanmaktadır?

Yöntem

Bu araştırmada, araştırmacıların ChatGPT (CG) kullanarak görüşme soruları hazırlama deneyimlerini incelemek amacıyla bireysel araştırma deseni kullanılmıştır. Çalışma grubu, nitel araştırma ve CG deneyim düzeyleri farklılık gösteren üç araştırmacıdan oluşmuştur. Veri toplama aracı olarak, araştırmacıların bireysel olarak ve CG ile hazırladıkları sorular kullanılmıştır. Süreçte, "Bilim insanların ChatGPT kullanımına yönelik düşünceleri nasıldır?" araştırma sorusuna yönelik sorular oluşturulmuş, CG'nin katkıları araştırmacılar tarafından bağımsız şekilde değerlendirilmiş ve nihai sorular revize edilmiştir. Veriler, tümevarımsal içerik analizi ile incelenmiş; kodlama süreçleri bağımsız olarak gerçekleştirilip fikir birliği sağlanarak temalar oluşturulmuştur. Araştırmanın geçerlik ve güvenilirliğini artırmak için süreç detaylı açıklanmış, veriler değiştirilmeden alıntılanmıştır. Bu kapsamlı yöntem, CG'nin nitel araştırmalardaki potansiyelini değerlendirmek için yapılandırılmıştır.

Bulgular

ChatGPT'nin Soruları ve Araştırmacıların Soruları

Araştırma sonucunda, ChatGPT'nin hazırladığı soruların teorik bilgi açısından yeterli, dilbilgisi kurallarına uygun ve katılımcılar için anlaşılabilir olduğu görülmüştür. Ayrıca, ChatGPT'nin oluşturduğu soruların açık uçlu olduğu ve katılımcıların düşüncelerini özgürce ifade etmelerine imkân tanıdığı belirlenmiştir. Araştırmacılar, ChatGPT'nin sorularını inceleyerek bazı temalarda doğrudan, bazı temalarda ise dolaylı olarak fayda sağlamıştır. Bu süreçte, ChatGPT'nin daha önce araştırmacılar tarafından ele alınmamış temaları da içeren kapsamlı sorular oluşturduğu gözlemlenmiştir.

Araştırmacıların Deneyimleri ve Kullanım Farklılıkları

ChatGPT'nin kullanımı, araştırmacıların deneyimlerine bağlı olarak farklılık göstermiştir. Daha deneyimli araştırmacıların, ChatGPT'nin özelliklerinden daha etkin bir şekilde faydalandığı görülmüştür. Örneğin, ChatGPT'nin doküman yükleme özelliğini kullanarak daha spesifik çıktılar elde eden deneyimli araştırmacılar, daha az sayıda komutla istedikleri sonuçlara ulaşmıştır. Daha az deneyimli araştırmacılar ise süreç boyunca daha fazla deneme yapmış ancak yine de ihtiyaç duydukları soruları hazırlayabilmiştir.

ChatGPT'nin Avantajları ve Sınırlılıkları

ChatGPT'nin geniş veri seti ve hızlı sonuç üretme yeteneği, araştırmacılara zaman kazandırmakta ve daha geniş bir perspektif sunmaktadır. Ancak, araştırmacıların etik kaygıları dikkate alarak ve soruları eleştirel bir yaklaşımla değerlendirerek nihai hale getirmesi önemlidir. Ayrıca, ChatGPT'nin bazen benzer temaları tekrar etme eğiliminde olduğu ve bu durumun dikkatle yönetilmesi gerektiği belirtilmiştir.

Sonuç ve Öneriler

Bu çalışma, ChatGPT'nin (CG) nitel araştırma süreçlerinde, özellikle görüşme soruları hazırlama aşamasında, araştırmacılara değerli bir destek sağlayabileceğini göstermektedir. CG, geniş veri seti ve özellikleriyle araştırmacılara çeşitlilikte ve derinlikte sorular üretebilme imkânı sunmuş, bu da araştırmacıların perspektiflerini genişletip daha kapsamlı soru setleri oluşturmalarını sağlamıştır. Literatürde belirtilen bağlamsal farkındalık eksikliği ve alana özgü uzmanlığın sınırlı olması gibi olumsuzluklar bu çalışmada gözlemlenmemiştir. Araştırmacılar, ana dilleri olan Türkçe'yi kullanarak güncel, yaratıcı ve bağlamsal olarak tutarlı sorular üretebilmiştir. CG, uzun sohbetlerde önceki komutlarla tutarlılığını koruyup yüklenen dokümanlardan faydalanabilmiştir. Deneyimli araştırmacılar, CG'den daha verimli şekilde yararlanarak etkili sorular hazırlayabilmiştir. Sonuç olarak, CG'nin nitel araştırma süreçlerine katkı sağlayarak araştırmacıların zaman ve verimlilik açısından önemli kazanımlar elde etmelerine olanak tanıdığı ortaya konmuştur. Araştırmacılar, ChatGPT'yi bir yardımcı araç olarak kullanarak sorularını daha kapsamlı ve derinlemesine geliştirebilir, böylece elde edilen verilerin kalitesini artırabilir.

Öneriler

- ChatGPT'yi kullanırken oluşturulan soruların eleştirel bir yaklaşımla değerlendirilmesi ve araştırmacının kontrolü altında nihai hale getirilmesi gerekmektedir.
- Araştırmacıların, ChatGPT'yi etkin bir şekilde kullanabilmek için önceden bu araca aşinalık kazanmaları önerilmektedir.
- ChatGPT'nin farklı temalarda sorular oluşturma yeteneği, nitel araştırmalarda çeşitli bakış açıları geliştirmek için kullanılabilir.

Bu sonuçlar, ChatGPT'nin nitel araştırma süreçlerinde etkin bir şekilde kullanılabileceğini ve araştırma soruları hazırlama aşamasında sağladığı katkılarla alan yazına önemli bir katkı sunduğunu ortaya koymaktadır.

Ethics Committee Approval: This study did not involve any direct interaction with human subjects for the purposes of data collection. As such, no ethical approval was required, and no personal or sensitive data was collected from individuals.

Data Availability: Below are the ChatGPT conversations that the researchers had with the raw data supporting the results of this paper:

R1: <https://chatgpt.com/share/3395409a-5209-4e32-9497-b24cc2ad951c>

R2: <https://chatgpt.com/share/19d3d771-2887-44a5-a2a8-2fdebd1b3872>

R3: <https://chatgpt.com/share/c7a82711-8062-4b0d-bde6-c8ea70579e5a>

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Authors	Contact
Mert Şen	Inonu University, Faculty of Education, Türkiye, E-mail: mert.sen@inonu.edu.tr
Oktay Bektaş	Erciyes University, Faculty of Education, Türkiye E-mail: obektas@erciyes.edu.tr
Şeval Nur Şen	Inonu University, Faculty of Education, Türkiye E-mail: seval.ozkes@inonu.edu.tr