Youth Expectations and Perceptions of Generative Artificial Intelligence in Higher Education

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Abstract

Artificial Intelligence (AI) is not a recent innovation, what's new is how accessible its features have become across multiple devices, apps, and services. Sensationalistic news can distort public perception by exaggerating AI's capabilities and risks. This leads to misconceptions and unrealistic expectations, causing misunderstandings about the true nature and limitation of these tools. Such distortions can undermine trust and hinder the effective adoption and integration of AI into society. This study aims to address this issue by exploring the expectations and perceptions of young individuals regarding Generative Artificial Intelligence (GAI) tools. It explores their understanding of GAI and related devices, such as virtual assistants, chatbots, and social robots, which can incorporate GAI. A total of *N*=100 university students engaged in this study by completing a digital questionnaire distributed through the virtual campus of the University of La Laguna. The quantitative analysis uncovered a significant gap in participants' understanding of GAI terminology and its underlying mechanisms. Additionally, it shed light on a noteworthy gender-based discrepancy in the expressed concerns. Participants commonly recognized their ability to communicate effectively with GAI, asserting that such interactions enhance their emotional well-being. Notably, virtual assistants and chatbots were perceived as more valuable tools compared to social robots within the educational realm.

Keywords

I. Introduction

SCIENCE unfolds a realm of opportunities to delve into and understand the foundations of Generative Artificial Intelligence (GAI onwards) tools across diverse domains [1]. While it is true that these tools provide the opportunity to address complex challenges without restrictions in scope or strict theoretical knowledge, we encounter the presence of journalists seeking to capture lectors' attention with sensationalistic news about the impact of GAI tools on society [1]-[3]. Journalists present these tools as a fascinating technology that, at best, promises to improve our quality of life [1] [4]-[7]. This approach hinders the user's real understanding of the true nature of GAI tools, creating a gap between expectations and reality.

The lack of real contextualization may contribute to a distorted perception of GAI tools' actual capabilities and limitations. Furthermore, false promises can undermine people's trust in emerging technology, as the hopes placed in expectations are significantly linked to trust [8]. Promises are meant to foster beliefs in future actions, which can influence the user's perception, emotion, and behavior in multiple ways [9]. While GAI tools offer innovative solutions [3], we must not forget that overlooking their limitations and risks can negatively shape an individual's perception of these tools and, in some cases, even of human capabilities [10].

To understand the emerging technological paradigm, it is crucial to analyze the dynamics of user expectations related to these tools [11], particularly among the younger population. Therefore, the aim of this pilot study is to identify the expectations and perceptions of young individuals regarding GAI tools, as well as the understanding of GAI and devices such as virtual assistants, chatbots, and social robots. What are the expectations and perceptions of the youth regarding GAI? This study aims to address this research question, providing an insight into how young individuals currently interact with these technologies.

The structure of the paper is as follows. In Section II, we provide an overview of the framework. Section III details the research methodology employed in this study. Moving forward, Section IV presents the obtained results. Finally, in Sections V and VI we delve into discussions and present conclusions derived from the analysis.

II. FRAMEWORK

A. A Brief Introduction to GAI

Artificial Intelligence (AI onwards) is not an innovation in its essence. It was first introduced in 1956 by Marvin Minsky and John McCarthy in the Dartmouth Summer Research Project on AI [12] [13]. Since then, its development has been continuous, and significant advancements have occurred over the decades. However, the newness now lies in the ease with which we can employ its functionalities through multiple devices, applications, and AI-driven services.

Its definition has evolved over time, but currently, AI is defined as the ability of machines to mimic certain functionalities of human intelligence, including capabilities such as perception, learning, reasoning, and problem-solving [14][15]. While we can approach and classify AI in multiple ways, this study will focus on two categories: Narrow or Weak AI and General or Strong AI.

Narrow AI represents a more specific and specialized form of AI, designed to perform specific tasks within a defined scope. This category excels in specific contexts, such as facial recognition, natural language processing, or medical diagnostics. Narrow AI lacks versatility and adaptability. On the other hand, General AI aspires to achieve a level of intelligence comparable to or even exceeding human intelligence, capable of addressing a wide range of tasks and autonomously learning in diverse contexts. This category aims to replicate human intelligence's versatility and adaptability characteristics, enabling machines to perform specific tasks while understanding, reasoning, and problem-solving more broadly. While Narrow AI focuses on specialization, General AI seeks to mimic human intelligence, posing ethical, technical, and philosophical challenges that are constantly evolving as we progress in this field of study [15].

In this constant evolution, Predictive AI and GAI emerge as two new dimensions within the field of AI. Predictive AI focuses on the ability to anticipate future events through analysis of patterns and historical data. However, GAI goes beyond replicating predefined functions, enabling machines to generate original and creative content. This opens up new possibilities in art creation, text composition, and design, raises the potential for innovation, and closes collaboration with human creativity [12] [15].

It is important to note that, in the present study, AI is understood as a field of computer science that deals with creating and developing systems and programs capable of performing tasks that typically require human intelligence. While GAI is considered a specific approach within the broader AI field, focusing on the capacity to autonomously create, produce, or generate content.

B. GAI Shaping Today's World

Many of the currently available and operational AI applications are examples of Narrow AI tools designed to perform specific and limited tasks [15]. However, the rapidly growing number of GAI tools available have expanded into society at an overwhelming pace [16]. and access information. These tools' implementation and use have transformed how we interact with technology, access information, and complete our tasks [17]. Establishing boundaries between the human and the artificial has become a challenge by providing coherent responses, simulating emotions, and even generating creative content [18].

In the healthcare domain, GAI plays a crucial role in the analysis of medical images, disease prediction, and treatment personalization [19]. In the financial sector, GAI has become an invaluable tool for data analysis, decision-making, and precise financial planning. Simultaneously, the use of these tools enables the creation of seamless and personalized experiences, fostering higher consumer loyalty, a positive brand perception, and sustainable growth [20]. In the educational sphere, GAI brings significant benefits by allowing the personalization of educational content and the creation of virtual assistants that facilitate interactive learning [17][21]. Furthermore, in the creative industry, GAI is employed for the creation of artistic content, spanning areas such as scriptwriting, filmmaking, journalism, text generation, as well as the creation of music, images, and animations [22].

Regarding GAI devices, virtual assistants and chatbots have stood out among users because they offer a natural and intuitive way of communication with technology [23]. Virtual assistants, such as Siri, Google Assistant, and Alexa (a few of the most popular ones), have transformed how users perform their daily tasks. These assistants can answer questions, engage in real-time conversations, and execute specific actions [24]. Their ability to understand natural language has resulted in a smoother and more accessible user experience, defining a new interaction process between individuals and intelligent machines [25]. Virtual assistants are understood as a technological device interacted with through voice or text commands. On the other hand, chatbots have also become a valuable tool for users. These programs can engage in textual conversations with users, providing quick and efficient responses to their queries [26]. Chatbots are recognized as a program designed to offer assistance through text, with varying levels of intelligence [27]. Furthermore, social robots incorporating GAI are experiencing a significant growth in adoption across various domains. Their ability to act as assistants or companions redefines the Human-Robot Interaction (HRI onwards) process [28]. Social robots are comprehended as robots designed to interact and communicate with people in a more natural manner, resembling human interaction, though not necessarily humanoid in form [29].

As this technology evolves, a future is envisioned where these devices play increasingly integral roles in our everyday lives.

C. Beyond the Books: GAI Education

The introduction of GAI devices and tools has led to significant transformations in the educational sphere. The GAI's ability to generate original content and adapt to users' specific needs has redefined the approach to educational processes [30]. The possibility of creating personalized materials and developing interactive learning experiences has become a feasible and easily accessible task [21]. However, a lack of understanding of the nature of these tools can lead to a range of ethical issues in academic settings [31].

In the First Draft of the Recommendation on the Ethics of AI [14], ten fundamental principles were established to ensure ethics in the development and application of AI. These principles addressed various concerns, from the unintentional reproduction of biases to issues related to the applicability and transparency of technologies, encompassing safety and protection, privacy, oversight, and human decision-making. Additionally, the importance of awareness and AI literacy was taken into account, emphasizing the need to consider multiple ethical aspects in the design and adoption of these innovative technologies in education [14].

In response to the challenges posed within the educational domain, organizations such as UNESCO have issued reports highlighting key points for the proper implementation of AI tools in preschool, primary, and secondary stages [14]. The report acknowledges that the rapid technological evolution may create knowledge gaps in this regard. This initiative aims to address the potential knowledge gaps and foster an informed and proactive dialogue among professionals, thereby contributing to building a solid foundation for the effective adoption of AI in educational environments.

The presence of AI and GAI in the university setting is self-evident [32]. Although these tools allow students to carry out academic tasks more efficiently, they also face the challenge of potential errors or

failures in content generation. In fact, despite being aware of the lack of reliability in responses, some participants still demonstrate a consistent trust in these tools for specific tasks [33]. Universities now emerge as key environments where GAI can play a significant role in research, creativity, and the training of future professionals. Proactively addressing the integration of GAI in higher education is essential to prepare students for the challenges and opportunities that this technology presents to society. Indeed, those who do not incorporate it into classrooms will face a significant disadvantage in the job market [15].

D. Risks to Mitigate

While GAI can benefit and enhance our lives, it also presents risks and challenges that must be carefully addressed, regardless of the professional sector.

GAI tools and devices often interact with personal information. This implies the possibility of data compromise or improper use, failing to safeguard user privacy and security. Simultaneously, the massive collection of data to improve GAI tools raises ethical questions about how these data are stored, used, and shared with third parties. This could also lead to violations of user privacy [34].

Another risk is the lack of transparency in the algorithms employed by GAI. Not understanding how these algorithms function can lead to distrust in the decisions and recommendations provided by the devices and/or tools [35]. However, excessive reliance also poses risks. Overconfidence in these tools can hinder human creativity and innovation [36].

Another significant risk lies in the emotional and cognitive bonds that users may establish during the interaction process with GAI tools and/or devices. The integration of these technologies into our lives has involved them in personal and emotional aspects of people's lives. This raises the possibility that users may develop emotional dependence on machines, creating an affective connection that could influence traditional human relationships. This phenomenon emphasizes the importance of addressing the ethical and emotional aspects of Human-Generative Artificial Intelligence Interaction (HGAII onwards) [37].

Understanding how these technologies work, what they provide, how they can assist us, as well as the benefits they offer and the risks they pose, is essential for informed and responsible interaction. Promoting awareness and AI literacy enables users to make conscious decisions, critically evaluating the utility of these tools in their everyday lives. The key is to empower individuals with the necessary knowledge to harness the benefits of GAI ethically and equitably, while preserving autonomy and personal skills [15].

E. Expectations and Perceptions of GAI

The tools and devices of GAI have been introduced in society as a revolutionary technology with the potential to transform different areas of our lives. In fact, they have promised significant advancements in fields such as medicine, education, and art, among others [1]. The ability to generate written, visual, and auditory content has been perceived as a valuable contribution to saving time and resources, enabling professionals to focus on more complex tasks [15].

The discrepancy between expectations and reality in the interaction process with Conversational Agents (CAs onwards) highlights the complexity of the path to the full realization of GAI tools [38]. Clark et al. [25] found that we should not perceive this interaction process as an imitation of human capabilities but as a new process of communication and interaction. The expectation that GAI tools will come to comprehend their own existence and be capable of making independent decisions, surpassing predefined instructions, represents an ambitious horizon that has not yet been achieved [15]. A lack of knowledge about the current capabilities of these technologies can

impact user's risk perception [39], emphasizing the need for GAI literacy [15].

GAI-driven systems have limitations that prevent them from offering optimal responses indefinitely. The false hope that CAs are infallible negatively impacts the intention to use these tools when users encounter errors, especially in laboratory and field studies where the initial reliability rate was very high [40]-[42]. There is often an initial belief that these tools are error-free, generating high confidence. However, when users become aware of errors in responses or in understanding their requests, that confidence is weakened [33].

Trust has also been recognized as a factor predicting the quality of HRI and people's willingness to use social robots in certain tasks. The level of trust can be influenced by media representations, such as movies where robots dominate the world, creating often unrealistic expectations that may induce fear or rejection toward the adoption of these devices. However, what truly concerns users is the fear that social robots will replace human labor. In fact, positive attitudes have been found towards the presence of robots in jobs that require social skills [43].

III. Method

A. Methodology

The present research focuses on a pilot study. In this initial phase, a deliberately small sample has been selected for the questionnaire application, aiming to ensure the relevance and effectiveness of the items used. This pilot approach will allow for adjustments and refinements to the methodology before conducting large-scale data collection, ensuring the quality and validity of the results obtained.

B. Participants

A total of 100 young individuals aged between 18 and 34 participated. Specifically, 63.0% (*N*=63) of the participants are biologically male, while 37.0% (*N*=37) are biologically female. When inquiring about gender, 60.0% (*N*=60) identified with the male gender, while 38.0% (*N*=38) identified with the female gender. 2.0% (*N*=2) chose not to reveal this information. 99.0% (*N*=99) of the participants reside in Spain, with the majority of them residing in the Canary Islands (87.0%, *N*=87). 7.0% (*N*=7) reside in Madrid, 3.0% (*N*=3) in Andalucía, 1.0% (*N*=1) in Cantabria, and another 1.0% (*N*=1) in Galicia.

Regarding participant technology usage, 95.0% (*N*=95) of the participants use it to connect to the Internet, 79.0% (*N*=79) use it for communicative purposes, and 60.0% (*N*=60) use it for entertainment activities, such as gaming (shown in Table I).

TABLE I. Youth Internet Usage Habits

		1		2		3		4		5	
Items	Sex	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%
I use technology to connect to the Internet	M	*0*	0	*0*	0	*0*	0	*3*	3	*60*	60
	F	*0*	0	*0*	0	*0*	0	*3*	3	*34*	34
I use technology to communicate	M	*0*	0	*0*	0	*2*	2	*11*	11	*50*	50
	F	*0*	0	*0*	0	*0*	0	*8*	8	*29*	29
I use technology to play	M	*1*	1	*3*	3	*6*	6	*11*	11	*42*	42
	F	*1*	1	*3*	3	*4*	4	*11*	11	*18*	18

ᵃ Items were assessed using a Likert scale, where 1 indicates completely disagree, and 5 indicates completely agree.

C. Research Questions

The aim of this pilot study is to identify both the expectations and the perceptions that young individuals have regarding GAI tools. Specifically, the following research questions will be addressed to achieve a comprehensive overview of the results:

- RQ1: To what extent are the youth familiar with the terminology of GAI?
- RQ2: What are the main concerns of the youth regarding GAI? Are there gender differences in these concerns?
- RQ3: How do youth perceive the effectiveness of GAI in communication and to what extent does it contribute to their well-being?
- RQ4: How do youth perceive GAI devices usefulness within the educational realm?

D. Data Collection

For data collection, an *ad hoc* questionnaire featuring two dimensions was employed. The first dimension, focused on participants' characterization, was designed to gather detailed information about participants. This dimension consists of 8 questions covering aspects such as sex, gender, age, place of residence, and technology-related habits. To explore participants' expectations and perceptions regarding GAI, a second dimension was designed, addressing key aspects such as concept understanding, frequency and types of use, as well as ethical considerations, privacy, and interaction. This dimension comprises a total of 46 items, of which 45 are assessed using a Likert scale ranging from 1 (completely disagree) to 5 (completely agree), and an additional optional qualitative item. The time required to complete the questionnaire ranged from 10-15 minutes, and it was filled out individually in digital format.

E. Procedure

The study employed a non-probabilistic sampling method, specifically targeting a population subgroup through the snowball sampling technique. To be more concrete, the questionnaires were distributed through email platforms and forums within the virtual campus of the University of La Laguna to students in the Bachelor's Degree in Computer Engineering, the Master's Degree in Teacher Training for Middle and High Education, Vocational Training and Language Training with a specialization in Technology Education, among other areas.

Once the deadline for completing the questionnaire expired, the data analysis process started. Initially, the results were recorded in a Google Sheet spreadsheet where participants' personal data were coded to ensure privacy. Subsequently, the template was imported into the IBM SPSS Statistics statistical software program to initiate the analysis and interpretation of the collected data.

F. Data Analysis

The analysis was conducted with a quantitative approach based on the research questions. Various analyses were employed in line with the defined objectives and variables.

In the initial phase, the internal consistency of the questionnaire was assessed through a factorial analysis, employing Cronbach's Alfa coefficient as a measure. The internal consistency of the questionnaire, as determined through the analysis, was found to be .93. Subsequently, descriptive analyses were conducted to explore participant's internet usage habits, employing cross-tabulations for this purpose (Refer to Table I). To examine variable distribution and adherence to normality, the Kolmogorov-Smirnov test was applied. Given the non-normal distribution of the majority of variables, non-parametric measures, concretely the Mann-Whitney U and independent samples t-tests,

were conducted. This comprehensive methodological approach facilitated a rigorous examination of various aspects of the research, offering a complete and detailed insight into the obtained results.

All analyses were conducted using the IBM Statistical Package for the Social Sciences (SPSS) software, version 29.0 for Windows.

IV. Results

A. Familiarity With GAI and Practical Application

Addressing the first research question, 20.0% (*N*=20) of the respondents indicated familiarity with the concept of GAI. However, when asked if they could define the concept, 24.0% (*N*=24) disagreed with being able, and 31.0% (*N*=31) neither agreed nor disagreed regarding understanding how GAI functions. Concerning practical usage, 23.0% (*N*=23) of the participants agree that they frequently use applications employing GAI. In the academic realm, 31.0% (*N*=31) stated that the use of GAI tools enhances their productivity in academic tasks. A 3.0% (*N*=3) mentioned that its use reduces productivity in these tasks, while it neither motivates nor demotivates 32.0% (*N*=32). In terms of future perspectives, 42.0% (*N*=42) firmly believe that GAI has significant potential to transform how we work and live. Regarding knowledge of usage, 33.0% (*N*=33) of participants assert that GAI tools record their request during the interaction, while 27.0% (*N*=27) express having no defined position on the matter. Concerning the learning capacity of these tools, 38.0% (*N*=38) agree that GAI tools learn and improve over time through interaction, and 34.0% (*N*=34) completely agree. In the context of ethical limits during interaction, 32.0% (*N*=32) remain neutral, neither agreeing nor disagreeing. On the other hand, 30.0% (*N*=30) agree, and 21.0% (*N*=21) completely agree that GAI tools have ethical limits during the interaction process. Additionally, 35.0% (*N*=35) agree that these tools have limited capacity to generate responses during interaction. Fig. 1 provides an overview of all results and items discussed.

B. Concerns and Considerations

Exploring the second specific research inquiry, 26.0% (*N*=26) of participants express a neutral stance, showing neither agreement nor disagreement regarding the respect for their privacy. On the other hand, 49.0% (*N*=49) voice significant concern, indicating full agreement that they are worried about the potential use of these tools to generate false or misleading content. In the realm of gender biases present in GAI tools, 18.0% (*N*=18) express concern, while another 24.0% (*N*=24) fully agree with this apprehension. In contrast, 24.0% (*N*=24) indicate being neither concerned nor unconcerned regarding this issue. Concerning transparency in the decision-making processes of GAI tools, 28.0% (*N*=28) adopt a neutral position, showing neither agreement nor disagreement with concerns about transparency. Conversely, another 28.0% (*N*=28) fully agree with concerns about the risk of developing a dependency on these tools in decision-making. Women demonstrate higher levels of concern across all evaluated aspects in comparison to men. However, the only significant gender difference in the analysis relates to their concerns about privacy when using GAI tools with a .024. Women seem to be more worried about keeping their personal information private while using these technologies compared to men. Fig. 2 displays the results for male respondents, while Fig. 3 presents the results for female respondents, facilitating a comparative analysis.

C. User Experience

Delving into the third targeted research questions, 39.0% (*N*=39) express neither agreement nor disagreement with feeling secure when interacting with GAI tools. In contrast, 7.0% (*N*=7) fully agree with this statement. Regarding the sense of companionship when interacting with these tools, 9.0% (*N*=9) agree, while 15.0% (*N*=15) neither agree nor
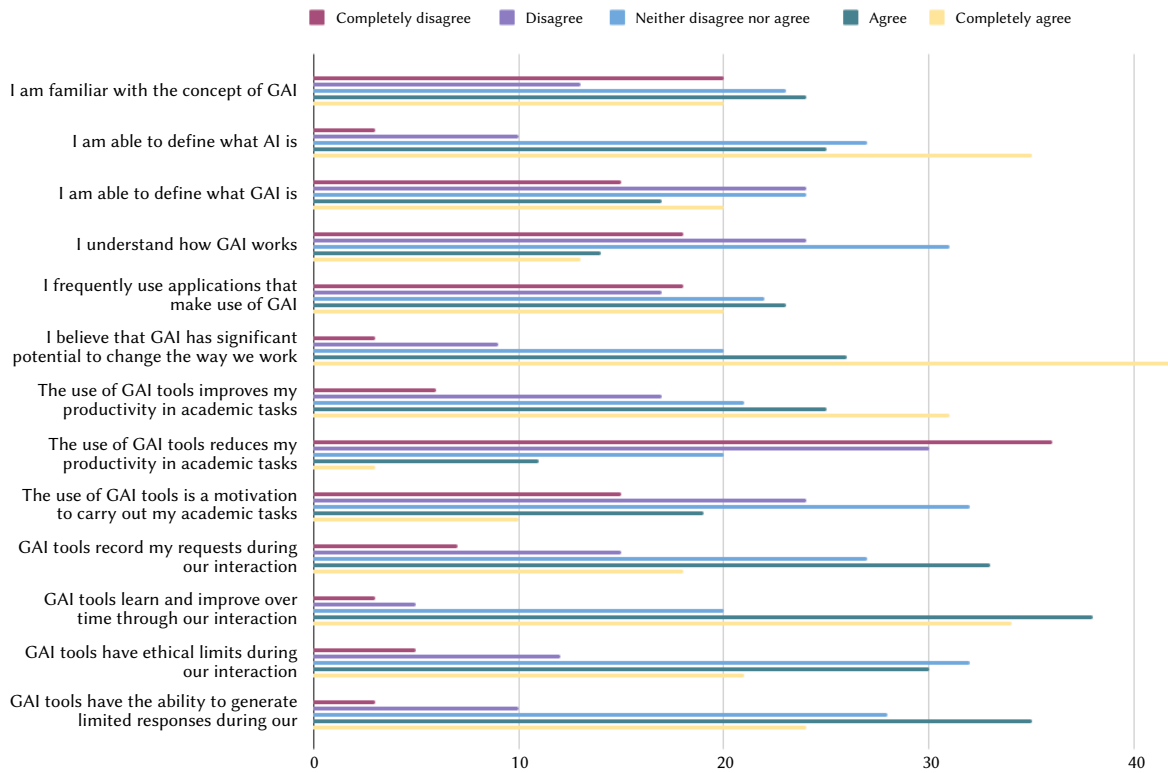
Fig. 1. Familiarity with GAI and practical application.
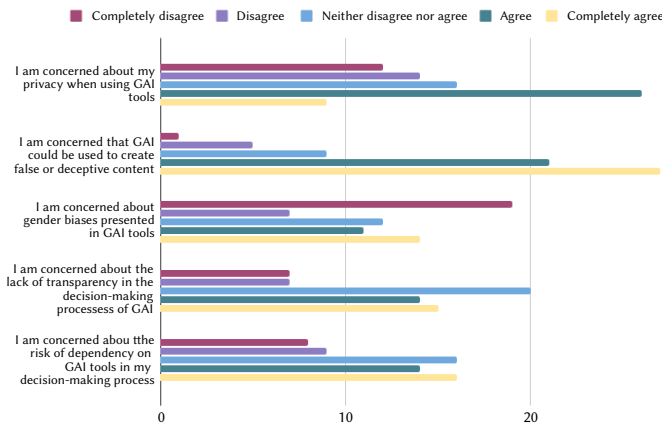

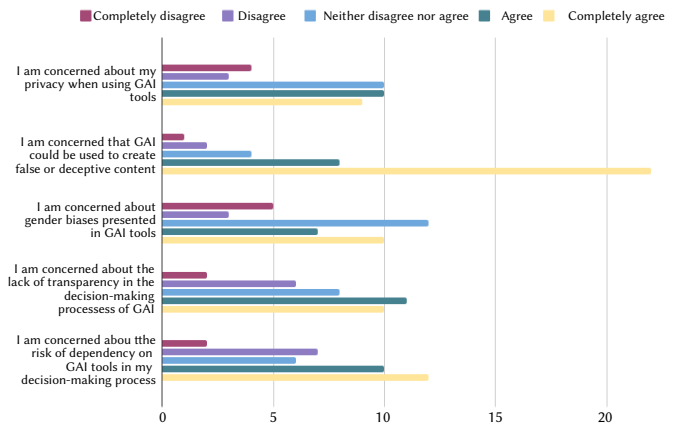Fig. 2. Concerns and considerations of male participants.

Fig. 3. Concerns and considerations of female participants.

disagree. Only 5.0% (*N*=5) agree that GAI understands their emotions, while a notable 49.0% (*N*=49) completely disagree with this statement. Concerning the responsiveness of GAI to emotions, only 6.0% (*N*=6) agree, while a significant 47.0% (*N*=47) completely disagree. Regarding overall satisfaction, 35.0% (*N*=35) agree with feeling satisfied with GAI tools. Additionally, 33.0% (*N*=33) agree that they can communicate effectively with GAI (Illustrated in Fig. 4). On the other hand, 26.0% (*N*=26) agree that they feel anxious when GAI tools fail to understand their requests. Furthermore, 25.0% (*N*=25) agree that GAI contributes to a positive experience. In emotional terms, 4.0% (*N*=4) completely agree, and 10.0% (*N*=10) agree that communication with GAI enhances their emotional well-being (Shown in Fig. 5).

D. Devices Employing GAI

Concerning the use of virtual assistants, 23.0% (*N*=23) express agreement when asked if the use of these devices increases their desire to learn new content. 37.0% (*N*=37) indicate no defined position on whether virtual assistants foster a participative attitude towards learning, while 21.0% (*N*=21) agree. Regarding the impact on reflection on various topics, 18.0% (*N*=18) agree that virtual assistants encourage reflection. In terms of skills, and knowledge in the use of ICT, 31.0% (*N*=31) agree that these devices contribute to their development. In the realm of personalized learning, 31.0% (*N*=31) indicate having no clear stance on whether virtual assistants support this approach based on individual characteristics, while 25.0% (*N*=25) agree. Finally, 18.0% (*N*=18) concur that virtual assistants facilitate control and evaluation of the learning process.

In the realm of chatbot usage, 24.0% (*N*=24) of participants agree that using chatbots increases their motivation to learn new content. In terms of promoting a participative attitude towards learning, 18.0% (*N*=18) agree with the contribution of chatbots. Concerning the ability to foster reflection on various topics, 29.0% (*N*=29) agree, while another 29.0% (*N*=29) adopt a neutral position, neither expressing
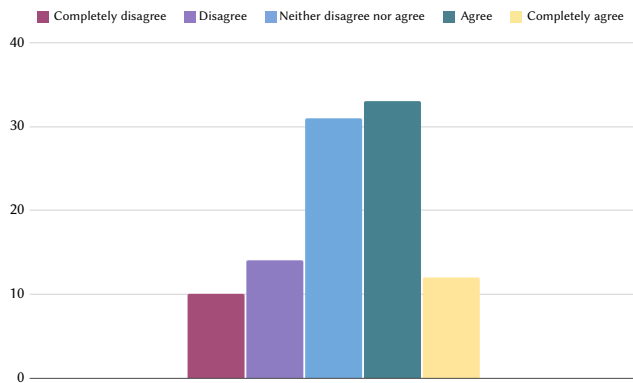
Fig. 4. Results of effectively communicating with GAI tools.

Fig. 5. Outcomes of dialogue with GAI to enhance emotional wellbeing.

agreement nor disagreement. In the aspect of developing skills and knowledge in the use of ICT, 40.0% (*N*=40) confirm that chatbots play a positive role in this process. In terms of personalized learning, 26.0% (*N*=26) agree that chatbots support this approach based on individual characteristics. Furthermore, an equal percentage concur that chatbots facilitate control and evaluation of the learning process (26.0%, *N*=26).

Regarding the use of social robots, 30.0% (*N*=30) express total disagreement with the statement that using these devices increases their motivation to learn new content. On the other hand, 19.0% (*N*=19) agree that social robots foster a participative attitude during the learning process. In terms of promoting reflection on various topics, 18.0% (*N*=18) agree, while 24.0% (*N*=24) disagree with this statement. In the aspect of developing skills and knowledge in the use of ICT, 35.0% (*N*=35) neither express agreement nor disagreement, while 22.0% (*N*=22) agree, and 12.0% (*N*=12) fully agree. Concerning support for personalized learning based on individual characteristics, 43.0% (*N*=43) neither express agreement nor disagreement, and 16.0% (*N*=16) agree. In terms of facilitating control and evaluation of learning, 35.0% (*N*=35) neither show agreement nor disagreement, while 15.0% (*N*=15) agree.

In response to the fourth research question, it is observed that young individuals find virtual assistants and chatbots more useful than social robots in the educational context.

V. Discussions

The aim of this pilot study was to identify the expectations and perceptions that young students have regarding GAI tools. The following four research questions were formulated to facilitate a comprehensive analysis and understanding within this specific domain: RQ1. To what extent are the youth familiar with the terminology of GAI?, RQ2. What are the main concerns of the youth regarding GAI? Are there gender differences in these concerns?, RQ3. How do youth perceive the effectiveness of GAI in communication and to what extent does it contribute to their well-being?, and RQ4. How do youth perceive GAI devices usefulness within the educational realm?

The intersection between familiarity and practical usage of GAI reveals insights into the adoption of emerging technologies, reaffirming the necessity of technical understanding for effective implementation [15]. Despite a limited understanding of GAI terminology and mechanics, a significant portion of respondents actively engage with GAI tools, highlighting a disconnect between knowledge and usage. This paradox suggests that user-friendly interfaces outweigh the need for in-depth technical comprehension, fostering widespread acceptance among university students. However, while the accessibility of these interfaces facilitates the use of GAI tools without requiring technical expertise, it simultaneously omits the potential risks and vulnerabilities that students may encounter
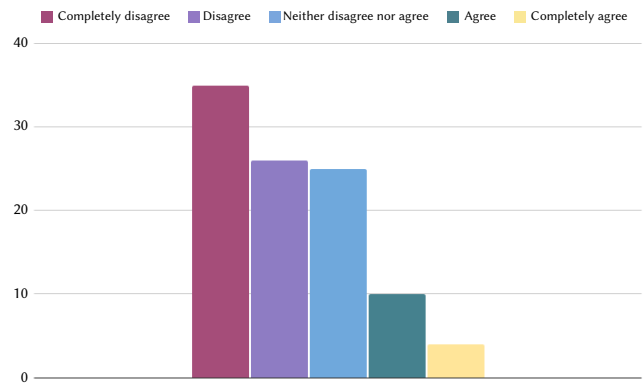
during the interaction processes with GAI tools.

Fig. 1 illustrates a strong belief among respondents that GAI tools can transform the way we work and enhance productivity in academic tasks. This belief is evident in the high percentage of participants who agree and completely agree that GAI can significantly influence and improve different aspects of professional and educational activities. While the belief in the transformative potential of GAI tools appears promising for their continued implementation in both professional and academic context, there are concerns regarding the respondents' confidence in these tools without adequate consideration of potential gender biases, lack of transparency in decision-making processes, and the risk of dependency on these tools for decision-making. This observation prompts us to question the future of GAI tools if upcoming computer scientists fail to address the fundamental aspects of these technologies. Ignoring critical issues such as potential biases and transparency in decision-making could weaken trust and minimize their effectiveness over time. Additionally, the lack of concerns among respondents regarding their dependence on GAI tools raises questions about autonomy and judgment in an increasingly AI-driven world. While the convenience of these tools is clearly attractive, it is crucial to approach the risk of excessive reliance with caution, as it could adversely affect critical thinking and informed decision-making [14]. Women exhibited higher levels of concern across all items related to the potential risks of GAI tools. As illustrated in Fig. 3, this heightened concern is evident in their responses. However, there is only one item with a statistically significant difference between genders: "I am concerned about my privacy when using GAI tools". Women demonstrate a markedly greater concern about this issue than men (Shown in Fig. 2). Conversely, the level of consensus among respondents expressing concern about using GAI tools for creating false or deceptive content is striking. This highlighted item reflects a shared sensitivity among participants, suggesting a widespread perception of the potential threat that GAI tools pose to information integrity. This collective concern may be attributed to prior experiences with online misinformation, manipulation campaigns, and increased awareness of the potential malicious uses of technology or the fear of plagiarism.

In the context of user experience, the natural interaction offered by GAI-based tools has created a new communication process with technology. The ability to understand natural language, interpret voice commands, and adjust to individual preferences has expanded comfort and accessibility for users [25]. The results of user communication are presented in Fig. 4. However, the findings related to emotional well-being, highlighted in Fig. 5, are less encouraging. Few users feel accompanied when interacting with GAI tools, and even fewer believe that GAI understands or responds appropriately to their emotions. This could be attributed to a gap in the ability of GAI tools to establish affective emotional connections or issues in the communication process itself [15]. There is a moderate level of agreement among users in terms

of effective communication. It is important to consider that users' preconceived perceptions of a machine's inability to enhance their well-being may influence these low values. Similar to the emotional connections established in childhood with toys, we may also develop emotional bond with GAI devices, especially when these devices provide personalized responses and facilitate various tasks [37].

Investigating the variety of GAI devices currently used by young individuals provides valuable insights, particularly regarding their utility in education. The results show that participants perceive virtual assistants and chatbots as more beneficial than social robots in the educational context. Virtual assistants are widely perceived to support personalized learning effectively and chatbots are similarly valued. However, social robots are seen as less contributive to personalized learning. This disparity could be due to the greater accessibility and ease of use of virtual assistants and chatbots compared to the more complex implementation of social robots in educational settings. The preference for virtual assistants and chatbots likely stems from their ability to provide quick, personalized responses [23]-[25], and their adaptability to various platforms and devices. These findings highlight that for young individuals, immediate utility and efficiency are critical in evaluating the tools applications of GAI in education.

VI. Conclusions

This study sheds light on the expectations and perceptions of young individuals regarding GAI. Our findings reveal a nuanced landscape where familiarity with GAI terminology and detailed understanding of its internal mechanisms are limited, yet there is a notable adoption of these tools in daily practice. The accessibility and practical benefits of GAI applications appear to drive their widespread acceptance despite the technical knowledge gap. A significant portion of respondents believed that GAI tools have the potential to transform the way we work, with many recognizing the enhancement of productivity in academic tasks. This optimistic outlook underscores the expectations placed on GAI technologies. However, there is a notable lack of concern about privacy, transparency in decision-making, and dependency on these tools. Women expressed higher levels of concern across all items related to potential risks, with privacy being a significant gender-specific issue. Moreover, the study highlights a critical awareness among respondents about the risk of GAI tools generating false or deceptive content, reflecting a shared sensitivity to information integrity. In the realm of user experience, GAI tools are appreciated for their natural interaction capabilities, which enhance comfort and accessibility. However, the emotional connection with these tools remains weak, indicating a gap in their ability to establish affective bonds with users. When it comes to educational applications, virtual assistants and chatbots are perceived as more useful than social robots. In conclusion, young individuals demonstrate a multifaceted relationship with GAI, marked by high expectations for its transformative potential and practical benefits, alongside a notable lack of concern regarding privacy, transparency, and misinformation. These insights indicate that, while considerable enthusiasm exists for integrating GAI into daily life, addressing these critical concerns will be essential for ensuring these technologies' sustainable and ethical employment.

The results presented in this study should be interpreted with caution as they are not generalizable due to their adaptation to a specific context and a small sample size. It is important to note that this study has been designed as a pilot, implying the need to assess which items are truly significant for the research and which are not, thus adjusting the focus for future investigations. Additionally, the study has certain limitations that need to be considered. Some participants expressed difficulties in answering certain questions due to a lack

of knowledge about the subject, especially regarding the use and understanding of devices such as social robots. These challenges were directly communicated to the researchers. Furthermore, the uneven participation of men and women may influence the conclusions, given the study's majority representation of men, possibly attributable to the choice of fields with low female presence, such as computer engineering, and the technological specialization of the teacher training master's program. In future research, it is recommended to include the field of study in the questionnaire to identify the background of female participants and determine if they all come from technological fields or not. These limitations should be considered when interpreting the findings and provide opportunities for improvement and refinement of methodology in subsequent research.

The current research sets the stage for future lines of exploration. To delve deeper into user perspectives on GAI tools, exploring the underlying reasons behind users' deeply rooted beliefs about their usage is essential. Investigating the sources from which users access information and form opinions regarding GAI tools could offer valuable insights into the shaping of their attitudes. Furthermore, exploring the long-term impact and evolving role of GAI in educational settings could be another promising trajectory, shedding light on its efficacy over time and potential implications for pedagogical approaches. Additionally, investigating strategies to address the identified concerns, such as privacy, emotional engagement, and gender disparities, could contribute to the development of more inclusive and effective GAI tools. Comparative studies across different demographic groups and cultural contexts could also offer valuable insights into the context-specific nature of the observed trends, specifically when comparing the usage of GAI devices (e.g., virtual assistants, chatbots, and social robots). By addressing these aspects, future research can contribute to a comprehensive understanding of the multifaceted dynamics surrounding the integration of GAI in higher education and its broader implications. The study also highlights the importance of understanding the culture of AI, which plays a significant role in shaping how individuals perceive and interact with GAI tools. Future research should investigate how these cultural attitudes influence users' expectations and concerns about GAI, and how these perceptions vary across different demographics and cultural contexts.

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