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Perceptions of first-year university students toward artificial intelligence: awareness, attitude and trust

Percepciones del alumnado universitario de primer curso hacia la inteligencia artificial: conciencia, actitud y confianza

Dra. Amaia Arroyo-Sagasta
Profesora Titular de Universidad. Mondragon Unibertsitatea. Eskoriatza (Guipúzua). España.

Dr. Eneko Anton
Profesor Titular de Universidad. Mondragon Unibertsitatea. Eskoriatza (Guipúzua). España.

Dr. Aitor Zuberogoitia
Profesor Titular de Universidad. Mondragon Unibertsitatea. Eskoriatza (Guipúzua). España.

Dra. Txema Egaña
Profesora Titular de Universidad. Mondragon Unibertsitatea. Eskoriatza (Guipúzua). España.

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ABSTRACT

This study investigates the perceptions of first-year university students toward Artificial Intelligence (AI) at the Faculty of Humanities and Education Sciences of Mondragon University. The questionnaire entitled "Perceptions on AI by the Citizens of Europe" (PAICE) was used as a tool to assess students' knowledge, attitudes and trust with respect to AI technologies. The study sample consisted of first-year students in Bachelor's degree programs in Early Childhood Education, Primary Education, Global Digital Humanities and Audiovisual Communication. The majority of participants reported having an intermediate (39.62%) or basic (28.93%) understanding of AI and its social implications. Regarding attitudes toward AI, the results show a mixed response: a significant portion of the students (40.37%) expressed their approval of AI and its applications, indicating a generally positive view, however, a higher percentage (45.34%) maintained a neutral stance, suggesting a certain degree of uncertainty or ambivalence.

RESUMEN

Este estudio investiga las percepciones del alumnado universitario de primer curso sobre la Inteligencia Artificial (IA) en la Facultad de Humanidades y Ciencias de la Educación de Mondragon Unibertsitatea para lo que se utilizó el cuestionario "Perceptions on AI by the Citizens of Europe" (PAICE) como herramienta para evaluar el conocimiento, las actitudes y la confianza del alumnado hacia las tecnologías de IA. La muestra del estudio abarca estudiantes del primer curso de los grados de Educación Infantil, Educación Primaria, Humanidades Digitales Globales y Comunicación Audiovisual. Los resultados revelaron que la mayoría de participantes declara una comprensión intermedia (39,62%) o básica (28,93%) de la IA y sus implicaciones sociales. En cuanto a las actitudes hacia la IA, los hallazgos mostraron una respuesta mixta: una parte significativa del alumnado (40,37%) expresó su aprobación de la IA y sus aplicaciones, lo que indica una perspectiva generalmente positiva; sin embargo, un porcentaje mayor (45,34%) mantuvo una postura neutral, lo que sugiere cierto grado de incertidumbre o ambivalencia.

KEYWORDS · PALABRAS CLAVES
Artificial Intelligence, Perception, Student, University, Literacy
Inteligencia Artificial, Percepción, Estudiante, Universidad, Alfabetización

1. Introduction

The term “Artificial Intelligence” (AI) refers to technological systems that operate with different levels of autonomy and adaptability, processing data to infer, explicitly or implicitly, predictions, content, recommendations or decisions that can influence physical or virtual environments (European Union, 2024). Currently, AI has emerged as a core technology that transforms various areas such as education, health, transportation, and entertainment (Russell & Norvig, 2020), and the growing presence of AI in everyday life has generated interest in understanding how different groups perceive this technology and its implications. This perception is based on technical knowledge, media representation and personal experiences (Huang & Rust, 2018). AI is considered to be a collaborative resource that requires human supervision and calibrated trust (Tossell et al., 2024).

The analysis of student perceptions of AI can be based on consolidated models of technological adoption. The Technology Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) explain the formation of attitudes based on perceived usefulness, ease of use, and social influence. Similarly, the Theory of Planned Behavior (TPB) (Ajzen, 1991) is useful for understanding the relationship between attitudes and trust. Regarding technological awareness, pedagogical approaches such as social constructivism and connectivism (Siemens, 2005) allow its analysis.

Among university students specifically, three factors that influence their perceptions stand out: their level of exposure to AI, cultural representations and prior knowledge. This is why students with experience in computer science tend to place higher value on technical skills, while humanities students often focus on AI’s ethical and social implications (Stöhr et al., 2024; Zhang et al., 2020). Likewise, popular narratives, such as science fiction films, can polarize opinions between optimism and fear, in addition to the fact that deeper prior knowledge about how AI works tends to reduce negative prejudices and encourage more balanced attitudes (Bilbao-Eraña, 2024; Jacovi et al., 2021).

The adoption of AI-based tools in educational settings is growing rapidly, including everything from virtual assistants to intelligent tutoring systems and writing support tools (Chen et al., 2025; Emenike & Emenike, 2023). This proliferation sparks interest in understanding how students perceive and experience these technologies. While students are aware of benefits such as personalized learning and improved efficiency and accessibility, they also fear that education may be dehumanized (Franks & Plummer, 2025), and have concerns about academic integrity (Darwin et al., 2024) and the ethical use of personal data (Shahzad et al., 2024). These ethical dilemmas, traditionally attributed to teachers (de la Iglesia-Ganboa & Arroyo-Sagasta, 2023), also emerge among students, especially in relation to privacy, algorithmic bias, and the impact on future employment.

First-year university students’ perceptions of AI seem to be influenced by factors such as educational level, previous academic behaviors, and ethical considerations (Pedreño et al., 2024), and studies conducted in earlier stages reveal high interest and favorable attitudes toward AI literacy (Talukdar et al., 2023), which underscores the need for universities to clearly guide the ethical use of these technologies, promoting academic

integrity and key competencies for the professional sphere (Organization for Educational Cooperation and Development - OECD, 2025; Tindle et al., 2023; Wang et al., 2023). This need is highlighted in publications by international institutions like UNESCO (2024), which recognizes the need to incorporate AI education into education systems. In addition, this line of action is aligned with European regulatory frameworks, such as the Coordinated Plan on Artificial Intelligence 2021 Review (European Commission, 2021) and the AI Act (European Commission, 2022), which advocate for integrating training in AI in higher education while maintaining standards of responsibility and ethics. Research such as that by Xu et al. (2024) demonstrates that AI-literate undergraduate and graduate students show a more critical understanding of the limitations of tools such as ChatGPT, as well as greater concern about their security. This suggests that educational level may play an important role in shaping students' perceptions of AI.

University students believe that AI, especially when integrated with social networks and intelligent learning, has a positive effect on their academic performance and mental well-being (Shahzad et al., 2024). However, they are also concerned about its misuse, particularly in relation to academic dishonesty (Tindle et al., 2023). Although they recognize the educational potential of AI, they also highlight the importance of its responsible use. This may indicate a need for educational institutions to provide appropriate guidance in order to both maximize the benefits of AI and mitigate its risks.

Scantamburlo et al. (2025) surveyed more than 4,000 citizens from 8 European countries to investigate awareness, attitudes, and trust in relation to AI, and found that, despite low self-assessment of knowledge about AI, general attitudes were mostly positive. More than 60% of the participants showed approval of AI, though this varied depending on the specific application domain: there was greater acceptance of AI in areas such as law enforcement and environmental applications compared to areas such as human resources. There was also a clear disconnect between the perceived impact of AI and knowledge of European Union (EU) policy measures on AI ethics and regulation. Trust was positioned as a central factor: although the need for laws and regulations was positively valued, trust in governments was limited, in contrast to the greater trust placed in universities and research centers.

Although the study by Scantamburlo et al. (2025) offers a broad and comparative view at the European level, it does not provide information on specific groups such as university students. Therefore, given the importance of learning about students' perceptions, this study aimed to discover university students' attitudes, trust and awareness. To accomplish this, we based the study on the following research questions:

1. What level of awareness do first-year undergraduate students have regarding AI and the debate that surrounds it?

2. What attitude do first-year students have toward AI?

3. What level of trust do first-year students have when it comes to using AI and what elements contribute to that trust?

2. Methodology

This study was carried out using a quantitative approach and analyzing data collected between May 15 and 20, 2024.

2.1. Sample

The sample was selected intentionally and consisted of 172 students (average age, 18 years) in their first year of study at the Faculty of Humanities and Education Sciences of Mondragon University (Basque Country, Spain) in four Bachelor's degree programs: 32 students (18.6%) in Early Childhood Education, 73 (42.44%) in Primary Education, 22 (12.79%) in Global Digital Humanities, and 45 (26.16%) in Audiovisual Communication. Regarding gender, 55.7% identified as female, 40.51% as male, and 3.8% as non-binary or other.

2.2. Data collection instrument

This study was conducted with a quantitative approach, using the validated online questionnaire entitled "Perceptions on AI by the Citizens of Europe" (PAICE) (Scantamburlo et al., 2025). The questionnaire is structured in three sections: Awareness, Attitude and Trust. The questions are distributed among different response formats, including Likert-type scales, and dichotomous, multiple choice and ranking questions, with the aim of capturing both subjective evaluations and declarative knowledge (Fig. 1).

Figure 1

Design and structure of the PAICE questionnaire

	Question Type	Description
Awareness	Likert scale	Q1: Knowledge about AI Q3: Impact of AI on daily life (repeated for control question) Q5: Awareness of interaction with products incorporating AI Q7: Awareness of the application of AI in different sectors across Europe
	Dichotomous	Q4: Knowledge about three specific European initiatives: the General Data Protection Regulation (GDPR), the Ethics Guidelines for Trustworthy AI, the proposal of an AI regulation
	Multi-response	Q6: Awareness of products embedding AI
Attitude	Likert scale	Q2: General attitude towards AI Q8: Attitude towards the application of AI in specific sectors Q9: Perceived comfort with a scenario applying AI to job recruitment Q10: Perceived comfort with a scenario applying AI to energy consumption
Trust	Likert scale	Q12: Importance of specific policy measures to increase trust Q13: Importance of education to increase trust in AI Q14: Trust in entities that may ensure a beneficial use of AI
	Ranking	Q11: The three most important ethical requirements derived from [4] in relation to the aforementioned scenarios (i.e. Q9 and Q10)

Source: Scantamburlo et al., 2025, p. 5.

The Awareness dimension is addressed through Likert-type questions with closed questions aimed at exploring the participants' general knowledge about AI (Q1), their perception of its impact on daily life (Q3), their awareness of interaction with AI-based products (Q5), and their knowledge of the use of AI in different European sectors (Q7). A

dichotomous question on their knowledge of European initiatives in the regulatory and ethical field of AI is also included (Q4), as is a multiple choice question on identifying products that incorporate AI (Q6).

The Attitude dimension consists of a Likert-type question about general attitudes toward AI (Q2), and a battery of items about the acceptance of AI in specific sectors (Q8). It also has two items on the participants' degree of comfort with specific scenarios of AI application: automated personnel selection (Q9) and the optimization of energy consumption in the home (Q10).

The Trust dimension includes Likert-type items that evaluate the importance attributed to different public policies (Q12), the role of education in generating trust (Q13), and the degree of trust placed in entities responsible for the development and use of AI (Q14). A ranking question (Q11) is also included for participants to select the three most relevant ethical requirements for the responsible use of AI in the previously proposed scenarios (Q9, Q10), taking as a reference the guidelines proposed by European regulatory sources.

Data were collected between May 15 and 20, 2024, through the institutional email using encuesta.com, which collected the participants' informed consent and informed them that their anonymity and confidentiality were guaranteed.

3. Analysis and results

Following the analysis procedure put forward by Scantamburlo et al. (2025), an initial descriptive exploration was carried out by item, and possible differences between groups in each dimension were then analyzed.

The descriptive analysis by item included only the responses of participants who responded to all items (n = 122). For each index, the responses are represented graphically by Likert-type item (responses from 1 to 5) in each dimension (Awareness, Attitude, Trust), where dark blue and red on the left represent high values, light blue and purple on the right represent low levels, and green indicates the intermediate value (Figs. 2-4). In addition, the most informative findings obtained from these items are described in the text below, together with the most relevant of the results obtained from the dichotomous and multiple choice items.

3.1. Descriptive analysis

3.1.1. Awareness

When self-evaluating their knowledge of AI (Q1), 25% of respondents rated themselves as advanced or expert (responses 4 or 5, respectively), more than 30% indicated that they had a basic level or barely any knowledge of AI (2 or 1), and the remainder claimed an intermediate level of knowledge. In contrast, their perception of the impact of AI on their daily lives (Q3) was medium or high (4 or 5) for almost half of respondents, while 20% considered it low or non-existent (2 or 1). However, when asked how often they were aware of interacting

with a service based on or including AI (Q5), fewer than 20% indicated that they were aware of this always or often, while just over 20% were aware very rarely or never.

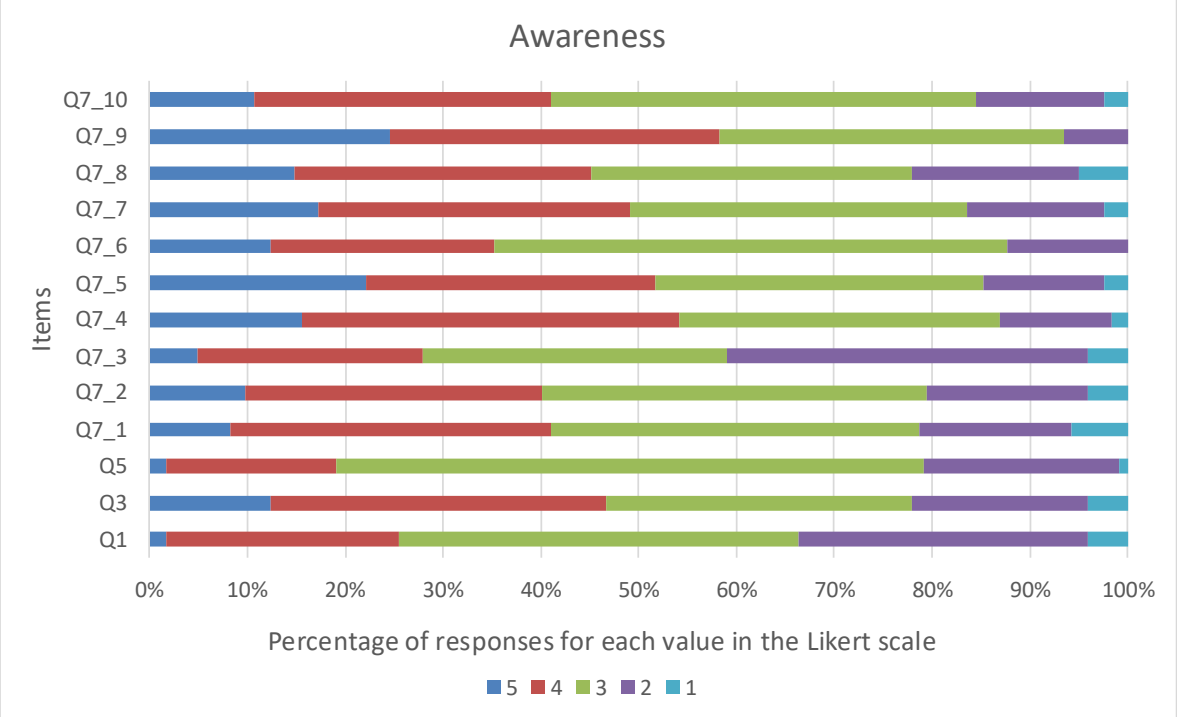
Q7 measured awareness of the use of AI in different sectors in Europe. The highest values were obtained for financial, military and productive use (Q7_4, Q7_5, Q7_9), with responses of 4 or 5 above 50%. On the other hand, agriculture and law enforcement were the areas that showed the least awareness of AI use, with responses of 4 and 5 below 30 and 40%, respectively. See Fig. 2 for a visual representation of the distribution of the results.

Regarding the items that did not follow the Likert format, question 4 (Q4) asked dichotomous questions about whether or not the respondents were familiar with three specific European initiatives. A total of 30% responded that they were aware of the General Data Protection Regulation (GDPR), 13% were aware of the Ethics Guidelines for Trustworthy AI, and 32% were aware of the proposal to regulate AI (AI Act).

When asked which apps and services from a given list they thought might incorporate AI (Q6), more than half of the participants selected navigation and traffic apps, personalized product and service recommendations, calculators, social networks, text editors, and spam filtering in email. On the other hand, fewer than 35% selected calendar, cell phone camera, cell phone messaging, drones, and teleconferencing or video call applications. Only 6% marked “none,” indicating that they did not identify any AI-based applications or services on the list.

Figure 2

Results for the Awareness dimension



Source: Own elaboration.

3.1.2. Attitude

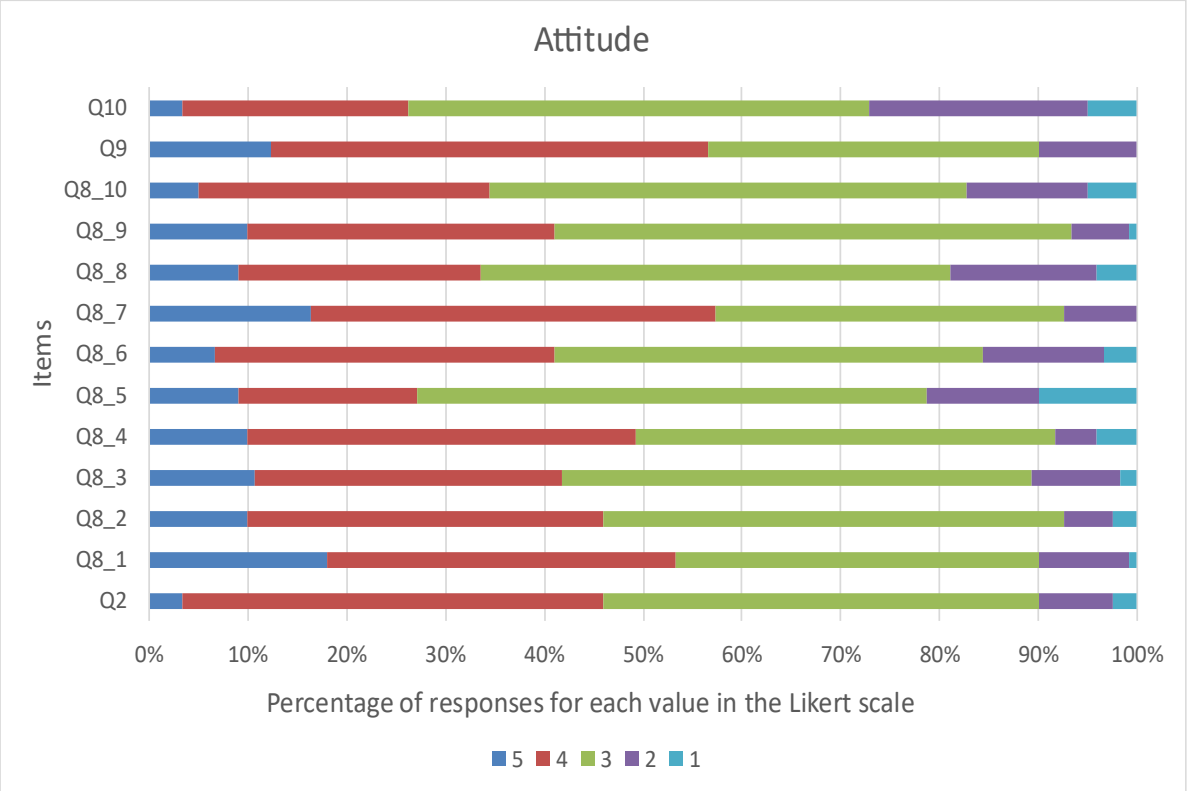
Regarding the participants' general attitude toward or level of approval of AI (Q2), 45% showed a positive or very positive attitude, while 10% indicated a negative or very negative attitude.

When asked about their approval of AI in specific areas (Q8), the areas with the highest acceptance or approval of the use of AI were health (Q8_1), the environment (Q8_7) and production (Q8_9), each with a percentage of approval or very high approval of more than 50%. Below 30% we find military use (Q8_5) and human resources (Q8_10).

Q9 and Q10 represent two particular scenarios: the use of AI for the first screening of job interview candidates and the use of AI to improve the efficiency of energy consumption in the home by consumers, respectively. In the first case, the respondents showed more than 50% responses of favorable or very favorable, while in the second, positive attitudes did not reach 30%. See Figure 3 for a visual representation of the distribution of results.

Figure 3

Results for the Attitude dimension



Source: Own elaboration.

3.1.3. Trust

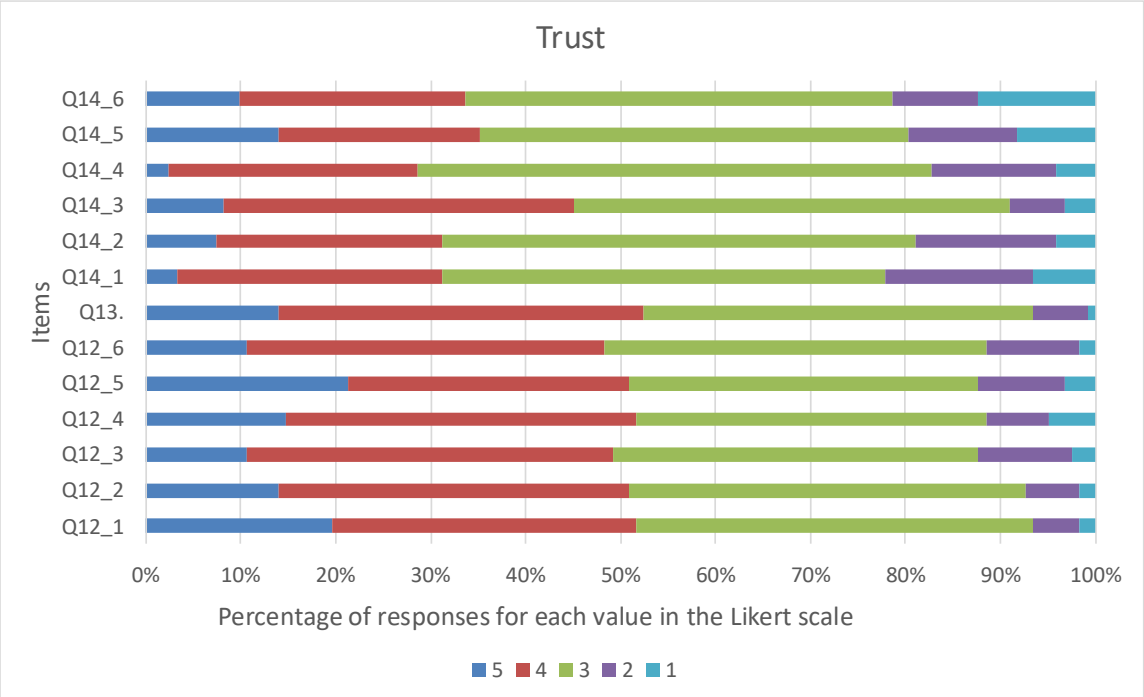
Regarding policies to increase trust (Q12), more than 50% of the participants considered it to be important or very important that there be laws made by state authorities (Q12_1), certifications by competent agencies (Q12_2), self-regulated codes of conduct (Q12_4) and transparent information from AI providers (Q12_5), while other trust issues were rated as important or very important by fewer than 50%. When asked whether they believed that education is a tool to increase citizen trust (Q13), more than 50% agreed or strongly agreed.

When respondents were asked about the level of trust they have in organizations or entities that can guarantee the beneficial use of AI (Q14), 45% responded that they could trust universities and research centers a lot or quite a lot (Q14_3), while state governments, the European Union, technology companies and social media companies (Q14_1, Q14_2, Q14_5, Q14_6) were trusted a lot or quite a lot by slightly more than 30%. The type of entity that was least often or fairly often trusted was consumer associations (Q14_4), which did not reach 30%.

Question Q11 asked respondents to choose the three most important aspects (out of a total of 7) that an organization should consider when developing or using AI, in relation to the scenarios previously described (Q9 and Q10). The three most selected aspects were privacy and data protection, security and accurate results, and risk management and identification of responsibilities, which were selected by 70%, 63%, and 42% of participants, respectively. At the opposite extreme, fair treatment and equal access to AI for all members of society was chosen only 23% of the time. See Fig. 4 for a visual representation of the distribution of the results.

Figure 4

Results for the Trust dimension



Source: Own elaboration.

3.2. Comparisons among groups

Group comparisons were made by comparing each index among the different Bachelor's degree program groups (Early Childhood Education, Primary Education, Global Digital Humanities and Audiovisual Communication) and between the different Gender groups (Male, Female, and Non-binary/Other). For these comparisons, means were obtained for each index, but only for those items that Scantamburlo et al. (2025) included in each dimension after their reliability and validity analysis. Thus, the mean value for Awareness, for example, was obtained from seven items (Q7_2, Q7_4, Q7_5, Q7_6, Q7_7, Q7_9, Q7_10); for Attitude, six items (Q8_1, Q8_2, Q8_3, Q8_4, Q8_6, Q8_7); and for Trust, three (Q14_2, Q14_4, Q14_6). An analysis of the reliability of these factors using Cronbach's α indicated good internal consistency (all α>.69). For the purposes of the present analysis, only responses from participants who answered all of the items mentioned and included in the indices (n=140) were taken into account.

3.2.1. Degree program

The averages of the values for each index (Awareness, Attitude, Trust) obtained from 140 students in four groups (Early Childhood Education, n=25; Primary Education, n=58; Global Digital Humanities, n=17; Audiovisual Communication, n=40) were analyzed (Jamovi software, The Jamovi Project, 2024).

Verification of assumptions for each index showed that homogeneity of variances held in all three cases (Levene, all p>.12), however, because the Shapiro-Wilk test indicated that the distribution of the groups was not normal in any case (all p<.03), it was decided to make comparisons using the Kruskal-Wallis test (see Table 1 for descriptives).

Table 1

Means and standard deviations (in parentheses) by index and degree program group

Degree program	Awareness	Attitude	Trust
Early Childhood Education	3.54 (0.562)	3.49 (0.596)	3.03 (0.751)
Primary Education	3.46 (0.695)	3.44 (0.548)	3.29 (0.612)
Global Digital Humanities	3.64 (0.635)	3.55 (0.765)	3.00 (0.935)
Audiovisual Communication	3.21 (0.624)	3.44 (0.662)	3.01 (0.753)

The Kruskal-Wallis test indicated a marginally significant difference in Awareness levels among the groups [$\chi^2(3) = 6.78$, $p = .079$] with a small/moderate effect size ($\varepsilon^2 = 0.049$), indicating potential differences in Awareness, but not ones that reached statistical significance.

When comparing the groups in Attitude, no statistically significant differences [$\chi^2(3) = 1.64$, $p = .650$] were found and effect size was low ($\varepsilon^2 = 0.0118$), indicating minimal differences among the groups.

Similarly, the responses in the category of Trust showed no significant differences among the groups [$\chi^2(3) = 2.52$, $p = .471$] and effect size was low ($\varepsilon^2 = 0.0181$), indicating minimal differences among the groups.

3.2.2. Gender

The group of 140 students was distributed as follows: 77 identified as female, 56 as male, 6 as non-binary or other; 1 person did not respond. It was found that homogeneity of variances held in all indices (Levene's test, *ps*>.41), but normality did not (Shapiro-Wilk, *ps*<.01). Due to this and to the distribution of the groups, it was decided to compare the three groups using the Kruskal-Wallis test (see Table 2 for descriptives).

Table 2. *Means and standard deviations (in parentheses) by index and gender group*

Gender	Awareness	Attitude	Trust
Female	3.41 (0.636)	3.47 (0.566)	3.06 (0.704)
Male	3.4 (0.692)	3.4 (0.675)	3.18 (0.781)
Non-binary/Other	3.88 (0.49)	3.83 (0.596)	3.44 (0.344)

The Kruskal-Wallis test showed no significant differences among groups for Awareness [$\chi^2(2) = 3.40$, $p = .183$], with a low effect size ($\varepsilon^2 = 0.0246$). The same pattern was found for Attitude [$\chi^2(2) = 2.35$, $p = .309$], with a low effect size ($\varepsilon^2 = 0.0170$), and for Trust [$\chi^2(2) = 2.61$, $p = .271$], also with a low effect size ($\varepsilon^2 = 0.0189$). Taken together, these results suggest that differences among the groups were small.

4. Discussion

The results obtained in the present study allow us to draw relevant conclusions about how first-year university students perceive AI. Although no significant differences were observed by degree program or gender, it is important to emphasize that this is a group in an initial formative stage in which perceptions about AI are still in the process of being shaped and can evolve as the student's university career progresses. Recent longitudinal studies demonstrate that there may be significant changes in the space of a few months in the adoption of tools such as ChatGPT in the academic setting, linked to the curriculum and to the institutional environment (Polyportis, 2024). This finding gives added value to the analysis, as it highlights the need to pay attention to these profiles in the early stages of higher education.

A particularly noteworthy aspect is the paradox seen in the high perceived impact of AI on daily life in comparison with the low level of declared knowledge about its operation. In the present study, nearly half of the students (48%) believe that AI has a medium or high influence on their daily lives, but more than 30% admit to having only basic knowledge of it or none at all. This gap has been documented in the general population in previous studies at the global (Choung et al., 2022) and European (Scantamburlo et al., 2025) levels, and was also found here in 18-year-olds of a medium-high socio-educational level. Previous research indicates that a lack of technological literacy and critical thinking in AI can generate ambiguous attitudes, even at advanced educational levels (Bilbao-Eraña et al., 2024; Cepa-Rodríguez & Etxeberria-Murgiondo, 2024).

Regarding attitudes, the results reflect a differentiated assessment according to the field: acceptance was higher (more than 50%) in the health, environment and production sectors, while greater caution was shown in sensitive areas such as military use and automated personnel selection. This pattern is consistent with those found in international surveys, which underscores the greater social legitimacy of applications with collective benefits (Faverio & Tyson, 2023). However, unlike in large-scale studies such as the one by Scantamburlo et al. (2025), in which the general European population showed a general approval rating of more than 60%, in the present study, only 45% of students maintained a neutral position. This nuance is particularly relevant: in the early stages of university education, uncertainty prevails, probably linked to the student's lack of training experiences around AI and to a critical perception that is still incipient (Almusharraf et al., 2025; Ríos Hernández et al., 2024; Coello et al., 2024).

Regarding trust, three determining factors were identified: the existence of clear regulatory frameworks, the implementation of certification and transparency processes, and AI literacy. It was found that students express greater trust when external guarantees—legal, institutional, or technical— are perceived, which is consistent with the literature on calibrated trust and trustworthy AI ecosystems (Herrera-Poyatos et al., 2025; Scantamburlo et al., 2025). At the same time, more than 50% recognized the relevance of education in building trust, which establishes universities as strategic agents in the construction of a framework of trust (European Digital Innovation Hub, 2025).

Finally, ethical awareness was found to be limited: only 13% of participants were aware of the European guidelines on trustworthy AI, and principles like equity and social inclusion were less valued than more immediate concerns such as privacy and security. These findings are consistent with recent warnings about the risk of uncritical use of AI in educational contexts (de la Iglesia-Ganboa & Arroyo-Sagasta, 2023; Polat, 2025). Hence the importance of integrating ethical literacy into initial university education as a priority (Weise et al., 2025), understood not only as the acquisition of technical skills, but also as the development of a critical perspective on the social and cultural implications of AI (Raffaghelli, 2024; Suárez-Guerrero et al., 2025).

5. Conclusions

The present study analyzed the perceptions of first-year university students regarding AI, taking three dimensions into account: awareness, attitude and trust. Three main conclusions stand out:

1. Awareness: there is a clear gap between the students' high perception of AI's impact on daily life and their perceived low knowledge of how it works. This finding confirms that AI literacy should be a priority in the initial stages of university education, as recent experiences at different educational levels have already indicated (Bilbao-Eraña et al., 2024; Polat, 2025).

2. Attitude: students show differentiated acceptance according to the context of application, with greater positive assessment of AI uses perceived as beneficial to society (health, environment, production) and greater caution in ethically sensitive areas (military use, personnel selection). This pattern reflects the importance of contextualizing AI instruction, linking its applications to ethical and social debates (Weise et al., 2025).

3. Trust: three key factors were identified: regulation, certification/transparency, and AI literacy. Trust is strengthened when there are verifiable external guarantees and when education is recognized as a mediator of trust (European Digital Innovation Hub, 2025; Herrera-Poyatos et al., 2025).

The originality of this study lies in placing the focus on first-year students, a group at a critical formative moment that has nevertheless been little researched. While large-scale studies (Scantamburlo et al., 2025) offer an overview of the citizenship, the present work offers a microanalysis that allows us to understand how perceptions are configured in the initial stages of higher education, providing evidence that will be useful in designing specific pedagogical strategies (Coello et al., 2024; Ríos Hernández et al., 2024).

6. Limitations and future lines of research

This study has certain limitations that must be recognized. First, the sample was limited to 172 first-year students from a specific faculty, which restricts the possibility of generalizing the results to other disciplines or to international contexts. However, while this targeting bias limits extrapolation, it also offers the advantage of capturing a detailed snapshot of a particular group at a key formative moment.

Second, the use of the PAICE questionnaire ensures validity and comparability with European studies, but restricts methodological innovation. It does not capture emerging dimensions such as literacy in generative AI or perceptions of the impact of tools such as ChatGPT, which should be explored with adapted instruments in future research (Polyportis, 2024).

With a view to future lines of research, we propose three urgent actions:

1. Expand the sample to more disciplines and universities to obtain comparative and generalizable data (Almusharraf et al., 2025).
2. Develop or adapt instruments to be able to capture emerging dimensions, including ethics and generative AI (Herrera-Poyatos et al., 2025; Weise et al., 2025).
3. Design longitudinal studies that follow the evolution of awareness, attitude, and trust throughout the university career (Cepa-Rodríguez & Etxeberria-Murgiondo, 2024), also taking into consideration the pedagogical changes that are already occurring in university hybridization (Suárez-Guerrero et al., 2025).

Author contributions

Conceptualization, Author1, Author3 and Author4; data curation, Author1, Author3 and Author4; formal analysis, Author1 and Author2; funding acquisition, Author1 and Author 4; investigation, Author1, Author3 and Author4; methodology, Author1, Author3 and Author4; project administration, Author1, Author3 and Author4; resources, Author4; software, Author2; supervision, Author1, Author2, Author3 and Author4; validation, Author1, Author2, Author3 and Author4; visualization, Author1, Author2 and Author3; writing—original draft, Author1, Author2 and Author4; writing—review and editing, Author1, Author2, Author3 and Author4.

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Data Availability Statement

The dataset used in this study is available upon reasonable request to the corresponding author.

Ethics approval

Not applicable

Conflicts of interest

The authors declare that they have no conflicts of interest.

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