GENERATIVE ARTIFICIAL INTELLIGENCE AS A PROMPT IN THE INCLUSION PROCESS: A PRELIMINARY STUDY ON TEACHERS' PROFESSIONAL RESOURCES

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ABSTRACT

The study, a preliminary phase of an experiment on the use of AI in teaching, analyzes a human-machine interaction model designed to enhance teacher agency and teachers' reflective skills in the context of the Fourth Revolution. Through a quantitative survey of 200 secondary school teachers, the research explores the correlation between metacognitive beliefs and perceived self-efficacy in managing students with SEN. It is hypothesized that the synergy between reflective monitoring and confidence in one's professional abilities allows us to think of AI prompts as scaffolding for the construction of complex actions preparatory to the inclusion process. The aim is to promote pedagogical intentionality, while integrating new technologies into the co-construction of students' Life Projects, to ensure that educational responsibility remains the cornerstone of personalized teaching.

KEYWORDS

AI; Inclusion; Metacognition; Inclusive self-efficacy; Teacher agency.

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[1] Developed the theoretical framework for Section 2 "The intentional prompting model" and drafted Section 5 "Conclusion".
[2] Prepared the research design and drafted Section 3 "Research".
[3] Drafted Section 4 "Discussion".
[4] Drafted Section 1 "Introduction".

1. Introduction

The level of technological development achieved in our era appears to be promoting a progressive transition from analogic to digital, shaping people's daily experiences to the point of redefining some of their core habits (Panciroli, 2021). This process is believed to be mediated by the growing use of prompts, through which people entrust digital technologies with the automation of complex workflows, a characteristic already described by Schwab (2016) as one of the cornerstones of the Fourth Industrial Revolution (Pesci, 2025). The policy of updating and revising the most well-known software houses has, in recent years, made Generative Artificial Intelligence (GenAI) systems accessible to the general public, transposing the human-machine interaction relationship beyond corporate contexts. Their use in everyday and professional activities, including educational ones, appears to be contributing to the transformation of a growing number of living environments into hybrid spaces in which humans and artificial agents interact and cooperate (Brafa et al., 2025).

Starting from this epistemological framework, it would be interesting to consider the conditions that could make the use of GenAI profitable in school contexts to facilitate inclusive processes. If guided by appropriately structured prompts and adapted to specific educational needs, Large Language Models (LLM) systems could support the autonomy of the most vulnerable students and expand the possibilities for teacher intervention during school hours. However, the technology should not reduce individuals to standardized categories that would alter the objectives defined in the Life Project, compromising their quality of life (Corsi et al., 2025; Mancini & Sebastiani, 2024; Panciroli et al., 2020; Romano et al., 2025).

It is important to clarify that LLM systems possess neither semantic understanding nor communicative intentionality, but operate as statistical-predictive models based on neural architectures known as Transformers (Peter & Zimuel, 2024). The text entered through the prompt is broken down into minimal units, called tokens, and converted into numerical representations. Using the self-attention mechanism, the model identifies the contextual relationships between the units and generates the response by sequential prediction of the most linguistically probable token, based on the statistical plausibility found in the training data (Devin, 2026).

An entirely machine-generated output, even if it may appear formally and stylistically plausible, should be considered lacking in emotional intelligence and potentially capable of locking the student into stereotyped representations, failing to take into account their aspirations and the complexity of their needs (Bortolotti & Feresin, 2025; Nicolazzo et al., 2026). Consequently, if we blindly trusted GenAI to review an Individualized Educational Plan, prepare a written test, or evaluate a paper, we would run the risk of standardizing and flattening the effects of personalized teaching (Orofino, 2026). Plausibly, one could imagine two different ways of using GenAI: a first, uncritical mode, in which the user delegates analysis and planning to the machine, and a second, critical and informed mode, in which the teacher maintains control of the educational process and treats GenAI as an epistemic ally, viewing the output as provisional material to be reviewed for contextualization (Brafa et al., 2025).

Students with Special Educational Needs (SEN) do not belong to rigid, self-sufficient categories; in fact, they must be welcomed into the classroom through structured observations, personalized assessment processes, and ongoing redesign actions based on their desires to truly understand them. In

this sense, it would be possible to imagine using GenAI to amplify the range of actions teachers can take to make contexts more inclusive and break down barriers that slow down the inclusion process, almost as if contributing to increasing teachers' professional agency (Amatori, 2025; Dainese, 2025; Romano et al., 2025).

To consciously integrate GenAI into special education, it would be appropriate to ask how to foster the development of an adaptive AI mindset in teachers (Brafa et al., 2025; Ranieri et al., 2024). Conceivably, to manage AI-based technological development, it would be necessary to be able to formulate effective requests (AI literacy) and fully understand the probabilistic logic of LLM systems, while being aware of their limitations, errors, and hallucinations (Chiu, 2025). Since the prompt should represent planning intentionality, it should be rethought as one of the specialized tools teachers can use. It must clearly define the purpose of the activity, relevant information, teaching constraints, and useful criteria for orienting the response (Orofino, 2026). Considering that the system lacks the ability to read and process information that is not explicitly provided, even if plausibly deducible, the success of this first step depends on the ability to observe classroom dynamics, identify significant elements, and organize them, in order to prepare the preparatory actions for formulating the first prompt (Peter & Zimuel, 2024).

2. The intentional prompting model

To describe this logic in more depth, it is possible to rethink the construct of reverie developed by Bion (1962). In Bionian theory, beta elements are still raw sensorial and emotional experiences, which become digestible through the alpha function exercised by a mind capable of receiving and transforming them. Transposed into the educational context, beta elements could coincide with the

still unorganized set of observations, needs, barriers, and aspirations of the student. The teacher would perform an interpretative function, selecting the relevant elements, attributing them a pedagogical meaning, and translating them into prompts consistent with specific objectives to be achieved. More specifically, the interaction with the machine would take place through a repetitive sequence: the teacher defines the objective to be achieved and formulates the prompt; the GenAI generates an output; the professional, evaluating its adequacy, modifies and contextualizes it (Peter & Zimuel, 2024). In this sense, the first output of GenAI should be understood as a first draft on which to build upon to initiate the process of educational scaffolding, that is, a temporary and situated support, constructed in relation to the student's characteristics and progressively remodeled according to the specifics of their Life Project (International Task Force on Teachers for Education 2030, 2025; Mancini & Sebastiani, 2024; Romano et al., 2025).

This model of human-machine complementarity would allow us to rethink new technologies to support teachers in breaking down the most complex tasks (Limone, 2012). The intentionality that teachers should exercise to guide LLM systems seems to us to recall the construct of Teacher Agency (Alasgarova & Rzayev, 2025). In this sense, teachers should be able to clearly define the purpose of their actions, select relevant information, and evaluate appropriate responses within a complex metacognitive process of output restructuring (Kahn et al., 2025). The exercise of Teacher Agency, rather than an innate disposition, may depend on the set of attitudinal and motivational resources through which teachers approach the challenges inherent in their professional role and rework their perception of the technological self (Deshen et al., 2026;

Santoianni, 2025). In this way, they could consciously use LLM systems without dysfunctionally depending on the received output due to a form of metacognitive laziness (Fan et al., 2025).

3. Research

This study represents the preliminary phase of a broader experiment on the use of GenAI in designing interventions for students with SEN. The aim is to identify professional resources that can support teachers in maintaining pedagogical direction during interactions with LLM systems. Specifically, it is hypothesized that teachers' dysfunctional metacognitive beliefs are associated with a lower perceived self-efficacy in behavior management, collaboration, and inclusive instruction.

The sample consisted of 200 Italian upper secondary school teachers working in Sicily. Inclusion criteria required at least one year of service, regardless of contract type and duration or employment continuity. Therefore, temporary teachers who, at the time of the survey, were not employed as substitute teachers, were also included.

The sample included both men and women, with the majority age group being between 51 and 60. At the time of the survey, 102 teachers, or 51%, were working in general positions, 51, or 25.5%, in support positions, and 47, or 23.5%, did not have a current substitute contract. The characteristics of the sample are shown in Table 1.

Tab. 1

Socio-demographic and professional characteristics of the sample			
Variable	Category	n	%
Gender	Men	85	42.5
	Women	115	57.5
Age	20-30 years	16	8.0
	31-40 years	49	24.5
	41-50 years	50	25.0
	51-60 years	63	31.5
	Over 60 years	22	11.0
Role at time of survey	General position	102	51.0
	Support position	51	25.5
	No current substitute contract	47	23.5
Years of service	1-5 years	75	37.5
	6-10 years	54	27.0
	Over 10 years	71	35.5

Note. N = 200

The study received approval from the Ethics Committee of Kore University of Enna. Participants were recruited through a non-probabilistic convenience sampling procedure based on the University's promotion of the study among upper secondary school teachers working in Sicily. The survey link was circulated through institutional communication channels and professional school networks connected to Kore University of Enna. Participation was

voluntary and was preceded by information regarding the research objectives, anonymity protection, data processing, and the possibility of interrupting the survey at any time.

Self-efficacy in inclusive practices was assessed using the Italian version of the Teacher Efficacy for Inclusive Practice Scale (Sharma et al., 2012; Aiello et al., 2017). The instrument consists of 18 items rated on a six-point Likert scale, from 1 (totally disagree) to 6 (totally agree), and includes three dimensions: Efficacy in Managing Behavior (EMB), relating to perceived self-efficacy in managing challenging behaviors; Efficacy in Collaboration (EC), referring to perceived self-efficacy in collaboration with colleagues, families, and other professionals; and Efficacy in Inclusive Instruction (EII), which concerns perceived self-efficacy in the implementation of inclusive teaching strategies. In the present study, the three subscales showed high internal consistency: EMB, $\alpha = .86$; EC, $\alpha = .85$; EII, $\alpha = .86$.

Metacognitive beliefs were assessed using the Italian version of the Metacognitions Questionnaire-30 (Wells & Cartwright-Hatton, 2004; Quattropani et al., 2015). The instrument comprises 30 items rated on a four-point Likert scale, from 1 (strongly disagree) to 4 (strongly agree), distributed across five dimensions: Positive Beliefs about Worry (POS), relating to positive beliefs about the usefulness of worry; Negative Beliefs about Uncontrollability and Danger (NEG), relating to beliefs about the uncontrollability and dangerousness of thoughts; Cognitive Confidence (CC), referring to distrust in one's memory and attention abilities; Need to Control Thoughts (NC), relating to the need to control thoughts; and Cognitive Self-Consciousness (CSC), regarding the tendency to monitor one's mental processes. In the present study, the subscales showed adequate internal consistency values: POS, $\alpha = .87$; NEG, $\alpha = .84$; CC, $\alpha = .85$; NC, $\alpha = .70$; CSC, $\alpha = .71$.

The questionnaire was administered online in March 2026 using Google Forms. Access to the questionnaire was subject to informed consent. The data were subsequently coded and stored anonymously. The final dataset consisted of 200 complete responses. Only questionnaires submitted after informed consent and meeting the inclusion criteria were included in the analyses. Since all items were set as mandatory in Google Forms, participants could proceed with the submission only after providing a response to each item. Therefore, no missing values were present in the variables considered, and no imputation procedures were applied.

The analyses were performed using Jamovi software. Descriptive statistics and internal consistency of the subscales were initially calculated using Cronbach's α. Associations between variables were examined using the Pearson correlation coefficient. Finally, three multiple linear regression models were estimated, taking EMB, EC, and EII as dependent variables and simultaneously including the five dimensions of the MCQ-30 as predictors.

Table 2 shows the descriptive statistics of the variables considered.

Tab. 2

Descriptive statistics of the variables under study

Variable	N	M	Median	Mode	SD	Min	Max	Skewness	Kurtosis
EMB	200	4.80	4.83	5.00	0.712	3.00	6.00	-0.319	0.000
EC	200	4.84	5.00	5.00	0.747	3.00	6.00	-0.598	-0.138
EII	200	5.01	5.00	5.00	0.680	2.83	6.00	-0.727	0.635
POS	200	2.43	2.40	2.20	0.577	1.00	4.00	0.341	0.028
NEG	200	2.01	1.83	1.67	0.653	1.00	4.00	0.901	0.469
CC	200	1.98	1.83	1.50	0.619	1.00	4.00	1.032	0.654
NC	200	2.01	2.00	1.83	0.498	1.00	4.00	1.005	1.712
CSC	200	2.48	2.50	2.50	0.515	1.00	4.00	0.451	0.437

Note. EMB = Efficacy in Managing Behavior; EC = Efficacy in Collaboration; EII = Efficacy in Inclusive Instruction; POS = Positive Beliefs about Worry; NEG = Negative Beliefs about Uncontrollability and Danger; CC = Cognitive Confidence, indicating distrust in memory and attention; NC = Need to Control Thoughts; CSC = Cognitive Self-Consciousness. In the presence of multiple modal values, the first one was reported

The three dimensions of perceived inclusive self-efficacy show high mean values, with the highest score for EII, M = 5.01, followed by EC, M = 4.84, and EMB, M = 4.80. The metacognitive dimensions show lower mean values, ranging from 1.98 for CC to 2.48 for CSC. The skewness and kurtosis indices are generally compatible with the subsequent parametric analyses. Pearson correlations between the variables are shown in Table 3.

Tab. 3

Pearson correlations between perceived inclusive self-efficacy and metacognitive beliefs

Variable	1	2	3	4	5	6	7	8
1. EMB	—							
2. EC	.822***	—						
3. EII	.852***	.875***	—					
4. POS	.053	.091	.027	—				
5. NEG	-.172*	-.123	-.153*	.428***	—			
6. CC	-.152*	-.198**	-.182**	.352***	.666***	—		
7. NC	-.074	-.037	-.055	.657***	.650***	.623***	—	
8. CSC	-.034	.006	-.009	.680***	.661***	.549***	.720***	—

**Note. EMB = Efficacy in Managing Behavior; EC = Efficacy in Collaboration; EII = Efficacy in Inclusive Instruction; POS = Positive Beliefs about Worry; NEG = Negative Beliefs about Uncontrollability and Danger; CC = Cognitive Confidence, indicating distrust in memory and attention; NC = Need to Control Thoughts; CSC = Cognitive Self-Consciousness. *p < .05. **p < .01. ***p < .001.*

The TEIP dimensions are strongly and positively correlated with each other. Compared to metacognitive beliefs, NEG shows negative associations with EMB, $r = -.172$, $p < .05$, and EII, $r = -.153$, $p < .05$. CC, on the other hand, is negatively associated with all dimensions of perceived self-efficacy: EMB, $r = -.152$, $p < .05$; EC, $r = -.198$, $p < .01$; EII, $r = -.182$, $p < .01$.

Since high scores on the CC subscale indicate greater distrust in memory and attention, the results suggest that lower confidence in memory, attention, and cognitive functioning is associated with lower perceived inclusive self-efficacy.

No significant associations emerged between the TEIP dimensions and POS, NC, and CSC. To verify the specific contribution of metacognitive beliefs, three multiple linear regression models were estimated, reported in Table 4.

Tab. 4

Multiple linear regressions of metacognitive beliefs on dimensions of perceived inclusive self-efficacy

Dependent variable	Predictor	B	SE	t	p
EMB	POS	0.175	0.127	1.377	.170
	NEG	-0.221	0.118	-1.867	.063
	CC	-0.098	0.115	-0.853	.395
	NC	-0.057	0.172	-0.331	.741
	CSC	0.110	0.166	0.661	.509
EC	POS	0.186	0.132	1.407	.161
	NEG	-0.104	0.123	-0.845	.399
	CC	-0.300	0.120	-2.505	.013
	NC	0.024	0.179	0.132	.895
	CSC	0.135	0.172	0.784	.434
EII	POS	0.041	0.121	0.339	.735
	NEG	-0.176	0.113	-1.559	.121
	CC	-0.210	0.110	-1.913	.057
	NC	0.054	0.164	0.330	.742
	CSC	0.205	0.158	1.299	.195

Note. For EMB: $R = .24$, $R^2 = .06$, $F (5, 194) = 2.29$, $p = .048$. For EC: $R = .27$, $R^2 = .07$, $F (5, 194) = 3.07$, $p = .011$. For EII: $R = .24$, $R^2 = .06$, $F (5, 194) = 2.39$, $p = .039$. B = unstandardized regression coefficient; SE = standard error.

The EMB model was significant, F (5, 194) = 2.29, p = .048, accounting for 6% of the variance. No single predictor reached statistical significance, although NEG showed a negative trend, B = -0.221, p = .063.

The EC model was significant, F (5, 194) = 3.07, p = .011, accounting for 7% of the variance. CC was the only significant predictor, B = -0.300, p = .013: greater distrust in memory and attention predicted lower perceived self-efficacy in collaboration.

The EII model was also significant, F (5, 194) = 2.39, p = .039, accounting for 6% of the variance. CC showed a negative trend approaching significance, B = -0.210, p = .057.

4. Discussion

The results appear to partially support the hypothesis that metacognitive beliefs are associated with perceived self-efficacy in inclusive practices. Specifically, negative beliefs about the uncontrollability and danger of thoughts and distrust in one's memory and attention are associated with lower levels of perceived self-efficacy. Although the relationships that emerged are limited, the finding may be consistent with the idea that metacognitive resources contribute, together with professional and contextual factors, to a teacher's perceived ability to tackle complex educational tasks (Kahn et al., 2025; Santoianni, 2025).

Among the most significant findings is that relating to Cognitive Confidence, understood here as distrust in memory and attention, which was negatively associated with all TEIP dimensions and was found to be the only significant predictor of perceived self-efficacy in collaboration. Since higher scores on this dimension express greater distrust in memory, attention, and cognitive abilities, the data may suggest that teachers who perceive their memory and

attention as less reliable also perceive themselves as less effective in interacting with colleagues, families, and professionals. This finding would appear to be consistent with the concept of teacher agency as the ability to define goals, select information, and make intentional decisions within complex situations (Alasgarova & Rzayev, 2025; Deshen et al., 2026).

The relationship distrust in memory and attention and perceived self-efficacy in collaboration may be particularly important in inclusive processes, where educational planning requires the integration of different perspectives and the sharing of responsibilities among multiple stakeholders. The data would therefore appear to support the idea that inclusion does not depend on the isolated action of teachers, but on the ability to coordinate diverse resources, information, and professional contributions (Mancini & Sebastiani, 2024; Romano et al., 2025).

The negative correlations between beliefs about the uncontrollability of thoughts and perceived self-efficacy in behavior management and inclusive instruction could be interpreted in the same direction. Managing unpredictable situations requires regulating one's reactions, maintaining attention on contextual elements, and rapidly reorganizing available information. The belief that one is unable to control one's thoughts could, albeit hypothetically, be accompanied by a reduced perception of control over educational action.

This finding could be reminiscent of the pedagogical reinterpretation of reverie proposed in the second section. In the model inspired by Bion (1962), the teacher transforms observations, needs, and barriers that are still fragmentary into elements endowed with pedagogical meaning. The results would seem to suggest that lower levels of distrust in memory and attention can support this process of selection and reorganization, but they do not allow for the establishment of a causal relationship between the variables.

The strong association between perceived self-efficacy in behavior management, collaboration, and inclusive instruction would also seem to indicate that the three dimensions of perceived self-efficacy are closely interconnected. This finding may be consistent with a systemic conception of inclusion, in which observation, planning, classroom management, and collaboration contribute to reducing barriers within the context (Dainese, 2025; Romano et al., 2025).

These data could be reinterpreted in light of the intentional prompting model. Formulating an effective prompt would require the teacher to define the purpose, select relevant information, clarify constraints, and critically evaluate the response produced by the system (Orofino, 2026; Peter & Zimuel, 2024). Distrust in one's memory and attention could complicate this process; however, it remains to be empirically verified whether this condition is also associated with greater acceptance of the generated outputs.

This hypothesis appears consistent with the risk of metacognitive laziness described by Fan et al. (2025), according to which delegating analysis and evaluation tasks to the machine can reduce the activation of control processes. Since LLM systems produce responses based on probabilistic associations and lack a semantic understanding of reality, their uncritical use could expose teachers to the use of formally plausible but pedagogically inadequate outputs (Bortolotti & Feresin, 2025; Nicolazzo et al., 2026; Peter & Zimuel, 2024).

The results, read in conjunction with the aforementioned literature, therefore seem compatible with the idea that GenAI can support inclusive processes only when its use remains subject to the teacher's professional evaluation. The output should not be taken as a definitive product, but modified and contextualized taking into account the student's wishes and the goals defined in the Life Project (Mancini & Sebastiani, 2024; Panciroli et al., 2020).

The lack of association between perceived inclusive self-efficacy, Positive Beliefs about Worry, Need to Control Thoughts, and Cognitive Self-Consciousness may indicate that the different metacognitive dimensions are not equally linked to teachers' perceived professional self-efficacy. Specifically, the tendency to monitor one's own mental processes was not found, in the selected sample, to be associated with the TEIP dimensions. Simple cognitive monitoring may therefore not necessarily coincide with action-oriented reflexivity.

Theoretically, developing an adaptive AI mindset may require not only attention to one's cognitive processes, but also flexibility, evaluative skills, and awareness of the limitations of technology (Chiu, 2025; Ranieri et al., 2024). This hypothesis, however, will need to be verified in subsequent phases of the research.

The small amount of variance explained by the models, however, cautions against overestimating the role of metacognitive beliefs. Perceived inclusive self-efficacy may also depend on experience, training, organizational support, the quality of professional relationships, and the availability of resources at one's institution. The data do not allow us to consider metacognitive beliefs as causes of perceived self-efficacy, but they appear to indicate that they are one of the possible components of the resources through which teachers address the complexity of inclusive action.

Overall, the results may support a conception of AI literacy that is not limited to technical expertise. The ability to formulate effective prompts should be accompanied by an awareness of the probabilistic functioning of systems, their errors, and their hallucinations, along with the ability to critically evaluate and restructure outputs (Chiu, 2025; Kahn et al., 2025; Orofino, 2026). Intentional

prompting could be configured as a process in which pedagogical competence, metacognitive resources and technological knowledge contribute to maintaining GenAI within a supportive rather than substitutive function.

5. Conclusion

The findings of this research, developed over the course of "algorithmic pulses," suggest that the issue surrounding the use of GenAI-based systems in educational and inclusive processes is not limited to the opposition between man and machine, but rather to the identification of certain cognitive variables that can preserve Teacher Agency during the interaction with LLM systems. Although, in summary, GenAI appears to be able to support the implementation phase of instructional design, it would seem appropriate to more precisely describe the parts of this process that must necessarily be manipulated without technological mediation, to avoid possible side effects on the personalization of teaching interventions and the quality of the educational relationship.

The data collected allow us to reflect on the role played by metacognitive resources in tasks requiring monitoring and evaluation, as well as the review phase of GenAI prompts. The relationships that emerged during the analysis phase suggest that the quality of interactions with LLM systems can be mediated by certain specific dimensions of metacognitive beliefs, especially distrust in memory and attention. In this regard, the results of this study suggest the need to reconsider intentional prompting as a process that is not yet definitive and needs to be tested. Its validity, while not directly proportional to the formal accuracy of the text, would depend on the teacher's

ability to translate observations and educational objectives into sufficiently precise prompts to guide the system without delegating any interpretative freedom.

The study has some limitations. The cross-sectional design does not allow for the establishment of causal relationships, while the exclusive use of self-report instruments exposes the results to potential biases related to social desirability and subjective perception. Furthermore, the sample size may limit the generalizability of the findings.

Subsequent research should involve larger and more heterogeneous samples, integrate questionnaires, observations, and experimental tasks, and consider variables such as GenAI training, organizational climate, management support, technological availability, and previous experience using generative systems.

Further study should analyze the structure of the prompts, the type of information selected, the modifications made to the outputs, and the criteria used to accept or reject them. Since perceived self-efficacy in collaboration appears to be associated with distrust in memory and attention, it may be appropriate to observe how GenAI output is discussed within working groups and in co-design processes.

The affective issue remains open, perhaps the most difficult to formalize. GenAI's ability to simulate attention, availability, and understanding is not a technical detail, but rather the point at which linguistic plausibility risks being mistaken for presence and care. We assume that this confusion cannot be resolved solely by promoting technological literacy efforts, but by enhancing the function of the reflective process regarding what the educational relationship requires. It will be the task of future research to clarify not only whether and how GenAI can support inclusive action, but also under what

conditions it does not imperceptibly replace its responsibility. Ultimately, what is at stake is the possibility that the educational encounter retains, even in the time of algorithmic beats, its essentially unpredictable nature.

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