TEACHERS' CULTURAL POSITIONINGS AND ATTITUDES OF ARTIFICIAL INTELLIGENCE IN EDUCATION: EVIDENCE FROM AN ITALIAN DESCRIPTIVE STUDY

Adrea Fiorucci[1]
University of Salento
andrea.fiorucci@unisalento.it

Alessia Bevilacqua
University of Macerata
a.bevilacqua11@unimc.it

Double Blind Peer Review

Citation
Fiorucci, A., & Bevilacqua, A. (2026). Teachers' cultural positionings and attitudes of artificial intelligence in education: Evidence from an italian descriptive study. *Italian Journal of Health Education, Sport and Inclusive Didactics*, *10*(3).
https://doi.org/10.32043/gsd.v10i3.1748

Doi: https://doi.org/10.32043/gsd.v10i3.1748

Copyright notice:
© 2026 The Author(s). This is an open access, peer-reviewed article published by Cares S.r.l. – REN Press and distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

renpress.it/index.php/gsdj
ISSN: 3103-5744

ABSTRACT
The rapid development of artificial intelligence (AI) and Generative AI (GenAI), particularly systems based on large language models (LLMs), is reshaping teaching practices, assessment processes, and ethical debates concerning authenticity, source reliability, and educational responsibility. Understanding teachers' attitudes toward AI is essential to identify acceptance, resistance, and professional development needs. This contribution presents the results of a descriptive survey conducted with 682 in-service teachers from different school levels and Italian regions, who completed an Italian adaptation of the questionnaire by Alsudairy and Eltantawy (2024). The study examines teachers' attitudes of AI's educational potential, risks, and conditions for responsible use in school contexts, also considering professional variables. The findings offer insight into how teachers position themselves toward AI and GenAI, highlighting implications for teacher education and ethical innovation.

KEYWORDS
Artificial intelligence; Teachers' attitudes; Teacher education.

Received 2026-07-28
Accepted 2026-10-22
Published 2026-10-30

[1] The authors jointly contributed to the conception and development of the manuscript. Specifically, Andrea Fiorucci, as coordinator and supervisor of the research activity, was responsible for Sections 1 and 4, while Alessia Bevilacqua was responsible for Sections 2, 5 and 6. Both authors contributed to the analysis and interpretation of the results, presented in Section 3.

1.Teachers' Attitudes Toward Artificial Intelligence: A Literature Review

The construct of attitudes toward technology represents a central dimension for understanding innovation adoption processes in educational contexts. Numerous studies have shown that such attitudes are significant predictors of technology use behaviors and teachers' willingness to integrate digital tools into their instructional practices (Buckenmeyer, 2010; Goktas et al., 2009; Hew & Brush, 2007). In general terms, an attitude can be defined as a relatively stable evaluation of an object, person, group, issue, or concept, positioned along a continuum ranging from negative to positive (APA, 2020). Applied to educational and technological contexts, this definition allows attitudes toward technology to be interpreted as a set of cognitive, affective, and behavioral dispositions through which teachers evaluate the usefulness, relevance, complexity, and pedagogical desirability of digital tools (Aiken, 2002; Triandis, 1971).

From this perspective, attitude is a multidimensional construct grounded in the interaction between beliefs, emotions, prior experiences, and behaviors related to technology use. The cognitive component concerns beliefs regarding the effectiveness and pedagogical coherence of technological tools; the affective component refers to the emotions associated with technology; and the behavioral component concerns the propensity to use, adopt, or reject technology (Triandis, 1971). The literature has also highlighted the importance of the affective dimension, showing how emotions, subjective experiences, and evaluative states influence the acceptance of or resistance to technological innovation (Allport, 1967; Clore & Schnall, 2005; Forgas, 2008).

Within this framework, attitudes toward technology encompass constructs such as technological or computer anxiety, technophobia, technophilia, trust, computer self-efficacy, technology acceptance, perceived usefulness, adoption behaviors, and technostress (Campion, 1989; Davis, 1993; Davis et al., 1989; Ennis, 2005; Heinssen et al., 1987; Lee & Lee, 2014; Meuter et al., 2003; Ragu-Nathan et al., 2008; Rosen & Weil, 1995; Venkatesh et al., 2003; Wang et al., 2004; Wang et al., 2008). These dimensions are particularly relevant for investigating teachers' perceptions and uses of AI, as they contribute to understanding levels of technology acceptance, instructional motivations,

conditions of use, and potential forms of resistance associated with educational innovation.

These elements provide valuable insights for the design of teacher training policies and support mechanisms aimed at facilitating educational innovation processes (Ferrantino & Scarano, 2024; Di Martino, 2024; Pellegrini & Sebastiani, 2024; Toci, Rossi, & Nencioni, 2025; Bruni & Murgia, 2025; Nirchi et al., 2025; Nazaretsky et al., 2022).

As argued by Nirchi and colleagues (2025), perception can be understood as a pedagogical category of instructional action, situated at the intersection of knowledge, professional experience, and pedagogical beliefs. It therefore acts as a filter through which innovations are interpreted and evaluated (Vrasidas & McIsaac, 2001; Ertmer, 2005): when a technology is perceived as excessively complex or pedagogically inappropriate, it is more likely to generate resistance; conversely, when it is regarded as useful and consistent with existing teaching practices, it tends to foster greater acceptance. From this perspective, Tondeur et al. (2008) demonstrated that pedagogical beliefs not only predict the extent of technology use but also influence the ways in which technology is integrated into instructional practices. This finding confirms that teachers' perceptions cannot be reduced to simple individual opinions; rather, they constitute a crucial pedagogical dimension for the success of educational innovation, whose effectiveness largely depends on teachers' active involvement (Fullan, 2007).

Research on technology acceptance has also highlighted the persistence of skeptical attitudes, often associated with anxiety when interacting with complex tools, preferences for established instructional methodologies, and concerns about the possible replacement or marginalization of the teacher's role (Istenic et al., 2021; Zimmerman, 2006; Tallvid, 2016).

More recent literature confirms that attitudes toward technology—and, more specifically, toward AI—are associated with training experiences, perceived digital competence, professional confidence, and willingness to adopt technological innovations. Wilson's (2023) meta-analysis shows that technology integration courses in initial teacher education have positive effects on preservice teachers' attitudes and beliefs regarding the educational use of technology. Similarly, Galindo-Domínguez et al. (2024) identified a positive relationship between teachers' digital competence and attitudes toward AI in

education, suggesting that familiarity with digital environments may foster greater openness toward AI-based educational applications.

Studies, specifically focused on AI, however, present a more nuanced and ambivalent picture. Cojean et al. (2023) found that teachers recognize AI's potential to reduce workload and support certain professional tasks, while simultaneously expressing greater ethical concerns than those associated with non-AI technologies. Regarding AI-based assessment systems, Shahid et al. (2024) emphasized the role of anxiety, resistance to change, and readiness for adoption in shaping university teachers' attitudes. Research on generative AI similarly confirms this tension between openness and caution: both students and teachers acknowledge its operational potential, yet differ in their levels of trust, acceptance, and perceived risk (Buyakova et al., 2024).

Within the field of teacher education, Heine and König (2025) demonstrated that preservice teachers' attitudes toward ChatGPT are associated with perceived digital self-efficacy and a demand for training pathways focused on digital literacy and critical awareness. In the Italian context, Perla, Agrati, and Beri (2025) found that teachers' attitudes toward AI, initially characterized by caution and ambivalence, tend to evolve toward greater openness when attention shifts from general representations of the technology to its concrete applications in teaching practice. Overall, these studies suggest that AI acceptance depends not only on the technical characteristics of the tools themselves but also on educational, professional, emotional, ethical, and organizational factors that influence how teachers interpret and integrate innovation into their instructional practices.

In light of this framework, there is a need to investigate not only teachers' general levels of favorability or unfavorability toward AI but also the ways in which they interpret its potential use in school settings. It is important to understand whether attitudes toward AI reflect mere technological acceptance or a more complex professional positioning, in which recognition of the technology's potential is accompanied by critical reflections on educational responsibility, pedagogical mediation, and the non-delegation of pedagogical decision-making to AI systems. This perspective is particularly relevant in the Italian context, where the use of AI in teaching–learning processes and in

supporting students with disabilities must be understood in light of the organizational and professional specificities of the inclusive educational model.

2. Methodology

The present study adopts a quantitative descriptive-exploratory design and was conducted through a self-administered online questionnaire. Its aim is to investigate Italian teachers' attitudes toward AI in educational settings, with particular attention to their perceptions of its use in teaching–learning processes and in supporting students with disabilities.

Consistent with this approach, the study is guided by the following research questions:

- What level of familiarity with AI systems do Italian teachers report?
- What attitudes do they hold toward the use of AI in teaching–learning processes and in supporting students with disabilities?
- To what extent do these attitudes reflect openness, evaluative caution, or resistance toward educational applications of AI?

2.1 Participants

A non-probability convenience sampling strategy was adopted, based on participants' voluntary participation. The questionnaire was disseminated through institutional school email lists, professional networks, subject-specific groups, and digital channels dedicated to teacher education and professional development. Although this procedure enabled the recruitment of a large number of potential respondents, it did not allow for an accurate estimation of the target population reached or the response rate. Consequently, the findings cannot be generalized to the entire population of Italian teachers; rather, they provide an exploratory overview of the perceptions of the participating sample.

The sample consisted of 682 teachers, the majority of whom were female (85.5%). Participants were distributed between general education teachers (47.5%) and special education teachers (52.5%), a distinction that is particularly relevant within the Italian school system given their different roles in inclusive educational settings.

From a geographical perspective, most participants were from Southern Italy (68.5%), followed by Central Italy (22.9%) and Northern Italy (8.7%). As shown in Table 1, the sample was primarily composed of teachers aged between 40 and 59 years, holding a Master's degree or equivalent qualification, and with professional experience mainly concentrated in the 0–5 and 6–10 year ranges. The distribution across educational levels revealed a greater representation of teachers working in upper secondary schools and primary schools.

Table 1. Sociodemographic Characteristics of the Sample

Category	Subcategories	n	%
Age	< 30	51	7.5
	30–39	126	18.5
	40–49	270	39.6
	50–59	199	29.2
	≥ 60	36	5.3
Gender	Female	583	85.5
	Male	99	14.5
Geographical area of service	Northern Italy	59	8.7
	Central Italy	156	22.9
	Southern Italy	467	68.5
Years of experience	0–5	250	36.7
	6–10	241	35.3
	11–20	110	16.1
	> 20	81	11.9
Educational qualification	High school diploma	129	18.9
	Bachelor's degree	39	5.7
	Master's degree	407	59.7
	Postgraduate Master's degree	70	10.3
	PhD	37	5.4
School level	Kindergarden	74	10.9
	Primary school	215	31.5
	Lower Secondary school	156	22.9
	Upper Secondary school	237	34.8
Current role	General education teacher	324	47.5
	Special education teacher	358	52.5

2.2 Research Instrument

The data collection instrument was a 36-item questionnaire developed by Alsudairy and Eltantawy (2024) to investigate special education teachers' perceptions of the use of AI in the education of students with disabilities. Although the role of special education teacher is not fully equivalent across educational systems, it is broadly comparable to that of the Italian support teacher.

In the version administered in the present study, based on a previous psychometric evaluation of the instrument (Fiorucci & Bevilacqua, 2026), including both exploratory and confirmatory factor analyses, the final ordinal model consisted of 32 items organized into a two-factor correlated structure.

Responses were recorded on a three-point Likert-type scale: 1 = Disagree; 2 = Neither agree nor disagree; 3 = Agree.

In addition to structural validity, the reliability of the refined CFA model was previously assessed. Factor 1 demonstrated acceptable-to-good reliability, with Cronbach's α = .846, ordinal α = .896, and McDonald's ω = .856. Factor 2 showed good reliability, with Cronbach's α = .901, ordinal α = .933, and McDonald's ω = .909.

However, the Average Variance Extracted (AVE) was below the conventional threshold of .50 for both factors, particularly for Factor 1 (AVE = .393) and, to a lesser extent, for Factor 2 (AVE = .483). These findings indicate that the two factors exhibit satisfactory internal consistency, whereas convergent validity is only partially supported.

Table 2. Allocation of the 32 Items into Two Factors (Final Model)

Factor	Items included in the final model
F1	V1, V2, V3, V4, V6, V7, V8, V11, V12, V13, V14, V15, V17, V18, V21
F2	V5, V10, V22, V23, V24, V25, V26, V27, V28, V29, V30, V31, V32, V33, V34, V35, V36

2.3 Procedure

Data were collected between March and September 2025 through an online questionnaire administered via Microsoft Forms. The questionnaire was preceded by a brief introduction outlining the objectives of the study, an estimated completion time of approximately 10 minutes, and information regarding informed consent.

Prior to participation, teachers were informed about the aims of the research, the study procedures, the voluntary nature of participation, and their right to discontinue completion of the questionnaire at any time without any consequences. Informed consent was obtained through participants' voluntary continuation with the survey.

The study, which was directed exclusively at teaching staff, was conducted anonymously. Participants were informed that no personally identifiable information would be collected and that all data would be treated confidentially, analyzed only in aggregate form, and used solely for research purposes, in accordance with the European Union General Data Protection Regulation (GDPR; Regulation (EU) 2016/679).

2.4 Data Analysis

Data were analyzed using the open-source statistical software Jamovi. For the purposes of the present study, the analyses focused on descriptive statistics for individual items and composite scores related to the two factors identified during the instrument validation process.

Frequencies, percentages, means, medians, and standard deviations were calculated. Composite scores were obtained by computing the mean of the items loading on each factor, whereas the overall attitude toward AI score was calculated as the mean of all 32 items included in the final version of the instrument.

The interpretation of the findings was not based solely on mean scores but also considered the percentage distribution of responses, with particular attention paid to the prevalence of neutral responses. These were regarded as potentially meaningful indicators of uncertainty, evaluative caution, limited direct experience, or ambivalence toward AI applications that have not yet become fully established in everyday educational practice.

In addition, the inter-item correlation matrix was examined using Spearman's rank-order correlation coefficient (Spearman's rho).

3. Results

3.1 Familiarity with AI Systems

The sociodemographic section of the questionnaire included additional questions aimed at assessing participants' level of familiarity with AI-based digital technologies, as well as their participation in training activities related to their use. Specifically, respondents were asked whether such training had been provided by their school institution or organized by external providers.

The results suggest that participants generally reported low-to-moderate levels of familiarity with AI-based technologies, reported by 77.9% of the sample.

Furthermore, 33.6% of teachers reported having participated in training courses offered by their school institution, while 12% had taken part in training initiatives organized by external providers (Table 4).

Despite the presence of a substantial proportion of teachers who had engaged in AI-related professional development activities, more than half of the respondents reported having received no training on the topic.

Table 3. Frequencies of Familiarity with AI Digital Technologies

Familiarity with AI digital technologies	Frequency	% of Total	Cumulative %
Low	163	23.9%	23.9%
Medium	368	54.0%	77.9%
High	122	17.9%	95.7%
Very high	29	4.3%	100.0%

Table 4. Frequencies of Participation in Training Courses on the Use of AI

Have you ever participated in training courses on the use of AI?	Frequency	% of Total	Cumulative %
No	371	54.4%	54.4%
Yes, organized by external training providers	82	12.0%	66.4%
Yes, organized by the school	229	33.6%	100.0%

3.2 Teachers' Attitudes Toward the Use of AI Systems

Descriptive Statistics of the Items

The results related to Factor 1 indicate an overall favorable attitude among teachers toward the potential of AI, although this is accompanied by some reservations regarding its use in complex decision-making contexts (Table 5).

For most items, mean scores were above the midpoint of the scale, and the percentages of agreement exceeded those of disagreement, suggesting a generally positive evaluation of AI applications in educational settings.

The highest levels of agreement were observed for items V8 (78.2%), V18 (68.8%), V21 (68.6%), and V3 (68.0%), which were also characterized by median scores of 3 and mean values ranging from 2.62 to 2.73. These findings indicate that a large proportion of teachers recognize both the potential and the fundamental principles of AI and positively evaluate its possible applications in educational contexts, particularly for optimizing the adaptation of instructional materials for students with disabilities and for creating simulated learning activities.

High levels of agreement also emerged for items V7 (66.0%), V17 (63.8%), V13 (62.2%), and V14 (60.1%). These results suggest not only a widespread positive disposition toward the use of AI for personalizing learning pathways and diversifying instructional methods, but also a general sense of appreciation regarding its potential. Similarly, items V11 (56.9%), V15 (51.6%), and V12

(51.3%) showed a predominance of positive responses, reflecting teachers' recognition of the important role that AI may play both in the teaching profession and in supporting the learning of students with disabilities.

However, these positive evaluations were accompanied by a substantial proportion of neutral responses, suggesting a degree of caution among teachers regarding the use of AI systems.

Items V1 and V6 showed comparatively lower levels of agreement. In particular, the statement that AI could contribute to increasing human happiness was endorsed by only 6.6% of participants, whereas 54.3% adopted a neutral position and 39.1% expressed disagreement. Similarly, for item V6, agreement reached only 22.7%, compared with a predominance of neutral responses (50.0%) and a substantial proportion of disagreement (27.3%).

Overall, the results of this first section portray a perception of AI characterized by recognition of its operational and practical potential, accompanied by a cautious attitude toward its broader social, ethical, and decision-making implications.

Table 5. Factor 1

Item		M	Median	SD	1 (%)	2 (%)	3 (%)
AI will make human beings happier.	V1	1.68	2.00	0.593	39.1	54.3	6.6
AI can solve very complex problems.	V2	2.34	2.00	0.698	13.2	40.0	46.8
I understand the basic principles of AI.	V3	2.62	3.00	0.594	5.9	26.1	68.0
In the future, societies will greatly benefit from the use of AI.	V4	2.38	2.00	0.659	10.0	42.5	47.5
I believe that the benefits of AI far outweigh its drawbacks.	V6	1.95	2.00	0.706	27.3	50.0	22.7
I was very surprised when I used AI to perform some tasks.	V7	2.57	3.00	0.644	8.5	25.5	66.0
I believe that AI systems are available 24 hours a day, 7 days a week.	V8	2.73	3.00	0.558	5.6	16.3	78.2
I believe that AI can play an important role in the learning of students with disabilities.	V11	2.48	3.00	0.657	9.1	34.0	56.9
I believe that learning about AI can be beneficial for my teaching career.	V12	2.39	3.00	0.695	12.2	36.5	51.3
There are many useful AI systems for teaching students with disabilities.	V13	2.57	3.00	0.582	4.7	33.1	62.2
AI helps teachers diversify teaching methods.	V14	2.51	3.00	0.653	8.8	31.1	60.1
AI techniques can be used to teach students with disabilities certain tasks, such as sign language.	V15	2.43	3.00	0.647	8.7	39.7	51.6
AI systems can be used to personalize the learning of students with disabilities.	V17	2.57	3.00	0.619	6.9	29.3	63.8
AI systems can be used to create simulated lessons.	V18	2.63	3.00	0.595	6.0	25.2	68.8
AI systems help teachers optimize time in adapting instructional materials for students with disabilities.	V21	2.62	3.00	0.598	6.2	25.2	68.6

*The table reports the percentages obtained using a three-point response scale: 1 = Disagree; 2 = Neither agree nor disagree; 3 = Agree.
**The items retain the original numbering as presented in the 36-item questionnaire.

The results related to the second factor indicate, overall, a moderately positive yet cautiously evaluative attitude toward the use of AI in educational settings, with particular reference to students with disabilities.

Mean values were predominantly above the midpoint of the scale, suggesting a generally favorable evaluation of the potential applications of AI in teaching and learning processes. In particular, items V29 (M = 2.60; 65.0% agreement), V24 (M = 2.41; 56.7%), V27 (M = 2.49; 56.3%), V25 (M = 2.44; 55.1%), and V28 (M = 2.43; 53.8%) showed the highest levels of agreement. These findings indicate that a substantial proportion of teachers recognize the value of AI as a supportive tool—at cognitive, analytical, feedback-related, or procedural levels—for teaching activities addressed to students with disabilities.

Similarly, items V32 (50.4%), V26 (48.2%), V22 (44.6%), and V35 (43.0%) also showed a prevalence of positive responses, although accompanied by notable proportions of neutral answers. This pattern suggests that, while teachers are generally favorable toward AI use, many maintain a cautious stance regarding specific applications of the technology.

A particularly relevant finding is the high incidence of neutral responses across most items. In several cases, more than 40% of participants selected the midpoint option (V23 = 42.5%; V30 = 43.0%; V31 = 40.9%; V33 = 40.8%; V34 = 45.7%; V36 = 48.1%).

This result may be interpreted as an indicator of evaluative caution or limited direct experience with the use of AI for more advanced educational purposes. Indeed, the items receiving the highest levels of neutrality concern highly specific and complex applications of AI, such as learning pathway personalization (V23), support for understanding abstract concepts (V30), assessment of students with disabilities (V31), the abandonment of traditional teaching methods (V33), individualized instruction based on learners' characteristics (V34), and the promotion of lifelong learning (V36). These functions are likely not yet widely experienced in teachers' everyday professional practice.

Rather than indicating rejection of AI's potential, the high proportion of neutral responses appears to reflect a cautious attitude and a suspension of judgment regarding application domains that are not yet fully consolidated in educational practice.

A different pattern emerges for items V5 and V10, which show the lowest mean values in the entire dimension (M = 1.27 and M = 1.44, respectively) and particularly high levels of disagreement (76.1% and 62.8%). Item V5 refers to the belief that complex decisions should be delegated to AI, while item V10 concerns the willingness to use AI for all professional tasks and activities. The

strong concentration of responses in the disagreement category suggests that participants largely reject the statements contained in these items.

This finding warrants careful interpretation. Disagreement with delegating complex decisions to AI or with its generalized use in all professional tasks should not necessarily be interpreted as rejection of the technology itself. Rather, it may reflect pedagogical caution and professional awareness regarding the limits of automation in educational processes. In this perspective, teachers appear to distinguish between the use of AI as a supportive tool for planning, personalization, and instructional adaptation, and its substitutive or delegating use, which is perceived as ethically and professionally problematic.

Overall, the results confirm that attitudes toward AI are not characterized by unconditional acceptance, but rather by selective openness, contingent on the preservation of educational responsibility and the teacher's central role in pedagogical decision-making.

Table 6. Factor 2

Item		M	Median	SD	1 (%)	2 (%)	3 (%)
I believe that complex decisions can be left to AI.	V5	1.27	1.00	0.509	76.1	20.8	3.1
I want to use AI in all my work and tasks.	V10	1.44	1.00	0.613	62.8	30.8	6.5
AI helps in planning teaching according to students' abilities and pace.	V22	2.28	2.00	0.731	16.6	38.9	44.6
AI helps in selecting the most effective learning method through an appropriate analysis of learning characteristics.	V23	2.18	2.00	0.737	19.8	42.5	37.7
During instruction, AI can help clarify complex concepts for students.	V24	2.41	3.00	0.742	15.4	27.9	56.7
I believe that AI technologies support students' educational environment.	V25	2.44	3.00	0.686	11.1	33.7	55.1
I believe that AI technologies can provide unique and intuitive perspectives I had never considered before.	V26	2.37	2.00	0.682	11.6	40.2	48.2
AI provides students with disabilities with support (conceptual, procedural, analytical, or feedback-related).	V27	2.49	3.00	0.630	7.3	36.4	56.3
AI technologies help in preparing useful educational methods for the teaching process.	V28	2.43	3.00	0.682	11.0	35.2	53.8
AI technologies help provide and simplify information for students with disabilities.	V29	2.60	3.00	0.592	5.4	29.6	65.0
AI technologies help present abstract and intangible concepts to students with disabilities.	V30	2.23	2.00	0.720	17.0	43.0	40.0
AI systems help assess students with disabilities using new methods.	V31	2.09	2.00	0.764	25.1	40.9	34.0
AI offers flexibility in implementing the educational process.	V32	2.39	3.00	0.682	11.3	38.3	50.4
AI reduces the use of traditional teaching methods.	V33	2.03	2.00	0.770	28.0	40.8	31.2
AI helps teachers explain content according to the inclinations and preferences of students with disabilities.	V34	2.18	2.00	0.714	18.0	45.7	36.2
AI increases students' motivation toward learning and participation.	V35	2.29	2.00	0.692	13.5	43.5	43.0
AI ensures continuous learning for students with disabilities in a lifelong learning perspective.	V36	2.21	2.00	0.688	15.2	48.1	36.7

*The table reports the percentages obtained using a three-point response scale: 1 = Disagree; 2 = Neither agree nor disagree; 3 = Agree.

**The items retain the original numbering as presented in the 36-item questionnaire.

The results indicate that teachers tend to recognize the potential of AI as a supportive tool for educational and instructional processes. However, alongside this generally favorable orientation, a substantial proportion of neutral responses emerges, suggesting the presence of uncertainty, caution, or limited familiarity with certain concrete applications of AI.

These findings suggest that while the pedagogical potential of AI is generally acknowledged, its effective operational integration into educational practice still requires further professional development and training processes.

Descriptive Analysis of Composite Scores

To analyze the two dimensions identified through factor analysis, two composite scores were constructed corresponding to the factors emerging from the instrument validation. In line with the bidimensional structure of the questionnaire, the score for Factor 1 was obtained by calculating the mean of the items associated with general perceptions and trust in AI, whereas the score for Factor 2 was derived from the mean of the items referring to the operational and pedagogical aspects of AI use in educational contexts.

The use of composite scores allows for the synthesis of information derived from individual items and provides an overall measure of the two investigated dimensions. For each factor, the main descriptive statistics were computed in order to examine the average level of agreement expressed by teachers and the variability of responses.

Table 7. Mean Scores for Factor 1 and Factor 2

	F1	F2
Mean	2.43	2.20

The analysis of the composite scores indicates an overall favourable attitude among teachers toward AI. Factor 1, which refers to general perceptions, trust in AI, and recognition of its educational potential, shows a mean score of 2.43.

Factor 2, which relates to the applications of AI in teaching and learning processes, also reflects a positive orientation, although with a slightly lower level of agreement (M = 2.20). This finding suggests that, while teachers acknowledge the general potential of AI, they express greater caution when evaluating its concrete implementation in educational practice.

The difference between the two means appears to indicate that acceptance of AI is higher at a theoretical level, related to perceived potential, than at the level of practical implementation. This result is consistent with the item-level analyses, which showed a higher prevalence of neutral responses in relation to aspects such as learning personalization, assessment, support for students with disabilities, and the continuity of educational pathways.

Overall, the findings suggest that teachers recognize the value of AI in educational contexts, while simultaneously expressing a degree of caution regarding its actual use within school settings.

Overall Attitude Toward AI

To obtain a synthetic measure of teachers' overall attitude toward AI, a total score was computed as the mean of all 32 questionnaire items, corresponding to the two identified dimensions (Factor 1 and Factor 2).

The overall score (M = 2.31) indicates a generally positive orientation toward AI in educational contexts. This value suggests that, overall, teachers tend to recognize the potential of AI as a resource for improving teaching and learning processes, with a predominance of favourable evaluations over disagreement.

Table 7. Mean Scores for Factor 1 and Factor 2

	F1	F2
Mean	2.43	2.20

Consistent with the findings emerging from the analysis of the individual dimensions, the overall result nonetheless reflects a non-uniform attitude. Alongside a generally positive evaluation, a component of caution also emerges, particularly regarding the practical applications of AI in teaching practice and in assessment and inclusion processes.

Therefore, the overall score confirms a favourable perception of AI among teachers, although this openness is accompanied by a degree of prudence that points to the need for further training initiatives and for the progressive consolidation of digital and pedagogical competences related to the use of these technologies.

Correlational Analysis Among Items of the Final Model

The correlational analysis, conducted using Spearman's rho on the 32 items included in the final model, reveals an overall pattern consistent with the bidimensional structure of the instrument.

Table 9. Summary of the Main Correlations Among Items of the Final 32-Item Model

Item pair	Factor(s)	Main conceptual domain	Spearman's ρ	p
V22–V23	F2–F2	Instructional planning and choice of learning methods	.584	< 0.001
V35–V36	F2–F2	Motivation, participation, and lifelong learning of students with disabilities	.578	< 0.001
V34–V36	F2–F2	Instructional personalization and continuous learning	.549	< 0.001
V21–V29	F1–F2	Adaptation of materials and simplification of information for students with disabilities	.549	< 0.001
V34–V35	F2–F2	Instructional personalization and learning motivation	.535	< 0.001
V11–V17	F1–F1	Role of AI in learning and personalization of learning pathways	.531	< 0.001
V14–V17	F1–F1	Diversification of teaching methods and learning personalization	.528	< 0.001
V31–V34	F2–F2	Innovative assessment and instructional personalization	.525	< 0.001
V25–V28	F2–F2	Support for the educational environment and preparation of teaching methods	.512	< 0.001
V12–V14	F1–F1	Teacher professional development and methodological diversification	.509	< 0.001
V27–V29	F2–F2	Support for students with disabilities and simplification of information	.506	< 0.001
V31–V32	F2–F2	Student assessment and flexibility of the educational process	.505	< 0.001
V22–V34	F2–F2	Instructional planning and adaptation to individual characteristics	.501	< 0.001

Note. Only correlations equal to or greater than ρ = .50 among the items included in the final 32-item model are reported. The values were calculated using Spearman's rho.

Most associations are positive and statistically significant, with predominantly low to moderate values. The strongest correlations emerge among conceptually related items, particularly within the dimensions referring to the operational and pedagogical applications of AI. For example, moderate associations are observed between items related to planning and the choice of learning methods (V22–V23, $\rho = 0.584$, $p < 0.001$), between student motivation and lifelong learning for students with disabilities (V35–V36, $\rho = 0.578$, $p < 0.001$), between instructional personalization and lifelong learning (V34–V36, $\rho = 0.549$, $p < 0.001$), as well as between material adaptation and information simplification for students with disabilities (V21–V29, $\rho = 0.549$, $p < 0.001$).

Within Factor 1, coherent associations also emerge among items referring to trust in the educational potential of AI and its use for inclusion. In particular, significant correlations are found between the recognition of AI's role in the learning of students with disabilities and the possibility of personalizing learning (V11–V17, $\rho = 0.531$, $p < 0.001$), as well as between the diversification of teaching methods and the personalization of learning pathways (V14–V17, $\rho = 0.528$, $p < 0.001$). These results suggest that teachers' responses tend to cluster around coherent conceptual cores, in which the value of AI is primarily associated with personalization, instructional flexibility, and support for students with disabilities.

At the same time, some items show weaker associations with the other variables in the model. This is the case, for example, of items referring to the delegation of complex decisions to AI or the reduction of traditional teaching methods, which exhibit lower correlations compared to items focused on instructional and inclusive support. This pattern confirms the conceptual specificity of these statements and supports the interpretation that teachers' caution does not necessarily reflect a rejection of AI, but rather a professionally grounded and prudent stance toward its substitutive or decision-making uses.

4. Discussion

The results provide a complex picture of teachers' attitudes toward AI. Participants recognize the potential of this technology as a tool for supporting personalization, the diversification of teaching strategies, the simplification of information, and the adaptation of instructional materials for students with disabilities. This finding is consistent with the literature highlighting AI's role as a potentially transformative resource for teaching practice, provided that its integration is supported by adequate training and professional development processes (Di Martino, 2024; Perla, Agrati & Beri, 2025).

However, teachers' openness does not take the form of naive or unconditional acceptance. The presence of a substantial number of neutral responses, along with clear disagreement with items suggesting the delegation of complex decisions to AI, indicates a form of selective acceptance, contingent upon pedagogical planning, professional responsibility, and teachers' educational judgment. This evidence confirms findings from recent studies suggesting that attitudes toward AI are not determined solely by the technical characteristics of the tools, but are also linked to perceived digital competence, technological familiarity, professional confidence, and awareness of ethical and pedagogical risks (Galindo-Domínguez et al., 2024; Pokrivcakova, 2023; Shahid et al., 2024).

The contribution of this study therefore lies in showing that attitudes toward AI cannot be interpreted along a simple favourable–unfavourable continuum. Rather, they emerge as complex professional stances in which interest, selective trust, ethical caution, and training needs coexist. In this sense, the results confirm the multidimensional nature of attitudes, understood as evaluative dispositions integrating cognitive, affective, and behavioural components (Ajzen, 1991; Çayak, 2024). The observed caution does not appear to reflect a general resistance to AI, but rather an implicit demand for training,

organizational, and cultural conditions that enable teachers to exercise informed control over technological innovation.

This is particularly relevant in relation to inclusive education. AI is perceived as potentially useful for supporting accessibility, personalization, instructional adaptation, and assistance for students with disabilities; however, its integration requires clear conditions of pedagogical control, transparency, instructional adequacy, and the safeguarding of educational responsibility. From this perspective, teacher training should go beyond technical literacy and promote a critically informed, ethically aware, and pedagogically grounded form of AI literacy (Galindo-Domínguez et al., 2024; Özden et al., 2025).

A further aspect concerns the need for robust measurement instruments specifically designed for educational contexts. The literature highlights considerable heterogeneity in the tools used to assess attitudes and perceptions toward AI, which are often developed ad hoc and vary in their levels of validity and reliability (Zawacki-Richter et al., 2019). In this regard, the present study also contributes methodologically by employing a 32-item, two-factor model aimed at capturing the pedagogical, professional, and ethical dimensions of teachers' attitudes toward AI.

5. Conclusion

Overall, the present study shows that the participating teachers express a favorable yet cautious attitude toward AI. This caution does not necessarily represent an obstacle to innovation; rather, it may be interpreted as a professional resource, insofar as it reflects attention to the pedagogical, ethical, and inclusive implications of AI use.

The most relevant finding is therefore not merely teachers' willingness to adopt intelligent tools, but rather their implicit demand for training, organizational, and cultural conditions that enable them to integrate AI in a critical and responsible manner. From this perspective, the integration of AI in schools cannot rely solely on the availability of technological tools, but requires competent professional communities capable of critically interrogating technology and guiding its use toward educational and inclusive purposes.

Future research may further investigate these findings through comparisons between teacher subgroups, analyses of the role of training and familiarity with AI, as well as mixed method designs capable of integrating quantitative data with qualitative insights into the actual use of AI in school contexts.

6. Limitations of the Study and Future Perspectives

The study presents several limitations. The use of a non-probability convenience sampling strategy does not allow the findings to be generalized to the entire population of Italian teachers. The geographical distribution of the sample, with a predominance of participants from Southern Italy, may have influenced the overall representativeness of the data. In addition, the self-report nature of the questionnaire does not allow for direct observation of actual AI use practices in school contexts. Finally, the three-point scale, while facilitating completion, may have limited the ability to capture more nuanced variations in respondents' positions.

Future research may further explore this topic through mixed-method designs, integrating quantitative and qualitative approaches, comparing different professional subgroups, and examining the actual practices of AI integration in teaching.

References

Aiken, L. (2002). *Attitudes and related psychosocial constructs: Theories, assessment, and research*. Sage.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.

Allport, G. W. (1967). Attitudes. In M. Fishbein (Ed.), *Readings in attitude theory and measurement* (pp. 1–14). John Wiley & Sons.

Alsudairy, N. A., & Eltantawy, M. M. (2024). Special Education Teachers' Perceptions of Using Artificial Intelligence in Educating Students with Disabilities. *Journal of Intellectual Disability-Diagnosis and Treatment*, *12*(2), 92-102.

American Psychological Association. (2020). *APA dictionary of psychology*. https://dictionary.apa.org/

Bruni, F., & Murgia, E. (2024). Generative Artificial Intelligence at school: University students perceptions and visions at Learning Sciences Faculty. *Education Sciences & Society: 2, 2024*, 269-283.

Buckenmeyer, J. A. (2010). Beyond computers in the classroom: Factors related to technology adoption to enhance teaching and learning. *Contemporary Issues in Education Research (CIER), 3*(4), 27.

Buyakova, K. I., Dmitriev, Y. A., Ivanova, A. S., Feshchenko, A. V., & Yakovleva, K. I. (2024). Students' and teachers' attitudes towards the use of tools with generative artificial intelligence at the university. *The Education and Science Journal*, *26*(7), 160-193.

Campion, M. (1989). Technophilia and technophobia. *Australian Journal of Educational Technology, 5*(1), 23–36.

Cayak, S. (2024). Investigating the relationship between teachers' attitudes toward artificial intelligence and their artificial intelligence literacy. *Journal of Educational Technology and Online Learning*, 7(4), 367–383.

Clore, G. L., & Schnall, S. (2005). The influence of affect on attitude. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 437–489). Erlbaum.

Cojean, S., Brun, L., Amadieu, F., & Dessus, P. (2023). Teachers' attitudes towards AI: what is the difference with non-AI technologies? In *Proceedings of the annual meeting of the cognitive science society* (Vol. 45, No. 45).

Davis, F. D. (1993). User acceptance of information technology: System characteristics, user perceptions and behavioral impacts. *International Journal of Man-Machine Studies, 38*(3), 475–487.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science, 35*(8), 982–1003.

Di Martino, V. (2024). L'IA in ambito educativo: percezioni dei docenti in formazione iniziale. *Education Sciences & Society. 2*, 88-104.

Ennis, L. A. (2005). The evolution of technostress. *Computers in Libraries, 25*(8), 10–12.

Ertmer, P. A. (1999). Addressing first- and second-order barriers to change: Strategies for technology integration. *Educational Technology Research and Development, 47*(4), 47–61.

Ertmer, P.A. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? *Educational Technology Research and Development*, 53(4), 25-39.

Ferrantino, C., & Scarano, R. (2024). Formare all'IA: un progetto-studio con docenti e futuri docenti. *Education Sciences & Society: 2, 2024*, 72-87.

Fiorucci, A., & Bevilacqua, A. (2026). Italian school teachers' attitudes toward artificial intelligence and perceptions of AI in teaching practices: socio-professional correlates. *Education Sciences*, *16*(5), 1-25.

Forgas, J. P. (2008). The role of affect in attitudes and attitude change. In W. D. Crano & R. Prislin (Eds.), *Attitudes and attitude change* (pp. 131–158). Psychology Press.

Fullan, M. (2007). *The new meaning of educational change* (4th ed.). Teachers College Press.

Galindo-Dominguez, H., Delgado, N., Campo, L., & Losada, D. (2024). Relationship between teachers' digital competence and attitudes towards artificial intelligence in education. *International Journal of Educational Research*, 126, 102381.

Goktas, Y., Yildirim, S., & Yildirim, Z. (2009). Main barriers and possible enablers of ICTs integration into pre-service teacher education programs. *Educational Technology & Society, 12*(1), 193–204.

Heine, S., & König, J. (2025). Applying artificial intelligence in teacher education: Preservice teachers' attitudes and reflections in using ChatGPT for teaching and learning. *European Journal of Teacher Education*, *48*(5), 934-963.

Heinssen, R. K., Glass, C. R., & Knight, L. A. (1987). Assessing computer anxiety: Development and validation of the Computer Anxiety Rating Scale. *Computers in Human Behavior, 3*(1), 49–59.

Hew, K. F., & Brush, T. (2007). Integrating technology into K–12 teaching and learning: Current knowledge gaps and recommendations for future research. *Educational Technology Research and Development, 55*(3), 223–252.

Istenic A., Bratko I., and Rosanda V. (2021). Are pre-service teachers disinclined to utilise embodied humanoid social robots in the classroom? *British Journal of Educational Technology*, 52(6), 2340-2358.

Lee, Y., & Lee, J. (2014). Enhancing pre-service teachers' self-efficacy beliefs for technology integration through lesson planning practice. *Computers & Education, 73*, 121–128.

Matthew L. Wilson (2023) The impact of technology integration courses on preservice teacher attitudes and beliefs: A meta-analysis of teacher education research from 2007–2017, Journal of Research on Technology in Education, 55:2, 252-280, DOI: 10.1080/15391523.2021.1950085

Meuter, M. L., Ostrom, A. L., Bitner, M. J., & Roundtree, R. (2003). The influence of technology anxiety on consumer use and experiences with self-service technologies. *Journal of Business Research, 56*(11), 899–906.

Nazaretsky, T., Ariely, M., Cukurova, M., & Alexandron, G. (2022). Teachers' trust in AI-powered educational technology and a professional development program to improve it. *British journal of educational technology*, *53*(4), 914-931.

Nirchi, S., Mangione, G. R. J., De Vincenzo, C., & Pettenati, M. C. (2025). Indagine esplorativa sulla percezione dei docenti neoassunti circa l'impiego dell'IA nella didattica: punti di forza, ostacoli e prospettive. *Journal of Educational, Cultural and Psychological Studies (ECPS Journal)*, (30), 151-180.

Özden, M., Ya.sar, F. .., & Meydan, E. (2025). The relationship between pre-service teachers' attitude towards artificial intelligence (AI) and their AI literacy. *Pegem Journal of Education and Instruction*, 15(3), 121–131.

Pellegrini, S., & Sebastiani, R. (2024). L'integrazione di IA e tecnologia assistiva nella didattica speciale: un cambio di paradigma nella formazione degli insegnanti e nel supporto agli studenti. *Italian Journal of Special Education for Inclusion*, *12*(2), 146-157.

Perla, L., Agrati, L. S., & Beri, A. (2025). Post-teaching and professional learning: An investigation on teachers' attitudes towards AI. *Professional Development in Education*, 51(3), 466–477.

Pokrivcakova, S. (2023). Pre-service teachers' attitudes towards artificial intelligence and its integration into EFL teaching and learning. *Journal of Language and Cultural Education*, 11(3), 100–114.

Ragu-Nathan, T., Tarafdar, M., Ragu-Nathan, B. S., & Tu, Q. (2008). The consequences of technostress for end users in organizations: Conceptual

development and empirical validation. *Information Systems Research, 19*(4), 417–433.

Rosen, L. D., & Weil, M. M. (1995b). Computer availability, computer experience and technophobia among public school teachers. *Computers in Human Behavior, 11*(1), 9–31.

Shahid, M. K., Zia, T., Bangfan, L., Iqbal, Z., & Ahmad, F. (2024). Exploring the relationship of psychological factors and adoption readiness in determining university teachers' attitude on AI-based assessment systems. *The International Journal of Management Education*, *22*(2), 100967.

Tallvid M. (2016). Understanding teachers' reluctance to the pedagogical use of ICT in the 1: 1 classroom. *Education and Information Technologies*, 21, 503-519.

Toci, V., Rossi, F., & Nencioni, P. (2024). Education in the Age of AI: perceptions, Challenges and Opportunities for Italian Teachers. *Education Sciences & Society: 2, 2024*, 56-71.

Tondeur J., Van Braak J., Ertmer P. A., and Ottenbreit-Leftwich A. (2017). Understanding the relationship between teachers' pedagogical beliefs and technology use in education: A systematic review of qualitative evidence. *Educational technology research and development,* 65, 555-575.

Triandis, H. C. (1971). *Attitude and attitude change*. Wiley.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425–478.

Vrasidas, C., & McIsaac, M.S. (2001). Integrating technology in teaching and teacher education: Implications for policy and curriculum reform. *Educational Media International*, 38(2-3), 127-132.

Wang, K., Shu, Q., & Tu, Q. (2008). Technostress under different organizational environments: An empirical investigation. *Computers in Human Behavior, 24*(6), 3002–3013.

Wang, L., Ertmer, P. A., & Newby, T. J. (2004). Increasing preservice teachers' self-efficacy beliefs for technology integration. *Journal of Research on Technology in Education, 36*(3), 231–250.

Wilson, M. L. (2023). The impact of technology integration courses on preservice teacher attitudes and beliefs: A meta-analysis of teacher education research from 2007–2017. *Journal of Research on Technology in Education*, 55(2), 252–280.

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). *Systematic review of research on artificial intelligence applications in higher education – where are the educators? International Journal of Educational Technology in Higher Education, 16*.

Zimmerman J. (2006). Why some teachers resist change and what principals can do about it. *Nassp Bulletin*, *90* (3), 238-249.