AI LITERACY: AN EXPLORATIVE ANALYSIS OF ITALIAN UNIVERSITY STUDENT'S PERCEPTIONS OF AI SKILLS

AI LITERACY: UN'ANALISI ESPLORATIVA DELLA PERCEZIONE DELLE COMPETENZE DI IA DA PARTE DEGLI STUDENTI UNIVERSITARI ITALIANI

Matteo Adamoli
eCampus University
matteo.adamoli@uniecampus.it

Michele Marangi
eCampus University
michele.marangi@uniecampus.it

Marco Rondonotti
eCampus University
marco.rondonotti@uniecampus.it

Paolo Raviolo
eCampus University
paolo.raviolo@uniecampus.it

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ABSTRACT
This paper analyzes university students' perceptions of the use of ChatGPT, the AI conversational system developed and released in 2022 by OpenAI. Based on a survey of 23,000 students across 109 countries (with a focus on an Italian sub-sample of 1180), the study investigates AI literacy (understanding, academic application, creative use) and its educational implications. Results indicate a positive correlation between AI literacy and the perceived effectiveness of ChatGPT as a learning tool.

Questo articolo analizza le percezioni degli studenti universitari sull'uso di ChatGPT. Basato su un questionario somministrato a 23.000 studenti in 109 paesi (con un focus su un sottocampione italiano di 1180), lo studio indaga tre dimensioni dell'IA Literacy (comprensione, applicazione, creatività) e le sue implicazioni educative. I risultati indicano una correlazione positiva tra il livello di alfabetizzazione sull'IA e l'efficacia percepita su ChatGPT come strumento di apprendimento.

KEYWORDS
AI Literacy, Generative Artificial Intelligence, higher education
Alfabetizzazione all'intelligenza artificiale, intelligenza artificiale generativa, università

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Introduction

Artificial Intelligence (AI) has been studied in education since the 1970s, however, the topic experienced a huge increase in interest with the release of ChatGPT at the end of 2022, when more and more people started to apply it in everyday activities, including education. Scientific studies on the use of Artificial Intelligence in higher education have seen significant growth in previous years, most of which focused on students (Crompton & Burke, 2023). The application of generative AI tools in educational activity has opened up a range of possibilities from the co-design of courses, lessons, content and tests by teachers to support in practical activities and learning experiences by students (Holmes, & Miao, 2023; Urmeta & Romero, 2024; Mah & Grob, 2024). A possible categorisation of the many types of use of AI in higher education includes profiling and prediction, intelligent tutoring systems, adaptive systems, personalisation, and assessment and evaluation activities (Zawacki-Richter et al., 2019; Bond et al., 2024). Given these premises, the need to develop an AI Literacy (Artificial Intelligence Literacy) in order to understand and consciously address the social, ethical and educational challenges brought about by the diffusion and pervasiveness of these technologies seems increasingly evident. A comparative analysis of the definitions of AI literacy found in scientific studies published over the past decade reveals four fundamental dimensions: knowing and understanding Artificial Intelligence; using Artificial Intelligence; evaluating and creating with Artificial Intelligence; understanding the ethical implications of Artificial Intelligence (Ng, 2021; Cuomo et al., 2022). The knowledge dimension relates to the understanding of how AI works and its basic implications needed to interact with AI in a safe and informed manner in the various areas of life (Chan, 2023). The operational dimension refers to the competent and effective application of AI to address individual and collective contemporary challenges (Holmes & Tuomi, 2022). The critical dimension emphasises the ability to evaluate and develop critical thinking around AI including the ability to create artefacts and apply it creatively (Henriksen, 2024). Finally, the ethical dimension includes reflection on practices aimed at a fair, transparent and responsible use of AI by emphasising its strengths but also its risks (Nguyen et al., 2023). From an educational point of view, these dimensions are also present in the 'AI competency framework for students', a framework of twelve competencies on the use of AI developed by UNESCO (2024) with the aim of guiding students to become responsible and critical citizens and providing educational institutions with a

structured and practical approach for AI education. The framework includes technical, cognitive and social skills that are aimed at an inclusive and sustainable use of AI by defining three levels of progression to facilitate learning: Understand, Apply and Create. At the first level, students must be prepared to understand the basics of how generative AI works by linking it to real-world situations and social practices. At the apply level, students are asked to develop skills in using AI in various subject areas. Finally, at the create level students deepen and apply knowledge and skills on data and algorithms to customise existing AI tools and create artefacts and content based on specific tasks. These three levels, reflecting increasing complexity, were applied for an initial exploratory analysis of AI Literacy of university students from a survey sponsored by the University of Ljubljana. The research was conducted by using a quantitative method based on an anonymous online questionnaire available in seven different languages and which collected the compilations of 23,218 university students from 109 countries (Ravšelj et al., 2025). The data collection period is between October 2023 and February 2024.

In previous research investigating the use of the ChatGPT chatbot by university students, the importance of literacy focused both on enhancing their learning experience and on developing an appropriate pedagogical approach within a context that is normative emerged (Von Garrel & Mayer, 2023). These findings will be compared by the analysis included in this contribution, which confirms that the group of students with a higher level of digital literacy expresses a higher level of agreement on the statements related to AI Literacy and the learning methods used.

1. Methodology

The survey sponsored by the University of Ljubljana asked this research question: How do students perceive different aspects of ChatGPT related to its use, skills, satisfaction and attitude, study problems and outcomes, and skill development? The questionnaire was structured into 11 sections (Ravšelj et al., 2025). In addition to socio-demographic characteristics, the questionnaire covered several aspects relevant to ChatGPT, including usage (6 questions from Q13 to Q18), skills (1 question, Q19), study issues and outcomes (2 questions, Q26 and Q27), skills development (2 questions, Q28 and Q29); the questionnaire also covered general study and personal information (8 questions from Q33 to Q40). Our analysis focused on the perception of Italian students (subsample of 1180 participants) seen in the "AI Competence Framework for Students" proposed by UNESCO to which we

referred. With reference to Italian university students, we investigated the "understanding" of how ChatGPT works, its "application" in the academic context and its "creative" use in three different learning modes, traditional, online and blended.

The researchers from the University of Ljubljana themselves recognise some critical aspects of the research. The first is related to sampling. The choice of convenience sampling led to an unbalanced sample composition in socio-demographic terms; for example, there is extremely low representation of low-income countries (less than 1%). As a result, the results are not generalisable and the extension of the conclusions to a global scale may not be correct. A second criticism is related to the exclusive use of questionnaires based on self-assessments. This choice, which is certainly very practical for large-scale studies, exposes one to various types of information bias. In particular, the authors point to the risk of over- or underestimation of individual perceptions, due to cognitive and social mechanisms such as social desirability or lack of accurate introspection. To these elements, already highlighted by the authors of the study, it is appropriate to add a fourth consideration, particularly relevant in the Italian context. The administration of items originally developed in the Anglo-Saxon context may present critical issues related to the correct comprehension by subjects of other cultures. Some expressions could be ambiguous for Italian students, especially where the vocabulary is not adequately adapted.

2. Results

A brief description of the Italian student sample participating in the survey reveals that 57.2% identify as female and 41.1% as male, while 1.7% preferred not to disclose their gender. In terms of age distribution, 58.7% fall within the 19–22 age range, 22.5% are between 23 and 26 years old, and 6.8% are aged between 27 and 30. The most represented field of study is Social Sciences, comprising 41.5% of the sample, followed by Applied Sciences (35.8%), Natural Sciences (11.6%), and Arts and Humanities (10.1%). Regarding AI usage habits, we analyzed responses to Q18: “How often do you use ChatGPT for the following tasks?”. The survey included multiple AI-related tasks (Academic writing, Professional writing, Creative writing, Proofreading, Brainstorming, Translating, Summarizing, Calculating help, Study assistance, Personal assistance, Research assistance, Coding assistance), with responses recorded on a five-point Likert scale (1 = Never; 5 = Always). Based on these responses, we categorized the sample into four percentile groups, corresponding to very low, low, high, and very high levels of AI usage.

Gender-based analysis reveals a positive gradient in AI usage among male students: 19.6% fall within the very low usage category, 21.2% in low usage, 24.3% in high usage, and 34.9% in very high usage. Conversely, among female students, the gradient is negative, with 25.3% reporting very low AI usage, decreasing to 23.8% in the very high usage category. Furthermore, AI usage increases as students progress through higher education levels: among undergraduate students, 25.8% report very high AI usage, a percentage that rises to 34.1% among master's students and 34.5% among doctoral students.

The sample distribution shows no significant differences regarding Q11: "What learning method best describes your current mode of study?" However, notable variations emerge in relation to Q34: "Which learning method do you believe is the most suitable for your studies?". Among students who prefer traditional learning methods, AI usage decreases as usage intensity increases: 32.9% fall within the very low category, followed by 28.0% in low, 20.3% in high, and 18.9% in very high AI usage. In contrast, students who prefer blended learning methods exhibit an increasing trend, with 19.3% in very low AI usage rising to 31.6% in very high AI usage. This positive trend is even more pronounced among students favoring online learning, where 23.3% report very low AI usage, increasing significantly to 46.7% in the very high usage category. These findings indicate that students engaged in digital or hybrid learning environments tend to make more frequent use of AI tools, highlighting a correlation between learning mode preferences and AI adoption patterns.

2.1 Understand AI

To investigate the basic understanding of generative AI, we examined Q19: "How much do you agree with the following statements related to the capabilities of ChatGPT?" (Table 1).

	Top two box		Average values	
ChatGPT can..	All students	Italian students	All students	Italian students
1: Simplify complex information	68%	70%	3.79	3.85
2: Summarize extensive information	67%	75%	3.77	3.91
3: Provide information efficiently	63%	75%	3.68	3.92

4: Respond in human language	60%	75%	3.59	3.85
5: Understand indications given in human language	59%	79%	3.58	3.92
6: Facilitate online learning	57%	57%	3.58	3.57
7: Facilitate blended learning	52%	54%	3.49	3.53
8: Hold a pleasant conversation	47%	31%	3.38	3.05
9: Provide reliable information	41%	39%	3.29	3.19
10. Facilitate traditional learning	41%	42%	3.24	3.24

Table 1. Contingency table between the “skill” competency index and the blended learning preference among Italian students

A comparative analysis of Italian university students' perceptions of ChatGPT's capabilities, as opposed to the global sample, reveals significant discrepancies. Italian students demonstrated a higher level of appreciation for ChatGPT's ability to simplify complex information (70% vs. 68%), summarise extensive content (75% vs. 67%), and provide information efficiently (75% vs. 63%). The mean values further corroborate this heightened appreciation among Italian students (3.85 vs. 3.79 for simplification and 3.91 vs. 3.77 for summarisation). Furthermore, a higher percentage of Italian students believe that ChatGPT can respond and understand instructions in natural language (75% and 79%, respectively, compared to 60% and 59% in the global sample). This perception is thus more pronounced among Italian students, as also reflected in the average scores (3.92 vs. 3.58 for understanding human instructions and 3.85 vs. 3.59 for responding in human language). Regarding ChatGPT’s role in learning, the data indicate that Italian students do not significantly differ from the global average: 57% believe that ChatGPT can facilitate online learning (identical to the global sample), while 54% consider it useful for blended learning (vs. 52%) and 42% for traditional learning (vs. 41%). Nevertheless, ChatGPT has given rise to a degree of scepticism with regard to its conversational capabilities and the reliability of the information it provides. A comparative analysis reveals that only 31% of Italian students hold a favourable opinion of ChatGPT's ability to sustain a pleasant conversation, a figure that stands in contrast to the 47% observed in the global sample. Furthermore, when it comes to the perception of ChatGPT as a reliable source of information, the sentiment is similarly unfavourable, with 39% of Italian students expressing scepticism, compared to 41% on a global scale.

These findings serve to reinforce the prevailing view that Italian students primarily utilise ChatGPT as a tool for processing and organising information, as opposed to employing it as a conversational agent or a primary source of knowledge.

2.2 Apply AI

The application dimension of artificial intelligence-related competence was tested using an index called 'skill' and referring to question concerning the extent to which participants consider ChatGPT to be able to facilitate specific skills (Q28). These skills concern: academic writing proficiency; professional writing proficiency; typing proficiency; native language proficiency; foreign language proficiency; interpersonal communication skills; digital communication skills; information literacy skills; digital content creation skills. Assigning to the 'skill' index a value ranging from 1 to 4 (where 1 corresponds to a low value and 4 to a high value), within the Italian sample the 647 respondents were distributed uniformly (23.8% with low competence; 25.8% with sufficient competence; 24.9% with good competence; 25.5% with excellent competence).

We then investigated the perceived impact of ChatGPT on the three types of student learning, relating it to the competence index. The three questions answered by the students are: "How much do you agree with the following statements related to the capabilities of ChatGPT? a) ChatGPT facilitate traditional learning (in a classroom); b): ChatGPT facilitate online learning (using digital technologies); c): ChatGPT facilitate blended (hybrid) learning (a mix of traditional and online learning)". Regarding traditional learning, among those with low or no competence, most tend to disagree or remain neutral on the idea that ChatGPT facilitates learning. Specifically, 14.9% of students with low competence strongly disagreed and 26.6% disagreed, while 20.4% of those with low competence disagreed and 42.5% were neutral. As the competence index increases, the percentage of agreement on the perception of ChatGPT as a support for traditional learning increases: 46.1% of those with high competence agree, and 18.8% strongly agree.

Regarding the relationship between the level of competence and online learning, the data underlines that those with low competence tend to be more sceptical about the role of ChatGPT: 9.7% strongly disagree and 18.2% disagree.

However, 29.2% agree and 10.4% strongly agree, indicating that a significant proportion of those with low competence recognise some value in the use of ChatGPT. With increasing competence, the level of agreement on the effectiveness of ChatGPT in online learning increases: 48.5% of students with high competence

agree while 25.5% strongly agree, the highest percentage among all groups. Students with medium competence also show strong agreement: 47.2% agree and 16.8% strongly agree.
The contingency table between the competence index and the perception that ChatGPT supports blended learning also shows that those with low competence tend to be more critical of ChatGPT's role: 10.4% of those with poor competence strongly disagree and 16.2% disagree plus 34.4% who have a neutral position (see Table 2)**.**

Skill	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1: Poor skill	10,4%	16,2%	34,4%	29,9%	9,1%
2: Sufficient skill	2,4%	7,2%	44,3%	38,9%	7,2%
3: Good skill	2,5%	6,2 %	29,8%	47,8%	13,7%
4: Excellent skill	0,6%	3,0%	22,4%	48,5%	25,5%
Total	3,9%	8,0%	32,8%	41,4%	13,9%

Table 2. Contingency table between the 'skill' index and the type of blended learning of the Italian student group

As the level of competence increases, the agreement on the perception of ChatGPT as a support device for blended learning grows: 48.5% of those with excellent competence agree and 25.5% strongly agree. Those with good competence also show strong agreement: 47.8% agree and 13.7% strongly agree. Furthermore, those with sufficient or poor competence tend to take a more neutral view (44.3% and 34.4% respectively), signaling less resistance to the use of ChatGPT in a hybrid learning context.

2.3 Creative AI

The creative and proactive dimension of the competence related to AI was tested using an index called "creativity" and which refers to question 29 concerning how much the participants consider ChatGPT capable of facilitating certain skills (Q29). These skills concern: numeracy proficiency; decision-making skills; problem-solving skills; analytical skills; critical thinking skills; creativity skills; data analysis skills; programming skills; artificial intelligence literacy skills. By assigning a value ranging from 1 to 4 to the "creativity" index (where 1 corresponds to a low value and 4 to a high value), within the Italian sample the 647 respondents tend to position

themselves more on the high values (23.2% with poor competence; 16.1% with sufficient competence; 23.7% with good competence; 37% with excellent competence): over 60% of the respondents recognize a good or excellent level to the "analytical and creative" competence referable to artificial intelligence. On this basis, the perception of the impact of ChatGPT on the three types of student learning was then investigated, relating it to the index of analytical and creative competence: also in this case, the index of competence linked to the specific dimension, analytical and creative, was crossed with the perception of the facilitation of learning with ChatGPT in traditional, blended and online learning. The highest percentage of those who associate ChatGPT with a high index of creative and proactive competence is recorded in those who follow online courses (56.3%), followed by blended learning (38.3%) and traditional learning (32.5%). Conversely, if we consider the minimum value of the analytical and creative competence index, that is, "poor", the differences are more contained, but the order is not reversed compared to the previous one: the least convinced about the development of analytical and creative skills with ChatGPT are the students who attend online (25%), followed by the traditional (23.9%) and finally the blended (22.6%), a group that is therefore confirmed as the most confident in this specific indicator.

If we broaden our gaze and consider only two categories of the competence index, for which "poor" and "low" designate a more negative value and "medium" and "high" a positive value, the positions remain unchanged. The most confident about the analytical and creative competence index are students who study online, with 65.7% positive (56.3% high and 9.4% medium), followed by blended, with 61.4% (38.3% high and 23.1% medium) and finally by traditional, which adds 59% (32.5% high and 26.5% medium).

We then investigated some specific items with respect to the 9 specifications that make up question 29: decision-making skills (Q29b); problem-solving skills (Q29c); creativity skills (Q29f); programming skills (Q29h). Table 3 shows the valuestending to the negative, which combine the indicators "strongly disagree" and "disagree" and the values tending to the positive, which combine the indicators "strongly agree" and "agree"**.**

	Traditional Learning		Blended Learning		Online Learning	
Ability of ChatGPT to facilitate...	Negative	Positive	Negative	Positive	Negative	Positive
1: Decision-making skills	34,2%	29,8%	32,1%	31,1%	31,1%	35,5%

2: Problem-solving skills	25,3%	40,2%	23,7%	45,3%	26,3%	42,4%
3: Creativity skills	28,1%	38,4%	26,6%	41,9%	26,1%	46,0%
4: Programming skills	17,5%	45,9%	15,8%	49,9%	16,8%	48,5%

Table 3. Contingency table between positive and negative attributions to 4 parameters of the creative dimension and the learning typologies among Italian students

From the analysis of data reported in the table 3, it emerges that the attributions of positive impact are always higher, except in decision making, which has a negative balance both in traditional learning (-4.4%) and in blended learning (-1%), while it remains positive in online learning (+4.4%). The largest delta between negative and positive values always occurs in programming skills, in particular in blended learning (+34.1%), followed by online learning (+31.7%) and traditional learning (+28.4).

If instead we consider the largest difference between the three learning methods, for the positive values online learning records an active delta (+7.6%) compared to traditional learning in reference to creativity skills. Among the negative values, however, the largest delta is the one already mentioned relating to decision making, with a difference of 4.4% between online and traditional learning.

Finally, one last piece of evidence. Among the absolute values, the highest positive attributions are always in online learning, except for programming skills, which are more popular in blended learning (49.9%). The highest negative attributions are always in traditional learning. The difference in the positioning of the 4 items in the positive attribution also appears significant: if programming skills dominate in all three types of learning, problem solving skills are in second place in traditional and blended learning, while creativity skills are in second place for online learning. Decision making skills always remain last, but with notable differences compared to the delta with skills in first place: -16.1% in traditional learning, -18.8% in blended learning, -13% in online learning.

3. Discussion

3.1 Discussion AI

The discussion of the data analysis was constructed based on the three levels of AI Literacy outlined by UNESCO (2024) to support learning: Understand, Apply, and

Create. From the analysis we can observe that the Italian students in general perceive ChatGPT to have a higher ability to process and generate content in comparison the other students, with a specific perception about its ability in simplifying complex concepts, summarizing text and question in natural language. This result confirms that the Italian students use ChatGPT as a tool to process information cognitively and not as an interactive entity amid a structured learning method (Zawacki-Richter, 2019). Despite this inclination to use ChatGPT as a support for information management and synthesis, greater scepticism emerges regarding its reliability and conversational abilities. The fact that Italian students assign a lower value to the quality of interaction with the model and its ability to provide reliable information compared to their international peers indicates a higher level of critical awareness in their approach to generative artificial intelligence. This scepticism may be indicative of a more cautious attitude towards the adoption of new technologies, or alternatively, a stronger emphasis within the Italian academic context on assessing source reliability and critically analysing content. Another issue that merits further investigation is the language used for training the algorithm. It is highly probable that training data for AI systems is predominantly in English rather than Italian, which could influence the perceived accuracy of ChatGPT among Italian students.

The absence of substantial disparities in Italy's utilisation of ChatGPT for educational purposes, when compared to the global average, indicates that the perception of its impact on education is consistent with global trends. This could become from a certain caution in recognizing artificial intelligence as an integrable tool within traditional educational processes or from the absence of a clear structure for AI use in academic curricula. Italian students recognise the value of ChatGPT in content processing; however, they are hesitant to fully integrate it into learning practices, potentially due to a perceived discrepancy between its operational model and more established educational methodologies.

From a more extensive standpoint, the comparison with the global sample suggests that Italian students utilise ChatGPT in a manner that could be characterised as pragmatic and functional. Rather than perceiving it as a conversational partner or a comprehensive educational assistant, they regard it as a means to enhance comprehension and information management while maintaining a degree of scepticism regarding its capacity to substitute for the interactive dynamics of human learning. This attitude, more critical compared to the global average, may be influenced by the Italian academic culture, which has traditionally emphasized rigor in source analysis, the construction of knowledge through discussion, and the centrality of the teacher’s role (Laurillard, 2012). Given this critical attitude on the

part of the sample surveyed, students should develop critical thinking skills to verify the reliability and accuracy of the content provided by the chatbot, as well as learn effective prompting strategies (Adamoli et. al., 2024). From an operational point of view, this is linked to the possibility of balancing the use of ChatGPT with other AI systems, using them as complementary rather than substitute tools. The analysis of students' perceptions also provides valuable insights for teachers, such as the possibility of adopting teaching approaches suitable for AI integration, promoting critical and responsible trust that takes into account the presence of bias and the possibility of AI hallucination. Furthermore, through targeted training, ChatGPT could become a strategic tool for online and blended learning environments and an additional support for traditional learning.

3.2 Apply AI

With reference to the application dimension, the results show that there is a direct relationship between the students' level of competence and the perception of ChatGPT's role in traditional classroom learning. The higher the competence index, the greater the agreement on its potential usefulness.

Those with greater competence might feel more confident in using AI technologies as additional tools, while those with less competence might see it as a threat to traditional teaching methods (Chan, 2023).

Also, for online learning, the trends are similar to those observed for traditional learning: a higher perception of competence corresponds to a higher agreement on the use of ChatGPT as a learning support.

However, the data on online learning seem to show a greater polarisation: those with high competence are more in favor of traditional learning, while those with low competence are more diffident.

It would emerge from the questionnaire data that the level of competence influences the perception of the usefulness of ChatGPT in online learning: the higher the competence, the higher the agreement on its effectiveness. Conversely, those with low competence are more likely to reject ChatGPT as a useful tool for learning. This is in line with what the literature suggests, in that more competent users are more likely to perceive the use of AI in an entirely online learning context as useful, particularly about active and personalised learning (St-Hilaire et al., 2022).

Students with greater competence with respect to the use of ChatGPT are more likely to consider it useful for blended learning, while those with low or no competence are more neutral. Hybrid learning seems to be more readily accepted

than exclusively online or traditional learning, as positive responses are higher in percentage terms compared to the other two methods.
A possible interpretation of this data underlines that those with higher competence may be more comfortable with a hybrid approach that combines traditional and online methods, integrating ChatGPT more effectively, especially in promoting essential skills such as self-regulation, problem-solving and critical thinking (Lee et al., 2024). In contrast, those with lower competence may perceive ChatGPT as a destabilising factor in an already complex learning environment.

3.3 Creative AI

In relation to the "creativity" dimension, which summarizes both the creative and proactive aspects, a greater predisposition to grasp this potential in AI emerges clearly among those who follow online courses, with a very significant gap (+23.8%) compared to traditional learning. If this outcome could have been foreseeable, compared to a greater familiarity with the non-executive use of digital resources by those who are more accustomed to working in online environments (Ranieri et al., 2024), it is striking that the blended dimension is much closer to the traditional one (+5.8%) than to the online one (-18%). The data will need to be explored further, but it appears significant that the innovation that AI entails is generally seen in a more functionalist and instrumental way even in the blended dimension, almost as if to mark a sort of anchoring in physical reality and in "human" practice with regard to the more expressive aspects, with a distrust towards the new perspectives of integration and collaboration between AI and humans, also in a dialectical and creative sense (Manovich, 2023).
The confirmation emerges in the third place positioning of creativity skills in the ranking of positive values for blended learning, exactly as it happens for traditional learning, while online learning places creativity skills in second place, at a very short distance from programming skills.
In the other two learning dimensions, on the contrary, creativity skills are much more detached, after programming skills and problem-solving skills.
The data confirms a trend that had already occurred for digital, long seen in a purely instrumental logic (Panciroli & Rivoltella, 2023) and then emerged also with respect to the perception of computational thinking, declined above all according to the functionalist paradigm, without fully grasping its potential for more narrative, playful, collaborative developments and in a perspective of divergent thinking (Wing, 2008).

This trend is also confirmed by the predominance of programming skills and problem-solving skills in blended compared to online, while in the latter creativity skills and decision-making skills have higher positions. The online dimension thus emerges as the one most integrated with human skills compared to the more creative and proactive dimension, while blended still seems to be tied to an algorithmic and supplementary vision of AI (Natale, 2022). This happens, as expected, also in the positioning that emerges from traditional learning, obviously with lower valuesin absolute terms, but with the same positions as blended.
On this evidence, which should be further investigated and explored, the need emerges to develop teaching practices and pedagogical perspectives that are able to overcome the dichotomy between human and artificial, between thought and machine, in a perspective of effective hybridization (Floridi, 2023), alternative both to the functionalist and instrumental paradigm and to the more pessimistic vision of replacement (Moriggi & Pireddu, 2024).
In the creative dimension, Italian data shows the need to train students who are less accustomed to dealing with the online dimension more in AI usage practices that increasingly develop a personal and creative use, to avoid instead a more instrumental and mechanical use, in particular for expressive capacity and decision-making skills. It seems necessary to integrate this type of use of AI in an increasingly coherent and strategic way in training design and teaching methodologies, overcoming a technophobic approach (Gallese & Moriggi & Rivoltella, 2025) that still characterizes many higher education and training institutions.

Conclusions

The University of Ljubljana questionnaire data offers an interesting perspective on the perception of AI in education. First of all, it is a significant amount of data collected, even after the data quality process, moreover it allows us to compare data from different countries. Of course, the data come from a sample that we cannot consider representative of a specific population, precisely because of the sampling process themselves, but it is nevertheless a good starting point to make some reflections on how one of the best-known AI-based conversational systems is perceived by its users.
From the analysis it emerges how Italian users show a slightly more oriented approach towards using ChatGPT in processing information (simplifying complex information, summarising extended content and providing information efficiently), while the perception of the tool's potential to facilitate learning is similar to the average response of non-Italian users.

Another element that clearly emerges is the confidence in the ChatGPT learning potential in relation to the users digital skills, probably this can be related to the degree of awareness the user must have to write the instructions for ChatGPT to obtain the expected output. In fact, the sample of students with a higher level of digital literacy declares greater agreement with statements related to 'AI Literacy' and the learning methods used, particularly blended and online learning.
The perception of Italian users of ChatGPT may also be influenced by the use of the Italian language, in response to an explicit request ChatGPT replies that less than 5% of the textual data used for training is in Italian, the same system claims to be able to respond to Italian language questions less accurately than in English. It is credible that there is a relationship between the textual data used to train the system and the language used and that this may influence the functioning and potential of ChatGPT, unfortunately the questionnaire did not include asking users the language used to interact with the system.

Author contributions

Authorship contribution: Paolo Raviolo supervised the work, and all co-authors contributed to the design and implementation of the research. Regarding the writing of the manuscript, co-authors participated with the following attribution: Matteo Adamoli (Introduction; 2.1; 3.1); Marco Rondonotti (1; 2; 2.2; 3.2); Michele Marangi (2.3; 3.3); Paolo Raviolo (Conclusion).

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