

UNDERGRADUATE STUDENTS' ACADEMIC HELP-SEEKING BEHAVIOR WITH  
ARTIFICIAL INTELLIGENCE

by

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(Under the Direction of Jill E. Stefaniak)

ABSTRACT

When students face academic challenges that extend beyond their control, seeking help from external resources serves as a strategic approach to overcoming obstacles. The rapid development of GenAI tools has led to the widespread use by college students for help-seeking purposes. In the meantime, however, there have been numerous reported concerns from teachers, students, and researchers regarding the ethical implications. As digital technologies increasingly permeate educational environments, understanding students' perceptions and actual use of AI-powered assistance tools for academic help-seeking purposes becomes imperative. This study used ChatGPT as a representative GenAI tool and explored how undergraduate students perceived and used the tool for academic help-seeking purposes, informed by the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) framework. Through Q methodology, a mixed-method design with a pre-study survey and a post-study interview, this study identified three distinctive perspectives and students' primary uses of ChatGPT for help-seeking purposes. The study also outlined the factors that affected undergraduate students' use of ChatGPT, both positively and negatively. The findings of this study contributed to theoretical advancements in

the UTAUT2 framework and provided practical implications for investigating AI-driven support systems in higher education settings.

**INDEX WORDS:** Academic Help-Seeking, Artificial Intelligence, ChatGPT, Higher Education, Q Methodology, Technology Acceptance Model.

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DEDICATION

To my loving parents for their unconditional love and support over the years!

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## **CHAPTER 1**

### **INTRODUCTION**

In the ever-evolving landscape of education and learning, students face numerous challenges and obstacles that require effective help-seeking strategies. Help-seeking, the process of learners actively seeking assistance from various sources, has been recognized as an independent and active act that contributes to successful learning and academic achievement since the 1980s (Dunn et al., 2014; Kitsantas & Chow, 2007; Nelson-Le Gall, 1981). Traditional help-seeking sources include people like course instructors, more knowledgeable peers, or non-human agents like textbooks, course syllabi, or supplementary course materials. The advent of advanced technologies, particularly generative artificial intelligence (AI), has introduced an “interactive” way for learners to seek and obtain academic help through chatbots. This chapter examined the background of help-seeking research, as well as the employment of generative AI in education. It also discussed the opportunities to expand help-seeking strategies, followed by the statement of the problem. Finally, the research questions were listed, and definitions of key terms in this dissertation were provided.

#### **Background**

When learners identify gaps in their understanding, a typical way to bridge the gaps is to seek help from other sources. Technically, help-seeking is defined as “*an achievement behavior involving the search for and employment of specific strategies to obtain success*” (Ames & Lau, 1982, p. 414). Learners engage in help-seeking behavior to achieve academic success, which represents their persistence and motivation in overcoming academic difficulties. Typical steps in

learners' help-seeking behavior include: (1) becoming aware of a need for help, (2) deciding to seek help, (3) identifying potential helper(s), (4) using strategies to elicit help, and (5) evaluating the help-seeking episode (Nelson-Le Gall, 1981). Karabenick and Dembo (2011) proposed a more detailed help-seeking process, indicating that eight steps existed: (1) detecting a problem, (2) determining that help is needed, (3) deciding whether to seek help, (4) deciding what type of help to seek, (5) selecting the source of help, (6) soliciting the help, (7) obtaining help, and (8) processing help. What these two help-seeking processes have in common is that help-seeking begins with learners' awareness of a need for help and ends with learners' evaluation of the help-seeking experience. Learners keep making decisions throughout the entire help-seeking process and the way they engage in help-seeking is a manifestation of their cognitive, metacognitive, and interpersonal decision-making as well as an evaluation of their domain-specific skills and knowledge (Giblin et al., 2021; Newman, 1998; Puustinen, 1998; H. Wood & D. Wood, 1999).

According to Chowdhury and Halder (2019), studies on help-seeking have experienced four phases of development. From the 1950s to the late 1970s, help-seeking was mainly regarded as a dependent act. When learners seek help, they show their incapability and lack of self-sufficiency based on the main Western values (Chowdhury & Halder, 2019). Seeking help during adolescence and adulthood was often viewed as immature, while for learners, it seemed threatening and ultimately futile to the learning process (Nelson-le Gall, 1985).

The second phase was represented by the revolutionization of help-seeking. Before the 1980s, help-seeking was commonly regarded as an act of dependence (Nelson-Le Gall, 1985). Noteworthy contributions were made by Nelson-Le Gall (1981, 1985) when she argued for a re-evaluation of help-seeking and proposed that it should be regarded as an effective approach to addressing academic challenges rather than being stigmatized as self-threatening

behavior. Nelson-Le Gall (1981) initiated the dichotomy of executive (or expedient) help-seeking and instrumental (or adaptive) help-seeking based on different learning goals learners have when they engage in help-seeking. Learners with an executive goal, for example, count on the help to complete tasks while learners with an instrumental goal aim for just enough assistance to independently complete the task. Nelson-Le Gall (1981) believed that instrumental help-seeking was an active and complex social-cognitive activity essential to learning and achievement, representing learners' adaptive reactions to solving problems and achieving success.

The incorporation of help-seeking under the umbrella of self-regulated learning (SRL) marks the third phase and since then, help-seeking has been viewed as an active cognitive strategy (Chowdhury & Halder, 2019; Karabenick & Gonida, 2018). Self-regulation refers to the control learners have over their cognition, behavior, emotions, and motivation to achieve their established goals (Panadero & Alonso-Tapia, 2014). Self-regulated learning, accordingly, encompasses learners' abilities to regulate cognition, behavior, emotions, and aspects of the learning environment for better learning outcomes (Kesuma et al., 2020). Karabenick and Berger (2013) integrated the help-seeking process (Karabenick & Newman, 2009) with the SRL model (Zimmerman, 2000), claiming that the help-seeking and self-regulation processes fit well with each other (see Table 1.1). Help-seeking has been included as one of the self-regulated learning strategies in a significant number of studies (Bidjerano & Dai, 2007; Brusio et al., 2020; Ghyasi et al., 2013; Mirhashemi & Goodarzi, 2014). For example, Bidjerano and Dai (2007) examined the relationship between personality traits and nine self-regulated learning strategies, including help-seeking, rehearsal, organization, elaboration, critical thinking, metacognition, effort regulation, time and environment management, and peer learning.

**Table 1.1**

*Help-Seeking Process and Three-Phase Model of SRL (adapted from Karabenick and Berger, 2013)*

Help-Seeking Process	Self-Regulation Process	SRL Phase
1 Determine whether this is a problem	Task analysis	Forethought
2 Determine whether help is needed/wanted		
3 Decide whether to seek help	Strategic planning	
4 Decide on the type of help		
5 Decide whom to ask		
6 Solicit help	Self-control	Performance
7 Obtain help		
8a Process the help received (judge or evaluate it)	Self-judgment; self-evaluation	Self-reflection
8b Process the help received (react to it)	Self-reaction; self-satisfaction and adaptive inference	

The fourth phase involves a shift in research focuses from in-person help-seeking to the realm of online help-seeking, which is defined as the process by which learners seek assistance, guidance, or support for their academic needs and challenges through online platforms, resources, and interactions. According to the categorization by Makara and Karabenick (2013), help-seeking can be categorized as either mediated or face-to-face, decided by the involvement of technologies. Face-to-face help-seeking occurs when help-seekers and help-givers interact in

person, while mediated help-seeking occurs with the help of technology, such as online chat tools, video platforms, or text messaging applications. Historically, much of the literature on help-seeking has predominantly concentrated on traditional face-to-face learning settings without paying enough attention to online learners' help-seeking patterns (Cheng et al., 2013; Yang & Stefaniak, 2023).

Generally, the diversion of researchers' attention from in-person help-seeking to online help-seeking is necessitated by three reasons. First, online help-seeking has unique advantages that are often absent in its counterpart. Cheng and Tsai (2011) explained that online help-seeking is perceived as less threatening because it significantly reduces learners' perceived stigma and pressure on their self-esteem, as they often seek assistance from individuals whose identities are unknown to them (Kumrow, 2007). The COVID-19 pandemic has contributed to unprecedented changes in learning and teaching, transitioning learning from traditional classrooms to online environments. As a result, in-person help-seeking has become impossible, and learners are forced to seek help online. Thirdly, technical advancements, particularly in generative artificial intelligence (AI) tools such as ChatGPT, have enabled learners to rapidly obtain answers to a variety of topics at lower costs. Learners simply input their inquiries into the chat box, and they can receive immediate answers from ChatGPT. Nowadays, when learners seek help online, it often feels like live interactions with a knowledgeable instructor who provides timely and accessible support across diverse subjects. When learners are unsatisfied with the answer, they can generate additional responses or request further clarification. Considering the substantial differences between the two types of help-seeking, it is crucial not to automatically extend conclusions drawn from face-to-face help-seeking to online learning environments (Aleven et al., 2003; Hao et al., 2017; Puustinen & Rouet, 2009).

## **Artificial Intelligence and Chatbots**

Artificial Intelligence (AI) has captivated scientists, engineers, and thinkers since the appearance of computing machines, serving as a constant subject of research (Choudhury & Shamszare, 2023). Ahuja (2019) indicated that the emergence of AI dates back to the 1950s which marks the beginning of a profound journey toward the creation of sophisticated, human-like machines equipped with the ability to think, learn, and reason autonomously. During this time, research focused on building rule-based systems that could make decisions based on pre-determined logical rules (Choudhury & Shamszare, 2023). These systems, however, fell short of expectations as they could not learn from data, adapt to new situations, and were characterized by rigid repetitions (Russell & Norvig, 2016).

During the 1960s and 1970s, AI research pivoted towards the development of expert systems that enabled reasoning and decision-making based on comprehensive domain-specific knowledge (Bobrow & Hayes, 1985). According to Whalen (1995), the expert systems had limitations in the 1980s and 1990s since they could not handle the complexity and ambiguity of real-life problems. Since the appearance of the internet, machine learning algorithms have enjoyed rapid development, learning from massive amounts of data, and making decisions based on complex patterns in images, speech, and text (Choudhury & Shamszare, 2023).

Nowadays, AI has been widely adopted in various fields, such as health care, transportation, entertainment, retail, manufacturing, finance, customer service, and education. Choudhury and Shamszare (2023) outlined some AI-powered technologies, including self-driving cars, virtual assistants, and personalized recommendation providers. The advancements in AI have also significantly broadened the range of options available for help-seeking. Both intelligent software and hardware, commonly known as intelligent agents, are increasingly

integrated into people's lives due to the rise of AI (Albayati, 2024). Chatbots symbolize a ubiquitous application of AI systems, serving as a fundamental yet pervasive example of intelligent Human-Computer Interaction (Bansal & Khan, 2018). Chatbots are utilized in various fields such as education, information retrieval, business, mental care, and e-commerce (Li et al., 2023; Shawar & Atwell, 2007).

In conclusion, AI-powered chatbots offer advantages such as accessibility, affordability, anonymity, and convenience, which make it a popular help-seeking strategy for learners. Yin et al. (2021) indicated that compared with traditional learning forms, learning through AI Chatbots contributed to higher levels of intrinsic motivation and perceived enjoyment among students. It is therefore important to understand how these AI-powered chatbots affect learners' help-seeking behavior.

### **Opportunities to Expand Help-Seeking Strategies**

As one of the most widely used AI-powered chatbots, ChatGPT demonstrates a broader range of capabilities instead of merely recognizing patterns and making predictions like the traditional AI models (Strzelecki, 2024). It seems reasonable and imperative to focus on ChatGPT as an example and to explore its influence on learning and help-seeking. A significant number of studies have examined how ChatGPT affected learning from either students or instructors' perspectives (Jepkemoi et al., 2024; Li et al., 2023; C. Song & Y. Song, 2023). Up until now, only one study by Adams et al. (2024) explicitly situated ChatGPT as a mediated help-seeking behavior, as categorized by Makara & Karabenick (2013), and explored students' use of ChatGPT as a help-seeking strategy to deal with academic difficulties. The study explicitly situates ChatGPT as a help-seeking tool, revealing that learners seek academic help with ChatGPT because of its usefulness in facilitating task and assignment completion and its

resourcefulness in locating learning materials (Adams et al., 2024). Another finding is that empirical studies on ChatGPT in education focus primarily on the overall performance of the tool, often overlooking its potential influence on learners' approaches to seeking academic help, particularly in online environments (Adams et al. 2024; Fontenelle-Tereshchuk, 2024). This gap highlights the need for a deeper exploration of how ChatGPT might shape help-seeking behaviors, especially when learners use the tool for academic purposes. Therefore, this study bridged the gaps by incorporating ChatGPT as a unique yet powerful help-seeking tool and exploring how learners interacted with ChatGPT for academic help-seeking purposes.

The second motivation of this study is supported by the nature of the Q methodology. Studies that explore learners' help-seeking behavior have traditionally relied heavily on self-made or pre-existing surveys or questionnaires for data collection (Ashida & Ishizaka, 2022; Bornschlegl et al., 2021; Fan & Lin, 2023; Hong et al., 2021; Tang et al., 2021), which typically require a significant number of participants to ensure the validity and reliability of results. In Q methodology, participants have the status of factors rather than the Q statements do, indicating that a large participant sample or a randomly generated participant sample is not required (Janson et al., 2008; Mckeown & Thomas, 2013). Considering that no studies have attempted to analyze how learners engage in ChatGPT as an online help-seeking strategy with Q methodology, this study bridged the gap by adding Q methodology to the potential tools to explore learners' help-seeking prioritizations.

### **Statement of the Problem**

A significant number of studies have investigated the use of ChatGPT, with the focus primarily placed on users' intentions, attitudes, and their actual use of the tool (Abadie et al., 2024; Albayati et al. 2024; Duong et al., 2023; Lai et al., 2023; Liu et al., 2024; Polyportis &

Pahos, 2024; Rahman et al., 2023; Zou & Huang, 2023). Only one study by Adams et al. (2024) explicitly regarded the use of ChatGPT as an academic help-seeking behavior. Similarly, this study positioned ChatGPT within the context of help-seeking and examined learners' interactions with the tool from the perspective of their help-seeking behaviors. Compared with the number of studies that explore face-to-face help-seeking, researchers' attention to help-seeking behaviors mediated by technologies is far from enough (Cheng et al., 2013; Yang & Stefaniak, 2023).

The existing literature has examined the adoption of AI technology through extending theoretical models, such as the Technology Acceptance Model (TAM, Davis, 1989), and the Unified Theory of Acceptance and Use of Technology (UTAUT, Venkatesh et al., 2003) or proposing new models, such as the Task-oriented AI Acceptance (T-AIA, Yang et al., 2022) and Artificially Intelligence Device Use Acceptance model (AIDUA, Ma & Huo, 2023). Among the various versions of the Technology Acceptance Model, including TAM2, TAM3, UTAUT, UTAUT2, and UTAUT3, this study adopted the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) as the theoretical framework and explored how the 10 constructs within that model (i.e., performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, age, gender, and experience) together with other constructs from different sources (i.e., literature, personal experience, a pre-study survey) affected learners' academic help-seeking behavior with ChatGPT.

### **Research Questions**

The following four research questions guided the study:

1. How do undergraduate students perceive the use of ChatGPT as an academic help-seeking tool?
2. How do undergraduate students use ChatGPT for academic help-seeking purposes?

3. What factors motivate undergraduate students' use of ChatGPT as an academic help-seeking tool?
4. What factors prevent undergraduate students' use of ChatGPT as an academic help-seeking tool?

### **Definitions and Key Terms**

#### **Academic Help-Seeking**

The process in which learners actively seek assistance or resources to improve their understanding of academic difficulties, overcome learning challenges, or enhance their academic performance.

#### **Artificial Intelligence**

Artificial intelligence (AI) refers to the simulation of human intelligence in machines, enabling them to perform human-like cognitive functions like perception, reasoning, environmental interaction, learning, problem-solving, decision-making, and even creativity (Rai et al., 2019).

#### **ChatGPT**

A type of AI that is supported by large data training and uses deep learning technology techniques to generate human-like text and conversationally respond to users' queries (Habibi et al., 2023; Zhai, 2023).

#### **Executive Help-Seeking**

A type of help-seeking behavior where learners ask for direct answers or solutions, avoiding effort and meaningful engagement in the learning process (Karabenick, 2003; Nelson-Le Gall, 1981). In contrast to instrumental help-seeking, executive help-seeking is often described as non-adaptive or expedient help-seeking (Algharaibeh, 2020; Astatke, 2018).

#### **Face-to-Face Help-Seeking**

The practice of seeking assistance or support for academic purposes through in-person interactions with peers, instructors, tutors, or academic support staff.

### **Generative Artificial Intelligence**

Generative Artificial Intelligence (GenAI) is a type of artificial intelligence that can generate new content, such as text, images, audio, code, and video, based on patterns learned from large datasets. It is represented by large language models such as Claude, Bard, ChatGPT, and New Bing (Ma, 2024).

### **Help-Seeking**

An achievement behavior that involves the search for and employment of a strategy to solve problems and obtain success (Ames & Lau, 1982; Nelson-Le Gall, 1981).

### **Instrumental Help-Seeking**

A type of help-seeking behavior where learners request specific guidance to complete tasks independently. Rather than asking for direct answers, instrumental help-seekers focus on obtaining the necessary tools, resources, or partial guidance to make progress independently (Karabenick & Berger, 2013; Nelson-Le Gall, 1981). Instrumental help-seeking is often called adaptive, indicating learners' ability to effectively seek assistance when needed while maintaining autonomy (Martín-Arbós et al., 2021; Yang & Stefaniak, 2023).

### **Online Help-Seeking**

The practice of students seeking assistance or support for their academic endeavors through digital platforms or resources.

### **Perceived Ease of Use**

The degree to which a person believes that using a particular system would be free of effort (Davis, 1989).

**Perceived Usefulness**

The degree to which a user believes that technology will enhance their job performance or productivity (Davis, 1989).

**Technology Acceptance Model**

A theoretical framework designed to understand and predict how users accept and adopt new information technology systems or innovations (Davis, 1989).

## **CHAPTER 2**

### **LITERATURE REVIEW**

This dissertation focused on undergraduate learners' help-seeking behavior with ChatGPT as they encounter academic difficulties. The purpose of this chapter is to provide an overview of the major theoretical topics related to help-seeking and a theoretical framework that supports the design of this dissertation. The chapter begins with a review of the help-seeking process and diverse categorizations of help-seeking. It then provides a comprehensive literature review of the factors affecting help-seeking behavior. This chapter continues to describe how ChatGPT is accepted and utilized in educational settings and how learners use this tool as a help-seeking strategy. Then the Technology Acceptance Model (TAM) and the development of its various versions are discussed. The chapter ends with the identification of the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) as the supporting model for this study, explaining why and how the theory will be used within the theoretical framework of this dissertation.

#### **Help-Seeking Process**

Models of the help-seeking process indicate important stages and decision points that manifest how learners cope with learning and performance difficulties (Karabenick & Newman, 2009; Nelson-Le Gall, 1981). A comparison of two significant models of the help-seeking process is shown in Table 2.1.

**Table 2. 1***A Comparison of Two Help-Seeking Processes*

Help-Seeking Process (Nelson-Le Gall, 1981)	Help-Seeking Process (Karabenick & Dembo, 2011; Karabenick & Newman, 2009)
(1) Becoming aware of a need for help	(1) detecting a problem (2) determining that help is needed
(2) Deciding to seek help	(3) deciding whether to seek help
(3) Identifying potential helper(s)	(4) deciding what type of help to seek (5) selecting the source of help
(4) Using strategies to elicit help	(6) soliciting the help (7) obtaining help
(5) Evaluating the help-seeking episode	(8) processing help

Nelson-Le Gall (1981) indicated that learners' help-seeking process begins with their awareness that help is needed when they cannot solve the problems by themselves. This step represents learners' cognitive assessment of the problems they meet, their abilities, and the resources they have. Learners often decide to seek help when they successfully overcome beliefs in excessive self-worth or autonomy that hinder their willingness to ask for help. Studies indicate that self-autonomous learners who perceive help-seeking as a threat to self-worth or classroom status may intentionally avoid seeking help (Butler, 1998; Deci & Ryan, 1987; Karabenick & Knapp, 1991). After they have decided to seek help, the next step is to identify potential helper(s) from various sources. Learners typically engage in decision-making to identify the

most suitable source of help. For example, Giblin et al. (2021) claimed that learners often narrow their sources of help by considering the accessibility, availability, and quality of the help. After the decision of potential helper(s) is made, they will continue with the decision of suitable strategies to elicit help. This step can be roughly represented by the dichotomization of online and face-to-face channels. For instance, some learners may choose to email the course instructor since they feel ashamed to raise questions in public while sometimes, they may prefer to see the instructor as they can get direct and timely feedback on some urgent problems. Learners often evaluate their help-seeking experience after they have finished the solicitation of help. Their evaluations are typically based on their prior knowledge, match with their goals (i.e., instrumental vs executive goals), reliability, and accuracy of the help obtained (Giblin et al., 2021). Other evaluation considerations include the time or energy spent on the help-seeking experience and the influence on their self-esteem or self-efficacy. All these evaluations will affect their subsequent help-seeking choices, including whether, whom, how, when, and where to seek help.

Compared with the model by Nelson-Le Gall (1981), the model by Karabenick & Dembo (2011) and Karabenick & Newman (2009) focuses more on the breakdown of important steps that involve more than one round of decision-making. For example, in the third step, the model by Nelson-Le Gall (1981) only indicates that learners identify potential helper(s). However, the model by Karabenick and Dembo (2011) takes into account the type of help-seeking and the selection of help-seeking sources. Researchers have devoted tremendous efforts to the type of help-seeking and several important categorizations have been proposed (Cheng et al., 2013; Karabenick & Knapp, 1991; Makara & Karabenick, 2013; Nelson-Le Gall, 1981).

### Help-Seeking Categorizations

Researchers have employed various methods to classify learners' help-seeking behavior (see Table 2.2). Nelson-Le Gall (1985) was one of the first to distinguish between *executive* (or dependency-oriented) and *instrumental* (mastery-oriented) help-seeking, based on help-seekers' goals to seek help. Executive help-seekers focus solely on solving the problem at hand, whereas instrumental help-seekers aim to develop their skills and knowledge for future use. It's assumed that instrumental help-seeking predicts higher learning motivation and academic performance and increases learning compared with expedient help-seeking (Karabenick, 2003).

Karabenick and Knapp (1991) expanded on this idea by identifying five categories of help-seeking behaviors based on the source of the help, such as formal or informal sources. Formal help-seeking means the help comes from formal sources like course instructors, and university personnel, while informal help-seeking means the help is obtained from informal sources like friends or other students. They also proposed three other categories: instrumental activities, lowering performance aspirations, and altering goals. Instrumental activities represent the actions learners take to help them perform better, and lowering performance aspirations means learners lower their original goals and do easier things next time. Altering goals denotes a complete change to their original goals based on past experiences.

Puustinen and Rouet (2009) analyzed help-seeking from two aspects: the type of help sources (i.e., human, or non-human) and location (e.g., physically present, or on the internet). They proposed three types of help-seeking situations: 1) students seek help from human sources when the environment is technology-enhanced, 2) students seek help from human sources with the help of technology-supported tools or systems, 3) students seek help from non-human sources with the help of technology-supported tools or systems.

Makara and Karabenick (2013) further expanded the categorization by considering the role, relationship, channel, and adaptivity of the help-seeking source. Formally, the instructor serves as a primary source of help-seeking, while students may also turn to other formal channels like the syllabi for information on resources and support. Informally, classmates, discussion boards, family, friends, and texting peers contribute to a more casual and collaborative approach to seeking help, fostering a sense of community support. In their categorization, the personal and impersonal dimension distinguishes between seeking help from close friends versus strangers. The mediated and face-to-face dimension differentiates between seeking help through technology versus in-person interactions. Lastly, the dynamic and static dimension considers whether the help sources adapt over time. For instance, a discussion board is more dynamic than a textbook since it can be updated with new information.

Based on the uniqueness of online learning settings, Cheng et al. (2013) identified three types of online academic help-seeking, including information searching (e.g., search for specific information to solve academic problems on Google or other websites), formal query (e.g., email or contact course instructors for help), and informal query (make online requests to peers or unknown experts for academic help), taking into consideration learners' computer competencies, specifically learners' information searching skills. The new categorization has brought people's attention to learners' help-seeking behavior in online settings, further strengthening the influence of online help-seeking on learners' learning outcomes.

**Table 2.2***A Summary of Categorizations of Help-Seeking Behavior*

Researcher(s)	Category	Definition
Nelson-Le Gall (1981)	Executive/ Expedient help-seeking	Instances in which the person's intention is only to have somebody else on his or her behalf solve a problem or attain a goal.
	Instrumental/ Adaptive Help-seeking	Instances in which the person seeks a limited amount & type of help to help himself or herself independently solve the problem or attain a goal.
Karabenick & Knapp (1991)	Formal Help-seeking	Learners obtain help from formal sources.
	Informal Help-seeking	Learners obtain help from informal sources.
	Instrumental Activities	Learners take action to help themselves perform better.
	Lowering Performance Aspirations	Learners choose to lower their original aspirations and do easier things next time.

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	Altering Goals	Learners change their goals based on their experiences.
	Face-to-face help-seeking from humans with technologies being present	Learners seek help from human sources when in technology-enhanced learning environments.
Puustinen & Rouet (2009)	Online human help-seeking with technologies being present	Communicating with human help-seeking sources with technology-supported methods.
	Online non-human help-seeking with technologies being present	Seeking help from search engines, help systems, or built-in support tools.
Cheng et al. (2013)	Information Searching	Search online for answers to solve academic problems.
	Formal Query	Contact instructors or tutors online to request help.
	Informal Query	Contact peers or unknown experts online to request help.
Makara & Karabenick (2013)	Formal (F) & Informal (In)	Seek help through formal and informal sources.
	Personal (P) & Impersonal (Im)	The relationship between the help seeker and the help source is close or distant.

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Mediated (M) & Face-to-face (F)	The help-seeking episode occurs with the help of technology or help-seekers and help-givers meet physically.
Dynamic (D) & Static (S)	The help source adapts or changes over time based on learners' needs or not

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### **Contributing Factors to Help-Seeking**

Extensive research has explored the various factors affecting learners' help-seeking behavior, considering it as a dependent factor in both online and face-to-face settings. For example, Martín-Arbós et al. (2021) summarized that socio-demographic factors (such as age, gender, and ethnicity), educational factors (including achievement goals, self-regulated learning, academic performance, and outcomes), and psychological factors (such as gender role norms, emotional intelligence, and locus of control) affect learners' help-seeking behavior in higher education. However, most of these factors have been examined primarily from the learners' perspectives, highlighting the need to also include factors related to instructors and the learning environment for a more comprehensive understanding.

Table 2.3 provides a summary of the factors that have been examined to predict learners' help-seeking behavior in higher education. Regarding gender, there is no established agreement. For example, Holt (2014) indicated that female students exhibit a more positive attitude toward academic help-seeking compared with male students. This conclusion, however, is refuted by Astatke (2018) who revealed no significant correlation between gender and academic help-seeking behavior. In the same study, Astatke (2018) revealed that although not statistically significant, emotional intelligence showed a positive relationship with academic help-seeking and a negative relationship with psychological help-seeking.

When considering the influence of age on learners' help-seeking behavior, it is commonly believed that undergraduate learners seek less help compared to younger learners. Researchers posit that learners' help-seeking behavior gradually declines as they enter middle school, caused by losses in motivational resources and teacher help (Marchand & Skinner, 2007; Wigfield et al., 2006). This phenomenon continues as learners enter higher education, which supports Yang et al.'s (2016) assertion that age is negatively correlated with help-seeking behavior. Parnes et al. (2020) found a significant relationship between help-seeking and learners' ethnicity. Asian students, compared with Black/African American, Latino/Hispanic, Mixed Race, and White students, displayed lower levels of help-seeking behavior, and they also held more negative views of seeking help.

The use of emotional intelligence as a tool to analyze learners' help-seeking behavior represents a novel direction, although no correlational relationship has been identified thus far (Astatke, 2018). In the context of online help-seeking, Cheng et al. (2013) disclosed that individual perceptions of self-regulation in the online setting, as well as the utilization of evaluative standards in online information searching and filtering, could predict learners' help-seeking behavior.

In comparison to explorations of learner characteristics, research from instructors' perspectives has not received equal attention. Generally, the presence of instructors in online teaching and their digital literacy skills in utilizing different help-seeking tools play a crucial role in affecting students' help-seeking. Richardson et al. (2016) revealed that learners' help-seeking behavior is affected by instructors' perceptions of their teaching presence and beliefs about instructors' teaching actions. Also, the study found that instructors' digital competencies in offering diversified help-seeking tools can affect learners' help-seeking behavior in online

settings (Richardson et al., 2016). To promote instructor and teaching presence, Whipp and Lorentz (2009) recommended that diverse help-seeking tools like discussion postings, announcements, online tutorials, e-mail communication, paging, phone, and informal chatrooms should be implemented to support learners' online help-seeking behavior.

The design of an environment that facilitates help-seeking is the final factor that researchers focus on when they analyze learners' help-seeking behavior, although instructors play a more important role. In general, an interaction-friendly learning environment is essential for a positive help-seeking experience, while an unsocial learning environment hinders learners' help-seeking intentions since learners are more likely to face judgment from others, leading to a higher perception of threat associated with help-seeking (Er et al., 2015; Karabenick, 2004). Additionally, Giblin and Stefaniak (2017) found that students who receive assignments embedded in performance-based language report a higher frequency of non-adaptive help-seeking behavior. As a result, the study estimated that a mastery context could facilitate adaptive help-seeking (Giblin & Stefaniak, 2017), aligned with the findings of another study conducted by Karabenick and Dembo (2011).

**Table 2.3**

*A Summary of Factors Influencing Help-Seeking Behavior in Higher Education*

<b>Factor(s)</b>	<b>Sub-Factor</b>	<b>Author(s)</b>	<b>Setting(s)</b>	<b>Key Finding(s)</b>
Learner-related	Age	Yang et al. (2016)	Online	Older students report less help-seeking compared to younger students.
	Gender	Holt (2014)	Face-to-face	Gender has an impact on learners' attitudes towards academic help-seeking.  Female students have more positive attitudes than males to seeking help.
	Ethnicity	Parnes et al. (2020)	Face-to-face	Age is not a predictor of learners' help-seeking behavior.  Asian students are more likely to avoid seeking help and have a more negative perception of help-seeking compared with Black/African American, Latino/Hispanic, Mixed Race, and White students.
	Emotional intelligence	Astatke (2018)	Face-to-face	Emotional intelligence and academic help-seeking have a positive but not significant correlation.

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				Emotional intelligence is negatively but not significantly correlated with psychological help-seeking.
	Perceptions/ belief	Cheng et al. (2013)	Online	Online learners' perceptions of self-regulation and information commitments affect learners' online academic help-seeking.
	Prior Knowledge	H. Wood and D. Wood (1999)*	ILE	Learners with high prior knowledge exert the most effective help-seeking behavior.  Learners with high prior knowledge seek help and have a better understanding of their need for help.
Instructor- related	Instructor presence	Richardson et al. (2016)	Online	Instructors' perceptions related to teaching presence, and beliefs about actions in online settings contribute to learners' perceptions of support and their help-seeking behavior.
	Instructor digital competency	Richardson et al. (2016)	Online	Diversifying help-seeking tools available to learners can promote their online academic help-seeking behavior.

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Environment-related	Mastery-based environment	Karabenick and Dembo (2011)	N/A	Creating a mastery-oriented learning environment is an effective intervention that contributes positively to learners' adaptive help-seeking behavior.
	Performance-based environment	Giblin and Stefaniak (2017)	Face-to-face	An assignment embedded in an intentionally designed performance-based learning environment caused statistically significant non-adaptive help-seeking.
	Social environment	Er et al. (2015)	Online	Unsocial learning environments raise concerns about being judged and therefore contribute to higher perceptions of threat for help-seeking.

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*Note.* \* indicates a K-12 setting.

### **ChatGPT in Education**

The internet has emerged as a powerful platform that enables learners to seek help through live interactions with various online entities, ranging from course instructors, knowledgeable peers, and professional experts to increasingly sophisticated and adaptable chatbots powered by artificial intelligence (AI). A chatbot is a kind of software engineered for automating human interactions (Lebeuf et al., 2017). One such AI chatbot is ChatGPT which has

gained instant popularity among researchers, educators, and students alike since its public appearance in 2023 (Romero-Rodríguez et al., 2023).

GPT stands for “Generative Pre-Trained Transformer” or “General-Purpose Technologies”, indicating that the tool processes requests and generates responses based on a vast volume of pre-trained data (Ding et al., 2023; Eloundou et al., 2023). ChatGPT works by generating human-like responses to a wide range of prompts and queries based on the training on vast amounts of data in the form of a chatbot. With the help of deep learning algorithms to generate human-machine natural language discussions (Javaid et al., 2023), ChatGPT boasts its 24/7 availability, quick speed of response, and wide scope of expertise. Tlili et al. (2023) verified that ChatGPT can provide useful information on a diverse range of topics like science, history, business, health, and technology. Additionally, Farrokhnia et al. (2023) demonstrated that ChatGPT excels in delivering tailored and intricate learning experiences, significantly transforming educational practices.

Given that ChatGPT is now being widely adopted by undergraduate students as a help-seeking tool in their learning since its proliferation across social media platforms (Cooper, 2023), tremendous studies have attempted to explore the applications of ChatGPT in educational settings. C. Song and Y. Song (2023) found that learners who use ChatGPT as a writing assistant for feedback show improved writing proficiency in organization, coherence, grammar, and vocabulary. Compared to the control group who receive traditional instruction, those utilizing ChatGPT express higher motivation in academic writing. In a study by Javaid et al. (2023), a total of 27 applications of ChatGPT have been identified, including endeavors such as enhancing critical thinking and communication abilities, delivering instructional materials, facilitating dialogues with students, and enhancing reading abilities, among others. The study concluded that

ChatGPT can offer students access to on-demand and living tutoring while simultaneously assisting instructors in generating course materials, including diverse test versions, student learning assessments, syllabi, rubrics, and other additional resources (Javaid et al., 2023). This coincides with Parsons and Curry's (2024) claim that the advent of ChatGPT has significantly impacted the pedagogical approaches and learning methodologies employed by instructors and students.

Apart from the benefits brought to learners, instructors use ChatGPT as a help-seeking strategy too. A study by Li et al. (2023) explored the integration of ChatGPT as an instructional tool in three Chinese language courses, reaffirming the advantages of using ChatGPT such as flexibility, real-time responsiveness, and access to a wealth of information in instructional practices. Bolick and Da Silva (2024) explained that employing AI for instructional assistance can enhance the content creation process in instructional design, ensure higher content quality, and save time for higher-order thinking tasks. Within science education, instructors also use ChatGPT to help with the optimization of the instructional process. Research into the integration of ChatGPT has demonstrated its capacity to enhance assessment creation, offer tailored support for individual learning needs, and streamline the evaluation and reporting of student progress (Zhai, 2021, 2023).

Despite the great potential of ChatGPT in aiding both students and learners, its limitations should not be neglected. Concerns such as research ethics, bias, integrity, quality, and trustworthiness of the ChatGPT-generated information have been mentioned by various researchers (Ding et al., 2023; Lim et al., 2023; Sullivan et al., 2023). For example, Rudolph et al. (2023) warned that students who rely overly on the tool without deeply engaging with the content will encounter a deficiency in critical thinking skills, making it challenging for

instructors to accurately assess their true abilities based on the seeming accurate content in students' assignments or submissions. Adding to these concerns, Michalon and Camacho-Zuñiga (2023) stated that the rapid advancement of ChatGPT poses a new challenge for educational institutions in effectively monitoring or regulating its use by both students and instructors.

### **Technology Acceptance of ChatGPT in Education**

As indicated in the section above, the coexistence of benefits and risks associated with using ChatGPT highlights the need for a deeper understanding of the variables affecting its use. Analyzing the existing literature can reveal key themes. First, these studies either adapt existing constructs from various versions of the Technology Acceptance Models (TAM) or Unified Theory of Acceptance and Use of Technology (UTAUT) or build other new models. For example, Abadie et al. (2024) examined a total of nine variables adapted from UTAUT (Venkatesh et al., 2003), including efficiency, excellence, status, esteem, play, aesthetics, ethics, spirituality, and intention to use ChatGPT. New frequently used models include the Technology-Organization-Environment (TOE) framework (Jo & Bang, 2023) and the AI Device Use Acceptance (AIDUA) proposed by Ma and Huo (2023). Second, these studies rely heavily on hypothesis testing (Liu & Ma, 2024; Liu et al., 2024; Zou & Huang, 2023) and structural equational modeling is employed to identify the relationships among diverse variables of interest.

### **ChatGPT as a Help-Seeking Strategy**

While considerable effort has been directed toward integrating ChatGPT into instructional practices, there has been limited focus on situating ChatGPT within the context of help-seeking behavior. Further investigation is warranted to explore common inquiries, such as the motivations and barriers that influence learners' effective utilization of ChatGPT as a help-

seeking strategy. This coincides with two of the research questions that investigate the factors motivating or hindering learners' use of ChatGPT as a help-seeking strategy.

Up until now, only one study examined learners' use of ChatGPT as an academic help-seeking behavior and focused on the readiness and perceived usefulness of using ChatGPT (Adams et al., 2024). The research findings indicated that learners hold mixed perceptions regarding the use of ChatGPT for academic help-seeking. While students possess the proficiency, willingness, and requisite technological infrastructure to use ChatGPT, there seems to be a lack of adequate guidelines from the university. In the meantime, students acknowledge the negative impacts on their critical thinking, creativity, and problem-solving skills if they become over-reliant on the tool. The study also suggests examining instructors' perceptions of ChatGPT for academic help-seeking purposes.

### **Technology Acceptance Models**

Technology acceptance reflects the willingness of individuals to adopt and use new technologies (Bazalais et al., 2024). Research on the acceptance of new technologies is often embedded in the technology acceptance model (TAM; Davis, 1989; Venkatesh et al., 2003) or its two upgrades: the TAM2 (Venkatesh & Davis, 2000) and the unified theory for acceptance and use of technology (UTAUTA; Venkatesh et al., 2003).

Oye et al. (2014) concluded that Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Model of PC Utilization (MPCU), Motivational Model (MM), Combined Theory of Planned Behavior/Technology Acceptance Model (C-TPB-TAM), Innovation Diffusion Theory (IDT), and Social Cognitive Theory (SCT) are all the technology acceptance models that have been developed over the years apart from TAM and its upgrades. While this study will use UTAUT2 as its theoretical framework, it will start with the precursors of TAM.

## **Technology Acceptance Model (TAM)**

TAM (see Figure 2.1) was developed by Fred Davis in the 1980s and later it was refined by Venkatesh and Davis in the 1990s (Davis et al., 1989). As Venkatesh et al. (2003) indicated, TAM “*is tailored to IS contexts, and was designed to predict information technology acceptance and usage on the job.*” TAM points out that the acceptance of new technology is primarily decided by two main factors: perceived usefulness and perceived ease of use (Davis, 1989; Davis et al., 1989). Perceived usefulness (U) means “*the degree to which a user believes that technology will enhance their job performance or productivity*”, while perceived ease of use (EOU) is defined as “*the degree to which a person believes that using a particular system would be free of effort*” (Davis, 1989). The perceived usefulness and perceived ease of use are predicted by some external factors including user’s demographic characteristics, social influences, and organizational culture (Albayati, 2024; Connor & Siegrist, 2010; Saade & Bahli, 2005).

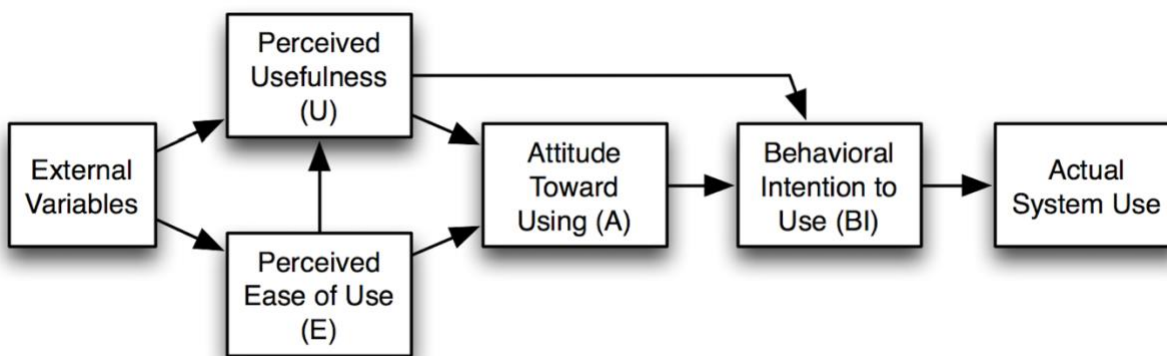
As shown in Figure 2.1, TAM postulates that the behavioral intention to use (BI) is jointly determined by the person’s attitude toward using the system (A) and perceived usefulness (U). The person’s attitude toward using the system (A) is jointly determined by the perceived usefulness (U) and the perceived ease of use (E). In terms of the relationship between U and E, TAM postulates that the perceived usefulness (U) is determined by the external factors and the perceived ease of use (E).

According to Taylor and Todd (2001), a significant limitation of TAM is its failure to consider the barriers that would prevent a user’s adoption of a particular information systems technology. The theory presupposes that once a user intends to use the technology, he or she will have unrestricted access to it. However, as noted by Bagozzi (2007), in the real world, various

constraints such as limited ability, time constraints, environmental or organizational limits, or even unconscious habits may restrict a user's freedom to utilize the technology. Another limitation of TAM, as indicated by Hong & Yu (2018), is that it overly relies on individual beliefs and ignores the social influences on the perceived usefulness (U) and perceived ease of use (E).

**Figure 2.1**

*Technology Acceptance Model (Davis, 1989)*



### **Technology Acceptance Model 2 (TAM2)**

To address the criticism in the previous version, Venkatesh and Davis (2000) proposed the extended TAM, often referred to as the TAM2. Compared with the first version, the extended TAM2 (see Figure 2.2) has removed the attitude toward using (A) and incorporated additional social influence processes (*subjective norm, voluntariness, and image*) and cognitive instrumental processes (*job relevance, output quality, result demonstrability, and perceived ease of use*).

Attitude toward using a technology (A) was removed because of the partial mediation of the impact of beliefs on intention by attitude, a weak direct relationship between perceived usefulness and attitude, and a strong direct relationship between perceived usefulness and intention (Venkatesh, 2000). Venkatesh (2000) explained that the model can better display the

influence of perceived usefulness and perceived ease of use on intention, which is an important dependent factor of interest.

As part of social influence processes, Venkatesh and Davis (2000) indicated that TAM2 demonstrates the impact of three interrelated social forces that collectively affect an individual facing the opportunity to adopt or reject a new system: subjective norm, voluntariness, and image. *Subjective norm* is an element originally from the theory of reasoned action (TRA), indicating a “*person’s perception that most people who are important to him think he should or should not perform the behavior in question*” (Fishbein & Ajzen, 1975, p. 302). Venkatesh and Davis (2000) believed that the important people around an individual have the impact to influence an individual’s motivation to perform a behavior even if the individual may have no favorable perception of it. *Voluntariness* is defined as “*the extent to which potential adopters of behavior perceive the adoption decision to be non-mandatory*” (Hartwick & Barki, 1994). Venkatesh and Davis (2000) postulated that voluntariness can moderate the effect of subjective norms on intention to use. When system use is perceived to be mandatory, the subjective norm will have a positive direct effect on the intention to use, while no significant effect exists when system use is perceived to be voluntary. *Image* is defined as the status that individuals have in a social system and is positively affected by subjective norms. Venkatesh and Davis (2000) explained that when the important members of a person’s social group believe that he or she should perform a behavior like using a technology system, performing the behavior will cause an increase in his or her standing within the group. Therefore, TAM2 claims that subjective norm has a positive effect on the image, which also has a positive effect on perceived usefulness.

Under the umbrella of cognitive instrumental processes, Venkatesh and Davis (2000) have incorporated job relevance, output quality, and result demonstrability in addition to the

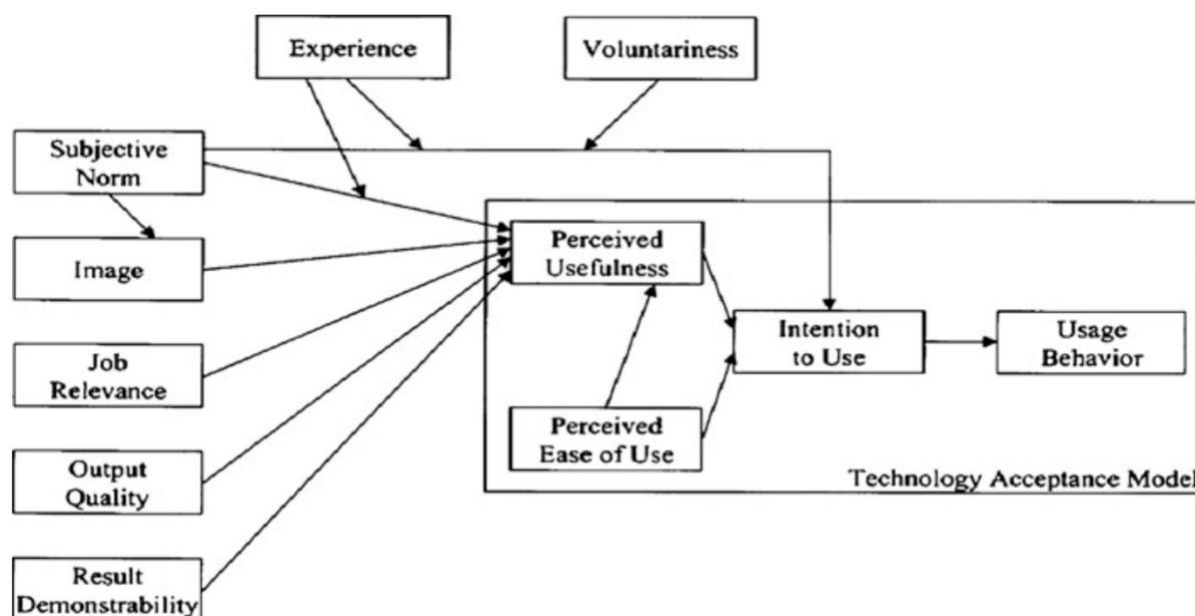
perceived ease of use that is already existent in the previous model. In terms of *job relevance*, Venkatesh and Davis (2000) define it as the degree to which the target system applies to his or her job. In other words, the relevance of a job is determined by how important the tasks supported by a system are within that job and TAM2 hypothesizes that job relevance will have a positive effect on perceived usefulness. In addition to what tasks a system is capable of performing and the degree to which those tasks match the job goals, individuals also consider how well the system performs those tasks, which is defined as the perceptions of *output quality*. TAM2 claims that output quality has a positive effect on perceived usefulness. The higher the quality of the output is for a system, the higher useful the system will be perceived by users. *Result demonstrability* indicates “*the tangibility of the results of using the innovation*”, concluding that when users’ performing of certain behavior entails positive results, users are more likely to develop positive perceptions of the usefulness of the system (Moore & Benbasat, 1991; Venkatesh & Davis, 2000). TAM2 indicates that result demonstrability has a positive effect on perceived usefulness.

In TAM2, the perceived usefulness is placed at a very central place, which directly affects the user’s intention. The perceived usefulness is affected by a total of five constructs: subjective norm, image, job relevance, output quality, result demonstrability, and perceived ease of use. Table 2.4 presents a complete list of definitions for the five constructs.

The extended technology acceptance model (TAM2) was validated with real populations at four different organizations and explained 40% to 60% of the variance in usefulness perceptions and 34% to 52% of the variance in usage intentions (Venkatesh & Davis, 2000).

**Figure 2.2**

*Extended Technology Acceptance Model (TAM2, Venkatesh & Davis, 2000)*

**Table 2.4**

*A Summary of Determinants of Perceived Usefulness*

<b>Term</b>	<b>Definitions</b>
Perceived Ease of Use	The degree to which a person believes that using an information technology (IT) will be free of effort (Davis et al., 1989).
Subjective Norm	The degree to which an individual perceives that most people who are important to him think he should or should not use the system (Fishbein & Ajzen, 1975; Venkatesh & Davis, 2000).
Image	The degree to which an individual perceives that the use of an innovation will enhance his or her status in his or her social system (Moore & Benbasat, 1991).

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Job Relevance	The degree to which an individual believes that the target system applies to his or her job (Venkatesh & Davis, 2000).
Output Quality	The degree to which an individual believes that the system performs his or her job tasks well (Venkatesh & Davis, 2000).
Result Demonstrability	The degree to which an individual believes that the results of using a system are tangible, observable, and communicable (Moore & Benbasat, 1991).

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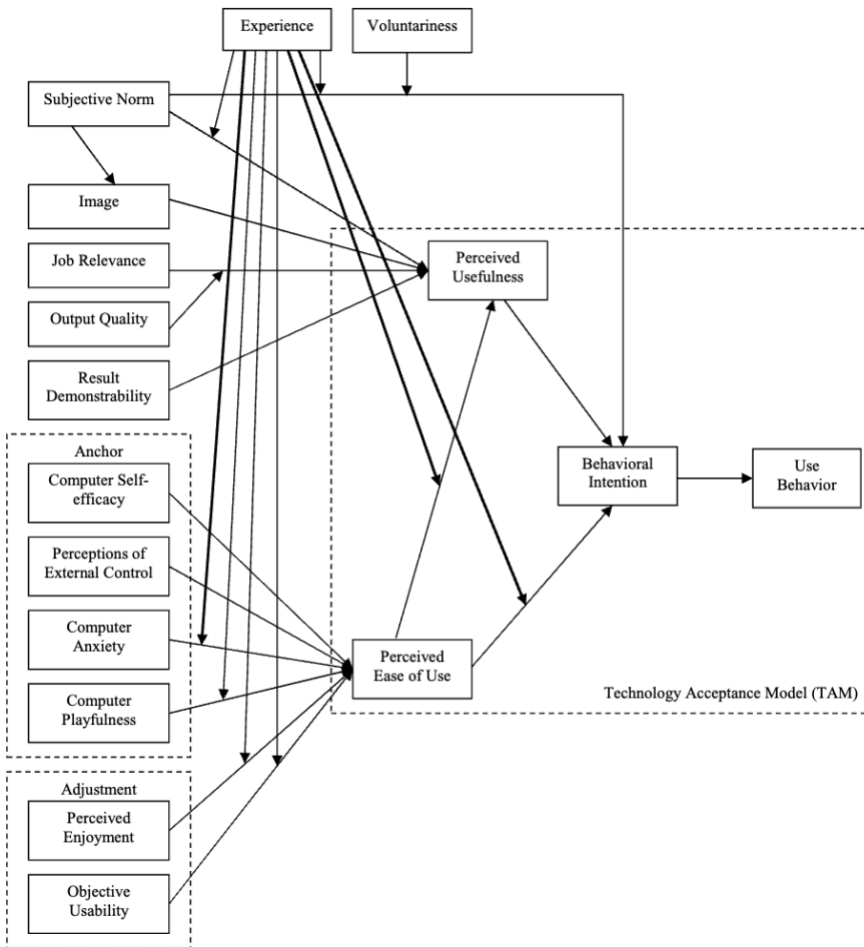
### **Technology Acceptance Model 3 (TAM3)**

Based on the TAM2 (Venkatesh & Davis, 2000) and the model of the determinants of perceived ease of use (see Table 2.5, Venkatesh, 2000), an integrated model of technology acceptance model (TAM3) has been proposed in a study by Venkatesh and Bala (2008).

Compared with the previous version of TAM2, this updated model incorporated six additional constructs: *computer self-efficacy*, *perception of external control*, *computer anxiety*, *computer playfulness*, *perceived enjoyment*, and *objective usability*, as depicted within the dotted line boxes (see Figure 2.3). In addition, this model has introduced the moderating effect of experience on the relationships between (1) perceived ease of use and perceived usefulness, (2) computer anxiety and perceived ease of use, and (3) perceived ease of use and behavioral intention, which are represented by the three thick lines in Figure 2.3.

**Figure 2.3**

*Extended Technology Acceptance Model (TAM3, Venkatesh & Bala, 2008)*



*Note.* Thick lines indicate new relationships proposed in TAM3.

**Table 2.5***A Summary of Determinants of Perceived Ease of Use*

<b>Term</b>	<b>Definitions</b>
Computer Self-Efficacy	The degree to which an individual believes that he or she can perform a specific task/job using the computer (Compeau & Higgins, 1995a, 1995b).
Perception of External Control	The degree to which an individual believes that organizational and technical resources exist to support the use of the system (Venkatesh et al., 2003).
Computer Anxiety	The degree of “an individual’s apprehension, or even fear, when she/he is faced with the possibility of using computers” (Venkatesh, 2000, p. 349)
Computer Playfulness	“...the degree of cognitive spontaneity in microcomputer interactions” (Webster & Martocchio, 1992, p. 204).
Perceived Enjoyment	The extent to which “the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use” (Venkatesh, 2000, p. 351)
Objective Usability	A “comparison of systems based on the actual level (rather than perceptions) of effort required to complete specific tasks” (Venkatesh, 2000, pp. 350–351).

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### **Unified Theory of Acceptance and Use of Technology (UTAUT)**

Apart from the development of TAM, a separate thread of models to explore users’ adoption and use of technologies is the Unified Theory of Acceptance and Use of Technology (UTAUT). Among all models, the unified theory of acceptance and use of technology (UTAUT) has been extensively validated in the literature and demonstrated good robustness in its

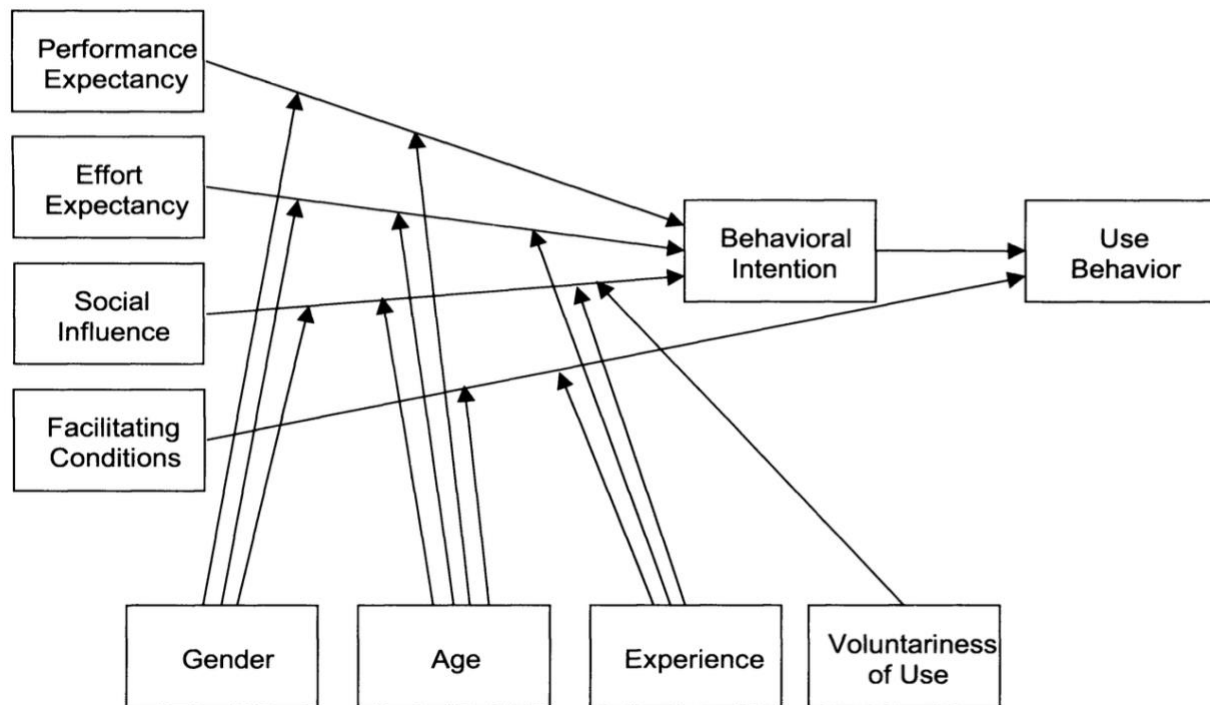
explanatory power across many situations (Bazelais et al., 2024). The UTAUT (see Figure 2.4) identifies four constructs that play significant roles as direct determinants of user acceptance and usage behavior (i.e., *performance expectancy*, *effort expectancy*, *social influence*, and *facilitating conditions*) and four moderators that influence the relationship are also identified (i.e., *gender*, *age*, *experience*, and *voluntariness of use*)

Performance expectancy is defined as “*the degree to which an individual believes that using the system will help him or her to attain gains in job performance*” (Venkatesh et al., 2003). The UTAUT assumes that when users perceive that using the stem will help them in job achievement, they are more likely to develop stronger intentions to use the stem. However, such influence is moderated by gender and age. Effort expectancy is defined as “*the degree of ease associated with the use of the system*” (Venkatesh et al., 2003) and it has origins from TAM and TAM2 in the name of the perceived ease of use. The UTAUT assumes that the easier users perceive the system to be, the stronger intentions they will develop about using the system, and the link is moderated by gender, age, and experience. Social influence is defined as “*the degree to which an individual perceives that important others believe he or she should use the new system*” (Venkatesh et al., 2003). The new term draws inspiration from the subjective norm and image, as depicted in TAM2. The UTAUT believes that an individual’s behavior is influenced by how others believe them as a result of having used the technology and simply put, when an individual thinks that important person thinks he or she should perform the behavior, he or she is more likely to do that. Facilitating conditions are defined as “*the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system*” (Venkatesh et al., 2003). Different from the previous three constructs that affect

behavioral intention, the facilitating conditions will directly affect use behavior moderated by age and experience.

**Figure 2.4**

*The Unified Theory of Acceptance and Use of Technology (UTAUT, Venkatesh et al., 2003)*



### Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)

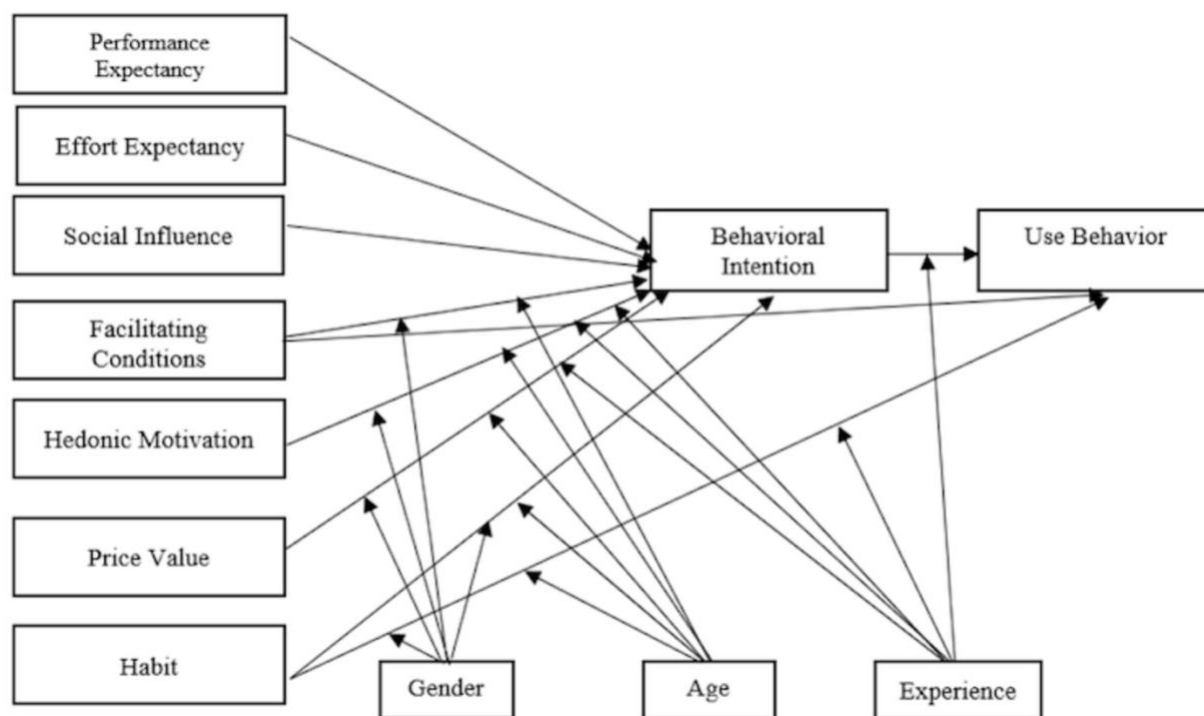
Venkatesh et al. (2012) proposed the UTAUT2 intending to explore the factors that affect the acceptance and use of technology from the consumer's perspective. Compared with the previous UTAUT, the UTAUT2 incorporated three new constructs: *hedonic motivation*, *price value*, and *habit* (see Figure 2.5).

Hedonic motivation is defined as pleasure or fun that is derived from using technology (Venkatesh et al., 2012). Price value is defined as consumers' cognitive tradeoff between the perceived benefits of the applications and the monetary cost of using them (Dodds et al., 1991; Venkatesh et al., 2012). Generally speaking, a price value is positive when the perceived benefits

of using the technology outweigh the monetary cost of using that technology, thus contributing positively to the behavioral intention to use the technology. Habit is conceptualized as the extent to which people tend to perform behaviors automatically because of learning (Limayem et al., 2007; Venkatesh et al., 2012).

**Figure 2.5**

*The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2, Venkatesh et al., 2012)*



### **Rationale for Using Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)**

The strongest motive for choosing UTAUT2 as the framework for this study is its wide applications to test new technologies in higher education settings. For example, Dajani & Abu Hegleh (2019) examined the antecedents that influence students' use of animation inspired by the UTAUT2, confirming the applicability of the model to explain the behavior intention to use animation in universities. Zacharis and Nikolopoulou (2022) tested university students' behavioral intention to use eLearning platforms in the post-pandemic era by adding learning

value and empowerment in learning to the UTAUT2. The study also yielded satisfying results, with 71.9% and 43.0% of the variance in students' behavioral intention and use being explained by the model. Other cases include lecture capture systems (Farooq et al., 2017), mobile devices (Hoi, 2020), and learning management systems (Raza et al., 2022; Zwain, 2019).

The second motive for choosing UTAUT2 as the framework for this study is the predictive power. Venkatesh et al. (2012) mentioned that UTAUT2 has been examined in various cultural settings, boasting improved applicability and substantiality. Generally, UTAUT explains 56% of the variance in intention and 40% in use, while UTAUT2 shows a significant improvement, accounting for 74% of the variance in behavioral intention and 52% in technology use.

A more recent version of UTAUT3 has been proposed by Farooq et al. (2017) who incorporated a new construct of *personal innovativeness* (PI) when they explored the role of PI for determining acceptance and use of a specific lecture capture system in executive business graduates. Given the novelty of the UTAUT3 model, it has not received as much attention as its predecessors and was therefore not selected for this dissertation.

### **Theoretical Framework**

A considerable variety of help-seeking types have already been explored in the literature. Theoretically, researchers have attempted to differentiate among instrumental, executive, and avoidant help-seeking (Algharaibeh, 2020), autonomic and dependent help-seeking (Harpaz et al., 2023), goal-directed, exploratory, and avoidant help-seeking (Shi et al., 2021). Practically, diversified help-seeking tools have emerged, including live chat tools (Broadbent & Lodge, 2021), peer-assisted academic support mechanisms (Garcia-Melgar et al., 2021), workshops (Banks et al., 2021; Mckenna & Kyser, 2022). Positioned at the intersection of praise and

critique, ChatGPT warrants further research as an academic help-seeking tool, like other help-seeking sources mentioned before.

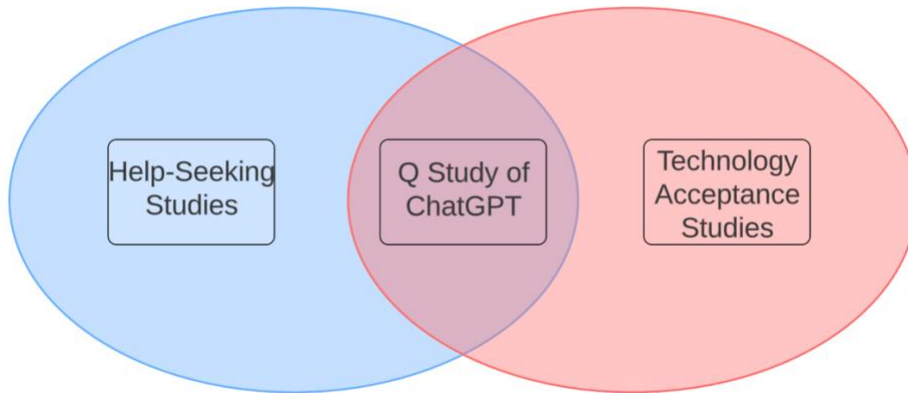
This Q study of ChatGPT drew inspiration from both help-seeking studies and technology acceptance studies (see Figure 2.6). By situating ChatGPT as a widely used help-seeking tool, this study attempted to examine its acceptance and utilization by a specific group of learners—undergraduate students. For example, research question two examined the main uses of ChatGPT, and research questions three and four were focused on the factors affecting their use of ChatGPT, which are frequently topics examined in existing help-seeking and technology acceptance studies.

Research on technology acceptance relies heavily on hypothesis testing methods. In these studies, researchers often develop hypotheses about the factors influencing the acceptance and utilization of technological tools and then test their predictive relationships (Jo & Bang, 2023; Lai et al., 2023; Liu et al., 2024; Ma & Huo, 2023; Polyportis & Pahos, 2024; Tanantong & Wongras, 2024; Zou & Huang, 2023). The uniqueness of this dissertation is that it doesn't employ any hypothesis testing. Instead, this study employs Q methodology to explore the potential factors that may affect learners' perceptions of the tool, as indicated by the first research question (McKeown & Thomas, 2013; Watts & Stenner, 2012).

ChatGPT offers a wide range of capabilities in assisting learners and is widely used as an academic help-seeking tool. In the meanwhile, extensive technology acceptance studies have explored the acceptance and utilization of ChatGPT. This study aims to integrate concepts from both help-seeking research and technology acceptance studies to examine ChatGPT, including its perceptions, primary uses, and influencing factors with the help of Q methodology.

**Figure 2.6**

*A Theoretical Framework of the Study*



## **CHAPTER 3**

### **METHODOLOGY**

This chapter outlines the methodology employed in this dissertation, detailing the research design, data collection methods, and analytical approaches. This chapter begins with an overview of Q methodology. It continues with the researcher's subjectivity statement followed by procedures of Q methodology. This chapter goes on with the description of the research design, explaining important steps (i.e., concourse development, Q set development, Q sort and questionnaire, and data analysis) in this dissertation. Finally, this chapter provides a brief description of ethical considerations.

#### **History of Q Methodology**

Q methodology was proposed by William Stephenson, an English psychologist and physicist, in the 1930s when he tried to analyze subjective viewpoints with the help of factor analysis. Q methodology typically starts from the development of the concourse, which represents a comprehensive list of all potential statements related to a topic of interest (Brown, 1993; McKeown & Thomas, 2013). The statements in the concourse may come from various sources including literature review, individual or group interviews, and even researchers' own experience (Brown, 1993; Cross, 2005). As the concourse is an exhaustive list of propositions of the research topic, the number of statements in a concourse could be hundreds (Brown, 1993; Watts & Stenner, 2012). For practical purposes, a smaller number of representative statements, or the Q sample (Brown, 1993; McKeown & Thomas, 2013), are selected for the following Q-sort activity, which is the data collection process to capture the participants' subjective

viewpoints (Brown, 1993). During the Q-sort activity, the participants follow the instructions to sort the Q sample statements from most agree to most disagree (McKeown & Thomas, 2013). Participants have to compare the statements and evaluate how they think of each in relation to the others (Rieber, 2020). While traditional Q-sort activity is done face-to-face with paper-based cards, there are more and more digital tools available to researchers for convenient data collection.

By-person factor analysis of the Q-sort data can reveal the patterns of subjective viewpoints among the participants (McKeown & Thomas, 2013; Watts & Stenner, 2012) and the viewpoints shared by clusters of participants are called factors. The Q factors are then interpreted by the researcher, "*with attention given to the relevance of such patterns to existing or emerging theories, propositions, and the like*" (McKeown & Thomas, 2013, p.13). Participants' comments on their Q sorts are also collected to assist the interpretations of the generated Q factors (Watts & Stenner, 2012).

As a systemic approach to studying human subjectivity, Q methodology is often used to analyze the self-referenced perspectives of individuals and to reveal the similarities and differences between these perspectives (Brown, 1993; Watts & Stenner, 2012). Q methodology is often regarded as a mixed methods approach since it employs a statistical method of factor analysis to reveal clusters of participants with diverse perspectives combined with inductive reasoning which is typically found in qualitative studies (Ramlo & Newman, 2011). That is why Brown (1996) indicated that the use and dissemination of Q methodology have combined the strengths of quantitative and qualitative traditions. A key advantage of Q methodology is that it can be done with a small sample size, and even one participant doing the sorting several times from different perspectives can provide some insights (Gailey & Knowles, 2022).

### **Researcher Subjectivity Statement**

In qualitative research, the researcher is often considered the primary instrument for data collection and interpretation. It is therefore important for researchers to identify potential influences of their beliefs, values, or assumptions that may affect the design of data collection methods and the interpretation of study results (Maxwell, 2013). In the context of this study, my personal experiences, beliefs, and values are likely to influence the following four aspects, including my opinion of using technology in teaching, the development of the Q statements, the selection of the Q set, and the interpretation of results.

I used to work as a college instructor and when the COVID-19 pandemic struck, all instructional activities were moved online. As an instructor, I witnessed firsthand the myriad challenges faced by both students and instructors. One prominent difficulty was the struggle for students to seek academic assistance. In the pre-pandemic era, students could easily approach their instructors after class or during designated office hours for clarification or additional help. However, with the sudden transition to remote learning, these traditional avenues became obsolete. Many students found it challenging to reach out for help virtually, either due to technical barriers or unfamiliarity with online communication platforms. Instructors encountered challenges too, particularly concerning technology employment. The sudden transition to remote teaching necessitated a rapid adaptation to various online tools and platforms. From navigating video conferencing software to managing online assignments and assessments, instructors found themselves grappling with a steep learning curve. Internet connectivity further exacerbated these challenges, with unstable conditions disrupting class sessions and hindering communication with students.

Embracing technology in teaching, especially through the integration of new tools, offers significant benefits for instructors and students. These advancements enhance engagement, accessibility, and flexibility within the learning environment. New tools like interactive whiteboards and virtual reality simulations enable instructors to create dynamic and immersive experiences. Technology also fosters active learning and collaboration, which were extremely important during the pandemic as students often expressed a sense of loss. During the pandemic, I used to create online chat groups where students could either post questions in public or ask each other privately. A lot of students mentioned this as a useful way to get connected and seek academic help. Therefore, I always believe that the clever and wise integration of technology in teaching promotes student engagement and contributes to better learning outcomes.

In this study, one source for developing the Q concourse was my personal experience using ChatGPT as a help-seeking tool. As a frequent user of ChatGPT, I have used it mainly for generating ideas, proofreading grammatical mistakes, and improving the structure of my writing. I have a favorable viewpoint regarding the use of ChatGPT for academic help-seeking purposes. Also, as a technology lover, I am always holding a positive viewpoint regarding the use of technology in instructional design. I tend to have curiosity and interest in trying different new technologies, apart from ChatGPT. It is therefore highly likely that the Q statements are biased to some extent. To ensure the validity and reliability of the Q statements in this study, I attempted to generate these statements from other sources as well, including the UTAUT2 model (Venkatesh et al., 2012), literature, and a pre-study survey.

To minimize potential biases in interpreting the results, I also took some measures. For example, a Q-sort questionnaire was employed to let participants reflect further and add more details on the research questions. Such measures could ensure that the participants' viewpoints

were well represented. Also, the interview generated more detailed information that might not be well represented in the Q-sort questionnaire.

Another aspect to be noted is the background where I was born and raised. I was born in an environment where obedience to the instructor is sometimes a manifestation of respect. Such practices have affected me negatively as a more introverted person who dares not to question even when I feel the need to do so. Compared with extroverts, I often link introverts to adept listeners who tend to observe and absorb information before contributing their insights. In qualitative studies, this skill can be invaluable during data collection, as the researcher may be more attuned to subtle nuances in participants' narratives. Introverts also prefer written communication or one-on-one interactions rather than engaging in large group settings. This preference can influence how the researcher communicates their findings, potentially leading to a description of research findings clearly and concisely.

The bias that was beyond my control was my English proficiency. I started learning English as a foreign language in middle school. Although I went to the U.S. in 2014 during my master's studies as an exchange student and I had five years of working experience as an English instructor, I am still making progress in English. From the inoculation of research ideas to data collection and the final interpretation in this study, English was used throughout the process. It is still highly possible that my English proficiency had some impact on this study, particularly during participant interviews.

I acknowledge that the inherent subjectivity permeates the design of this study, and it is almost impossible to get rid of subjectivity completely. As Maxwell (2013) suggested, a well-developed and explicit strategy to deal with subjectivity or bias is to document and reflect on all

aspects of the experience related to the study. Embracing subjectivity, rather than seeking to eliminate it, allows for a more authentic representation of the research findings.

### **Procedures of Q Methodology**

Giblin et al. (2021) noted that learners' help-seeking behavior has not been explored extensively, as existing studies rely heavily on quantitative or survey-based tools with pre-defined options. To address that gap, Q methodology was selected for this study because of its affordances to identify a wide range of views related to a given topic. Q methodology uses both qualitative and quantitative approaches to deal with the information that comes out of the forced sorting activity, and it provides quantitative statistical techniques for researchers to unveil the pattern behind the subjective viewpoints of the participants (Janson et al., 2008). The main components of a typical Q study involve the development of Q statements, the Q sort, and the Q analysis (Kopcha et al., 2016). Table 3.1 presents a detailed description of all important steps in a Q study. Additionally, things to be noted within each step are discussed.

**Table 3.1**

*A Summary of Main Steps in a Q Study*

<b>Step</b>	<b>Main Action</b>	<b>Notes</b>
1	Identify the research topic and research questions	<ul style="list-style-type: none"> <li>The research questions should be subjectivity-related, like perceptions, perspectives, attitudes, or viewpoints.</li> </ul>
2	Develop the concourse of statements	<ul style="list-style-type: none"> <li>The concourse should be a comprehensive list of statements related to the research topic.</li> </ul>

- 
- |   |  |
|---|--|
|   | <ul style="list-style-type: none"><li>• Using a variety of methods can help make the concourse as complete as possible.</li><li>• The concourse is suggested to use ordinary conversation language that is easy to understand.</li></ul>   |
| 3 | Develop the Q set <ul style="list-style-type: none"><li>• The selection of statements from the concourse should ensure the highest level of representativeness possible.</li></ul>   |
| 4 | Administer the Q-sort survey <ul style="list-style-type: none"><li>• Proper strategies (paper-based cards or online websites) should be used to administer the Q-sort activity.</li><li>• Detailed instructions should be provided when necessary.</li><li>• The number of sorting slots should be carefully made the same as that of the statements used.</li></ul> |
| 5 | Analyze the Q sorts <ul style="list-style-type: none"><li>• The analysis can be done with online or desktop tools.</li><li>• Special training is needed in the analysis.</li></ul>   |
| 6 | Interpret the Q factor analysis <ul style="list-style-type: none"><li>• The interpretation relies on qualitative skills.</li><li>• The use of a crib sheet is recommended.</li></ul>   |
| 7 | Report the results <ul style="list-style-type: none"><li>• The format of the report should be aligned with the requirements.</li></ul>   |
-

## Research Design

A substantial body of research has used the UTAUT models to investigate learners' acceptance and utilization of ChatGPT. A common goal in these studies is to identify the factors that significantly predict user's acceptance or utilization of ChatGPT. Structural equation modeling or path analyses are commonly used in these studies (Liu & Ma, 2024; Liu et al., 2024; Zou & Huang, 2023). The purpose of this study, however, was not to statistically identify the significant factors affecting college students' use of ChatGPT like those existing studies. Instead, this dissertation aimed to explore undergraduate students' general perceptions of ChatGPT, aligned with the goal of Q to understand the viewpoints of a group on a particular topic instead of generalizing the results to a larger population (Watts & Stenner, 2012).

Table 3.2 presents a complete description of the data collection sources and analytical methods for each of the four research questions.

**Table 3.2**

*A Summary of Research Questions, Data Collection, and Analytical Methods*

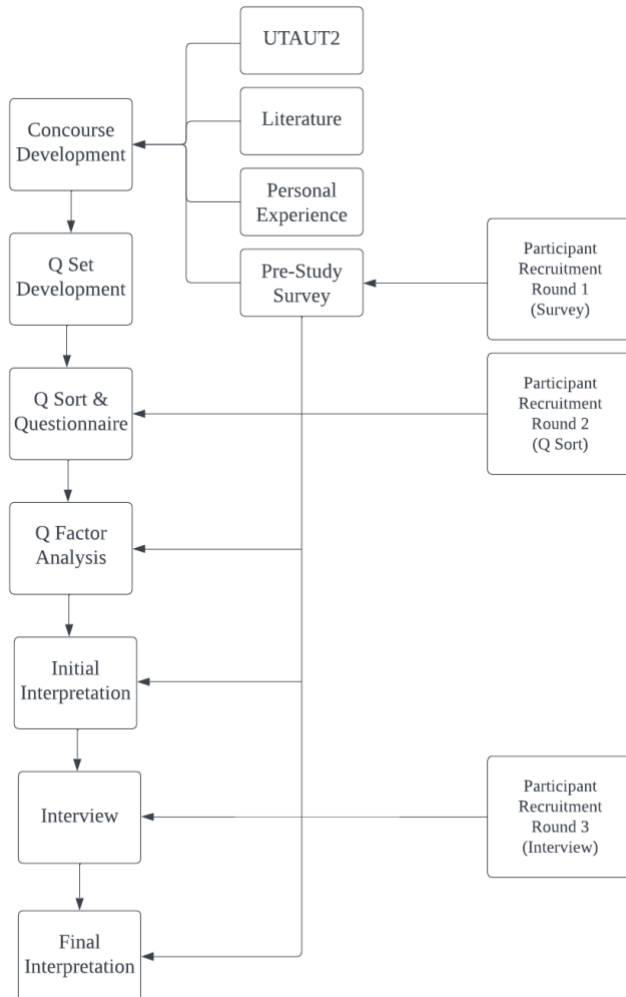
Research Question (RQ)	Data Collection Source	Analyses
RQ#1: How do undergraduate students perceive the use of ChatGPT as an academic help-seeking tool?	Literature review; Q sorts; After-sorting interview.	Q factor analysis (Brown, 1980; Watts & Stenner, 2012)
RQ#2: How do undergraduate students use ChatGPT for academic help-seeking purposes?	Post-sorting survey; post-study interview.	Thematic analysis (Given, 2008); Content analysis (Given, 2008)

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RQ#3: What factors motivate undergraduate students' use of ChatGPT as an academic help-seeking tool?	Pre-study survey; post-study interview.	Thematic analysis (Given, 2008); Content analysis (Given, 2008)
RQ#4: What factors prevent undergraduate students' use of ChatGPT as an academic help-seeking tool?	Pre-study survey; post-study interview.	Thematic analysis (Given, 2008); Content analysis (Given, 2008)

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To ensure the rigor of this study, guidelines by Watts and Stenner (2012) were followed for this Q study that involved multiple participants. Figure 3.1 illustrates the main seven phases of this study: concourse development, Q set development, Q sort and questionnaire, Q factor analysis, initial interpretation, interview, and the final interpretation. All documentation for the study was submitted to and approved by the Institutional Review Board (IRB).

**Figure 3.1***A Visual Flow of the Study Procedure***Concourse Development**

A *concourse* is a broad range of viewpoints, perceptions, and ideas about the topic being investigated in a Q study (Brown, 1980; Watts & Stenner, 2012). Theoretically speaking, the volume of a concourse can include countless statements, potentially reaching a magnitude of hundreds or even extending infinitely (McKeown & Thomas, 2013). Watts and Stenner (2012) suggested that the conclusion of a concourse development occurred when there were no new opinions about the investigated topic. Regarding the sources to gather opinions that make up the

concourse, Brown (1980) suggested that subjective expressions could be found in daily conversations, published commentaries, literature, and interviews.

The construction of the concourse in this study was guided mainly by the four sources. First, the 10 constructs (i.e., performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, age, gender, and experience) from the UTAUT2 (Venkatesh et al., 2012) were employed for an initial draft of the statements (see Appendix A). Second, an additional eight constructs (e.g., data privacy, bias, human and job replacement, educational integrity, transparency, depersonalization of learning, quality of response, and overreliance) from the literature were employed to supplement the existing Q statements. Third, two of the constructs (i.e., technical issues, and quality of response) came from researchers' personal experience with ChatGPT for academic help-seeking purposes. Lastly, a pre-study survey (see Appendix D) was conducted to gather students' perceptions about the use of ChatGPT for academic help-seeking purposes. Demographic information, including gender, age, and major were collected. Open-ended questions allowed those participants to reflect on their help-seeking experience with ChatGPT as well as the factors that motivated or hindered the use of ChatGPT for academic help-seeking purposes.

An initial draft yielded a total of 42 statements (see Appendix A) based on the 19 constructs. The final Q statements (see Table 4.2) were specified after the results of the pre-study survey were analyzed.

### **Q Set Development**

The next step in a Q study is to choose a reasonable number of statements from the concourse to form a *Q set* which is defined as a collection of subjective viewpoints from the large concourse, and it represents a balanced selection of potential viewpoints related to the

investigated topic (Donner, 2001). Watts and Stenner (2012) explained that a rigorous and balanced Q set must demonstrate good coverage related to the research question and its content must be broadly representative of the opinion domain or concourse at issue. In the meanwhile, a balanced Q set will not appear to be value-laden or biased towards some particular viewpoint or opinion (Watts & Stenner, 2012). In Q methodology, a sample of items must be provided that is similarly representative of some relevant opinion (Watts & Stenner, 2012, p. 58).

Watts and Stenner (2012) proposed the development of a reasonable Q set in either a structured or unstructured way. Structured Q sets break down a subject matter into different component sub-themes or issues and aim to include a roughly equal number of statements related to each sub-theme, while unstructured Q sets treat the subject matter as a single whole and aim to produce a representative sample related to that whole. In this study, a structured Q set was employed, meaning that a roughly equal number of statements was selected from each of the constructs.

### **Q Sort and Questionnaire**

A common Q sort typically involves a symmetrical bell curve sorting grid, a reasonable number of Q statements, detailed instructions for participants, and several supplementary questions that are designed after participants finish the sorting of these statements. While a lot of Q-sort is done in a face-to-face setting, using software has become a trend nowadays. Common tools include Lloyd's Q sort tool (Rieber, 2019), Easy-HtmlQ (Banasick, 2015), Q method software (Lutfallah & Buchanan, 2019), and Q-TIP (see <https://qtip.geography.wisc.edu/#/faq>).

Purposeful sampling was employed in this study. The participants in this study were undergraduate students from an educational technology course at a southeastern Research 1 university. The course was titled "Teaching and Learning with Technology", and the purpose of

the course was to introduce a variety of computer tools into classroom instructions. The course was open to all majors at the university, so students enrolled in this course were composed of education and non-education majors from different years of study. The three-credit course was typically 16 weeks long and students were required to meet 150 minutes per week (twice a week for 75 minutes each or three times a week for 50 minutes each). Participants enrolled in this course were selected because in this course lots of educational tools were introduced and students had a deeper understanding of GenAI tools like ChatGPT compared to their peers in other courses. As the course syllabus indicates, students are not allowed to use AI for coursework unless explicitly authorized by the course instructor. However, the course instructor encourages students to use AI tools like ChatGPT to help study and students should take full responsibility for AI-generated content and give proper credit like any other reference materials.

The study recruited participants in the fall semester of 2024. The participants were selected based on two criteria: (a) full-time enrollment in the course and (b) prior use of ChatGPT for help-seeking purposes. Upon approval from the IRB, the recruitment letter (see Appendix C) and consent letter (see Appendix B) were provided to both the instructor and the students enrolled in the course.

As shown in Figure 3.1, three rounds of participation solicitation occurred in this study. The first round involved a pre-study survey (see Appendix D) that aimed to collect preliminary information to refine the Q concourse. Students reflected on the frequency of ChatGPT use, the evaluation of past help-seeking experience with ChatGPT, and their perceived factors hindering or motivating the use of ChatGPT for academic help-seeking experience.

The second round was participants doing the online Q-sort which involved an online Q-sort worksheet and several follow-up questions that included both multiple-choice questions and

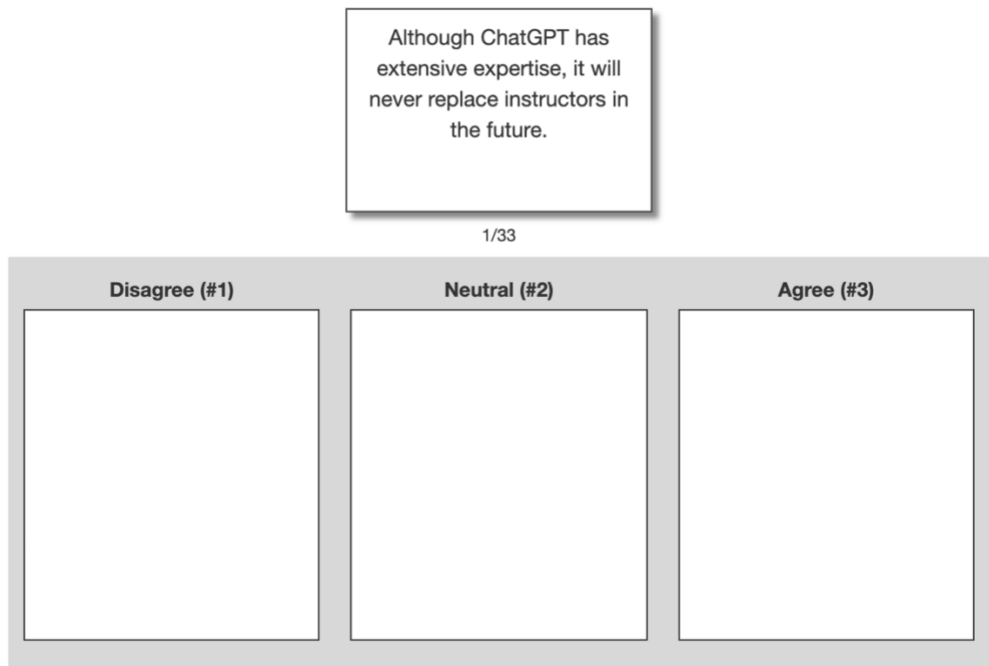
open-ended questions (see Appendix E). Participants were invited to put all the finalized statements into three files: one pile of statements they agreed with, one pile of statements they disagreed with, and one pile full of statements they felt neutral about (See Figure 3.2). After they finished the initial sorting, participants were provided with the prompt, “Please sort these statements based on your agreement with them when you seek help with ChatGPT.” They needed to re-sort all 33 statements into the inverse pyramid-shaped sorting grid (see Figure 3.3). The Q-sort worksheet showed the arrangement of statements in this study, with one slot for each of the 33 statements. All statements were organized in the form of a normal distribution, with 9 columns having headings from +4 (statements they agree with the most) to -4 (statements they disagree with the most). After participants finished the Q-sort activity, they were invited to answer some supplementary questions (see Appendix E) related to their sorting experience. For example, participants reflected on the reasons why they agreed or disagreed with certain statements. They also explained the main use of ChatGPT when they needed academic assistance and the factors that affected their use of ChatGPT for academic help-seeking purposes.

The third round involved participants being interviewed about their sorting experience and reflections (see Appendix F). A total of five participants were invited for the interview. The semi-structured interview took around 20 minutes for each participant, which was audiotaped for further analysis. Students reflected on their perceptions of ChatGPT for help-seeking purposes, the main use of ChatGPT, and the benefits and drawbacks of using ChatGPT. In this study, participants for the second and third rounds of data collection were drawn from the same population. Students were completely voluntary to participate, and a \$5 Amazon gift card was provided to each participant who consented to and was selected for the interview.

The use of multiple data collection methods, or data triangulation, has ensured the credibility and validity of the findings (Greene, 2007). Data triangulation has gained significant attention in the field of online help-seeking research, particularly in studies adopting a mixed research design (Er et al., 2015; Stretton et al., 2018). For instance, a study by Er et al. (2015) employed four Likert-type items, two open-ended questions, as well as email communication logs and notes as data sources, highlighting how combining qualitative and quantitative results through triangulation can facilitate a deeper comprehension of students' help-seeking processes when utilizing online tools.

**Figure 3.2**

*Initial Sort of Q Statements*



*Note.* The finalized number of statements in this study was 33 based on the pre-study survey results.

**Figure 3.3***The Q Sort Worksheet*

Disagree Directions: Please sort the statements below into columns based on how much you agree or disagree with each one. Place statements you strongly disagree with on the far left (-4), neutral statements in the middle (0), and statements you strongly agree with on the far right (+4). Agree

-4	-3	-2	-1	0	1	2	3	4

Disagree	Neutral	Agree
My previous experience with similar AI-based tools influences my perception of ChatGPT for help-seeking purposes.	I find it frustrating when using the free version of ChatGPT during rush hour periods, as errors occur frequently.	The support staff in various sectors will face the risk of unemployment when ChatGPT is used as an automatic help-providing tool.
Interacting with ChatGPT is entertaining for me, beyond its academic utility.	I am concerned that students may use ChatGPT to cheat in assignments or	I think that over-reliance on ChatGPT for

*Note.* The finalized number of statements in this study was 33 based on the pre-study survey results.

**Data Analysis**

After students finished the pre-study survey, their answers were analyzed. Thematic analysis (Given, 2008) was employed to generate themes regarding the factors that either motivated or prevented the use of ChatGPT as an online help-seeking strategy. According to Given (2008), “*Thematic analysis is a data reduction and analysis strategy by which qualitative data are segmented, categorized, summarized, and reconstructed in a way that captures the important concepts within the data*” (p. 867). Furthermore, descriptive statistics, such as frequencies and percentages were presented. The UTAUT2 model proposed by Venkatesh et al. (2012) was also employed to guide the analysis of the factors.

To answer research question #1, their sorting data was analyzed with KADE (Banasick, 2019), a desktop version of the web-based tool named KenQ analysis. This is a free software

specialized for Q factor analysis available for Microsoft, Apple MacOS, and Linux operating systems (see <https://github.com/shawnbanasick/kade>). Research questions 2, 3, and 4 will be answered similarly. Data from the post-sorting survey and post-study interview were analyzed. Thematic analysis (Given, 2008), content analysis (Given, 2008), and descriptive statistics like frequencies were presented. Detailed descriptions were presented in the results section in Chapter 4.

### **Ethical Considerations**

This study fulfilled all required protocol requests by the UGA Institutional Review Board (IRB). All study participants were informed about the research purpose, research procedures, and how the collected data would be used. Although there was low or no risk or harm to participants who chose to participate in this study, it was always their right to terminate the study at any point. All personal information (i.e., names and email accounts) collected in this study was kept confidential, and only their assigned participant numbers were reported in this study. All collected data was accessible to only the researcher and the data was used only for the structure of this dissertation.

## **CHAPTER 4**

### **RESULTS**

As mentioned in the previous chapter, this study involved three rounds of data collection, including a web-based pre-study survey, a Q-sort activity followed by supplementary survey questions, and semi-structured interviews with five participants. The sequential integration of diverse approaches to data collection and analysis was to enhance the reliability, depth, and overall quality of the findings. Aligned with the research design of the dissertation, this chapter reported the major results. First, the pre-study survey was analyzed, and a detailed explanation was provided regarding the final selection of the 33 statements in the Q set. This chapter went on to discuss the Q-sort results, including a detailed description of each of the three generated factors. Then, the three supplementary survey questions were analyzed regarding the primary uses of ChatGPT, the factors motivating their use of ChatGPT, and the factors that prevent their use of ChatGPT for help-seeking purposes. Finally, the chapter discussed the major findings from the semi-structured interviews with five selected participants.

#### **Pre-Study Survey Responses**

A web-based survey, developed using Qualtrics, was distributed to students enrolled in an educational technology course at an R-1 university in the United States. The survey targeted undergraduate students with prior experience in academic help-seeking behaviors with ChatGPT. The goal was to examine their general perceptions of using ChatGPT for academic help-seeking, which were then used to refine and enhance the preliminary Q statements (see Appendix A).

The survey was distributed to 189 students, yielding 35 responses. Of these, 2 responses were excluded as the respondents indicated no prior use of ChatGPT for academic help-seeking purposes, and an additional 12 responses were excluded due to a lack of completed survey data. This resulted in a final dataset of 21 valid responses. The course instructors attributed the low response rate to the asynchronous nature of the online course, which limited direct interaction between students and the instructor. Despite multiple reminders, many students were reluctant to complete the survey. This was further evidenced by 12 students who opened the survey but ultimately chose not to submit any responses.

As shown in Table 4.1, 71.43% of the participants were females. The participants' ages were approximately evenly distributed across five age groups: 18, 19, 20, 21, and 22 years old. The majority of participants were from the College of Business (57.14%), followed by the College of Education (33.33%). Additionally, there was one participant each from the College of Arts and Sciences and the School of Public and International Affairs. Among the 21 students surveyed regarding their frequency of using ChatGPT for academic help-seeking purposes, 14 students (66.67%) reported using it "sometimes." Additionally, seven students indicated higher levels of usage, with three students (14.30%) selecting "about half of the time," another three (14.30%) choosing "most of the time," and one (4.76%) reporting "always." None of the participants selected "never," indicating that all students had some engagement with ChatGPT, which was one of the criteria of the survey.

**Table 4.1***Demographics of the Pre-Study Survey Participants*

<b>Category</b>	<b>Counts</b>	<b>Percentage</b>
<b>Gender</b>		
Male	6	28.57%
Female	15	71.43%
Other	0	
<b>Age</b>		
18	4	19.04%
19	3	14.29%
20	7	33.33%
21	4	19.04%
22	3	14.29%
<b>Affiliated Colleges/Schools</b>		
College of Arts and Sciences	1	4.76%
College of Business	12	57.14%
College of Education	7	33.33%
School of Public and International Affairs	1	4.76%
<b>Total</b>	<b>21</b>	

To refine and enhance the preliminary Q statements, participants were invited to reflect on their previous academic help-seeking experience with ChatGPT through an open-ended prompt: “As an online learner, how is your academic help-seeking experience with ChatGPT?”

An inductive thematic analysis, which is a bottom-up approach that focuses more on the data itself without pre-set coding schemes or an existing theoretical framework (Braun & Clarke, 2006), was performed to examine if new themes emerged from the existing Q statements. The results indicated no new themes, but those participants provided more details that helped the inclusion of five additional statements into the final Q set (see Table 4.2). For example, one student mentioned that ChatGPT would never be able to replace human instructors in the future, a perspective not included in the preliminary Q statements. Additionally, two students noted that if students were to use ChatGPT to cheat on assignments or quizzes, it would negatively affect their learning outcomes. Another student pointed out that ChatGPT provided no reasoning based on which the results were generated, making the results less reliable. A fourth statement added to the final Q set reflected a student's concern that ChatGPT sometimes provided wrong answers on some topics, while on other topics it produced correct answers, ultimately limiting the use of ChatGPT for academic purposes. Moreover, several students mentioned that excessive reliance on ChatGPT for academic help-seeking could undermine their critical thinking abilities.

Furthermore, seven statements were adapted from the preliminary Q statements to make them simple and easy to read. All remaining statements were then screened to remove any double-barreled, biased, and leading ones. All these measures ensured that the final 33 statements were as comprehensive as possible to represent college students' perspectives regarding the use of ChatGPT for academic help-seeking purposes.

**Table 4.2***A Summary of Refined Q Statements*

<b>Themes</b>	<b>Statements</b>	<b>Status</b>
Performance	1. Interacting with ChatGPT improves my ability to	Appendix A
Expectancy	grasp complex concepts in my studies.	
	2. I believe that ChatGPT helps me achieve better	Adapted
	learning outcomes compared to other help-seeking tools like Google.	
Effort	3. Learning how to use ChatGPT for help-seeking	Appendix A
Expectancy	effectively does not require extensive effort.	
Social Influence	4. I am more likely to use ChatGPT for help-seeking	Appendix A
	purposes if it is recommended by instructors.	
	5. I am more likely to use ChatGPT for help-seeking	Appendix A
	purposes if it is recommended by students good at learning.	
Facilitating	6. ChatGPT is always available whenever I need	Appendix A
Conditions	academic assistance.	
	7. The instructor has provided me with guidance on	Appendix A
	how to use ChatGPT effectively for academic help-seeking.	
	8. ChatGPT can keep my help-seeking records across	Appendix A
	different devices, allowing me to catch up with the information seamlessly.	

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Gender	9. I believe that gender plays a role in how I perceive ChatGPT as a help-seeking strategy.	Appendix A
Age	10. I believe that age plays a role in how I perceive ChatGPT as a help-seeking strategy.	Adapted
Experience	11. My previous experience with similar AI-based tools influences my perception of ChatGPT for help-seeking purposes.	Appendix A
	12. Students with more experience using technology are more likely to find ChatGPT easy to use.	Appendix A
Hedonic	13. Interacting with ChatGPT is entertaining for me, beyond its academic utility.	Appendix A
Motivation		
Price Value	14. I am willing to devote time to learning to use ChatGPT, considering its great functions.	Appendix A
	15. Considering the benefits it offers, I believe that ChatGPT is worth the investment of a subscription of \$20 a month.	Appendix A
Habit	16. I find myself instinctively turning to ChatGPT whenever I encounter academic challenges.	Appendix A
	17. Even when other options are available, I habitually rely on ChatGPT as my primary source of academic help-seeking.	Appendix A

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Data Privacy	18. I am concerned about how my data is collected, stored, and used by ChatGPT when I use the tool for help-seeking.	Adapted
	19. When using ChatGPT for help-seeking, I am worried about my personal information being leaked.	Adapted
Bias	20. I am concerned about the potential biases in the responses provided by ChatGPT.	Adapted
Human and Job Replacement	21*. Although ChatGPT has extensive expertise, it will never replace instructors in the future.	Added from Survey Results
	22. The support staff in various sectors will face the risk of unemployment when ChatGPT is used as an automatic help-providing tool.	Appendix A
	23. I am concerned that the widespread adoption of ChatGPT for academic help-seeking purposes may lead to the devaluation of human educators.	Appendix A
Educational Integrity	24. I worry that relying on ChatGPT for academic help-seeking may undermine the value of authentic learning experiences.	Appendix A
	25*. I am concerned that students may use ChatGPT to cheat in assignments or exams, which may affect their learning outcomes.	Added from Survey Results
Transparency	26. I feel that ChatGPT should be more transparent about where the responses come from.	Adapted

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	27*. The lack of clarity about how ChatGPT generates its responses makes it difficult for users to trust the tool for academic help-seeking.	Added from Survey Results
Technical Issues	28. I find it frustrating when using the free version of ChatGPT during rush hour periods, as errors occur frequently.	Appendix A
Depersonalization of Learning	29. I feel that relying too heavily on ChatGPT for academic help-seeking undermines the importance of human-to-human interactions in the learning process.	Appendix A
Quality of Response	30. ChatGPT can provide some good answers to certain subjects, but on other topics it does not.	Adapted
	31*. Responses provided by ChatGPT can be wrong, making it less helpful for addressing academic inquiries.	Added from Survey Results
Overreliance	32. I worry that using ChatGPT too much can prevent me from developing independent problem-solving skills.	Appendix A
	33*. I think that over-reliance on ChatGPT for help-seeking may negatively affect my critical thinking.	Added from Survey Results

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*Note.* All five statements added from the survey results are indicated with an asterisk (\*).

### **Q-Sort Results**

Students from an educational technology course at an R-1 university in the United States were invited to participate in the web-based Q-sort activity. As Watts and Stenner (2012)

suggested, the number of Q-sort participants should be at least half the total number of Q statements. With this study comprising 33 Q statements, a minimum of 17 participants was anticipated. A total of 46 students participated in the Q-sort and one student was excluded because he was a graduate student, leading the final participant number to 45.

Table 4.3 presents the demographic information of the 45 participants who completed the Q sorts. The majority of participants were female students, accounting for 75.56% of the sample, while male participants comprised 24.44% ( $n = 11$ ). The age distribution of participants shows a concentration of younger participants, with 18-year-olds taking up the largest group ( $n = 15$ ), followed by 19-year-olds ( $n = 13$ ). Students aged 20 made up 22.22% of the sample ( $n = 10$ ), while 21-year-olds represented 13.33% ( $n = 6$ ). Only one participant, or 2.22%, was 22 years old. The distribution of participants across different years of study follows a similar pattern to that of age. Of the 45 participants, 21 (46.67%) were in their first year of study, 11 (24.44%) were in their second year, followed by 8 (17.78%) in their third year, and 5 students (11.11%) in the fourth year. A total of 17 majors were reported, with Communication Sciences and Disorders representing the largest share of 58.33%. Three students reported double majors, leading to the total number of majors exceeding the number of participants. Additionally, two students did not report their major: one had not yet decided on a major, while the other left the response blank.

**Table 4.3**

*Demographics of the Q-Sort Participants*

Category	Counts	Percentage
<b>Gender</b>		
Male	11	24.44%
Female	34	75.56%

<b>Total</b>	45	
<b>Age</b>		
18	15	33.33%
19	13	28.89%
20	10	22.22%
21	6	13.33%
22	1	2.22%
<b>Total</b>	45	
<b>Year of Study</b>		
First-year	21	46.67%
Second-year	11	24.44%
Third-year	8	17.78%
Fourth-year	5	11.11%
<b>Total</b>	45	
<b>Major</b>		
Accounting	1	2.08%
Biology (neuroscience)	1	2.08%
Chemistry	1	2.08%
Communication Sciences and Disorders	28	58.33%
Consumer Economics	1	2.08%
Exercise Science	1	2.08%
Family and Consumer Sciences	1	2.08%
Finance and Economics	1	2.08%

Housing Management and Policy	1	2.08%
International Affairs	1	2.08%
Journalism	2	4.17%
Music	1	2.08%
Physics	1	2.08%
Psychology	2	4.17%
Public Relations	1	2.08%
Risk Management and Insurance	1	2.08%
Spanish	1	2.08%
Undecided or No Responses	2	4.17%
<b>Total*</b>	48	

*Note.* Three students indicated a double major and the percentages are calculated based on the total number of 48, including those who had not decided on or reported their majors.

### Q Analysis and Interpretation

The data analysis process was completed using KADE (Banasick, 2019), a desktop version of the web-based tool named KenQ analysis tool, specifically version 1.2.1. The first step was to correlate the 45 Q sorts and then data variance was examined with a principal component analysis, resulting in the unrotated factor matrix table shown in Table 4.4.

**Table 4.4**

*Unrotated Factor Matrix*

Participant No.	Factor Number							
	1	2	3	4	5	6	7	8
1	0.44	-0.18	0.43	-0.01	-0.24	0.3	0.46	0.13

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2	0.45	0.16	-0.12	0.19	0.04	0.42	-0.37	-0.34
3	0.52	0.28	0.36	0.17	0.04	0.1	0.26	-0.12
4	0.61	0.09	0.17	-0.46	0.08	0.3	-0.12	0.22
5	0.6	0.41	0.08	0.04	0.04	-0.36	0.18	0.1
6	0.59	-0.17	0.11	-0.29	-0.25	-0.05	0.41	-0.16
7	0.15	0.74	0.09	-0.16	-0.21	0.04	0.29	-0.05
8	0.58	0.27	-0.06	-0.43	-0.03	0.13	-0.12	0.23
9	0.07	0.87	0.01	0.19	0	0.05	-0.1	0.01
10	0.53	0.43	0.31	0.31	-0.1	0.14	-0.32	-0.02
11	0.21	0.39	0.49	-0.08	0.56	-0.01	-0.13	-0.15
12	0.54	0.1	-0.51	-0.41	0.01	-0.02	-0.12	-0.02
13	0.25	0.35	-0.28	0.29	-0.57	-0.04	-0.13	-0.24
14	0.55	-0.67	-0.29	0.09	0.19	-0.09	0.14	-0.03
15	-0.09	0.2	-0.12	0.62	-0.01	0.05	-0.2	0.39
16	0.64	-0.34	-0.02	0.32	0.1	0.11	0.12	0.23
17	0.63	-0.32	0.18	0.42	-0.03	0.03	0.05	0.04
18	0.15	0.37	-0.3	-0.12	-0.22	0.65	-0.08	0.29
19	0.55	-0.23	0.33	0.04	-0.2	0.03	-0.17	0.06
20	0.19	-0.37	0.65	-0.32	-0.13	-0.07	-0.12	-0.05
21	0.59	-0.27	-0.2	-0.41	0.01	-0.13	-0.34	0.1
22	0.44	0.48	0.29	-0.1	0.02	-0.01	-0.25	0.02
23	0.44	0.41	-0.1	0.08	0.01	0.13	0.25	-0.34
24	0.86	-0.07	0.18	-0.13	0.12	0.08	-0.17	-0.04

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25	0.66	0.25	-0.02	-0.1	-0.35	-0.26	-0.11	0.33
26	0.37	-0.11	0.04	0.08	-0.26	-0.11	-0.31	-0.13
27	0.56	-0.59	-0.11	-0.13	-0.14	0.16	-0.12	0.26
28	0.39	0.05	-0.45	0.07	0.26	0.23	0.1	-0.21
29	0.36	-0.75	-0.2	0.19	-0.06	-0.06	-0.17	-0.09
30	0.69	-0.33	-0.31	0.21	-0.03	0.1	0.2	-0.02
31	0.65	-0.19	0.11	0.26	0.34	0.32	-0.15	-0.03
32	0.31	-0.23	0.16	0.48	-0.1	0.08	0.29	0.14
33	0.05	0.56	-0.43	0.04	-0.15	0.22	0.2	0.24
34	0.61	0.23	0.25	0.06	-0.22	-0.3	0	-0.18
35	0.52	-0.34	0.28	-0.08	0.14	0.41	0.15	-0.24
36	0.69	-0.06	-0.29	-0.09	-0.22	0.22	-0.03	-0.21
37	0.31	0.43	-0.35	-0.32	0.04	0.05	0.29	-0.24
38	0.62	0.33	0.06	0.17	0.4	-0.19	-0.01	-0.06
39	0.57	0.19	0.01	-0.15	0.18	-0.23	0.01	0.06
40	0.63	-0.34	-0.27	0.09	-0.34	-0.32	-0.03	-0.16
41	0.42	0.55	-0.26	0.31	0.07	-0.28	-0.08	0.02
42	0.54	0.3	0.36	0.08	-0.06	-0.05	0.12	0.33
43	0.71	-0.03	0.05	-0.07	-0.17	-0.39	0.04	-0.09
44	0.49	-0.07	-0.28	-0.07	0.4	-0.21	0.22	0.46
45	0.67	0.02	-0.29	0.02	0.49	-0.17	-0.02	-0.08
<b>Eigenvalues</b>	11.88	6.19	3.34	2.66	2.29	2.17	1.81	1.68

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<b>% Explained</b>								
<b>Variance</b>	26	14	7	6	5	5	4	4
<b>Cumulative %</b>								
<b>Explained</b>	26	40	47	53	58	63	67	71
<b>Variance</b>								

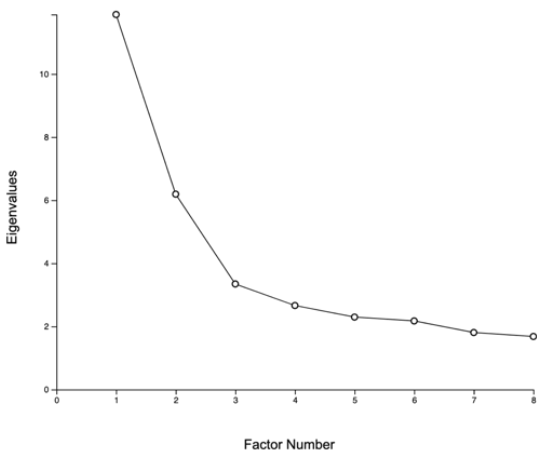
*Note.* All numbers were rounded to two decimal places.

A key step was then to determine the number of factors retained for rotation. According to the *Kaiser-Guttman* criterion, eigenvalues of less than 1.00 are often a cut-off point for the extraction and retention of factors (Watts & Stenner, 2012, p. 105). That means only factors with an eigenvalue of 1.00 or above should be retained for rotation. This method, however, didn't help reduce the number of factors for rotation as all the eight factors in Table 4.4 have an eigenvalue higher than 1.00. A second method was employed to further reduce the number of factors for rotation. According to Brown (1980), only factors that have two or more significant factor loadings following extraction should be retained. Based on the formula proposed by Watts and Stenner (2012), the factor loading at the 0.01 level is calculated by multiplying 2.58 (critical value at the  $p = 0.01$  level) with the inverse of the square root of the number of items in the Q set (33 statements), yielding a result of 0.449 (rounded to 0.45). An examination of Table 4.4 reveals that factors 1 to 5 satisfy this criterion and could be retained for rotation. Factors 6 to 8 were excluded as they each included only one factor loading higher than 0.45. A stricter rule, *Humphrey's rule*, was also applied in this study to determine the number of factors. According to Brown (1980) and Watts and Stenner (2012), a factor should be retained if the cross-product of the two highest loadings (regardless of the sign) should exceed twice the standard error. In the context of this study, the standard error is 0.17 (the inverse of the square root of the number of

items in the Q set). An analysis of Table 4.4 indicates that only Factor 1 and Factor 2 meet the criteria for retention. However, the rule could be made less strict by requiring the cross-products to exceed the standard error, instead of twice the standard error (Watts & Stenner, 2012, p.108). A fourth method was then employed to examine the scree plot. According to Watts and Stenner (2012), the number of factors to extract is indicated by the elbow point where the line changes slope. Figure 4.1 indicates that three factors should be retained as the plot shows a noticeable “elbow” after the third factor, where the slope of the eigenvalues begins to flatten. Considering that choosing four factors for rotation will result in more participants being unable to rotate onto any factors. Therefore, retaining three factors for rotation captures a meaningful amount of variance while avoiding the inclusion of factors with diminishing explanatory power.

### Figure 4.1

#### *Scree Plot*



After deciding to retain three factors for the next step, varimax rotation was employed since this method aims to maximize the difference between factors without interfering with the underlying structure of the solution (Donner, 2001). As previously stated, a factor loading is considered significant at the 0.01 level if it exceeds 0.45. Therefore, only loadings greater than

0.45 will significantly contribute to the factors. Table 4.5 presents the factor loadings after varimax rotation for three factors, each of which has at least two Q-sorts significantly loading onto it. The three factors explained 48% of the variance in the study. A total of four Q-sorts were identified as cross-loading onto multiple factors: Participant 9 (loading onto Factors 1, 2, and 3), Participant 12 (loading onto Factors 1 and 3), Participant 24 (loading onto Factors 1 and 2), and Participant 43 (loading onto Factors 1 and 2). According to Watts and Stenner (2012), “*Q sorts possessing a significant factor loading in relation to more than one of the study factors are said to be confounded*” (p. 129). Furthermore, six Q-sorts (Participants 1, 2, 15, 23, 26, and 32) were identified as non-significant, as their factor loadings were below 0.45 and, therefore, did not load onto any of the three factors. Therefore, these 10 Q-sorts were excluded from further analysis as a standard procedure in Q analysis.

Table 4.6 presents the correlations between the three factors. The highest correlations were between Factors 2 and 3 (+0.29) and Factors 1 and 2 (+0.24). There was a slight negative correlation between Factor 1 and 3 (-0.02). All these correlations were below the threshold of 0.50, indicating that participants assigned to the three factors hold distinct perspectives (Kopcha et al., 2016). As Kopcha et al. (2016) mentioned, correlations at or above 0.50 may indicate that participants within these factors may have underlying new perspectives that should be assigned to a new factor.

**Table 4.5**

*Rotated Factor Loadings*

<b>Participant No.</b>	<b>Factor 1</b>	<b>Factor 2</b>	<b>Factor 3</b>
1	0.32	0.44	-0.33
2	0.28	0.29	0.29

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3	0.12	0.68*	0.02
4	0.36	0.52*	0.06
5	0.19	0.63*	0.32
6	0.52*	0.35	-0.06
7	-0.35	0.52*	0.43
8	0.29	0.46*	0.33
9	-0.47	0.5	0.55
10	0.06	0.73*	0.15
11	-0.21	0.62*	-0.08
12	0.49	0.08	0.57
13	0.06	0.16	0.48*
14	0.9*	-0.17	-0.08
15	-0.15	-0.02	0.2
16	0.69*	0.21	-0.05
17	0.62*	0.34	-0.19
18	-0.03	0.1	0.49*
19	0.47*	0.42	-0.27
20	0.19	0.32	-0.68*
21	0.66*	0.11	0.11
22	-0.03	0.7*	0.17
23	0.11	0.42	0.42
24	0.65	0.6	0.01
25	0.35	0.52*	0.32

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26	0.33	0.19	-0.02
27	0.8*	-0.02	-0.16
28	0.38	0	0.45*
29	0.77*	-0.28	-0.23
30	0.8*	0.07	0.18
31	0.57*	0.38	-0.06
32	0.33	0.17	-0.19
33	-0.18	0.05	0.68*
34	0.26	0.64*	0.09
35	0.52*	0.32	-0.31
36	0.63*	0.22	0.34
37	0.07	0.2	0.6*
38	0.25	0.59*	0.3
39	0.32	0.46*	0.23
40	0.75*	0.05	0.13
41	0.06	0.38	0.63*
42	0.13	0.7*	0.03
43	0.54	0.45	0.1
44	0.49*	0.1	0.28
45	0.57*	0.25	0.38
<b>Eigenvalues</b>	9.23	7.34	4.84
<b>% Explained</b>			
<b>Variance</b>	21	16	11

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<b>Cumulative %</b>			
<b>Explained Variance</b>	21	37	48

*Note.* All values are rounded to two decimal places, with significant factor loadings denoted by an asterisk (\*).

**Table 4.6**

*Factor Score Correlations*

	<b>Factor 1</b>	<b>Factor 2</b>	<b>Factor 3</b>
<b>Factor 1</b>	1	0.24	-0.02
<b>Factor 2</b>	0.24	1	0.29
<b>Factor 3</b>	-0.02	0.29	1

*Note.* All numbers were rounded to two decimal places.

The sort values associated with each of the statements within the three factors are shown in Table 4.7. To generate a summary of the three factors in the study, a crib sheet was created for each of the three factors because it “*provides a wider system of organization for the interpretative process and encourages holism by forcing engagement with every item in a factor array*” (Watts & Stenner, 2012, p. 150). Each of the three crib sheets (see Tables 4.10, 4.12, and 4.14) highlights five key elements: statements with the highest or lowest ranking, statements ranked higher or lower compared to Factor 2 and Factor 3, and additional statements that could help the interpretation of this factor.

**Table 4.7***Q-Sort Statements and Sort Values by Factors*

Statement No.	Statement	Factor Arrays		
		1	2	3
1	Interacting with ChatGPT improves my ability to grasp complex concepts in my studies.	0	3	3
2	Learning how to use ChatGPT for help-seeking effectively does not require extensive effort.	1	0	-2
3	I am more likely to use ChatGPT for help-seeking purposes if it is recommended by instructors.	1	3	1
4	My previous experience with similar AI-based tools influences my perception of ChatGPT for help-seeking purposes.	-1	-1	1
5	I find it frustrating when using the free version of ChatGPT during rush hour periods, as errors occur frequently.	-2	-2	0
6	ChatGPT is always available whenever I need academic assistance.	-1	1	1
7	The instructor has provided me with guidance on how to use ChatGPT effectively for academic help-seeking.	1	1	1
8	ChatGPT can keep my help-seeking records across different devices, allowing me to catch up with the information seamlessly.	-2	-1	2

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9	I believe that gender plays a role in how I perceive ChatGPT as a help-seeking strategy.	-2	-4	-1
10	I am more likely to use ChatGPT for help-seeking purposes if it is recommended by students good at learning.	-1	1	2
11	Considering the benefits it offers, I believe that ChatGPT is worth the investment of a subscription of \$20 a month.	-3	-2	-3
12	I believe that ChatGPT helps me achieve better learning outcomes compared to other help-seeking tools like Google.	-2	1	4
13	Students with more experience using technology are more likely to find ChatGPT easy to use.	0	0	2
14	Interacting with ChatGPT is entertaining for me, beyond its academic utility.	-1	0	0
15	I am willing to devote time to learning to use ChatGPT, considering its great functions.	-1	-1	2
16	I find myself instinctively turning to ChatGPT whenever I encounter academic challenges.	-4	4	-1
17	I am concerned about how my data is collected, stored, and used by ChatGPT when I use the tool for help-seeking.	0	-3	0
18	When using ChatGPT for help-seeking, I am worried about my personal information being leaked.	-1	-3	0
19	I believe that age plays a role in how I perceive ChatGPT as a help-seeking strategy.	0	0	1

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20	Although ChatGPT has extensive expertise, it will never replace instructors in the future.	2	0	3
21	I am concerned about the potential biases in the responses provided by ChatGPT.	0	-2	-2
22	The support staff in various sectors will face the risk of unemployment when ChatGPT is used as an automatic help-providing tool.	0	-1	-1
23	Even when other options are available, I habitually rely on ChatGPT as my primary source of academic help-seeking.	-3	-1	-2
24	I worry that relying on ChatGPT for academic help-seeking may undermine the value of authentic learning experiences.	2	1	0
25	I think that over-reliance on ChatGPT for help-seeking may negatively affect my critical thinking.	4	2	-1
26	ChatGPT can provide some good answers to certain subjects, but on other topics it does not.	1	1	1
27	I am concerned that the widespread adoption of ChatGPT for academic help-seeking purposes may lead to the devaluation of human educators.	2	-2	-1
28	I am concerned that students may use ChatGPT to cheat in assignments or exams, which may affect their learning outcomes.	2	0	-2
29	I feel that ChatGPT should be more transparent about where the responses come from.	1	2	0

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30	I feel that relying too heavily on ChatGPT for academic help-seeking undermines the importance of human-to-human interactions in the learning process.	3	-1	0
31	I worry that using ChatGPT too much can prevent me from developing independent problem-solving skills.	3	2	-3
32	Responses provided by ChatGPT can be wrong, making it less helpful for addressing academic inquiries.	1	2	-1
33	The lack of clarity about how ChatGPT generates its responses makes it difficult for users to trust the tool for academic help-seeking.	0	0	-4

**Table 4.8***Factor-Defining Q Sorts for Three Study Factors*

Factor No.	Q Sort No.	Total	Cumulative Total
1	6; 14*; 16*; 17*; 19; 21*; 27*; 29*; 30*; 31; 35; 36*; 40*; 44; 45	15	15
2	3*; 4; 5*; 7; 8; 10*; 11*; 22*; 25; 34*; 38; 39; 42*	13	28
3	13; 18; 20; 28; 33*; 37*; 41*	7	35
Confounded	9; 12; 24; 43	4	39
Non-significant	1; 2; 15; 23; 26; 32	6	45

*Note.* Factor loadings of 0.60 and above are indicated with \*.

***Factor 1 – Harsh Critics of ChatGPT: Supporters of Human Instructors***

Factor 1 has an eigenvalue of 9.23 and explains 21% of the variance in the study (see Table 4.5). 15 participants are significantly associated with this factor (see Table 4.8). These participants, with an average age of 19.4 years old, include three male students and 12 female students (see Table 4.9). 73.33% of these students (n =11) are majoring in Communication Sciences and Disorders, with two students reporting a double major. Among participants associated with Factor 1, two students consented to and were selected for a follow-up interview.

Table 4.10 provides the crib sheet results for Factor 1. Participants in Factor 1 were labeled as *Harsh Critics of ChatGPT* because these people seemed to have a more negative perception of ChatGPT (see Figure 4.2), especially when users became dependent on the tool. For example, participants believe that too much reliance on ChatGPT undermines learning by negatively affecting learners' critical thinking (25: +4) and independent problem-solving abilities (31: +3). Participant 14 (F1) raised concerns, stating, "*If I consistently turn to ChatGPT I'm scared I'll stop challenging myself. I won't learn anything by taking the easy way out.*" This sentiment was echoed by Participant 31, who mentioned that when students used ChatGPT to generate answers without engaging in their critical thinking, it could significantly impact their ability to think critically in the future. Participant 44 (F1) further concluded that students nowadays often favor quick answers and shortcuts in learning, leading them to use ChatGPT for problem-solving. He described the trend:

*Students of all ages are becoming more complacent and want the "easy" way out or shortcuts. I feel like ChatGPT has the opportunity to provide that easy way out by providing simple answers to complex problems topics etc. By relying on ChatGPT you're not really learning anything even if you're asking it to solve simple homework questions because you're relying on a tool rather than independently solving the problem.*

In addition to the negative effects on learners' critical thinking and problem-solving abilities, participants in this factor also stated that overreliance on ChatGPT can negatively affect learning outcomes by diminishing the value of human instructors (27: +2), limiting meaningful interactions between instructors and students (30: +3), and compromising the value of authentic learning experiences (24: +2). Just as Participant 16 (F1) indicated, teachers are extremely important to the learning process, especially in a face-to-face setting where direct interactions occur. Participant 6 (F1) concluded that interactions with teachers help students recognize the value of hard work, whereas reliance on ChatGPT may decrease their work ethic and encourage laziness. Participant 30 (F1) shared a similar perspective, emphasizing that long-term memory development depends on collaboration and interactions between students and teachers, which ChatGPT cannot effectively facilitate. Participant 29 (F1) asserted that ChatGPT is primarily used by lazy students to cheat, resulting in a lack of learning when students fail to apply their knowledge and creativity. She argued that using AI for both graded and ungraded projects should be viewed as a type of academic dishonesty, which diminishes the value of authentic learning experiences (24: +2).

Participants in this factor unanimously agreed that human instructors hold an indispensable role in learning that ChatGPT can never replace (20: +2). Participant 36 (F1), for example, explained, "*The instructor has hands-on professional experience in the area they are teaching. ChatGPT can provide information but it cannot teach using personal experience and feelings like an instructor.*" Participants 30 (F1) and 40 (F1) similarly explained that while ChatGPT can handle educational tasks such as teaching lessons and answering questions, it lacks the human capacity to care for students' well-being and the ability to build meaningful relationships with students.

Due to the negative perspectives outlined above, participants in this factor were reluctant to use ChatGPT for academic help-seeking (16: -4; 23: -3) or to invest money in using the tool (11: -3). It is noteworthy that Participant 27 with an academic background in neuroscience mentioned that ChatGPT was “*nearly entirely unhelpful*” because the tool had been wrong so many times for a STEM student like her, so she described the tool as “*always my last resort.*” Similarly, Participant 16 (F1) described ChatGPT as her “*last resort*” because she feels that “*it gives you automatic answers rather than actually helping you learn the material.*” Participants 30 and 36 explicitly mentioned that their alternative help-seeking sources include textbooks, instructors, and course websites. Participants in this factor also had a negative view of paying money for the tool (11: -3). For example, Participant 40 (F1) mentioned, “*I do not believe that benefits to ChatGPT are worth the \$20 subscription because I do not believe that ChatGPT adds more value to learning than free resources like Google and the human mind.*” Participant 45 (F1) mentioned Copilot and Gemini, explaining that ChatGPT “*would quickly fall into obscurity*” because “*no one would be willing to use it over other free tools.*” Participant 17 (F1) mentioned that ChatGPT sometimes generates responses that are irrelevant to assignments and, more importantly, ChatGPT cannot recognize tone, voice, and emotions, preventing its use as the primary source for academic assistance. Participant 21 (F1) shared her unsuccessful experience in using ChatGPT to generate summaries for her Spanish class, stating that she would not use it for academic purposes.

The primary reason for students’ reluctance to use ChatGPT for academic purposes was the fear of being accused of dishonesty. Participant 14 (F1) mentioned that she would never turn to ChatGPT willingly because she was afraid of being accused of cheating. Participant 21(F1) also indicated that she didn’t feel inclined to use the tool and would never use it for academics.

Participant 29 (F1) expressed concerns that using ChatGPT would become a habit, so she avoided the tool completely.

Despite these negative perspectives, one participant in this factor acknowledged some minor benefits of using ChatGPT for academic purposes. For example, Participant 44 (F1), an accounting major, noted that he compared ChatGPT's responses with those from Google and his notes, observing that ChatGPT provided correct answers four out of five times.

**Table 4.9**

*Participant Information in Factor 1*

No.	Age	Gender	Year of Study	Major	Sorts Weight	Interview
6	19	F	1	CMSD	1.56	
14	19	F	2	CMSD	10	X
16	19	F	2	CMSD	2.89	
17	21	M	4	Psychology	2.19	
19	21	F	4	International Affairs	1.30	
21	18	F	1	CMSD, Spanish	2.53	
27	20	F	2	Biology-Neuroscience	4.90	
29	18	F	1	CMSD	4.18	
30	20	F	2	CMSD	4.93	X
31	20	F	3	CMSD	1.87	
35	19	F	1	CMSD	1.55	
36	20	F	3	CMSD	2.30	
40	18	F	1	CMSD	3.73	

44	21	M	4	Accounting	1.39
45	18	M	1	CMSD, Music	1.83

*Note.* CMSD refers to Communication Sciences and Disorders. Participants who consented to and were selected for a follow-up interview are marked with an “X”.

**Table 4.10**

*Factor Interpretation Crib Sheet for Factor 1*

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**Items Ranked at +4**

25. I think that over-reliance on ChatGPT for help-seeking may negatively affect my critical thinking.

---

**Items Ranked Higher in the Factor 1 Array than in other Factor Arrays**

2. Learning how to use ChatGPT for help-seeking effectively does not require extensive effort.

(+1)

7. The instructor has provided me with guidance on how to use ChatGPT effectively for academic help-seeking. (+1)

17. I am concerned about how my data is collected, stored, and used by ChatGPT when I use the tool for help-seeking. (0)

21. I am concerned about the potential biases in the responses provided by ChatGPT. (0)

22. The support staff in various sectors will face the risk of unemployment when ChatGPT is used as an automatic help-providing tool. (0)

24. I worry that relying on ChatGPT for academic help-seeking may undermine the value of authentic learning experiences. (+2)

27. I am concerned that the widespread adoption of ChatGPT for academic help-seeking purposes may lead to the devaluation of human educators. (+2)

---

28. I am concerned that students may use ChatGPT to cheat in assignments or exams, which may affect their learning outcomes. (+2)

30. I feel that relying too heavily on ChatGPT for academic help-seeking undermines the importance of human-to-human interactions in the learning process. (+3)

31. I worry that using ChatGPT too much can prevent me from developing independent problem-solving skills. (+3)

33. The lack of clarity about how ChatGPT generates its responses makes it difficult for users to trust the tool for academic help-seeking. (0)

---

**Items Ranked Lower in the Factor 1 Array than in other Factor Arrays**

1. Interacting with ChatGPT improves my ability to grasp complex concepts in my studies. (0)

3. I am more likely to use ChatGPT for help-seeking purposes if it is recommended by instructors. (+1)

4. My previous experience with similar AI-based tools influences my perception of ChatGPT for help-seeking purposes. (-1)

5. I find it frustrating when using the free version of ChatGPT during rush hour periods, as errors occur frequently. (-2)

6. ChatGPT is always available whenever I need academic assistance. (-1)

8. ChatGPT can keep my help-seeking records across different devices, allowing me to catch up with the information seamlessly. (-2)

10. I am more likely to use ChatGPT for help-seeking purposes if it is recommended by students good at learning. (-1)

11. Considering the benefits it offers, I believe that ChatGPT is worth the investment of a subscription of \$20 a month. (-3)

---

12. I believe that ChatGPT helps me achieve better learning outcomes compared to other help-seeking tools like Google. (-2)

13. Students with more experience using technology are more likely to find ChatGPT easy to use. (0)

14. Interacting with ChatGPT is entertaining for me, beyond its academic utility. (-1)

15. I am willing to devote time to learning to use ChatGPT, considering its great functions. (-1)

19. I believe that age plays a role in how I perceive ChatGPT as a help-seeking strategy. (0)

23. Even when other options are available, I habitually rely on ChatGPT as my primary source of academic help-seeking. (-3)

---

**Items Ranked at -4**

16. I find myself instinctively turning to ChatGPT whenever I encounter academic challenges.

---

**Additional Items**

7. The instructor has provided me with guidance on how to use ChatGPT effectively for academic help-seeking. (+1)

26. ChatGPT can provide some good answers to certain subjects, but on other topics it does not. (+1)

---

*Note.* Statements 7 and 26 have identical Q-sort scores across all three factors so these two statements are placed in the “Additional Items” column.

Figure 4.2

## Composite Q Sort of Factor 1

-4	-3	-2	-1	0	1	2	3	4
**◀ I find myself instinctively turning to ChatGPT whenever I	Considering the benefits it offers, I believe that ChatGPT is	ChatGPT can keep my help-seeking records across different	My previous experience with similar AI-based tools influences my	**▶ The support staff in various sectors will face the risk of	* Responses provided by ChatGPT can be wrong, making it less helpful	**▶ I worry that relying on ChatGPT for academic help-seeking	**▶ I feel that relying too heavily on ChatGPT for academic	**▶ I think that over-reliance on ChatGPT for help-seeking may negatively
**◀ Even when other options are available, I habitually rely on ChatGPT as	I find it frustrating when using the free version of ChatGPT during	When using ChatGPT for help-seeking, I am worried about my	Students with more experience using technology are more likely to	I am more likely to use ChatGPT for help-seeking purposes if it	Although ChatGPT has extensive expertise, it will never	**▶ I worry that using ChatGPT too much can prevent me from developing		
	I believe that gender plays a role in how I perceive ChatGPT as a	**◀ ChatGPT is always available whenever I need academic	I am concerned about how my data is collected, stored, and	The instructor has provided me with guidance on how to use ChatGPT	**▶ I am concerned that students may use ChatGPT to cheat in assignments or			
**◀ I believe that ChatGPT helps me achieve better learning outcomes	I am willing to devote time to learning to use ChatGPT, considering its	I believe that age plays a role in how I perceive ChatGPT as a	ChatGPT can provide some good answers to certain subjects, but	**▶ I am concerned that the widespread adoption of ChatGPT for				
	**◀ I am more likely to use ChatGPT for help-seeking purposes if it	**◀ Interacting with ChatGPT improves my ability to grasp complex	Learning how to use ChatGPT for help-seeking effectively does not					
	*◀ Interacting with ChatGPT is entertaining for me, beyond its academic	**▶ I am concerned about the potential biases in the responses	I feel that ChatGPT should be more transparent about where the					
		** The lack of clarity about how ChatGPT generates its responses makes						

*Note.* Distinguished statements are marked with \* at  $p < .05$  and with \*\* at  $p < .01$ . The left-pointing triangle indicates z-Score for the statement is lower than in all other factors. The right-pointing triangle indicates z-Score for the statement is higher than in all other factors.

### ***Factor 2 – Reflective Users of ChatGPT: Advocates for Accessibility with Cautious Optimism***

Factor 2 has an eigenvalue of 7.34 and explains 16% of the variance in the study (see Table 4.5). 13 participants are significantly associated with this factor (see Table 4.8). These participants, with an average age of 19.31 years old, include two male students and 11 female students (see Table 4.11). 76.92% of these students ( $n = 10$ ) are majoring in Communication

Sciences and Disorders, with one student reporting a double major. Among participants associated with Factor 2, two students consented to and were selected for a follow-up interview.

Table 4.12 provides the crib sheet results for Factor 2. Participants in this factor expressed contrastingly positive views about using ChatGPT (16: +4) when they have academic difficulties, compared with those in Factor 1. Participant 4 (F2) mentioned that ChatGPT was easy to set up and use. When using the tool to check for grammatical mistakes, she simply needed to type in the prompt and ChatGPT would do all the revisions. Participants highlighted additional positive features of ChatGPT, including its ability to break down complex concepts (1: +3), synthesize information, and promote accessibility. For example, Participant 7 (F2) stated, “*I use ChatGPT when I don't understand the topic or some of the things that my professor talks about. ChatGPT breaks down the topic and gives me a better understanding.*” Participant 25 (F2) echoed the opinion and mentioned that ChatGPT was able to “*break complex concepts down for common sense understanding*”, which greatly helped her learning. As Participant 42 (F2) said, ChatGPT could provide in-depth responses as the tool could “*dumb down a term or topic*” in a human-like conversational style. Participant 5 (F2) shared that she had a hearing impairment and attention-deficit/hyperactivity disorder (ADHD), so using ChatGPT enabled her to process instructions more quickly and efficiently. This highlights ChatGPT’s potential to enhance accessibility by providing equitable access to clear and adaptable instructions for diverse learners. Participant 34 (F2) expressed more enthusiasm, indicating that using the correct prompts in ChatGPT helps learners understand the subject better no matter how the assignment is set up.

Just as the factor name indicates, participants in this factor were equally concerned about the negative effects of ChatGPT. Participants 4 (F2) and 5 (F2) both mentioned that excessive

reliance on the tool would hinder their learning, as the tool limits opportunities for critical thinking. This is shared by participants in Factor 1 who believed that ChatGPT negatively affected their problem-solving and critical thinking abilities. A second concern is that ChatGPT lacks clarity in producing responses (29: +2; 33: 0). Participant 3 (F2) criticized that ChatGPT should be more transparent about where the information came from instead of providing random or fake answers. As Participant 10 (F2) stated, ChatGPT would “*fake quotes from the text*” in her English assignments, causing her to misunderstand the reading materials. Participant 8 (F2), a double major in psychology and CMSD, claimed that ChatGPT appeared more effective at explaining concrete concepts with definitive answers compared with topics that require reasoning. She explained, “*I have used ChatGPT for various subjects and I have found that it’s usually better at explaining straightforward scientific subjects over social sciences and subjects that tend to be more opinion-based.*”

Similar to participants in Factor 1, students in this factor value the presence of human instructors in learning. Participant 34 (F2) indicated that human teachers are “*so important in the lives of students and a piece of technology cannot change that.*” Participant 39 (F2) explained that human instructors could understand students’ needs and offer interactive activities, which could not be replicated solely with a computer.

It is noteworthy that participants in this factor strongly disagree with the impact of gender on students’ using ChatGPT for academic help-seeking (9: -4). A total of six participants (Participants 3, 5, 7, 25, 38, and 39) mentioned that gender has nothing to do with how they perceive ChatGPT. For example, Participant 3 (F2) mentioned, “*I have never considered gender roles when I go to ChatGPT for help so that is why I disagree with this statement. I do not think that ChatGPT is a human or should be compared therefore gender should not be considered.*”

However, participant 11 mentioned that age did affect her perspective on ChatGPT, as people at different stages face different learning or life challenges. She explained that college students might inquire about academic topics, while graduates may ask more complex and scientific questions. Older people, on the other hand, may not use ChatGPT at all.

Another connection between Factor 2 and Factor 1 is the criticism of the subscription fee of ChatGPT (11: -2). Participant 42 (F2) observed that the free version of ChatGPT offered enough help to students and mentioned that she had alternative options like Google, so she would not spend money on the tool. Participant 10 (F2) expressed her opinions similarly and she said:

*ChatGPT is amazing but \$20 is a very steep price for a monthly subscription. While I use it often I could live without it or find other alternatives. It's still limited in what it can do so unless it becomes much more reliable I definitely wouldn't consider paying that much for it.*

**Table 4.11**

*Participant Information in Factor 2*

No.	Age	Gender	Year of Study	Major	Sorts Weight	Interview
3	20	F	2	CMSD	2.74	
4	19	F	2	Journalism	1.57	
5	20	F	3	CMSD	2.24	
7	19	F	2	CMSD	1.57	
8	19	F	2	Psychology, CMSD	1.27	X
10	18	F	1	CMSD	3.4	
11	19	F	2	CMSD	2.16	

22	21	M	3	Risk Management and Insurance	2.95	
25	21	M	4	Finance and Economics	1.58	
34	20	F	2	CMSD	2.37	
38	19	F	1	CMSD	1.99	
39	18	F	1	CMSD	1.25	X
42	18	F	1	CMSD	2.98	

*Note.* CMSD refers to Communication Sciences and Disorders. Participants who consented to and were selected for a follow-up interview are marked with an “X”.

**Table 4.12**

*Factor Interpretation Crib Sheet for Factor 2*

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**Items Ranked at +4**

16. I find myself instinctively turning to ChatGPT whenever I encounter academic challenges.

---

**Items Ranked Higher in the Factor 2 Array than in other Factor Arrays**

1. Interacting with ChatGPT improves my ability to grasp complex concepts in my studies.

(+3)

3. I am more likely to use ChatGPT for help-seeking purposes if it is recommended by instructors. (+3)

6. ChatGPT is always available whenever I need academic assistance. (1)

11. Considering the benefits it offers, I believe that ChatGPT is worth the investment of a subscription of \$20 a month. (-2)

14. Interacting with ChatGPT is entertaining for me, beyond its academic utility. (0)

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23. Even when other options are available, I habitually rely on ChatGPT as my primary source of academic help-seeking. (-1)

29. I feel that ChatGPT should be more transparent about where the responses come from. (+2)

32. Responses provided by ChatGPT can be wrong, making it less helpful for addressing academic inquiries. (+2)

33. The lack of clarity about how ChatGPT generates its responses makes it difficult for users to trust the tool for academic help-seeking. (0)

---

**Items Ranked Lower in the Factor 2 Array than in other Factor Arrays**

4. My previous experience with similar AI-based tools influences my perception of ChatGPT for help-seeking purposes. (-1)

5. I find it frustrating when using the free version of ChatGPT during rush hour periods, as errors occur frequently. (-2)

13. Students with more experience using technology are more likely to find ChatGPT easy to use. (0)

15. I am willing to devote time to learning to use ChatGPT, considering its great functions. (-1)

17. I am concerned about how my data is collected, stored, and used by ChatGPT when I use the tool for help-seeking. (-3)

18. When using ChatGPT for help-seeking, I am worried about my personal information being leaked. (-3)

19. I believe that age plays a role in how I perceive ChatGPT as a help-seeking strategy. (0)

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20. Although ChatGPT has extensive expertise, it will never replace instructors in the future.

(0)

21. I am concerned about the potential biases in the responses provided by ChatGPT. (-2)

22. The support staff in various sectors will face the risk of unemployment when ChatGPT is used as an automatic help-providing tool. (-1)

27. I am concerned that the widespread adoption of ChatGPT for academic help-seeking purposes may lead to the devaluation of human educators. (-2)

30. I feel that relying too heavily on ChatGPT for academic help-seeking undermines the importance of human-to-human interactions in the learning process. (-1)

---

**Items Ranked at -4**

9. I believe that gender plays a role in how I perceive ChatGPT as a help-seeking strategy.

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**Additional Items**

7\*. The instructor has provided me with guidance on how to use ChatGPT effectively for academic help-seeking. (+1)

26\*. ChatGPT can provide some good answers to certain subjects, but on other topics it does not. (+1)

---

Note. Statements 7 and 26 have identical Q-sort scores across all three factors so these two statements are placed in the “Additional Items” column.

Figure 4.3

## Composite Q Sort of Factor 2

-4	-3	-2	-1	0	1	2	3	4
** ◀ I believe that gender plays a role in how I perceive ChatGPT as a	** ◀ When using ChatGPT for help-seeking, I am worried about my	I am concerned that the widespread adoption of ChatGPT for	** I am willing to devote time to learning to use ChatGPT, considering its	Learning how to use ChatGPT for help-seeking effectively does not	ChatGPT is always available whenever I need academic	* ▶ Responses provided by ChatGPT can be wrong, making it less helpful	Interacting with ChatGPT improves my ability to grasp complex	** ▶ I find myself instinctively turning to ChatGPT whenever I
** ◀ I am concerned about how my data is collected, stored, and	I find it frustrating when using the free version of ChatGPT during	* The support staff in various sectors will face the risk of	** ▶ The lack of clarity about how ChatGPT generates its responses makes	The instructor has provided me with guidance on how to use ChatGPT	** I worry that using ChatGPT too much can prevent me from developing	I am more likely to use ChatGPT for help-seeking purposes if it		
	I am concerned about the potential biases in the responses	I feel that relying too heavily on ChatGPT for academic	Students with more experience using technology are more likely to	ChatGPT can provide some good answers to certain subjects, but	* ▶ I feel that ChatGPT should be more transparent about where the			
Considering the benefits it offers, I believe that ChatGPT is	** ▶ Even when other options are available, I habitually rely on ChatGPT as	** ◀ Although ChatGPT has extensive expertise, it will never	** I worry that relying on ChatGPT for academic help-seeking	** I think that over-reliance on ChatGPT for help-seeking may negatively				
	My previous experience with similar AI-based tools influences my	I believe that age plays a role in how I perceive ChatGPT as a	* I am more likely to use ChatGPT for help-seeking purposes if it					
	ChatGPT can keep my help-seeking records across different	** I am concerned that students may use ChatGPT to cheat in assignments or	** I believe that ChatGPT helps me achieve better learning outcomes					
		Interacting with ChatGPT is entertaining for me, beyond its academic						

*Note.* Distinguished statements are marked with \* at  $p < .05$  and with \*\* at  $p < .01$ . The left-pointing triangle indicates z-Score for the statement is lower than in all other factors. The right-pointing triangle indicates z-Score for the statement is higher than in all other factors.

### Factor 3 – Optimistic Advocates of ChatGPT: Supporters with Financial Reservations

Factor 3 has an eigenvalue of 4.84 and explains 11% of the variance in the study (see Table 4.5). Seven participants are significantly associated with this factor (see Table 4.8). These participants, with an average age of 19 years old, include three male students and four female students (see Table 4.13). 57.14% of these students ( $n = 4$ ) are majoring in Communication

Sciences and Disorders. One student consented to the interview invitation and was selected for the follow-up interview.

As shown in Table 4.6, the strongest correlation (+0.29) in this study was between Factor 3 and Factor 2, although the correlation was not technically strong, as correlations below 0.50 suggest that participants in these factors have distinct viewpoints (Kopcha et al., 2016). There was an inverse correlation between Factor 3 and Factor 1, indicating an opposite relationship between the opinions of these two factors. Compared with participants in Factor 1 and 2, participants in Factor 3 have the most positive attitude toward using ChatGPT for academic help-seeking purposes (see Figure 4.4), viewing it as more effective than alternative tools like Google (12: +4). For example, Participant 13 (F3) mentioned that ChatGPT had “*expanded my knowledge of learning and I have more of a desire to acquire more information.*” Also, she mentioned that ChatGPT was incredibly helpful in her writing and offered more help than any Google tool. Participant 18 (F3) reinforced this point, explaining that while Google provides general responses, ChatGPT outperforms its counterpart by tailoring its answers to the specific questions posed. Participant 33 (F3) commented that ChatGPT advances her thinking when she uses the tool to explain complex topics or concepts. Participant 41 (F3) also liked to use ChatGPT to explain difficult concepts, and she explained:

*I believe that ChatGPT when prompted correctly can produce explanations that are easy to understand. The AI tool can also direct you towards other resources that explain difficult concepts. The tool can break down definitions and give immediate examples and analogies. Using ChatGPT to understand complex concepts works well for me because of the large number of examples and practice scenarios the tool can provide.*

Participant 20 (F3) praised ChatGPT for its ease of use, emphasizing that users could simply type a question and receive answers within seconds, without requiring any prior learning. However, Participant 28 (F3) disagreed, arguing that prior experience with technology plays a crucial role, as individuals not experienced with ChatGPT might be confused about the results and render time. In addition to prior experience, Participant 41 (F3) stressed the importance of learning how to effectively use ChatGPT by creating correct prompts to maximize the positive experience with ChatGPT. In response to concerns about biased responses from ChatGPT, Participant 28 (F3) argued that ChatGPT does not exhibit bias, as it draws from different resources and employs different approaches to understanding questions. When asked opinion-based questions, ChatGPT typically presents pros and cons instead of offering a straight answer.

The only criticism expressed by participants in this factor was the subscription fee for ChatGPT. Participant 13 (F3) indicated that while ChatGPT helps with acquiring information and summarizing topics, the \$20 subscription fee does not justify the benefits. Participant 33 (F3) explained that she did not rely on ChatGPT for help instinctively; instead, she saw it as a facilitation tool rather than one that takes full responsibility for teaching students.

Similar to participants in the previous factors, those in Factor 3 also expressed negative views about the influence of gender on learners' perceptions of ChatGPT. For example, Participants 20 (F3) and 37 (F3) stated that since ChatGPT yields responses without knowing gender, it should have no impact on how different learners perceive the tool.

**Table 4.13***Participant Information in Factor 3*

No.	Age	Gender	Year of Study	Major	Sorts Weight	Interview
13	18	F	1	CMSD	1.36	
18	18	M	1	Physics	1.41	
20	19	F	1	CMSD	-2.73	
28	18	M	1	Chemistry	1.25	
33	20	F	3	CMSD	2.75	X
37	22	M	4	Consumer Economics	2.06	
41	18	F	1	CMSD	2.29	

*Note.* CMSD refers to Communication Sciences and Disorders. Participants who consented to and were selected for a follow-up interview are marked with an “X”.

**Table 4.14***Factor Interpretation Crib Sheet for Factor 3***Items Ranked at +4**

12. I believe that ChatGPT helps me achieve better learning outcomes compared to other help-seeking tools like Google.

**Items Ranked Higher in the Factor 3 Array than in other Factor Arrays**

1. Interacting with ChatGPT improves my ability to grasp complex concepts in my studies.

(+3)

4. My previous experience with similar AI-based tools influences my perception of ChatGPT for help-seeking purposes. (+1)

- 
5. I find it frustrating when using the free version of ChatGPT during rush hour periods, as errors occur frequently. (0)
6. ChatGPT is always available whenever I need academic assistance. (+1)
8. ChatGPT can keep my help-seeking records across different devices, allowing me to catch up with the information seamlessly. (+2)
9. I believe that gender plays a role in how I perceive ChatGPT as a help-seeking strategy. (-1)
10. I am more likely to use ChatGPT for help-seeking purposes if it is recommended by students good at learning. (+2)
13. Students with more experience using technology are more likely to find ChatGPT easy to use. (+2)
14. Interacting with ChatGPT is entertaining for me, beyond its academic utility. (0)
15. I am willing to devote time to learning to use ChatGPT, considering its great functions. (+2)
17. I am concerned about how my data is collected, stored, and used by ChatGPT when I use the tool for help-seeking. (0)
18. When using ChatGPT for help-seeking, I am worried about my personal information being leaked. (0)
19. I believe that age plays a role in how I perceive ChatGPT as a help-seeking strategy. (+1)
20. Although ChatGPT has extensive expertise, it will never replace instructors in the future. (+3)

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**Items Ranked Lower in the Factor 3 Array than in other Factor Arrays**

2. Learning how to use ChatGPT for help-seeking effectively does not require extensive effort. (-2)
-

- 
3. I am more likely to use ChatGPT for help-seeking purposes if it is recommended by instructors. (+1)
11. Considering the benefits it offers, I believe that ChatGPT is worth the investment of a subscription of \$20 a month. (-3)
21. I am concerned about the potential biases in the responses provided by ChatGPT. (-2)
22. The support staff in various sectors will face the risk of unemployment when ChatGPT is used as an automatic help-providing tool. (-1)
24. I worry that relying on ChatGPT for academic help-seeking may undermine the value of authentic learning experiences. (0)
25. I think that over-reliance on ChatGPT for help-seeking may negatively affect my critical thinking. (-1)
28. I am concerned that students may use ChatGPT to cheat in assignments or exams, which may affect their learning outcomes. (-2)
29. I feel that ChatGPT should be more transparent about where the responses come from. (0)
31. I worry that using ChatGPT too much can prevent me from developing independent problem-solving skills. (-3)
32. Responses provided by ChatGPT can be wrong, making it less helpful for addressing academic inquiries. (-1)

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**Items Ranked at -4**

33. The lack of clarity about how ChatGPT generates its responses makes it difficult for users to trust the tool for academic help-seeking.

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**Additional Items**

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7\*. The instructor has provided me with guidance on how to use ChatGPT effectively for academic help-seeking. (+1)

26\*. ChatGPT can provide some good answers to certain subjects, but on other topics it does not. (+1)

Note. Statements 7 and 26 have identical Q-sort scores across all three factors so these two statements are placed in the “Additional Items” column.

#### Figure 4.4

##### Composite Q Sort of Factor 3

-4	-3	-2	-1	0	1	2	3	4
** ◀ The lack of clarity about how ChatGPT generates its responses makes	** ◀ I worry that using ChatGPT too much can prevent me from developing	** ◀ I am concerned that students may use ChatGPT to cheat in assignments or	** ◀ Responses provided by ChatGPT can be wrong, making it less helpful	** ▶ I find it frustrating when using the free version of ChatGPT during	I am more likely to use ChatGPT for help-seeking purposes if it	** ▶ Students with more experience using technology are more likely to	Interacting with ChatGPT improves my ability to grasp complex	** ▶ I believe that ChatGPT helps me achieve better learning outcomes
	Considering the benefits it offers, I believe that ChatGPT is	I am concerned about the potential biases in the responses	** ◀ I think that over-reliance on ChatGPT for help-seeking may negatively	I feel that ChatGPT should be more transparent about where the	* ▶ I believe that age plays a role in how I perceive ChatGPT as a	** ▶ I am willing to devote time to learning to use ChatGPT, considering its	Although ChatGPT has extensive expertise, it will never	
		** ◀ Learning how to use ChatGPT for help-seeking effectively does not	I believe that gender plays a role in how I perceive ChatGPT as a	I am concerned about how my data is collected, stored, and	The instructor has provided me with guidance on how to use ChatGPT	* ▶ I am more likely to use ChatGPT for help-seeking purposes if it		
	** Even when other options are available, I habitually rely on ChatGPT as	I find myself instinctively turning to ChatGPT whenever I	I find myself instinctively turning to ChatGPT whenever I	Interacting with ChatGPT is entertaining for me, beyond its academic	** ▶ My previous experience with similar AI-based tools influences my	** ▶ ChatGPT can keep my help-seeking records across different		
		* ◀ The support staff in various sectors will face the risk of	I feel that relying too heavily on ChatGPT for academic	I feel that relying too heavily on ChatGPT for academic	ChatGPT is always available whenever I need academic			
		I am concerned that the widespread adoption of ChatGPT for	** ◀ I worry that relying on ChatGPT for academic help-seeking	I worry that relying on ChatGPT for academic help-seeking	ChatGPT can provide some good answers to certain subjects, but			
				When using ChatGPT for help-seeking, I am worried about my				

*Note.* Distinguished statements are marked with \* at  $p < .05$  and with \*\* at  $p < .01$ . The left-pointing triangle indicates z-Score for the statement is lower than in all other factors. The right-pointing triangle indicates z-Score for the statement is higher than in all other factors.

### **Consensus Perspectives**

Statements 7, 11, and 26 were identified as consensus statements (see Table 4.15), indicating that they were placed by participants in similar places across all three factors in the Q grid. This means participants in the three factors generally agreed upon the three statements, regardless of their different perspectives on other topics.

For Statement 7, the consistent Q-sort ranking of 1 across the three factors indicates that participants generally agreed that their instructors had provided some level of training on how to use ChatGPT for academic purposes, with only minor differences in the degree of agreement. Similarly, for Statement 26, the uniform rankings among the three factors reflect a shared understanding among participants that ChatGPT's performance varies across subjects. While it excels in certain areas, participants noted its limitations and expressed criticism regarding its effectiveness in others.

Factor 1 demonstrated a distinct aversion toward the use of ChatGPT for academic purposes, which is reflected in its lowest Z-score for Statement 11. The negative rankings and Z-scores for this statement across all participants suggest a shared disagreement, indicating that they did not believe the perceived benefits of using ChatGPT justified the \$20 subscription fee. Similarly, participants in Factor 3 also assigned a Q-sort value of -3 to this statement, mirroring the reluctance seen in Factor 1. This highlights why participants in Factor 3 were named as *Supporters with Financial Reservations*, underscoring their hesitancy to pay for the tool despite recognizing its potential value.

**Table 4.15***Consensus Statements*

Statement	Factor 1		Factor 2		Factor 3	
	Q-sort	Z-	Q-sort	Z-	Q-sort	Z-
	Value	score	Value	score	Value	score
7. The instructor has provided me with guidance on how to use ChatGPT effectively for academic help-seeking. *	1	0.45	1	0.68	1	0.71
11. Considering the benefits it offers, I believe that ChatGPT is worth the investment of a subscription of \$20 a month. *	-3	-1.73	-2	-1.42	-3	-1.42
26. ChatGPT can provide some good answers to certain subjects, but on other topics it does not. *	1	0.40	1	0.64	1	0.23

*Note.* All listed statements are non-significant at  $p < 0.01$ , and those flagged with an \* are also non-significant at  $p < 0.05$ .

### Supplementary Survey Results

Along with the Q-sort activity were four questions that aimed to explore more details about undergraduates' help-seeking behavior with ChatGPT (see Appendix E). Question one was focused on understanding learners' primary purposes for using ChatGPT. Questions two and three were related to the factors that could motivate or prevent their use of ChatGPT. The last question was about their willingness for a follow-up interview, which was completely optional.

Inductive thematic coding was employed to identify the themes within participants' responses for the three open-ended survey questions. According to Braun and Clarke (2006), inductive thematic analysis is a bottom-up approach that focuses more on the data itself without pre-set coding schemes or an existing theoretical framework. Then, content analysis was employed to reveal the frequencies of the generated themes. As indicated by Given (2008), the purpose of content analysis was to identify consistent patterns and relationships between variables or themes by categorizing qualitative data into clusters of similar entities.

A summary of participants' primary uses of ChatGPT for academic help-seeking purposes was presented in Table 4.16. Participants in Factors 1, 2, and 3 identified 19, 26, and 12 distinct uses, respectively. Not surprisingly, the most common use of ChatGPT is for clarifications on difficult terms, topics, and concepts. Just as Participant 30 mentioned, *"If I don't understand a concept or structure, I may ask it to explain it in a different way."* Another common use of ChatGPT is to improve writing, including activities such as brainstorming ideas, paraphrasing, creating outlines, correcting grammatical mistakes, and strengthening argument, structure, and vocabulary. Participants also reported that they used ChatGPT to help with their assignments or quizzes. For example, Participant 39 (F2) explained, *"I use it to explain multiple choice answers to see why certain ones are correct."* Similarly, Participant 18 explained, *"Usually when doing homework and I get a problem wrong, and I don't understand why I use ChatGPT to clarify the answer."* Other uses of ChatGPT include creating practice questions for exams, managing projects, developing personalized learning plans, summarizing information, and analyzing data. One participant reported using ChatGPT to address life issues, which was categorized as non-academic.

An interesting finding is that, despite participants in Factor 1 expressing a strong aversion to ChatGPT as an academic help-seeking tool, they reported more uses of ChatGPT compared with participants in Factor 3. One possible explanation for this discrepancy might be the differing sample size, with Factor 1 including 15 participants and Factor 3 comprising only 7.

**Table 4.16**

*A Summary of the Primary Uses of ChatGPT (N = 57)*

<b>Theme</b>	<b>Definitions and Quotes</b>	<b>F1</b>	<b>F2</b>	<b>F3</b>	<b>Total</b>
1. Break down difficult topics/ themes/ concepts	Students use ChatGPT to seek clarification on difficult terms, topics, or concepts <i>“To help explain difficult concepts”</i> <i>“I use ChatGPT when I do not understand a concept that my professor is trying to teach”</i>	7	9	4	20
2. Improve on writing- related assignments	Students use ChatGPT to improve their writing for assignments, projects, and exams. <i>“Seeing how ChatGPT interprets my argument and what areas that ChatGPT thinks that I can improve the argument”</i> <i>“Ideas for writing papers”</i>	5	8	2	15
3. Help with assignments/ quizzes	Students use ChatGPT to find or check answers to their assignments or quizzes.	2	3	2	7

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	<i>“Usually when doing homework and I get a problem wrong and I don't understand why I use ChatGPT to clarify the answer”</i>				
	<i>“I use ChatGPT when I need an answer to a question that google does not clarify for me”</i>				
4.	Students use ChatGPT to summarize information, including texts, chapters, and notes to improve understanding.	1	2	1	4
Summarize information	<i>“summarizing information”</i>				
	<i>“My primary use of ChatGPT is to summarize readings”</i>				
5. Create practice questions for exams	Students use ChatGPT to simulate questions for exams or practice purposes.	2	1	0	3
	<i>“ask it to create a quiz or practice test for me”</i>				
	<i>“I would also ask it to generate questions for me when I need extra practice problems”</i>				
6. Develop personal learning plans	Students use ChatGPT to develop customized learning plans or schedules.	0	1	2	3
	<i>“My primary use is developing action plans to help me complete tasks”</i>				
	<i>“ChatGPT is also useful to me in studying or creating study guides”</i>				

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7. Manage projects	Students use ChatGPT to organize projects or plan tasks. <i>“If I need help planning projects”</i> <i>“I can ask it ways to go about tasks/projects”</i>	1	1	0	2
8. Analyze data	Students use ChatGPT to analyze data, both qualitatively and quantitatively. <i>“correlating, comparing data”</i>	1	0	0	1
9. Help with non-academia-related inquiries	Students use ChatGPT to seek answers to problems that are not academia-related. <i>“ It also helps me outside of the classroom where I can ask it life problems”</i>	0	1	0	1
10. Other/irrelevant	The description is not clear or irrelevant <i>“generate ideas”</i>	0	0	1	1
<b>Total</b>		19	26	12	57

A summary of the motives that encouraged learners to use ChatGPT for academic help-seeking purposes was presented in Table 4.17. Participants in Factors 1, 2, and 3 identified 22, 20, and 9 distinct motives, respectively.

Among the identified themes, the efficiency of ChatGPT in delivering direct and quick responses was the most common motivation for its use by participants. Other key motivations for using ChatGPT included its ease of use, its ability to improve understanding, dissatisfaction with help-seeking from other tools, and the constant availability of ChatGPT. For instance, seven participants highlighted ChatGPT’s ease of use, stating that the conversational nature allows

users to input inquiries and receive answers effortlessly. Aligned with the theme of using ChatGPT to break down complex concepts in Table 4.16, participants also expressed that a desire to improve their understanding of specific topics motivated their use of ChatGPT. For example, Participant 38 (F2) mentioned, *“I think ChatGPT is good at giving extensive explanations on certain subjects and can be very beneficial for students who might be confused on their assignments.”* Furthermore, six participants mentioned their dissatisfaction with other help-seeking tools. For example, Participants 10 (F2), 36 (F1), and 39 (F2) compared the academic help-seeking experience facilitated by tools such as ChatGPT and Google, concluding that ChatGPT outperforms Google by providing easy-to-understand and specific responses. They believed that this allowed learners to avoid the time-consuming process of sifting through extensive information typically provided by Google. The availability of ChatGPT was another motivation that encouraged the use of ChatGPT by participants who confirmed that the consistent and flexible availability of ChatGPT improved its use by participants.

**Table 4.17**

*A Summary of Factors that Promote the Use of ChatGPT (N = 51)*

Theme	Definitions and Quotes	F1	F2	F3	Total
1. Efficiency	ChatGPT generates direct, quick responses, saving learners time and effort.  <i>“the really fast render times and responses”</i>  <i>“it gives quick answers”</i>	3	4	3	10
2. Ease of use	ChatGPT is simple to use, requiring minimal effort or time.  <i>“It is easy to use”</i>	4	2	1	7

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	<i>“ease of use”</i>				
3. Desire to improve understanding	Learners believe that using ChatGPT can lead to an improved understanding of certain topics, questions, or concerns.	5	1	1	7
	<i>“When I don’t understand the way something is being taught”</i>				
	<i>“lack of understanding”</i>				
4. Dissatisfaction with other tools	Learners use ChatGPT because other help-seeking tools fail to solve their problems.	2	2	2	6
	<i>“when all other attempts to teach myself have failed”</i>				
	<i>“remain confused after using other resources”</i>				
5. Availability	ChatGPT is always accessible and operational whenever learners need it.	2	2	1	5
	<i>“what motivates me is the availability of it”</i>				
	<i>“the availability of it”</i>				
6. Variety of expertise	Learners use ChatGPT because the tool can provide various kinds of help in various subjects.	0	3	1	4
	<i>“It is a one-stop shop that can provide loads of different help”</i>				
	<i>“how versatile it is”</i>				
7. Accuracy	ChatGPT generates correct responses to address their problems.	0	2	0	2

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	<i>"find the most accurate information"</i>				
	<i>"has the ability to give accurate responses"</i>				
8.	ChatGPT customizes its responses based on	0	2	0	2
Customization	learners' unique needs or preferences.				
	<i>"you can tell AI how to think as well as how to act"</i>				
	<i>"make the response extremely specific to what you want"</i>				
9. Desire to	Learners believe that using ChatGPT can improve	2	0	0	2
perform better	their performance in assignments, projects, or				
	quizzes.				
	<i>"To make sure I do the assignments correctly"</i>				
	<i>"Good grades"</i>				
10. No	Learners do not have the motivation to use	2	0	0	2
motivation to	ChatGPT.				
use ChatGPT	<i>"I don't have motivation to use ChatGPT"</i>				
	<i>"I do not use it"</i>				
11.	Learners passively use ChatGPT only because it is	1	0	0	1
Assignment or	required by the assignment or the instructor.				
instructor	<i>"when it is required for an assignment"</i>				
requirements					
11. Other/	The description is not clear or irrelevant	1	2	0	3
irrelevant	<i>"procrastination"</i>				
	<i>"continuing my education"</i>				

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<b>Total</b>	22	20	9	51
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A summary of the barriers that discouraged the use of ChatGPT for academic help-seeking purposes was presented in Table 4.18. Participants in Factors 1, 2, and 3 identified 22, 16, and 9 distinctive barriers, respectively. The decreasing trend in perceived barriers is consistent with their increasing levels of acceptance of ChatGPT as an academic help-seeking tool.

Participants' fear of academic dishonesty and lack of trust in ChatGPT-generated content emerged as two of the leading barriers. Participants generally agreed that copying and pasting the information directly from ChatGPT without giving proper citations should be viewed as a form of cheating that violates ethical rules and might lead to penalties. As Participant 14 (F1) indicated, *"I am terrified of getting kicked out of college for academic dishonesty."* Participant 16 (F1) used the term *"stigma"* to describe the negative perception associated with cheating with ChatGPT. In addition to the fear of being expelled from college, Participant 38 expressed concern about receiving a low grade if AI usage is detected on certain assignments. Learners' lack of trust in ChatGPT was driven by several factors, including its occasional inaccuracies on certain subjects, lack of transparency regarding the sources of its responses, limitations in handling complex topics, and its overly confident tone. That explains why participants frequently question the tool's reliability for academic help-seeking purposes, suggesting that ChatGPT may not be perceived as a *"reliable"* source.

Additionally, participants expressed concerns that their use of ChatGPT was discouraged by fears of becoming overly reliant on the tool, prohibitions from instructors or universities, potential negative effects on learning, and a strong desire to rely on themselves for problem-solving. Participant 36 (F1) mentioned, *"I don't want to rely on it too heavily and not do the*

*homework myself.*” Similarly, Participant 44 (F1) indicated that participants were more likely to become reliant on the tool, and such reliance negatively impacted learning. Participant 13 (F3), the only student, mentioned that the \$20 subscription fee discouraged her from using ChatGPT fully using ChatGPT, and she also found the tool to be occasionally unreliable.

**Table 4.18**

*A Summary of Barriers that Prevent the Use of ChatGPT (N = 47)*

<b>Theme</b>	<b>Definitions and Quotes</b>	<b>F1</b>	<b>F2</b>	<b>F3</b>	<b>Total</b>
1. Fear of academic dishonesty	Participants worry that using ChatGPT is like cheating, which may violate ethical rules and lead to penalties.  <i>“I am terrified of getting kicked out of college for academic dishonesty”</i>  <i>“Receiving a low grade if AI is detected on certain assignments”</i>	7	4	1	12
2. No trust in ChatGPT	Participants have a negative impression of ChatGPT, and they don’t trust the generated responses.  <i>“Incorrect answers”</i>  <i>“Inconsistency. Sometimes it provides wrong information which could lead me decreasing the use of it.”</i>	4	5	3	12
3. Fear of over-reliance	Participants worry that using ChatGPT will lead to over-reliance on the tool.	5	1	1	7

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	<i>"I don't want to become reliant"</i>				
	<i>"It makes me reliant on ChatGPT"</i>				
4. Prohibition from instructors/ institutions	Instructors or institutions explicitly prohibit the use of ChatGPT.  <i>"The risk of a teacher not agreeing with using it"</i>  <i>"I think a lot of instructors don't allow it to be used"</i>	2	2	1	5
5. Fear of the negative effects on learning	Participants worry that ChatGPT will negatively affect their learning, including problem-solving and critical-thinking abilities.  <i>"The fact that it takes away from learning because it simply does it for you."</i>  <i>"A secondary thing that prevents me is fear of losing my own ability to critical [sic] think."</i>	3	2	0	5
6. Self-reliance	Participants prefer to solve problems themselves rather than seek assistance from ChatGPT.  <i>"I believe I am strong enough to complete most activities"</i>  <i>"I try out to figure everything out myself first"</i>	0	2	2	4
7. Subscription fee	Participants are reluctant to use ChatGPT because of the subscription fee.  <i>"The price of \$20 a month prevents me form [sic] using ChatGPT to its fullest potential"</i>	0	0	1	1

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8. Lack of understanding of ChatGPT	Participants worry that they do not have a deep understanding of ChatGPT about its potential to promote learning.  <i>“people aren’t really aware of how it can help you in the learning process.”</i>	1	0	0	1
<b>Total</b>		22	16	9	47

### Interview Results

The final question in the supplementary survey asked students whether they were interested in participating in an online follow-up interview. To incentivize more participants, a \$5 Amazon gift card was provided if students consented to and were selected for the follow-up interview. Out of the 11 participants who expressed their willingness by providing their names, three were excluded due to being identified as confounded or non-significant Q-sorts. The final selection comprised five participants, with two (i.e., Participants 14, 30) associated with Factor 1, two (i.e., Participants 8, 39) with Factor 2, and one (i.e., Participant 33) with Factor 3.

All follow-up interviews were conducted via Zoom, an online meeting platform that supports synchronous transcription. A subsequent round of proofreading was conducted to ensure the accuracy of the transcription. The interview transcripts were then compiled into a single Excel worksheet and coded using an inductive approach, with the aim of identifying potential themes and patterns in participants’ responses to each interview question.

A total of ten interview questions were initially prepared for the semi-structured interviews. However, additional clarification questions were posed during the interviews to explore responses in detail and ensure a clearer and deeper understanding of participants’ perspectives. The first question was about the general perceptions of the Q-sort activity.

Participants reported that the Q-sort activity was a new format for them, and they found the statements clear and easy to understand. Additionally, they felt that the allocated time was sufficient to complete the survey. Participant 14 (F1), in particular, mentioned that she experienced some difficulty in identifying enough space for neutral statements. I explained that this challenge is inherent to the forced Q-sort process, where participants need to constantly compare statements and choose those that best fit the grid, even if it means trading-offs between similar statements.

Question two was about the frequency of using ChatGPT for academic help-seeking. Generally, the responses from the five participants were aligned with the characteristics of their assigned factors. For example, the two participants in Factor 1 explained that they rarely used the tool unless it was required by the instructor. In contrast, Participant 33 (F3) mentioned that she frequently used ChatGPT whenever she had difficulties with her assignments, as the tool helped facilitate her learning.

Question three asked participants to rate their overall help-seeking experience with ChatGPT, with 10 representing the highest level of satisfaction. The ratings were consistent with the characteristics of each assigned factor. For example, the two participants in Factor 1 both rated their experience as 5, indicating a moderate level of satisfaction. The two participants in Factor 2 gave scores of 8, reflecting a higher level of satisfaction. The participant in Factor 3, however, gave a rating of 10, indicating strong satisfaction with using ChatGPT for help-seeking. She mentioned that ChatGPT has helped a lot in understanding course materials when she used the tool to break down academic difficulties.

Question four asked participants to provide an example of how ChatGPT had helped with their studies. Not surprisingly, most responses focused on using ChatGPT to break down

difficulties, seek clarification, or obtain definitions for challenging terms. Participant 33 (F3), in particular, mentioned that she used ChatGPT to learn Portuguese conjugations and grammatical rules and relied on Duolingo to learn pronunciation.

Question five asked participants to reflect on any potential concerns regarding ChatGPT use. No new themes emerged beyond those already identified in Table 4.18.

Questions six and seven investigated participants' help-seeking preferences in both online and face-to-face learning environments. In the online environment, the two participants in Factor 1 preferred using online textbooks, materials, announcements in the learning management system, online libraries, personal notes, and Google. In contrast, in a face-to-face setting, their preferred sources of support included peers and instructors. Participant 30 (F1) compared the use of Google and ChatGPT, highlighting a key distinction in how these tools affected learning. She explained that using Google for information searching involved active engagement as participants need to "*read the information, research, and understand*" the content themselves. In contrast, participants will be provided with direct answers without any effort when they use ChatGPT, which negatively affects their critical thinking and problem-solving abilities. A study by Zhang and Yang (2024) reported similar findings, indicating that while Google offers vast information, users must filter out irrelevant content. In contrast, ChatGPT provides immediate feedback, though its accuracy remains uncertain. Participant 8 (F2) also mentioned online textbooks and notes as the two major sources of help. Surprisingly, she also had a preference for Google over ChatGPT although Factor 2 is represented by a positive attitude toward ChatGPT. Participant 39 (F2) had a more positive attitude toward ChatGPT because she said, "*It does give me the specific thing that I need help with.*" It seems that participants had similar help-seeking options when they were in a face-to-face learning setting as their primary sources include peers

and instructors. An interesting finding of this study was that participants, regardless of their assigned factors, all indicated seeking help from peers as a solution and they didn't view such behavior as a threat to their self-esteem, although it was prevalent in the literature.

Question eight examined whether participants employed different tools depending on the nature of the problems they faced. Only Participant 30 (F1) indicated that her primary source of help-seeking was peers, regardless of the type of problem. In contrast, all other participants indicated that they adapted their help-seeking sources by utilizing a variety of resources tailored to the specific challenges they encountered.

Question nine was aimed to explore the factors participants considered when deciding on the sources for academic help-seeking. The findings aligned closely with the factors identified during the Q-sort activity, including both positive influences that encouraged the use and the negative influences that discouraged it. No new themes emerged from the analysis.

The last interview question was aimed at exploring participants' overall impressions of how ChatGPT might affect learning. Their responses generally aligned with the characteristics of their assigned factors, reflecting both positive and negative perspectives. However, a common theme emerged across all responses: participants unanimously agreed that irresponsible and unethical use of ChatGPT poses significant risks, potentially causing more harm than good.

## **CHAPTER 5**

### **DISCUSSION**

This dissertation examined the perceptions of undergraduate students at an R-1 university in the United States regarding the use of a GenAI tool (i.e., ChatGPT) as an online academic help-seeking tool. This chapter presents a comprehensive discussion of the study's findings, interpreting their implications in relation to the existing literature and highlighting their significance for research and practice. It begins with a discussion of four identified themes from the research questions. The chapter continues to discuss the implications of this study, addressing both its theoretical contributions to the existing body of knowledge and its practical applications for different people involved. The chapter also addresses the limitations of the study and provides suggestions for future studies.

#### **Discussion of Themes**

##### **Unpacking the Complex Dynamics of Help-Seeking Behavior with ChatGPT**

As discussed in Chapter 4, this dissertation incorporated 10 factors from the UTAUT2 model and introduced nine additional ones to comprehensively explore how these elements were perceived by undergraduates. Although this dissertation didn't consider the moderating and mediating effects of variables reflected in the UTAUT2 model, and Q methodology does not quantify factors affecting learners' intention to use ChatGPT as precisely as structural equation modeling or path analysis, it nonetheless reveals learners' varying perceptions of these factors.

In the UTAUT2 model, for instance, habit predicts both behavioral intentions and use behavior, as frequent use can create an automatic tendency to continue the behavior. While a

predominant claim is that learners' habits positively predict their behavioral intention to use ChatGPT (Bhat et al., 2024; Gulati et al., 2024; Habibi et al., 2023; Romero-Rodríguez et al., 2023), Arthur et al. (2024) rejected this claim, claiming that habit has no significant influence on behavioral intention and use behavior. This dissertation also revealed a contradictory perspective on habit. Statement 16, adapted from the concept of habit, was interpreted differently by participants across the three factors (see Table 4.7). Participants in Factor 1, who were averse to ChatGPT, strongly disagreed with this statement, suggesting that they did not habitually use the tool when facing academic challenges. In contrast, participants in Factor 2 strongly agreed with the statement, indicating that they regularly relied on ChatGPT as a habitual resource.

Suggested by the UTAUT2 model, this dissertation framed instructors and peers (see Statements 3 and 10 in Table 4.7) as two representative types of social influence. A study by Amin et al. (2024) revealed that social influence positively affects Bangladesh students' intention to use ChatGPT, indicating that these students are more likely to adopt new technologies if influenced by peers, classmates, or respected instructors. The different factor arrays for statements 3 and 10 in Table 4.7 indicated that learners have less trust in peers and are more likely to use the tool if recommended by their instructors. And conversely, students are less likely to use ChatGPT if discouraged by instructors or if they fear negative consequences of using it, such as academic dishonesty. This once again strengthens the impact of instructor guidance and support in promoting learners' positive perceptions of ChatGPT.

Understanding learners' perceptions of ChatGPT for academic help-seeking is a complex issue influenced by multiple interrelated factors. While the UTAUT2 model provides a foundational framework by examining constructs such as performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit,

additional factors must also be considered, like academic dishonesty concern. This intricate interplay highlights the need for a more comprehensive approach that goes beyond traditional technology acceptance models to fully capture the factors contributing to learners' varying perceptions of ChatGPT.

### **Redefining Help-Seeking Behaviors with ChatGPT**

ChatGPT, as a widely used online help-seeking tool, has the potential to transform help-seeking by lowering barriers to seeking help, encouraging self-regulated learning, and bridging gaps in access to academic help. Many students are reluctant to seek help due to social anxiety and the fear of being judged as incompetent (Er et al., 2015; Karabenick, 2004; Yang et al., 2016). ChatGPT significantly lowers the barriers associated with help-seeking by offering a personalized (Adams et al., 2024; Loos et al., 2023; Markos et al., 2024), non-judgmental, and 24/7 accessible help-seeking option (Adams et al., 2024; S. Aithal & P. Aithal, 2023). In this way, ChatGPT greatly reduces students' time and efforts in obtaining help to overcome difficulties. Additionally, ChatGPT offers a non-judgmental environment where help-seekers can ask questions without fear of criticism or embarrassment. This makes ChatGPT supportive and easily accessible that encourages learners to engage in help-seeking behaviors freely and confidently.

Another significant benefit of ChatGPT is its ability to help students break down complex topics into manageable steps or concepts, thereby fostering self-regulated learning. A study by Dahri et al. (2024) found that ChatGPT positively enhances pre-service teachers' metacognitive self-regulated learning, particularly in their lesson planning. Given that participants across all three factors in this dissertation identified using ChatGPT to break down complex topics as their primary use of the tool, it is reasonable to infer that their engagement with ChatGPT for different

help-seeking strategies (i.e., request simplification, seek elaboration, or request examples) enhances their self-regulated learning process. In addition to receiving help on various tasks, students can use ChatGPT outside of traditional class time or office hours without delaying the request to seek academic assistance. More importantly, ChatGPT can be used as a supplementary and virtual tool for self-directed adult learners who may not have access to tutors or other educational resources (Lin, 2024).

ChatGPT can also be a solution to support accessibility, especially for learners with disabilities. Kasneci et al. (2023) mentioned that ChatGPT assists people with visual impairments by providing speech-to-text or text-to-speech capabilities, thus enhancing accessibility. Similarly, Participant 5 (F2) in this study, who had a hearing impairment and ADHD, confirmed that ChatGPT helps her process class instructions more efficiently. Just as Markos et al. (2024) mentioned, one of ChatGPT's key strengths is its ability to support self-paced learning and expand access to educational resources, particularly for students with disabilities.

### **Fostering Instrumental Help-Seeking While Reducing Executive Help-Seeking with ChatGPT**

Although ChatGPT can enhance learning, there is a risk that students may develop executive help-seeking tendencies—using ChatGPT merely to obtain quick answers without deep and meaningful reflections. As shown in Table 4.17, participants in this study highlighted ChatGPT's efficiency in providing direct and quick responses as the primary factor promoting their use of the tool. Their responses also indicated the presence of executive help-seeking behaviors, reflecting their non-adaptive approach to seeking academic help. For example, Participant 10 (F2) said, *“It's extremely fast and efficient and I don't have to hunt for an answer*

*unlike Google.*” Similarly, Participant 11 (F2) remarked, *“It is the easiest way to find help in some of my classes. It answers in paragraph or bullet point form which I find very useful and straightforward.”* These statements indicate that some students primarily use ChatGPT for quick and straightforward answers, prioritizing efficiency over in-depth reflection or critical thinking. Given the negative link between executive help-seeking and learning outcomes (Nelson-Le Gall, 1981; Algharaibeh, 2020), it is important that students develop instrumental help-seeking behaviors with ChatGPT.

Emphasizing ChatGPT as an instrumental rather than an executive help-seeking tool highlights its role in providing learners with the resources and help that enable independent problem-solving, instead of acting merely as a means of guiding learners’ decision-making or problem-solving. This distinction is important because ChatGPT can supplement learning by offering immediate responses to a variety of inquiries. In the meantime, however, ChatGPT should not necessarily take on the responsibility of managing or directing learners’ overall learning process. When learners recognize ChatGPT as an instrumental tool that facilitates learning, they acknowledge its potential to enhance academic performance while preserving the motivation to self-regulate their learning experience, ensuring they don’t become overly reliant on the tool.

To maximize ChatGPT’s potential in promoting learning, instructors must encourage instrumental help-seeking (Huet et al., 2016), where students use the tool to deepen understanding and foster independent problem-solving. For example, a key strategy is to teach students how to effectively engineer prompts when they use ChatGPT. According to Bozkurt and Sharma (2023), the goal of prompt engineering in the context of AI language models like ChatGPT is to craft precise and effective prompts that elicit desired responses, ensuring clarity,

relevance, and specificity. The study offers practical strategies to ensure the quality of prompts, providing instructors with the framework to train their students. A second strategy that promotes instrumental help-seeking is to emphasize the importance of fact-checking ChatGPT's responses (Chan & Lee, 2023; Lo et al., 2024). It is not advisable to dismiss ChatGPT due to its potential inaccuracies or biases; instead, students should be trained to verify its responses against reliable sources. This ensures the reliability of the information while enhancing students' critical thinking of the subject through engagement with multiple information sources (Giray et al., 2024).

### **Advancing Collaborative Efforts for Ethical and Responsible Use of ChatGPT**

Ensuring the ethical and responsible use of ChatGPT requires the establishment of facilitating conditions, such as clear usage guidelines, digital literacy training opportunities, and ongoing financial and educational support from key stakeholders. A study by Habibi et al. (2023) reveals facilitating conditions to be the strongest determinant in the UTAUT2 model that affects learners' behavioral intention to use ChatGPT, suggesting that teachers should enhance its impact by incorporating the tool into students' daily learning experiences. Similarly, other studies indicate that facilitating conditions positively affect learners' behavior in using ChatGPT for educational purposes (Amin et al., 2024; Arthur et al., 2024; Ma, 2024; Shah et al., 2024; Strzelecki & ElArabawy, 2024). Research findings indicate that learners are more likely to engage with ChatGPT when they have access to the resources, infrastructure, and support. The study by Ma (2024), for instance, mentioned that facilitating conditions consist of resources, relevant knowledge, and assistance from a specific person or group to support the effective use of ChatGPT. Statement 7 in this study was adapted based on facilitating conditions in the UTAUT2 model, as it highlights the availability of instructional support and guidance that support the effective use of ChatGPT by students. The unanimous ranking of +1 across three

factors indicates that students receive some support from instructors, but not in a confident way. This reassures the instructor's role in providing structured assistance serves as a key facilitating condition, ensuring that learners have the necessary resources and support to engage with ChatGPT.

In addition to the instructor's support and guidance, greater collaboration from other personnel is essential. For instance, Gulati et al. (2024) mentioned that policymakers should evaluate and update existing education policies regarding curriculum development, teacher training, assessments, data privacy, and protection to accommodate the integration of AI tools like ChatGPT. AI developers, according to Yu et al. (2024), should focus more on compatibility and efficiency to enhance practical value, user-friendliness, and overall user satisfaction. Chen et al. (2024) claimed that libraries play a leading role in information access and responsible technology adoption, suggesting that academic libraries should actively improve their services with AI, promote AI literacy, and develop guidelines for the ethical and responsible use of AI tools like ChatGPT.

From an instructional design perspective, implementing facilitation conditions is crucial for the ethical and responsible use of ChatGPT. Gulati et al. (2024) suggest that instructors integrate ChatGPT into their instructional design practices to create captivating, interactive, and dynamic learning environments. Well-structured instructional design with ChatGPT can ensure a dynamic balance between AI-assisted learning with cognitive engagement and guide students on when and how to seek help effectively without being over-reliant on ChatGPT. Additionally, integrating ChatGPT into instructional design practices aligns AI use with pedagogical goals, ensuring that ChatGPT enhances learner autonomy (Lai et al., 2023), ethical help-seeking

behaviors (Gulati et al., 2024), and independent problem-solving and critical thinking (Adams et al., 2024; Strzelecki, 2024) rather than replacing essential learning processes.

### **Implications**

The findings of this study offer extensive theoretical and practical implications.

Theoretically, this study contributes to a deeper understanding of learners' help-seeking behavior with ChatGPT, providing insights for researchers examining this topic from the perspective of the UTAUT2 model.

The study expands the existing UTAUT2 model by highlighting additional factors that may play a role in shaping students' attitudes toward ChatGPT. Participants in this study identified fear of academic dishonesty and lack of trust in ChatGPT-generated responses as the primary factors discouraging their use of ChatGPT for academic help-seeking. Participants in Factor 1, for example, reported that they didn't believe in the responses generated by ChatGPT and they didn't think the tool could solve their problems. To some extent, a lack of trust in ChatGPT is associated with their lower performance expectancies in the UTAUT2 model. Extensive research has revealed that learners' performance expectancy significantly predicts their behavioral intention to use ChatGPT (Amin et al., 2024; Arthur et al., 2024; Bhat et al., 2024; Camilleri, 2024; Polyportis & Pahos, 2024; Strzelecki, 2023b). It seems reasonable to understand why participants identified their lack of trust as the primary barrier that affected their use of ChatGPT. However, the fear of academic dishonesty, a significant barrier identified by participants, does not explicitly align with any of the existing variables in the UTAUT2 framework. This highlights a gap in the framework, as it overlooks ethical concerns related to technology use, which also plays a critical role in shaping students' perceptions and use of ChatGPT for academic help-seeking purposes.

This study poses a challenge to the existing understanding of the relationship between help-seeking and the perceived stigma of being viewed as incompetent. The existing literature widely recognizes that the fear of being perceived as incompetent acts as a barrier that discourages learners from seeking help from both instructors and peers (Karabenick, 2004; Karabenick & Knapp, 1991; Yang et al., 2016). Tanaka and Murakami (2001), for example, found that learners' perceived threats are negatively related to adaptive help-seeking and positively related to avoidance of help-seeking. That means if students perceive help-seeking as a threat to their self-worth or abilities, they are less likely to seek help proactively. However, this opinion did not sound valid in this study. During the semi-structured interviews, four out of the five participants were asked to reflect on whether seeking help from peers was perceived as a sign of incompetence and whether this perception prevented them from seeking peer assistance. Surprisingly, none of them expressed that seeking help from peers was perceived as a sign of incompetence, but rather as a form of mutual support that strengthened friendship. Furthermore, none of the participants reported that the fear of being viewed as incompetent hindered their help-seeking behavior. One possible explanation is that learners' racial or ethnic backgrounds influence their perceptions of seeking help. In a study by Parnes et al. (2020), Asian students were found to perceive help-seeking as less useful compared to African American, Latino, White, and mixed-race students and as a result, Asian students showed greater reluctance toward help-seeking. Another possible cause is the supportive environment where the course instructor designed group activities that facilitated cooperation and mutual help. Students face less threats and as a result, they are more willing to provide and seek help from peers. Given that most participants in this study were from the U.S. and learners' ethnic or cultural backgrounds were

not considered, future studies could bridge the gap and explore how these factors may influence learners' perceptions of help-seeking.

Practically, this study offers implications for technology developers, institutions, instructors, and undergraduate students attempting to use ChatGPT for academic help-seeking purposes. In this study, ease of use emerged as the second strongest factor motivating learners' use of ChatGPT. Zou and Huang (2023) had similar findings, indicating that the perceived ease of use significantly affects learners' behavioral intention to use ChatGPT in writing. This suggests that technology developers focus on the design of a tool that is not only user-friendly but also innovative, engaging, and enjoyable to use to increase participants' perceived ease of use. Additionally, some participants in this study reported that their avoidance of ChatGPT was solely due to restrictions imposed by their instructors or institutional policies. It is reasonable to assume that instructors and institutions adopt clear and transparent policies on ChatGPT use, encouraging students to explore the potential benefits of the tool as an academic help-seeking tool while emphasizing the various ethical and academic concerns in its use. To achieve the goal, researchers suggest that institutions provide adequate funding resources, professional training workshops or seminars, and technical support to enhance the integration of GenAI into existing educational systems (Adams et al., 2024; Arthur et al., 2024; Jo, 2023). Participants in this study also identified the efficiency of ChatGPT in generating quick and direct answers, thereby saving time, as the primary motivation encouraging their use of the tool. This behavior aligns with what is described as "*executive*" or dependency-oriented help-seeking, where students prioritize immediate solutions over deeper understanding and independent problem-solving (Nelson-Le Gall, 1985). To adopt a healthy and productive attitude toward ChatGPT use, students should view it as a supplementary tool rather than a replacement for their efforts. They should use the

tool for mastery-oriented purposes, such as breaking down complex topics, brainstorming ideas, and improving their writing, all with the goal of building the skills necessary for independent problem-solving.

### **Limitations of the Study**

One notable limitation of this study is the selection of participants. As participants were drawn exclusively from an educational technology course at a single university, this may undoubtedly limit the width of the generated perspectives. An overview of the Q-sort participant demographics (see Table 4.3), for example, reveals that a significant proportion ( $n = 28, 58.33\%$ ) of participants were from the major of Communication Sciences and Disorders. It is therefore challenging to eliminate the influence of students' academic backgrounds on their perceptions of ChatGPT, especially when many of them share the same major. Another concern is that participants were selected from an educational technology course focused on the introduction of educational tools. The initial assumption was that purposeful sampling would ensure that students with a deeper understanding of educational technologies like ChatGPT could provide more valuable insights for this study. However, it should be noted that students taking this elective course tend to have a strong interest in or a positive attitude toward educational technologies. As a result, the participants may not represent a broad range of perspectives on the researched topic. The selection bias could potentially skew the findings of this study toward more favorable perceptions of ChatGPT for academic help-seeking purposes. Future research should consider including participants from multiple courses or universities to enhance the diversity and representativeness of the sample.

A second possible limitation of this study is related to the qualitative nature of Q methodology. Kampen & Tamás (2014) criticized the Q concourse development process, stating,

“However, the QM literature remains uncomfortably silent with respect to how to assemble and verify completeness of a concourse, and how to verify or falsify the representativeness of a sample drawn therefrom.” Furthermore, Robbins and Krueger (2000) mentioned that the sampling of Q statements, the implementation of Q sorting, and the interpretation of Q factors all rely on researchers’ epistemological beliefs, which made it impossible for Q methodology to completely remove the researchers’ influence on the results. Despite such criticism, various methods have been used to get rid of my subjectivity or biases that may affect the findings of this study. For example, a pre-study survey was administered to students with online learning experiences to gain some preliminary data regarding how they perceived the use of ChatGPT for help-seeking purposes. The results of the survey were then employed to guide the Q-sort activity done by another group of participants. The following semi-structured interviews with the same group of participants who did the Q-sort provided more detailed information to explain the rationales of their sorting. According to Maxwell (2013), a well-developed and explicit strategy to deal with subjectivity or bias is to write a “*researcher identity memo*” (p. 225) where researchers reflect on and write down the different aspects of experience that are potentially relevant to the study, which is reflected in the researcher subjectivity statement in the dissertation.

### **Recommendations for Future Studies**

As one of the study limitations suggests, the selected participants for this study were not diverse enough as they were selected from an educational technology course at a single university. In this study, more than half of the participants, or 58.33%, who did the Q-sort activity were from a single major in Communication Sciences and Disorders. Similarly, the participants selected for the pre-study survey, the Q-sort, and the follow-up interviews were

predominantly U.S. students, without enough representation from other countries and cultures. It is therefore suggested that future studies may use a more diverse sample to gather more representative results. For example, future studies may consider the potential influences of majors and cultural backgrounds by selecting students with different academic backgrounds from different countries. Future studies may consider including students' ethnicities or nationalities as part of the demographic information to enhance the breadth of participants. Additionally, participants in this study were selected from an educational technology course where the instructor adopted a flexible approach regarding the use of AI tools like ChatGPT. Future studies, therefore, should also consider the contextual impact and examine if differences exist depending on factors like institution or instructor policies regarding AI use.

Another recommendation is to conduct longitudinal studies to examine whether undergraduates' perspectives on ChatGPT change as they move to higher academic levels. In this study, Statement 19 examines the impact of age on learners' perceptions of ChatGPT. Overall, participants across the three factors expressed a neutral stance, indicating that they neither agree nor disagree with this statement. This may suggest that future research is needed in this area. A study by Chan and Lee (2023), for example, found that Generation Z is more optimistic about the potential benefits of GenAI compared with Generation X and Y, suggesting that age may influence an individual's perceptions of GenAI. Rather than covering the broad period between Generation X, Y, and Z, future studies could narrow down the scope by focusing on specific age groups. As this dissertation focused exclusively on undergraduates, future studies may compare if significant differences exist between undergraduates and graduates regarding how they view the use of ChatGPT for academic help-seeking. Future studies may also examine if there are

significant changes in undergraduates' perceptions and uses of ChatGPT when they enter their graduate studies.

### **Conclusion**

This study examined undergraduate students' perceptions of ChatGPT, exploring how they viewed and engaged with this emerging GenAI technology for academic help-seeking purposes. To ensure a comprehensive investigation of the research topic, this study employed three rounds of data collection. The first round involved a preliminary survey to capture undergraduate students' general perspectives on ChatGPT as an online academic help-seeking tool. Results from the survey were employed to inform the development of Q statements used in the second phase. The second round, a Q-sort activity, examined how participants evaluated these statements and explored the various factors affecting their use of the tool. The third round consisted of individual follow-up interviews with five participants, which aimed to provide rich and nuanced qualitative data that supplemented the findings from the Q-sort activity, ensuring a comprehensive analysis of the reach topic.

The findings revealed three distinct types of perspectives, from *harsh critics* of ChatGPT who supported human instructors, *reflective users* of ChatGPT who advocated accessibility with cautious optimism, to *optimistic supporters* of ChatGPT who struggled with financial constraints. While each identified perspective exhibited unique characteristics, they also shared some connections in their perspectives. Students acknowledged the potential of ChatGPT as a supportive resource for learning and productivity and emphasized the critical role of human instructors in both face-to-face and online learning environments. These perspectives contribute to a deeper understanding of how GenAI tools like ChatGPT shape learners' help-seeking and

educational experiences, highlighting the need for increased guidance on utilizing such tools ethically and responsibly, from the perspective of students.

The integration of ChatGPT as an academic help-seeking tool is likely to continue expanding, with increasing adoption in formal, informal, online, and face-to-face settings. As these AI tools become more sophisticated, they will evolve beyond simple question-answering functions to offer more personalized and context-based learning assistance. However, as the name “*artificial intelligence*” suggests, these AI tools can simulate human-like behavior but they cannot truly replace human instructors as they lack empathy, critical judgment, and self-awareness. As Strzelecki (2024) mentioned, AI technologies should be used as a tool rather than a replacement for human teachers, as the ethical and responsible use of AI tools relies heavily on human judgment. Participant 33 (F3) similarly indicated, “*I think that chat should be used as a facilitation tool to help students learn but not entirely take over the responsibility of teaching the students.*” It is reasonable to conclude that AI is not a solution to educational challenges; only humans are!

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APPENDICES

### Appendix A: Concourse Development of Learner Perceptions of ChatGPT

Theme	Q statements	Source
Performance	1. I believe that ChatGPT helps me achieve	UTAUT2
Expectancy	better learning outcomes compared to other help-seeking strategies like online information searching.	(Venkatesh et al., 2012)
	2. Interacting with ChatGPT improves my ability to grasp complex concepts in my studies.	
Effort	3. Using ChatGPT requires minimal effort on	UTAUT2
Expectancy	my part to seek academic help.	(Venkatesh et al., 2012)
	4. Learning how to use ChatGPT effectively does not require extensive effort.	
Social Influence	5. The opinions of my peers regarding	UTAUT2
	ChatGPT influence my decision to use it for	(Venkatesh et al., 2012)
	academic help-seeking.	
	6. I am more likely to use ChatGPT for help-seeking purposes if it is recommended by	
	instructors.	
	7. I am more likely to use ChatGPT for help-seeking purposes if it is recommended by students	
	good at learning.	

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Facilitating	8. ChatGPT is always available whenever I	UTAUT2
Conditions	need academic assistance.	(Venkatesh et al.,
	9. The instructor has provided me with guidance on how to use ChatGPT effectively as a help-seeking strategy.	2012)
	10. The stable internet connectivity enables me to use ChatGPT everywhere inside the campus.	
	11. ChatGPT can keep my help-seeking records across different devices, which allows me to catch up with the information seamlessly.	
Gender	12. My gender influences my perception of the usefulness and ease of use of ChatGPT in my online studies.	UTAUT2
	13. I believe that gender plays a role in how students perceive ChatGPT as a help-seeking strategy.	(Venkatesh et al., 2012)
Age	14. My age influences my attitude towards using ChatGPT for academic help-seeking in online courses.	UTAUT2
	15. Older students may have different experiences with ChatGPT in online learning.	(Venkatesh et al., 2012)

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Experience	<p>16. My previous experience with similar AI-based tools influences my perception of ChatGPT's usefulness for help-seeking purposes.</p> <p>17. Students with more experience using technology are more likely to find ChatGPT easy to use.</p>	<p>UTAUT2 (Venkatesh et al., 2012)</p>
Hedonic Motivation	<p>18. Using ChatGPT for help-seeking purposes adds enjoyment to my online learning experience.</p> <p>19. Interacting with ChatGPT is entertaining for me, beyond its academic utility.</p>	<p>UTAUT2 (Venkatesh et al., 2012)</p>
Price Value	<p>20. Considering the benefits it offers, I believe that ChatGPT is worth the investment of a subscription of \$20 a month.</p> <p>21. I am willing to devote time to learning to use ChatGPT, considering its great functions.</p> <p>22. I perceive ChatGPT as a cost-effective solution for obtaining academic help in online courses.</p>	<p>UTAUT2 (Venkatesh et al., 2012)</p>
Habit	<p>23. Using ChatGPT has become a routine part of my help-seeking experience.</p> <p>24. I find myself instinctively turning to ChatGPT whenever I encounter academic challenges.</p>	<p>UTAUT2 (Venkatesh et al., 2012)</p>

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	25.	Even when other options are available, I habitually rely on ChatGPT as my primary source of academic help-seeking.	
Data Privacy	26.	I am concerned about how my data is collected, stored, and used by ChatGPT during the help-seeking process with the tool.	Abadie et al. (2024), Choudhury & Shamszare (2023),
	27.	I worry that ChatGPT may compromise my privacy by accessing sensitive information shared during academic inquiries.	Ma & Huo (2023)
Bias	28.	I am concerned about potential biases in the responses provided by ChatGPT, such as gender or cultural biases, impacting the fairness of academic assistance.	Albayati (2024), Liu et al. (2024), Romero-Rodríguez et al. (2023)
	29.	I worry that ChatGPT may reinforce existing biases in educational content or perspectives, leading to inequalities in learning outcomes.	
Human and Job Replacement	30.	I am concerned that the widespread adoption of ChatGPT for academic help-seeking purposes may lead to the devaluation of human educators in online learning.	Albayati (2024), Strzelecki (2023a), Tanantong & Wongras (2024)

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	31.	The support staff in various sectors will face the risk of unemployment when ChatGPT is used as an automatic help-providing strategy.	
Educational Integrity	32.	I am concerned about the ethical implications of using ChatGPT for help-seeking purposes, particularly regarding academic honesty.	Liu & Ma (2024), Polyportis & Pahos (2024), Strzelecki (2023a), Zou & Huang (2023)
	33.	I worry that relying on ChatGPT for academic help-seeking may undermine the value of authentic learning experiences in online learning.	
Transparency	34.	I feel that ChatGPT should be more transparent about its decision-making processes to ensure accountability for the information it provides.	Bearman & Ajjawi (2023), Christensen et al. (2024), Niu & Mvondo (2024),
	35.	I am unsure who is responsible for monitoring the ethical issues related to the use of ChatGPT as an online help-seeking strategy.	Polyportis & Pahos (2024)
Technical Issues	36.	The system errors with ChatGPT disrupt my online help-seeking experience, thus negatively affecting my online learning experience.	Personal Experience
	37.	I find it frustrating when using the free version of ChatGPT during rush hour periods, as errors occur frequently.	

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Depersonalization of Learning	<p>38. I feel that relying too heavily on ChatGPT for academic help-seeking undermines the importance of human-to-human interactions in the learning process.</p> <p>39. I feel that using ChatGPT too often reduces meaningful interactions with instructors or peers, leading to a less personalized online learning experience.</p>	Maheshwari (2023), Student Pre-Survey
Quality of Response	<p>40. The responses from ChatGPT can be too generic or lack depth, making it less helpful for addressing specific academic inquiries.</p> <p>41. Sometimes I find it difficult to get the answers that are closely related to my questions.</p>	Gulati et al. (2024), Personal Experience
Overreliance	<p>42. I worry that using ChatGPT too frequently may prevent me from developing independent problem-solving skills in my online studies.</p>	Choudhury & Shamszare (2023), Strzelecki (2023a)

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*Note.* This is an original Q statements.

## **Appendix B: Consent Letter**

### **An Exploration of How Students Perceive Help-Seeking with ChatGPT in Online Learning Environments**

Dear Participant,

My name is Jill Stefaniak, and I am a faculty member in the Department of Workforce Education and Instructional Technology at the University of Georgia. I am inviting you to take part in a research study.

You are being asked to be in a research study that explores how students perceive their help-seeking experience with ChatGPT in an online learning environment. You are being asked to participate in this study because you are currently enrolled in EDIT 2000/e, an educational technology course and you have some experience with using ChatGPT as an academic help-seeking tool.

The research involves a pre-study survey that takes approximately 10 minutes, a Q-sort activity with supplementary questions that will take about 25 minutes, and a post-study interview that will take 30 minutes. Your participation is completely voluntary, and you may choose to join one or all of the three activities.

#### **Researchers**

Principal Investigator:

Jill Stefaniak, PhD, Associate Professor, Learning, Design, and Technology, Department of Career and Information Studies, College of Education

**Investigators:**

Fan Yang, Doctoral Student, Learning, Design, and Technology, Department of Career and Information Studies, College of Education

**Risks and Benefits**

**Risks:** There are no known risks at this time to participate in this study. This research involves the transmission of data over the Internet. Every reasonable effort has been taken to ensure the effective use of available technology; however, confidentiality during online communication cannot be guaranteed.

**Benefits:** The opportunity to contribute to the knowledge of the field through your participation in the study.

**Costs and Payments**

There will be no costs to you for participation in this research study. The researchers are unable to give you any payment for participating in this study.

**New Information**

If the researchers find new information during this study that would reasonably change your decision about participating, you will be informed.

**Confidentiality**

All information obtained about you or your institution for this study is strictly confidential unless disclosure is required by law. The results of this study may be used in reports, presentations, and publications, but the researchers will not identify you or your institution.

**Withdrawal Privilege**

It is OK for you to say NO. Even if you say YES now, you are free to say NO later, and walk away or withdraw from the study—at any time. Your decision will not affect your relationship

with the University of Georgia, or otherwise cause a loss of benefits to which you might otherwise be entitled. Your decision to participate or not participate in the research will have no effect on your relationship with the University of Georgia.

### **Questions**

If you are interested in participating or have questions about this research, please feel free to contact me at 706-542-7733, or [jill.stefaniak@uga.edu](mailto:jill.stefaniak@uga.edu). If you have any complaints or questions about your rights as a research volunteer, contact the IRB at 706-542-3199 or by email at [IRB@uga.edu](mailto:IRB@uga.edu).

Please keep this letter for your records.

### **Voluntary Consent**

By participating in this survey, you are agreeing to participate in this study.

## **Appendix C: Recruitment Letter**

### **An Exploration of How Students Perceive Help-Seeking with ChatGPT in Online Learning Environments**

You are being asked to be in a research study that explores how students perceive their help-seeking experience with ChatGPT. You are being asked to participate in this study because you are currently enrolled in EDIT 2000/e, an educational technology course and you have some experience with using ChatGPT as an academic help-seeking tool.

The research involves a pre-study survey that takes approximately 10 minutes, a Q-sort activity with supplementary questions that will take about 25 minutes, and a post-study interview that will take 30 minutes. Your participation is completely voluntary, and you may choose to join one or all of the three activities.

Our research team consists of Jill Stefaniak and Fan Yang (Department of Workforce Education and Instructional Technology) at the University of Georgia.

### Appendix D: Pre-Study Survey Questions

**Directions:** The following survey is designed to analyze undergraduate students' opinions about the use of ChatGPT for academic help-seeking. The information collected will only be used for the current dissertation and will be confidential. Your answers will have no impact on your scores in the current course.

1. What is your UGA email? (optional) \_\_\_\_\_
2. What is your age? \_\_\_\_\_
3. What is your gender? \_\_\_\_\_
4. What is your major? (Applied Linguistics, No Abbreviation) \_\_\_\_\_
5. How many online courses are you taking this semester in addition to EDIT 2000e (e.g., 2)?  
\_\_\_\_\_
6. Have you used ChatGPT to seek academic help-seeking prior to enrolling in EDIT 2000e?
  - A. Yes
  - B. No
7. How often do you use ChatGPT for academic help-seeking purposes (i.e., do homework, seek clarification to key terms, improve writing)?
  - A. Never
  - B. Sometimes
  - C. About half the time
  - D. Most of the time
  - E. Always

8. What is your primary use of ChatGPT for academic help-seeking purposes?

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9. What motivates you to use ChatGPT for academic help-seeking?

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10. What prevents you from using ChatGPT for academic help-seeking?

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11. As an online learning, how is your academic help-seeking experience with ChatGPT?

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12. Apart from ChatGPT. What other tools or resources do you use to seek academic help with your online courses?

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### Appendix E: Post-Sorting Survey Questions

1. Please explain why you chose the following statement for your highest rating (+4).

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2. Please explain why you chose the following statement for your lowest rating (-4).

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3. What is your UGA email? \_\_\_\_\_

4. What is your age (e.g., 19)? \_\_\_\_\_

5. What is your gender? \_\_\_\_\_

6. What is your year of study?

a. First year.

b. Second year.

c. Third year.

d. Fourth year.

7. What is your major (Applied Physics, No Abbreviation)? \_\_\_\_\_

8. What is your primary use of ChatGPT for academic help-seeking purposes?

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9. What motivates you to use ChatGPT for academic help-seeking?

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10. What prevents you from using ChatGPT for academic help-seeking?

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11. Are If you are selected for a 30-minute follow-up interview and are willing to participate, you will receive a \$5 Starbucks gift card as a thank-you for your time. If you would like to be considered for the interview, please provide your name below (optional)

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### Appendix F: Post-Study Interview Questions

**Directions:** The interview will focus on undergraduate students' use of ChatGPT for academic help-seeking purposes. The information collected will only be used for the current dissertation and will be confidential. Your answers will have no impact on your scores in the current course.

1. What do you think of the Q-sort activity?

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2. How often do you use ChatGPT for academic help-seeking?

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3. Please rate your overall help-seeking experience with ChatGPT (from 1-10 with 10 being the most positive). Also, provide your rationale for the score with examples.

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4. Describe a specific way ChatGPT has helped you with your studies.

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5. What concerns, if any, do you have about using ChatGPT for academic help-seeking?

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6. Suppose you are learning online, what is your first academic help-seeking tool when you have difficulties? If it is ChatGPT, why? If not, what are the differences between the tool chosen and ChatGPT?

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7. In a face-to-face learning setting, what is your first source of help-seeking when you encounter academic difficulties? Why?

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8. When you encounter different academic problems (e.g. math problems, writing problems, term definitions, please explain with examples), do you use similar tools? Why?

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9. When you decide on the source for academic help-seeking, what are the factors you will consider?

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10. What impact do you think ChatGPT could have on your learning? Why?

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