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The Chatbot as Design Scaffolding: Universal Design for Learning and Teacher Agency in Primary Education

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Abstract: Instructional design grounded in Universal Design for Learning (UDL) requires anticipating learner variability and sharing pedagogical decisions among general education and special education teachers. This qualitative exploratory study examines teachers' usual instructional planning practices and their perspectives on a co-planning experience supported by the educational chatbot AskLea, across four fourth-grade primary school classes. Twelve teachers participated. Data were collected through a 19-item questionnaire containing closed- and open-ended questions and two semi-structured group interviews, and analysed using a hybrid deductive–inductive thematic approach. Questionnaire responses describe predominantly individual planning, subsequent adaptations undertaken by special education teachers, and limited familiarity with UDL principles among participants. In the interviews, teachers valued collaborative planning, described AskLea as a guide whose suggestions required critical appraisal, and reported opportunities for pupil engagement alongside persistent accessibility barriers. Findings suggest that the chatbot may provide a form of scaffolding for instructional design when embedded in dedicated collaborative planning time, shared criteria, and professional mediation. The evidence reflects participants' perspectives and does not establish an independent causal effect of the technology.

Keywords: Universal Design for Learning; teacher agency; educational chatbot; co-planning; inclusive education

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1. Introduction

In contemporary education, engagement has become a central concern of instructional design, which must consider student motivation, teacher agency, and the authenticity of learning tasks alongside learning outcomes. From this perspective, Universal Design for Learning (UDL) can be understood as a pedagogical framework for *engagement by design*: rather than treating engagement, self-regulation, and participation as spontaneous responses to appealing materials or technologies, UDL approaches them as outcomes of anticipatory design decisions that accommodate learner variability from the outset (CAST, 2024). Translating this principle into practice nevertheless remains challenging. UDL-informed design requires specific expertise, sufficient time, and structured opportunities for dialogue between general education and special education teachers, conditions not consistently available in everyday practice in Italian schools.

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At the same time, educational debate on generative artificial intelligence (GenAI) has focused largely on students' direct use of these technologies, while the potential role of chatbots and generative assistants in instructional planning has received comparatively less attention. International evidence indicates that AI is becoming increasingly common in teachers' professional practice, alongside substantial needs for professional learning to support pedagogically informed use. According to TALIS 2024, a survey focused primarily on lower secondary teachers, approximately one in three teachers reported using AI in their work; among these users, 64% used it to prepare lesson plans or learning activities. Among non-users, roughly three quarters identified inadequate knowledge and skills as a barrier to adoption (OECD, 2025). This picture resonates with Cukurova's (2025) critique of an instrumental view of AI centred on automation and the replacement of human tasks, and with the potential of hybrid intelligence, in which artificial systems extend rather than replace human cognitive processes. Generative tools may reduce preparation time and broaden available resources, yet neither benefit necessarily improves the pedagogical quality of planning. The central issue, therefore, concerns the professional reflection and mediation through which teachers evaluate the accuracy and relevance of generated outputs, revise them, and situate them in relation to learning objectives, learner variability, and the particular circumstances of a class.

This article draws on the doctoral research project "AskLea and Inclusive Teaching through UDL" and focuses specifically on instructional design. It addresses two research questions: (1) What characterises the usual instructional planning practices of a primary school teaching team in relation to collaboration between general education and support teachers, Universal Design for Learning (UDL), and the use of artificial intelligence (AI)? (2) How do teachers describe and interpret UDL-informed collaborative planning supported by an educational chatbot, and which conditions do they perceive as enabling or constraining their professional agency?

1.1. Teacher Agency as an Ecological Achievement

Instructional design is a key arena in which teachers exercise professional agency. In the ecological approach developed by Priestley et al. (2026), agency is not an attribute that teachers possess but an achievement arising in situated interactions between individual capacities and the cultural, structural, and material conditions of a context. Drawing on Emirbayer and Mische's (1998) temporal conception of agency, the model distinguishes three dimensions. The iterational dimension encompasses past personal and professional experiences that shape how situations are understood. The practical-evaluative dimension concerns judgements made in the present in light of available resources and constraints. The projective dimension concerns the short- and long-term aspirations and goals towards which action is directed.

Instructional design is therefore a situated process in which opportunities to formulate alternatives and make decisions depend partly on the professional environment, including time, opportunities for collegial dialogue, and available tools. From this perspective, AI should not displace teachers' decision-making authority; its introduction should be assessed in terms of the pedagogical quality of practice rather than efficiency alone (Cukurova, 2025).

From a related perspective, Eteläpelto et al. (2013) conceptualise professional agency through the mutually constitutive relationship between individuals and their social contexts, while Biesta et al. (2015) show that its development calls for collective work rather than changes in individual teachers' beliefs alone. In Italy, recent

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scholarship has emphasised the shared and epistemic dimensions of agency within teaching teams (Urbani, 2024) and its role in inclusive processes, in which teamwork emerges as an important lever for change (Andreoli et al., 2022).

1.2. Universal Design for Learning: engagement as a designed quality

Within this framework, UDL provides a particularly relevant theoretical and operational point of reference. The UDL Guidelines 3.0 identify learner agency—the capacity to be purposeful and reflective, resourceful and authentic, and strategic and action-oriented—as the overarching goal of universal design (CAST, 2024). This goal is pursued through multiple means of engagement, representation, and action and expression, corresponding respectively to the why, what, and how of learning (Meyer et al., 2014; Savia, 2016).

The principle of engagement is especially relevant to designing engaging learning experiences. It encompasses choice and autonomy, relevance and authenticity, belonging and collaboration, the regulation of effort and persistence, and the availability of supports and action-oriented feedback (CAST, 2024). Accordingly, engagement is not understood as a spontaneous response to the presence of technology or attractive materials, but as a deliberately designed quality of educational experience.

This approach aligns with the inclusive perspective outlined by Cottini (2017), according to which participation by students with special educational needs requires a shared curricular horizon supported by appropriate mediation, differentiated supports, and multiple ways of accessing tasks. In Italy, this has a specific organisational implication: universal design presupposes effective collaboration between general education and special education teachers, who share responsibility for the classes in which they work and participate in educational and instructional planning (Italian Law No. 104/1992, Art. 13(6)). It is precisely this shared responsibility for planning that can prove difficult to realise in routine practice.

1.3 The Chatbot as a scaffold for Instructional Design

The use of a chatbot for UDL-informed collaborative planning can be interpreted through the concept of *scaffolding* for instructional design. *Scaffolding*, empirically articulated by Wood et al. (1976), refers to contingent assistance that enables an individual to undertake tasks initially beyond their independent capabilities. Subsequent research has identified contingency, the gradual fading of support, and the transfer of responsibility to the learner as defining features (van de Pol et al., 2010). As Shvarts and Bakker (2019) recount, although the concept has earlier intellectual roots, it was subsequently associated with Vygotsky's zone of proximal development: the distance between actual developmental functioning and what can be achieved under adult guidance or in collaboration with more capable peers (Vygotsky, 1978).

When extended from student learning to teachers' instructional design, this perspective suggests that a chatbot may mediate teachers' reflection and decision-making, provisionally supporting their activity and expanding the alternatives they can consider. Its pedagogical value may therefore lie in supporting iterative processes of formulating, evaluating, and revising design decisions. On this account, any *scaffolding* function depends on the responsiveness of support to emerging planning needs and on its capacity to sustain, rather than displace, teachers' decision-making autonomy. Interaction with a chatbot may thus provide opportunities to exercise professional agency, although its pedagogical significance must be examined in actual contexts of use.

Recent research offers insights into this issue. Celik et al. (2026) associate the quality of GenAI-supported lesson planning with teachers' AI-specific technological and pedagogical knowledge - conceptualised as *Intelligent-TPACK* (Celik, 2023) - and the prompting strategies they use. In their study of preservice teachers, more adaptive lesson plans, characterised by greater attention to planned student agency, more differentiated strategies, and more flexible tool use, were associated with participants who did more than request a finished product: they questioned, negotiated, checked, and prompted revision of the chatbot's suggestions. From this perspective, a prompt can be regarded as both an instructional design act and an epistemic act, through which teachers articulate aims, constraints, learner characteristics, and pedagogical criteria while retaining control of decisions.

Interaction with a chatbot can therefore be conceptualised as an asymmetrical form of collaborative design. AI has neither pedagogical intentionality nor epistemic responsibility; nevertheless, its outputs may serve as dialogic prompts that encourage teachers to identify inconsistencies, compare alternatives, and refine their decisions. Cukurova (2026) distinguishes substitution, complementarity, and enhancement of teacher expertise, and describes five levels of teacher–AI teaming. These range from transactional exchanges based on simple prompts and responses, through operational teaming, in which teachers articulate intentions and aims that the system incorporates into its suggestions, to synergistic teaming, in which the teacher and the system develop their contributions through critical evaluation and mutual challenge. The inclusive potential of these technologies also depends on the integration of universal design, teacher competence, and adequate institutional and organisational support (Dhouib et al., 2025).

The distinction between general-purpose AI applications and systems designed specifically for education makes the preservation of teacher autonomy and pedagogical relevance particularly important (Topali et al., 2026). The present study addresses this intersection.

2. Materials and Methods

2.1. Context, research design, and participants

The study forms part of the project "AskLea and Inclusive Teaching through UDL", conducted during the 2025/2026 school year at a comprehensive school in Rome. It involved four fourth-grade classes at one primary school site (approximately 80 pupils) and their teaching team. In the wider project, the four classes were allocated by drawing lots to two conditions: two intervention classes, in which pupils were also expected to use the chatbot directly, and two comparison classes, in which the tool was used only for instructional planning. UDL-informed collaborative planning with AskLea was undertaken in all four classes.

The present article focuses on the professional and instructional design dimensions, adopting a qualitative exploratory single-case study design with clearly defined boundaries, in which the teaching team is the unit of analysis (Yin, 2018; Trinchero, 2002). The case was selected on grounds of accessibility and relevance to the research aims. The research comprised an assessment of usual practices (T0, March–April 2026), collaborative planning with AskLea (T1, April–May), classroom implementation (T2, May), and final data collection (T3, June).

All 12 teachers in the teaching team participated: eight general education and four special education teachers, evenly distributed between the conditions (four general

education and two special education teachers in each group). The general education teachers generally had extensive service experience and continuity with their respective classes, whereas all four special education teachers had fewer than five years of experience in that role. Two participants had previously attended training on AskLea's features, which did not specifically address universal design for learning.

The participant group comprised the entire teaching team involved in the case. Its adequacy was considered in relation to the specificity of the setting, participants' relevance to the research aims, and the *information power* of the data, rather than statistical representativeness (Malterud et al., 2016).

2.2. AskLea and the collaborative planning procedure

AskLea (https://asklea.ai) is a conversational platform based on generative AI, developed by Talent S.r.l. in collaboration with the International Research Center for Inclusion and Teacher Training (IRCIT) at the European University of Rome[1]. For teachers, it provides virtual classrooms and a guided instructional planning function based on successive questions; for pupils, it is designed to support reasoning rather than supply answers directly.

Following the project presentation (March 2026), preparatory activities began with a meeting involving designated teachers, special education teachers, and the platform's education team to configure the virtual classrooms (March 2026). In April, a further meeting focused on the entry by special education teachers of pseudonymised functioning profiles for pupils with special educational needs, including information based on the International Classification of Functioning, Disability and Health (ICF). A separate whole-team meeting was devoted to developing a shared UDL-oriented prompt, subsequently adapted to the characteristics of each class. Collaborative planning continued through weekly interclass team meetings devoted to designing and monitoring activities (April–May 2026). This process led to an interdisciplinary learning unit integrating history, Italian language, and art, focused on Mediterranean civilisations and, in particular, the Phoenicians. The unit was implemented during regular lessons in May. In the initial phase, the researcher, who is the first author, acted as a facilitator, explaining how to use the platform, the principles of UDL and universal design, and criteria for constructing an effective, structured prompt.

2.3. Data Collection and Analysis

Usual planning practices were investigated through a 19-item LimeSurvey questionnaire comprising eight closed-ended and 11 open-ended items across five areas: professional background, knowledge of the class, instructional planning, inclusion and UDL, and artificial intelligence. Questions asked participants to describe their customary teaching practices. At T3, two separate semi-structured group interviews were conducted, involving the six teachers in the intervention condition and the six in the comparison condition, respectively. Each interview lasted approximately 30 minutes. Both were audio-recorded and transcribed *verbatim*, and opened with a *grand tour* question (Cohen et al., 2018). The group format was intended to elicit shared interpretations and evaluations through participant interaction, while recognising the collective, interactional character of the resulting data (Corbetta, 2015). Questionnaire excerpts are identified using pseudonymous codes (D01–D12); interview quotations are

[1] The IRCIT, directed by the second author, collaborated with Talent S.r.l. in developing the AskLea platform. The authors declare no financial relationship with Talent S.r.l. and received no remuneration or funding for this study.

presented without individual identifiers. Participants' quotations were originally collected in Italian and are presented here in English translation.

Textual data were analysed using a hybrid deductive–inductive thematic approach (Braun & Clarke, 2006; Fereday & Muir-Cochrane, 2006), combining an initial codebook derived from the theoretical framework and research aims with codes developed inductively from the data. Deductive categories addressed instructional planning practices, collaboration between general education and special education teachers, inclusion and UDL, AI use, and dimensions of professional agency. For open-ended questionnaire responses only, a preliminary coding proposal was generated with the assistance of generative AI, then comprehensively checked and revised against the original responses by the first author[2]. The interviews, by contrast, were transcribed and categorised by the first author without AI assistance. The resulting categories and interpretations were subsequently discussed by both authors, with particular attention to coherence between textual evidence and identified themes and to the principles of credibility, confirmability, and traceability of interpretation (Nowell et al., 2017; Semeraro, 2011). Questionnaire frequencies are descriptive only: they indicate the number of teachers whose responses were assigned to each category, and the categories are not mutually exclusive.

The research was authorised by the school principal and governed by a research agreement and a joint data-controller agreement under Regulation (EU) 2016/679. Participating teachers provided informed consent. Pupils' functioning profiles were entered into the platform in pseudonymised form, with prior parental consent.

3 Results

3.1. Teachers' usual planning practices

Questionnaire responses portray instructional planning as predominantly individual. Eight of the 12 teachers reported planning alone; nine identified interclass team meetings as opportunities for discussion, generally confined to activities shared across classes. Two respondents explicitly reflected critically on their customary practice: "Unfortunately, we tend not to plan enough, or not in the most appropriate way" (D08); "Years of teaching experience tend to make us attach less importance to the planning stage, leaving more room for improvisation" (D10).

Collaboration between general education and special education teachers was described largely in sequential terms. Three of the four special education teachers and one general education teacher (D11) reported adapting activities after they had already been planned. As one special education teacher explained, they "are not consistently involved in the planning stages; rather, they are asked to adapt to what has already been decided" (D12). Six teachers described communication that did not become joint planning ("There is communication, but we do not plan together", D09). Collaborative planning was reported by three general education teachers, all in the comparison condition, and by one special education teacher (D01), who nevertheless also described having to adapt to plans previously devised by the class teacher. These accounts suggest

[2] Declaration on the use of generative AI: Claude (Anthropic) was used exclusively to generate a preliminary coding proposal for the questionnaire's open-ended responses using pseudonymised data. The proposal was thoroughly verified and revised by the first author. The authors are responsible for data interpretation and manuscript preparation.

that professional collaboration and subsequent adaptation may coexist without necessarily entailing fully shared instructional decisions (Figure 1).

Familiarity with UDL was not widespread among participants: nine teachers reported being unfamiliar with it, and the only participant who reported applying it described offering "different channels for learning" (D06). Conceptions of inclusion differed by professional role: all four special education teachers referred to planning for every pupil, whereas six of the eight general education teachers emphasised inclusion primarily as a general principle or a supportive relational climate ("Leaving no one behind", D09). Planning priorities were varied: pupils' needs and starting points, objectives and content, participation and accessibility, and teaching methods were each mentioned by five teachers, while motivation appeared in the responses of three general education teachers (Figure 1).

The most frequently reported barriers to universal design were the diversity of needs within the class and insufficient joint planning (six teachers in each category), followed by limited resources, space, and materials (five) and time constraints (four, including three special education teachers). Two general education teachers explicitly identified a need for further training, while two participants highlighted the gap between intended plans and what could realistically be implemented in the classroom (Figure 1).

AI was used primarily to produce materials, quizzes, and images (eight teachers), and in four cases to generate ideas for activities; three teachers reported using it rarely or not at all. No participant explicitly described using AI to determine instructional objectives and design strategies. Ten teachers expressed concern about the risk that pupils might become dependent on the tool. At the same time, two regarded AI as a professional resource: "AI does not replace the teacher; it enhances the teacher's work" (D04).

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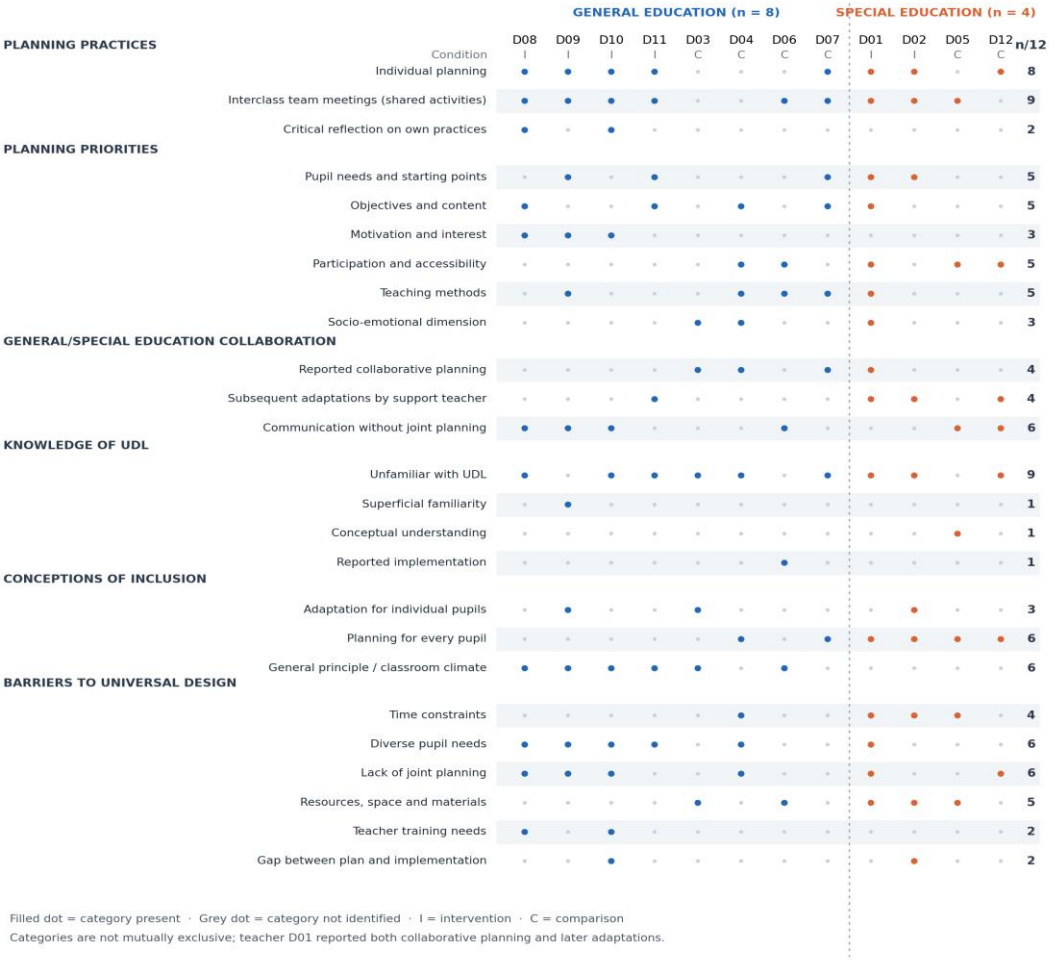


Figure 1. Teacher-by-category matrix derived from the questionnaire on usual instructional planning practices (T0; n = 12). Coloured circles indicate categories identified in each teacher's responses. Participants are grouped by professional role and condition (I = intervention; C = comparison). The n/12 column reports the number of teachers assigned to each category. Categories are not mutually exclusive.

3.2. Co-Planning with AskLea: teachers' perspectives

The joint analysis of the two semi-structured group interviews yielded three thematic strands: the value attached to collaborative planning, the role attributed to the chatbot, and perceptions of participation and accessibility. Themes are presented across both interviews, consistent with the teaching team as the unit of analysis and with the shared experience of planning with AskLea. Participants frequently evaluated this experience against their customary practices, a comparison explicitly invited by the interview guide.

3.2.1. Toward shared responsibility in Instructional planning

Collaborative planning was described as "quite new for us, because we usually plan individually and only work in groups on interclass activities". The initial phase was perceived as demanding and constrained by time, which did not always allow for "more carefully considered decisions". Participants also attributed their ability to address these

difficulties to the researcher's mediation: "We came to understand that we needed to streamline what had emerged from planning with the chatbot, also with the researcher's help".

The experience was valued particularly for restoring attention to the planning process. One contribution acknowledged a habitual preference for planning that was "individual and often, I admit, rather hurried or improvised", while observing that working with a tool specifically designed for education had helped "restore the appropriate pedagogical and educational value to the delicate planning phase". AskLea was also described as "a good starting point for building connections where it would otherwise be difficult to find common ground and achieve meaningful cooperation".

Collaboration between general education and special education teachers featured prominently. One participant described being able to "co-design genuinely universal activities with the class teacher without having to adapt them afterwards". Another extended this aspiration to everyday practice: "This is how we should plan every day and consistently: no adaptations afterwards, no exclusions, but universal design for everyone". These accounts foreground the value of making decisions together from the outset, rather than following a sequence in which special education teachers adapt activities after initial planning.

3.2.2. The Chatbot as a planning support tool

AskLea was characterised as "a guide" that structures planning around objectives and stages, including references to Bloom's taxonomy, and supports the development of ideas that might otherwise be less likely to be implemented. One participant credited the tool with the capacity to "broaden the sometimes one-track approaches we tend to follow", suggesting that it expanded the range of design alternatives considered.

Alongside these positive evaluations, teachers emphasised the need to retain professional control over generated suggestions. They noted that "putting them into practice is different from planning" and that "teachers always need to readjust the planning proposals generated by the tool". The chatbot was therefore viewed as a resource requiring critical appraisal, whose usefulness also depends on teachers' ability to contextualise its outputs in relation to class characteristics and practical implementation conditions.

A particularly significant evaluation concerned the tool's perceived tendency to agree with the user. One participant described the platform as "very accommodating of the changes suggested by the teacher" and wished for a system that would be "more critical when a suggestion may not be the best option". Recognition of the tool's supportive role was thus accompanied by a desire for interaction that more actively prompts reflection and reconsideration of instructional decisions.

3.2.3. Participation and Accessibility

Teachers' evaluations of classroom implementation suggested that they perceived pupil engagement to be substantial, particularly at a point in the school year marked by "a strong sense of demotivation and little interest". The activities were said to have "broken with the usual patterns of traditional teaching" and to have offered different opportunities for participation and expression, including creating a comic strip through which pupils "can describe emotions".

For pupils with special educational needs, teachers valued "personalisation that would not, however, exclude them from the work of the class and the group". A difficulty nevertheless emerged: for a non-speaking pupil, cooperative activities involving frequent verbal exchanges were perceived as less accessible. The interviews

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therefore conveyed positive appraisals of opportunities for engagement alongside recognition of participation barriers that had not been fully addressed.

At the professional level, one participant reported that the experience had allowed them to "challenge myself and improve my self-efficacy". The sustainability of AI-supported universal design was nevertheless linked to available time, the effort involved, and "both pedagogical competence and competence in AI". Participants also suggested that similar initiatives would be more appropriately scheduled at times of the school year less affected by fatigue and declining pupil motivation.

4. Discussion

The two data collections offer a coherent picture. Questionnaire responses describe predominantly individual planning and frequently sequential collaboration between general education and special education teachers. In the final interviews, these established practices served as a reference point against which participants valued their UDL-informed collaborative planning experience. Sharing instructional decisions was seen as an opportunity to account for learner variability from the outset, consistent with the shared responsibility established by Italian Law No. 104/1992 (Art. 13(6)). These findings concern teachers' accounts and cannot establish either a sustained transformation of practice or a change attributable to the chatbot.

From Priestley et al.'s (2026) ecological perspective, teacher agency may be understood as a situated achievement shaped by professional dispositions and contextual conditions. The iterational dimension is reflected in established patterns of individual planning; the projective dimension in participants' aspiration to make anticipatory, inclusive planning an everyday practice; and the practical-evaluative dimension in the reported need to select and revise suggestions. Dedicated meetings, a shared prompt, technological support, and the researcher's initial facilitation were concurrent conditions of the experience. Dialogue between general education and special education teachers thus points to the collective and epistemic dimensions of agency (Biesta et al., 2015; Urbani, 2024).

The testimony concerning self-efficacy reflects a participant's beliefs about their own capabilities and should be distinguished from agency as a situated capacity for action. TALIS 2024 also reports an association between professional collaboration and teacher self-efficacy (OECD, 2025).

The chatbot may be interpreted as a potential scaffold for instructional design, as teachers attributed to it a guiding role in formulating and revising decisions. However, the contingency of support and its gradual fading were not documented. Teachers' reported need to appraise and adapt outputs is consistent, at an interpretive level, with the operational teaming described by Cukurova (2026), whereas their wish for a less accommodating tool expresses a desire for more critical dialogue without demonstrating synergistic teaming. The value of such critical engagement is also discussed by Celik et al. (2026). Because actual conversations with AskLea were not analysed, perceived over-accommodation remains a participant evaluation rather than an empirically established property of the system; the tool's value also depends on professional judgement and mediation (Cukurova, 2025).

A distinctive feature of the interviews is the importance attached to the team. Making decisions collectively from the outset was described as an alternative to collaboration confined to subsequent adaptations. The chatbot formed only one component of the process, alongside collegial meetings, a shared prompt, and the

researcher's facilitation; its independent contribution to shared planning responsibility therefore cannot be isolated.

Regarding UDL, teachers reported greater attention to engagement and to shared tasks accessible through varied forms of participation, consistent with Cottini's (2017) notion of a shared task culture. Yet their account of the non-speaking pupil also shows that cooperative activities relying heavily on verbal exchange may preserve barriers within experiences designed to be inclusive. Reported engagement thus reflects teacher perceptions rather than an independent measure of pupil participation or learning outcomes.

The implications concern pedagogical, technological, and ethical professional learning about AI, consistent with *Intelligent-TPACK* (Celik, 2023); dedicated time for general education and special education teachers to negotiate design decisions; and conversational systems that encourage alternative perspectives and critical evaluation rather than simply affirming user requests.

The study is limited by its single-case design and small participant group (12 teachers). Because the questionnaire was completed after the project had been introduced and asked retrospectively about usual practices, it does not provide a rigorous baseline. The two group interviews, each lasting approximately 30 minutes, were conducted by the researcher involved in the intervention; their duration, group dynamics, and questions inviting comparisons with earlier practice may have encouraged social desirability and conformity.

Finally, the teaching team, rather than pupil learning outcomes, was the unit of analysis. Perceived effects on pupils were captured only through teachers' accounts as part of a broader study conducted towards the end of the school year. The implications of AI-supported UDL planning for learning, as well as the effects of pupils' direct chatbot use, require longitudinal investigation and sustained engagement with the tool by teachers and pupils. Such further inquiry is consistent with the need for critical evaluation of generative AI applications in education (OECD, 2026).

5. Conclusions

This study suggests that AI integration in schools should be understood within broader changes in professional practices and in the conditions that support teacher agency and inclusion. It points to implications for professional learning, school organisation, and technology design: developing pedagogical and critical AI competence; ensuring structured opportunities for collaborative planning; and designing tools that challenge professional judgement rather than merely accommodating users' requests.

From this perspective, a chatbot may serve as a scaffold for instructional design by supporting shared responsibility for decisions in which learner variability is considered from the outset and becomes integral to a common educational experience. The deeper meaning of universal design lies in this capacity to plan together, anticipating opportunities for all students to participate meaningfully.

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References

Andreoli, M., Zaniboni, L., Ghirotto, L., & Lascioli, A. (2022). A scoping review on teacher agency for inclusive education: Mapping existing evidence and conceptual frameworks. *Form@re – Open Journal per la formazione in rete, 22*(3), 9–29. https://doi.org/10.36253/form-13288

Biesta, G., Priestley, M., & Robinson, S. (2015). The role of beliefs in teacher agency. *Teachers and Teaching: Theory and Practice, 21*(6), 624–640. https://doi.org/10.1080/13540602.2015.1044325

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

CAST. (2024). *Universal Design for Learning Guidelines version 3.0*. https://udlguidelines.cast.org

Celik, I. (2023). Towards Intelligent-TPACK: An empirical study on teachers' professional knowledge to ethically integrate artificial intelligence (AI)-based tools into education. *Computers in Human Behavior, 138*, Article 107468. https://doi.org/10.1016/j.chb.2022.107468

Celik, I., Kontkanen, S., Laru, J., & Dalyanci, A. A. (2026). Co-constructing adaptive lesson plans with GenAI: Pre-service teachers' Intelligent-TPACK and prompt engineering strategies. *Computers & Education, 241*, Article 105485. https://doi.org/10.1016/j.compedu.2025.105485

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge. https://doi.org/10.4324/9781315456539

Corbetta, P. (2015). *La ricerca sociale: Metodologia e tecniche. III. Le tecniche qualitative* (2a ed.). il Mulino.

Cottini, L. (2017). *Didattica speciale e inclusione scolastica*. Carocci.

Cukurova, M. (2025). The interplay of learning, analytics and artificial intelligence in education: A vision for hybrid intelligence. *British Journal of Educational Technology, 56*(2), 469–488. https://doi.org/10.1111/bjet.13514

Cukurova, M. (2026). A conceptual framework for teacher-AI teaming in education: Harnessing generative AI to enhance teacher agency. In OECD (Ed.), *OECD Digital Education Outlook 2026: Exploring effective uses of generative AI in education* (pp. 130–146). OECD Publishing. https://doi.org/10.1787/062a7394-en

Dhouib, A., Hijab, M. H. F., Chemnad, K., Al-Thani, D., & Othman, A. (2025). Advancing inclusive smart learning environments: A systematic review of technologies, challenges, and best practices for students with disabilities. *Smart Learning Environments, 12*(1), Article 70. https://doi.org/10.1186/s40561-025-00416-y

Emirbayer, M., & Mische, A. (1998). What is agency? *American Journal of Sociology, 103*(4), 962–1023. https://doi.org/10.1086/231294

Eteläpelto, A., Vähäsantanen, K., Hökkä, P., & Paloniemi, S. (2013). What is agency? Conceptualizing professional agency at work. *Educational Research Review, 10*, 45–65. https://doi.org/10.1016/j.edurev.2013.05.001

Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods, 5*(1), 80–92. https://doi.org/10.1177/160940690600500107

Legge 5 febbraio 1992, n. 104. *Legge-quadro per l'assistenza, l'integrazione sociale e i diritti delle persone handicappate*. Gazzetta Ufficiale n. 39 del 17 febbraio 1992, Supplemento ordinario n. 30.

Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample size in qualitative interview studies: Guided by information power. *Qualitative Health Research, 26*(13), 1753–1760. https://doi.org/10.1177/1049732315617444

Meyer, A., Rose, D. H., & Gordon, D. (2014). *Universal design for learning: Theory and practice*. CAST Professional Publishing.

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods, 16*(1), 1–13. https://doi.org/10.1177/1609406917733847

OECD. (2025). *Results from TALIS 2024: The state of teaching*. OECD Publishing. https://doi.org/10.1787/90df6235-en

OECD. (2026). *OECD Digital Education Outlook 2026: Exploring effective uses of generative AI in education*. OECD Publishing. https://doi.org/10.1787/062a7394-en

Priestley, M., Biesta, G., & Robinson, S. (2026). *Teacher agency: An ecological approach* (2nd ed.). Bloomsbury Academic.

Savia, G. (Ed.). (2016). *Universal Design for Learning: Progettazione universale per l'apprendimento e didattica inclusiva*. Erickson.

Semeraro, R. (2011). L'analisi qualitativa dei dati di ricerca in educazione. *Giornale Italiano della Ricerca Educativa, 4*(7), 97–106.

Shvarts, A., & Bakker, A. (2019). The early history of the scaffolding metaphor: Bernstein, Luria, Vygotsky, and before. *Mind, Culture, and Activity, 26*(1), 4–23. https://doi.org/10.1080/10749039.2019.1574306

Topali, P., Ortega-Arranz, A., & Molenaar, I. (2026). Transitioning from general-purpose to educational-oriented generative AI: Maintaining teacher autonomy. In OECD (Ed.), *OECD Digital Education Outlook 2026: Exploring effective uses of generative AI in education* (pp. 147–166). OECD Publishing. https://doi.org/10.1787/062a7394-en

Trinchero, R. (2002). *Manuale di ricerca educativa*. FrancoAngeli.

Urbani, C. (2024). Teacher agency e approcci epistemici: Prospettive di indagine sulla formazione docente. *Giornale Italiano della Ricerca Educativa, 17*(32), 91–99. https://doi.org/10.7346/sird-012024-p91

van de Pol, J., Volman, M., & Beishuizen, J. (2010). Scaffolding in teacher–student interaction: A decade of research. *Educational Psychology Review, 22*(3), 271–296. https://doi.org/10.1007/s10648-010-9127-6

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.). Harvard University Press.

Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry, 17*(2), 89–100. https://doi.org/10.1111/j.1469-7610.1976.tb00381.x

Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). SAGE.