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*CORRESPONDENCE

Laura Daniusevičiūtė-Brazaitė
✉ laura.daniuseviciute@ktu.lt

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AI in inclusive education: teachers' visions of future- oriented practices

Laura Daniusevičiūtė-Brazaitė*, Lina Gaižiūnienė and
Raminta Pučėtaite

Kaunas University of Technology, Kaunas, Lithuania

This research explores teachers' visions of inclusive and future-oriented education in 2040, focusing on the role of artificial intelligence (AI) in the delivery of inclusive education. Drawing on the narrative analysis of fifty essays written by Lithuanian high school teachers, the study defines the dimensions of teachers' agency, reflects on their capabilities to reinterpret the inclusiveness of education in the future and strengthen long-term and holistic thinking. The teachers assessed AI not only in terms of personal efficiency and meeting individual student needs, but also in relation to broader social responsibilities, and its potential to contribute to societal progress. Their visions of AI for inclusive education emphasized personalized learning while also raising questions about shared responsibility, care, and justice, amid technological change. The study extends existing research by showing that teachers' orientation toward AI goes beyond acceptance of the technology and readiness to apply it and reflects on how they might envision and negotiate changes in inclusion, participation, and professional identity. By integrating futures studies with inclusive education, it conceptualizes futures thinking as an element of teacher agency and professional competence to shape inclusive AI-driven educational change.

KEYWORDS

agency, artificial intelligence, future-oriented education, inclusive education, teachers

Introduction

As digitalization advances, the education sector is being urged to develop systems that promote inclusivity, sustainability, and the acquisition of future skills (van der Vlies, 2020). Historically, traditional teacher-centered learning focused on delivering structured content, restricted student independence, and positioned the teacher as the main source of knowledge instead of encouraging active, student-led learning. In the digital age of education, the teacher's role is evolving - now they are expected to be creators, moderators, and facilitators of student-centered learning and inclusive learning pathways (Luckin, 2018). This evolution embraces inclusive education, understood as a comprehensive approach, that guarantees that all learners - regardless of background, ability, or circumstances - have the opportunity to participate in meaningful learning without discrimination and develop social, emotional, ethical, and technological skills (Holmes and Tuomi, 2022; UNESCO, 2025). Integrating artificial intelligence (AI) into inclusive education can provide individualization, accessibility, and tailored instruction that addresses students' cognitive, emotional, and psychomotor needs. As this trend evolves, examining teachers' perceptions of these social and technological developments in the classroom is crucial for recognizing how AI can

promote equity, accessibility, and participation, but also, the obstacles educators face when integrating AI-supported inclusive practices (Young, 2023).

In today's accelerated, unpredictable society (Rosa, 2013), teachers find themselves in a setting where traditional experience offers little guidance for progress. As expectations evolve and new technologies (AI learning tools) appear, teachers often remain in constant motion without a clear sense of direction. This "frantic standstill" (Levrini et al., 2015) leads to fragmented AI adoption without sustained coherence. Without a clear vision of how AI can be integrated into inclusive education, teachers often feel uncertain and lose their sense of purpose because their daily tasks appear disconnected from broader institutional and societal aims (Day et al., 2006).

This situation implies that teachers need extra skills other than those traditionally taught, such as transmitting knowledge. For example, futures thinking has been recently argued as a skill needed for scaffolding with the present challenges, with an eye on the future (Levrini et al., 2021). These skills entail an individual ability to imagine and generate alternative scenarios for problem solving, and to make responsible decisions (Gardiner and Rieckmann, 2015).

While extensive literature discusses teachers' technological readiness (Domínguez-González et al., 2025; Nurhidayat et al., 2024; Pozas et al., 2022), technology acceptance (Sánchez-Prieto et al., 2019; Venkatesh and Davis, 2000), and attitudes toward inclusion (Florian and Camedda, 2020; Forlin, 2010), little research examines how teachers envision the future of inclusive and technology-driven education. Giving teachers a voice can provide insight into the opportunities and challenges they anticipate and, importantly, help identify the conditions they perceive necessary for more inclusive technology-supported education to become possible. Most existing research concentrates on present issues like competence gaps, adoption obstacles, and policy pressures to apply inclusive education pedagogies (Ansari et al., 2024; Florian and Camedda, 2020; Ghavifekr and Rosdy, 2015). Research on technology-supported teaching often examines current uses of AI, VR, and digital tools in classrooms (Holmes et al., 2022; Yu, 2021). In contrast, studies on inclusion usually focus on classroom challenges and teacher preparedness (Florian and Camedda, 2020; Forlin, 2010). Only a few studies explore educators' future perspectives, such as attitudes toward inclusive schooling (Nikula et al., 2021) or anticipatory competence (Levrini et al., 2015). A significant gap remains in understanding teachers' future visions in relation to the current teaching practices for inclusive education. Currently, teaching practices are undergoing dynamic changes due to the arrival of AI in the classroom and the expectations for schools to produce positive effects of inclusive education, may have important practical implications. Therefore, with this paper we aim to shed some empirical light on these visions and gaps between the future envisioning and teachers' current reality in Lithuanian schools.

Our findings extend existing research in three important ways. First, they demonstrate that teachers' future orientations cannot be fully explained by established technology acceptance or readiness models, because educators frame AI not only as a technological innovation but also as a means of reshaping inclusion, participation, and professional

identity. Second, the study shows that teachers' visions emerge from the interaction between present classroom realities and anticipated future developments, highlighting that futures thinking functions as a bridge between current practice and educational transformation rather than as a purely aspirational exercise. Third, by integrating futures studies with research on inclusive education, the paper advances a conceptual perspective that positions futures thinking as an essential dimension of agency and a constituent of teachers' professional competence for navigating AI-driven educational change. In doing so, the study shifts the focus from explaining whether teachers are ready to adopt AI toward understanding how they envision, negotiate, and shape inclusive educational futures.

Related work

Understanding how teachers envision AI in inclusive education involves examining not just the futures they perceive, but also how their ability to imagine and influence those futures is shaped by their work environments. Essentially, this is influenced by their interactions with institutional frameworks, daily routines, technological advances, and overarching educational discourses (Varpanen et al., 2022), highlighting the importance of teachers' agency.

The concept of teachers' agency is rooted in sociology, particularly in the structure–agency debate. This provides a valuable lens through which to examine how teachers act within the specific structural and cultural conditions of their work. Rather than treating individuals as passive participants whose actions are determined by their environments, Biesta and Tedder (2007) conceptualize agency as the capacity to actively engage with and shape those environments. From this perspective, teachers' agency is neither entirely constrained by contextual conditions nor reducible to individual choice; instead, it emerges through the interaction between individuals and the opportunities, resources, and constraints of their environments. This relational understanding is particularly relevant to technological change in education, where teachers must navigate existing institutional arrangements while simultaneously responding to and potentially shaping emerging practices.

Emirbayer and Mische (1998) further conceptualize agency as comprising three interrelated temporal dimensions. The iterative dimension is primarily oriented toward the past and concerns the selective reactivation of established patterns of thought and action, including routines, habits, and prior experiences. The practical-evaluative dimension is oriented toward the present and involves making judgments about alternative courses of action in response to the contingencies and demands of an evolving situation. Finally, the projective dimension is primarily future-oriented and involves imagining possible trajectories of action that may depart from established routines and existing structures. Importantly, these dimensions operate together: teachers interpret emerging developments through prior experiences, evaluate what is feasible and appropriate under present conditions, and imagine alternative courses of future action. Agency can therefore be understood as inherently temporal, connecting interpretations of the past and judgments in the present with orientation toward the future.

This temporal understanding of agency provides a conceptual basis for incorporating futures thinking into the analysis of teachers' visions of digitalization and AI in inclusive education. The concept of future-scaffolding skills provides a particularly useful bridge between agency and futures thinking. [Levrini et al. \(2021\)](#) use this concept to describe capacities that enable individuals to structure and navigate their thinking about the future by recognizing temporal, causal, and systemic relationships and by moving between different future scenarios while connecting them to possibilities for individual and collective action. Future scaffolding not only involves imagining a future but also helps individuals connect past experiences and current situations to possible new paths. It encourages them to consider their role and potential actions within these alternative futures. In this sense, future-scaffolding skills complement the projective dimension of agency by providing conceptual resources through which imagined futures can be connected to present possibilities for action.

Scenario-based futures-thinking approaches help build future scenarios by prompting individuals to view the future from various angles instead of following a single expected path ([Bishop et al., 2007](#)). One angle involves probable futures—what might happen if current trends and developments persist. Thinking about probable futures largely depends on the iterative nature of agency, as people draw on previous experiences, familiar schemas, habits, and observed trends to forecast future events ([Emirbayer and Mische, 1998](#)). Simultaneously, understanding the significance of these predicted developments requires practical judgments about their relevance within current contexts.

Futures thinking also distinguishes between possible futures, concerning what *might* happen, and preferable futures, concerning what *ought* to happen ([Börjeson et al., 2006](#)). These orientations have a particularly strong affinity with the projective dimension of agency because they require actors to envision trajectories that may differ from established patterns. [Emirbayer and Mische \(1998\)](#) describe projectivity as involving the imaginative generation of possible future trajectories and the capacity to distance oneself from taken-for-granted assumptions, habitual schemas, and established traditions. Envisioning preferable futures adds a normative dimension to this process, as actors draw on their values, hopes, and aspirations to consider not only what is possible but also what is desirable. In the context of inclusive education, teachers may therefore envision not only how AI *could* transform educational practices but also how it *should* be used to support inclusion, participation, and other educational values.

Therefore, bringing together agency, future-scaffolding skills, and futures thinking, provides a framework for examining more than teachers' expectations about technological development. It allows us to explore how teachers draw on past experiences and present classroom realities to construct probable futures, how they distance themselves from existing assumptions to imagine possible alternatives, and how their professional values inform preferable futures. Future-scaffolding skills are particularly important within this framework, as they refer to the capacity to deliberately develop present-day strategies, structures, and practices that support future adaptability and resilience ([Levrini et al., 2021](#)). Future scaffolding is particularly important in this process because it helps connect

these imagined trajectories to teachers' perceived possibilities for action.

This perspective of the futures thinking skills aligns with the concept of futures literacy ([UNESCO, 2018](#)), highlighting that the goal is not to predict the future but to enhance the ability to perceive, generate, and interpret various potential futures to guide current decisions. It aligns with Rosen's anticipatory systems theory ([Rosen, 2012](#)), which describes systems as anticipatory if they have internal models that shape their current behaviour in response to anticipated future events. In education, futures literacy underscores the vital role of teachers as agents who can envision alternative pathways, evaluate their impacts, and act with foresight amid complex socio-technical environments ([Ahvenharju et al., 2018](#)). Rapid technological progress has heightened global competition, driving the need for advanced skills, including knowledge, attitudes, values, skills, and competencies. Therefore, future skills broadly encompass the competencies needed to help teachers navigate an unpredictable future. The goal of integrating future skills is to increase awareness about what the future holds and to improve the capacity to adapt, recover, and reinvent oneself amid change ([Miller, 2018](#)). Teachers play a key role in developing forward-looking learning environments and enhancing the adaptive and innovative skills necessary during times of educational change.

The discourse on inclusive education highlights the importance of developing pedagogical structures, tools, and practices that adapt to diverse and changing learning environments, especially with the integration of new technologies like AI ([Kohout-Diaz, 2023](#)). When combined with future-oriented approaches, it urges educators to consider how AI can support diverse learners and how future educational systems can be designed to reduce exclusion and algorithmic bias. In this context, AI should be seen as part of the broader aims of ensuring access, encouraging participation, and promoting educational equity ([Booth and Ainscow, 2016](#)).

Taken together, these perspectives suggest that understanding teachers' visions of AI in inclusive education requires an analytical framework that links future visions with real-world professional practice. By integrating agency with futures thinking, we can explore how teachers leverage past experiences, respond to current educational challenges, and envision desirable futures for AI-supported inclusive education. This approach highlights teachers not just as technology users but as active agents influencing how AI is interpreted, adapted, and utilized to create more equitable and inclusive schools.

Research methodology

Research setting

Lithuania was selected for its educational context where policy-set imperatives of inclusive education intersect with the global trends of AI entering the teaching and learning environments. Since September 2024, amendments to the Law on Education have strengthened the implementation of inclusive education by requiring all general education schools and kindergartens to admit children with special educational needs ([Ministry of Education, Science and Sports of the Republic of](#)

Lithuania, 2025). However, the transition from formal inclusion to effective participation and individualized support remains challenging. The Lithuanian National Audit Office (2026) <https://www.valstybeskontrole.lt/EN/Product/24413/educational-support-in-schools> reported that, although 94% of pupils with special educational needs attended general schools in the school year 2024–2025, 56% did not receive all the educational support that was required. A shortage of educational support specialists and assistants was identified as an important systemic constraint. Therefore, the Lithuanian context reflects a broader challenge for inclusive education, whereby increasing access to mainstream schooling does not necessarily ensure that diverse learners receive sufficiently individualized educational support.

Against this backdrop, AI is emerging as both an opportunity and a new challenge for inclusive education. AI-based tools potentially enable teachers to differentiate learning materials, adapt tasks to learners' abilities, provide alternative explanations and forms of representation, and support more individualized learning (Evmenova et al., 2024; Melo-López et al., 2025). These possibilities are particularly relevant in a system seeking to accommodate greater learner diversity within mainstream classrooms. However, AI may also reproduce or amplify inequalities if access, digital competence, accessibility, data protection, algorithmic bias, and the specific needs of learners with disabilities are insufficiently considered (Baker and Hawn, 2022; Linsenmayer, 2025).

The Lithuanian case represents a setting in which two educational developments converge: the implementation of system-wide inclusive education and the increasing integration of AI into teaching and learning as a global trend. This convergence raises a question as to whether AI is perceived and envisioned as empowering teachers to respond to learner diversity and strengthen inclusive education, or whether existing inequalities in access, competence, resources, and educational support will also be reproduced in AI-mediated education in the future.

Sample

A combination of purposive and convenience sampling strategies was employed. Purposive sampling was used to identify teachers as participants because of their central role in implementing AI-supported educational practices and because their perspectives remain comparatively underrepresented in the empirical literature on AI in education. Despite teachers' central role in translating technological innovations into classroom practice, research has often focused on other stakeholder groups or considered teachers alongside other participants, thereby providing only limited insight into teachers' actual experiences, practices, and concerns regarding AI integration (Baggia et al., 2026).

A convenience sampling strategy was employed to recruit participants who met the criteria of having experience of teaching in schools, and their accessibility and willingness to participate in the study. This approach was considered appropriate given the practical challenges associated with recruiting practicing teachers and the exploratory, qualitative nature of the research. As the study aimed to develop an in-depth understanding of teachers' experiences and future visions rather than to achieve statistical representativeness or population-level generalization, priority was

given to participants who had relevant professional experience and could provide information-rich accounts of the phenomenon under investigation (Creswell and Poth, 2018; Gabriel and Griffiths, 2004).

Several methods were used to recruit participants. Emails asking to circulate the invitation to teachers were sent to the publicly available email addresses of Lithuanian high school administration departments. In addition, the database of collaborating schools maintained by the University with which the authors are affiliated was used to disseminate the invitation. Finally, private contacts were used to invite practicing teachers to participate in the study. Of the 125 participants who agreed to participate and fill in the questionnaire, 50 completed it. As the study did not aim for statistical representativeness, the data that was generated was then processed. Responses coded as "not sure/difficult to answer" were treated as missing values and excluded from the calculation of descriptive statistics, leaving smaller valid numbers in some cases ($N = 43\text{--}47$).

Instrument

The data was gathered through an online questionnaire that consisted of two thematic blocks.

First, teachers were asked to write an essay designed to engage participants' imaginations regarding future educational scenarios. Teachers were asked to envision themselves in 2040 within a learning environment where AI tools are widely used. The task prompted them to reflect on and articulate their vision of the teaching and learning process in that setting. They were asked to consider which AI tools might support or hinder inclusion, identify a specific subject, topic, or issue where the teaching could be enhanced by using these tools, and contrast their envisioned future with current educational practices and environments. The prompts for the essay encouraged participants to express their hopes, concerns, and expectations about the adoption of AI for inclusive education.

Second, the participants reflected on the plausibility of the envisioned educational environment, the effort needed to implement it, and their perceived personal agency to be able to influence or execute these futures. The questionnaire also collected participants' opinions on how plausible they find the proposed educational environment, the effort needed to implement it, and their own sense of personal agency in influencing these futures. Questions focused on assessing the possibilities, characteristics, and factors driving the envisioned future, as well as respondents' personal engagement and views of AI's role in shaping that future. Each question used a semantic differential scale, with ratings from 1 to 7 on a Likert scale, plus a "not sure/difficult to answer" option, allowing participants to express their views along a range (see Table 1). The seven items were analyzed as separate indicators of different aspects of participants' envisioned educational futures and were not combined into a single scale. No reverse-coding was used to standardize the positive or negative direction across all items. Instead, scores were understood based on the specific verbally anchored endpoints of each item. Consequently, higher scores indicated: a greater likelihood (Item 1), a higher perceived need for effort (Item 2), a greater sense of personal agency (Item 3), a stronger focus on worldviews or perspectives (Item 4), increased

TABLE 1 Items (1–7) measuring perceptions of the future (Levrini et al., 2021).

Item	Question	Response option (7-point Likert scale)
1	How likely is the vision described of the learning environment?	1 = Not very likely, 7 = Very likely, Not sure/difficult to answer
2	The change described in my vision of the future...	1 = Will happen spontaneously, 7 = Will require effort from participants in the learning process, Not sure/difficult to answer
3	When assessing my described vision of the future...	1 = There is nothing I can do to make it happen, 7 = I can do a lot to make this vision a reality, Not sure/difficult to answer
4	The changes I described in my vision of the future were influenced by...	1 = Concrete actions of other people, 7 = Different worldviews/perspectives of others, Not sure/difficult to answer
5	Overall, I am...	1 = Not at all concerned about the future of education, 7 = Very concerned about the future of education, Not sure/difficult to answer
6	In the future vision I have described, AI tools are needed to:	1 = Facilitate everyday work, 7 = Improve the quality of life in society, Not sure/difficult to answer
7	In the future vision I described, artificial intelligence leads to:	1 = The regression of humanity, 7 = The progress of humanity, Not sure/difficult to answer

concern (Item 5), a stronger emphasis on societal quality of life (Item 6), and a greater orientation toward human progress (Item 7).

Finally, the participants were asked to express their evaluations for the following three fields using semantic differential scales: (i) the importance of using AI for personal efficiency in their envisioned learning environments (e.g., automating routine tasks), addressing student needs (e.g., adaptive learning, personalized feedback), and being able to contribute to a progressive, creative society (e.g., fostering innovation and problem-solving); (ii) the degree of influence their personal experience, the organizational culture, and societal factors would have on the future of AI in education; (iii) the perceived AI impact on students and parents, entrepreneurs and experts, and educational policymakers as change agents. The answers were rated using semantic differential scales (1–10), with an option “not sure/difficult to answer” which was coded as value 0.

Data

The empirical data comprised 50 written narratives in the form of essays produced by teachers. The essays constituted the primary unit of textual data and captured teachers’ accounts, reflections, and perspectives on AI in the context of inclusive

education. The narratives were treated as written qualitative data rather than as material for narrative analysis; accordingly, the analytical focus was placed on their content and its correspondence with the theoretically defined categories of the study. The complete set of 50 essays constituted the corpus for analysis.

Data analysis

The study employed deductive qualitative content analysis of the written essays, complemented by quantitative content analysis. The essays were treated as narrative textual data through which teachers articulated their perspectives and experiences concerning AI in inclusive education. The analysis was guided by the Future Scaffolding Skills Framework of Barelli et al. (2022), which provided *a priori* analytical categories for coding and interpreting the narrative content. The qualitative analysis examined how the predefined dimensions and subcategories of the framework were represented in teachers’ narratives, while quantitative content analysis was used to assess the frequency and distribution of the coded categories across the dataset.

The Future Scaffolding Skills Framework by Barelli et al. (2022) provided a structure to categorize the themes into the dimensions of Broadening, Approaching, and Future-scaffolding skills, each with its subcodes, to structurally understand the Future-oriented Scenarios (FoS):

- Broadening (widening markers): disciplinary knowledge (Broad0), futures thinking (Broad1), methodological innovation (Broad2), stakeholder inclusion (Broad3), expert roles (Broad4), and actionable strategies (Broad5).
- Approaching (future proximity markers): the increasing ability to think about the future (Ap1), the growing accessibility of the future through current actions (Ap2), and the improved accessibility of the future as it linked to teachers’ personal, social, and professional growth (Ap3).
- Future-scaffolding skills:
 - Structural skills (the ability to differentiate between disciplinary specifics and the broader FoS perspective (St1), the capacity to break down complex concepts into smaller, manageable components (St2), the recognition of causal relationships within and across FoS elements (St3), and the skill to distinguish and relate problems, objectives, and solutions to develop coherent strategies for resolution (St4), and
 - Dynamic skills (shifting between local and global perspectives (Dyn1), alternating between present-focused thinking and future-oriented possibilities (Dyn2), moving from individual viewpoints to broader societal and stakeholder perspectives (Dyn3), engaging in creative exploration of new possibilities and practical steps (Dyn4), balancing aspirational thinking with grounded realism (Dyn5), adopting multidisciplinary approaches that bridge disciplinary boundaries

(Dyn6), and expanding from necessity-driven reasoning to consideration of multiple options (Dyn7).

The coding process proceeded in several stages. Initially, all essays were read multiple times by two researchers to become familiar with the data. Then, preliminary codes were assigned based on the Future Scaffolding Skills Framework. These coded segments were compared across participants, refined through comparison and discussions between the researchers. Differences in coding were resolved through consensus. Throughout the process, coding choices were regularly reviewed referring to the original texts to maintain consistency and ensure clear conceptual understanding. The coding decisions and category refinements were kept throughout the analysis to ensure transparency and consistency.

Descriptive statistics were used to complement the qualitative analysis by reporting the medians of the thematic codes identified in the data collected using semantic differential scales. The purpose of calculating statistical indicators was not to quantify participants' experiences or to make statistical generalizations, but rather to provide a transparent indication of the relative prominence and distribution of particular themes within the analyzed material. Such use of numerical information is compatible with qualitative inquiry when numbers support rather than replace interpretation (Maxwell, 2010). Accordingly, statistics were treated as supplementary descriptive information rather than as indicators of statistical significance or, by themselves, of the substantive importance of a theme.

The software *IBM SPSS Statistics 27.0*, was used for statistical analyses. The seven items assessing participants' perceptions of their envisioned educational futures were measured using seven-point rating scales (1–7), with verbally anchored endpoints corresponding to the constructs represented by each item. The direction and substantive meaning of the endpoints differed across items; scores were interpreted in relation to the specific anchors of each item rather than assuming that higher scores consistently represented more positive evaluations. Means and standard deviations were additionally calculated to facilitate interpretation of overall response patterns and comparisons across items. Consequently, the mean or median scores across different items should not be interpreted as representing a common continuum from negative to positive. In addition, participants evaluated three sets of dimensions related to the role of AI in their envisioned educational futures using 10-point rating scales (1–10). Responses coded as “not sure/difficult to answer” were treated as missing values and excluded from the analyses. This applied to both the 7-point and 10-point scales. Where “not sure/difficult to answer” responses were coded as 0 in the dataset, the value 0 was only used for data management purposes and was not treated as part of the substantive rating scale.

As the analyzed variables were ordinal and consisted of related observations from the same participants, medians and interquartile ranges (IQRs) were used to describe central tendency and dispersion. Descriptive statistics were calculated using all available valid responses for each item, whereas Friedman tests were performed using complete cases only. The Friedman test, a non-parametric alternative to ANOVA, was used to assess differences across three related measures because it is appropriate for ordinal data and does not require the assumption of normally distributed observations. Test results

were reported using the chi-square approximation, $\chi^2(2)$, with two degrees of freedom corresponding to the three compared measures (Conover, 1999). Where the Friedman test indicated a statistically significant overall difference, *post-hoc* pairwise comparisons were conducted using Wilcoxon signed-rank tests to identify which pairs of related measures differed. The Wilcoxon signed-rank test was selected because it is appropriate for paired ordinal or non-normally distributed observations. To control the family-wise Type I error rate arising from multiple pairwise comparisons, *p*-values were adjusted using the Holm correction, which is generally less conservative than the standard Bonferroni correction while maintaining control of the family-wise error rate (Field, 2018; Holm, 1979). Statistical significance was set at $p < .05$. All procedures in this study adhered to research ethics standards. The study was approved by the Research Ethics Committee of Kaunas University of Technology on June 28, 2024 (Protocol No. M6-2024-12).

Results

Most participants were 41–65 years old (70%, $N = 35$). The sample showed a gender imbalance, with 75% female ($N = 38$) and 25% male ($N = 12$), limiting generalizability across genders. However, female teachers are statistically dominating the educational setting not only in Lithuania. The length of teaching experience among the participants ranged from 1 to 40 years (mean 25); about 60% ($N = 30$) had over 20 years of experience, indicating a predominance of seasoned educators with significant experience.

The section presents empirical findings that were derived by analyzing how AI in inclusive education is distributed and understood in teachers' narratives. The results demonstrate how skills related to broadening, approaching, and future scaffolding, are evident in their responses. Additionally, it encompasses perceptions of their visions of their future learning environments, the factors influencing their views on AI's role in education, how realistic they find the proposed scenarios, the effort required for implementation, and their sense of personal impact on these futures.

Analysis of a broadening marker for visions of the future

Each theme in the essays was analyzed in terms of its implications for FoS. The findings under the broadening markers showed an increased variety of strategies for addressing FoS, enhanced knowledge of futures thinking, and broader perspectives on conceptualizing FoS (Broad5: 24%, Broad1: 20%, Broad2: 18%; see Table 2). The narratives included both probable and more speculative futures, recognizing that some desirable outcomes rely on knowledge and skills not yet available (Voros, 2003). This suggests that participants were not only learning new information about AI but also improving their ability to envision, organize, and act within complex future scenarios involving AI. They indicated that inclusive education could be strengthened by AI-driven personalized learning

TABLE 2 The broadening markers for changes in future perception.

Broadening		
Description of marker	Examples of teachers' responses	Fraction of respondents
(Broad0) Expanded disciplinary knowledge of FoS	In the future, by 2040, the education process could be highly interactive and personalized, utilizing advanced artificial intelligence (AI) tools. I envision an educational environment where each student has a personalized, AI-based learning assistant that adapts to the student's learning style, abilities, and potential.	7/50 (14%)
(Broad1) Enhanced understanding of futures thinking in FoS	The integration of simulation and virtual reality. These AI tools continuously monitor student progress and adaptively select tasks and challenges to suit their needs.	10/50 (20%)
(Broad2) Broader range of approaches to addressing FoS	Digital tools help, and I think ChatGPT has a downside: pupils do not think for themselves; they look for answers, do the work for themselves, or find the answers.	9/50 (18%)
(Broad3) Greater involvement of non-expert stakeholders (e.g., citizens, policymakers) in FoS	It would be beneficial for the AI teacher to be able to assess not only multiple-choice or short-answer questions but also open-ended questions, to systematize the information about the student's progress, analyze it, and present it to the teacher in a summarized form with insights.	3/50 (6%)
(Broad4) Expanded roles for expert stakeholders in FoS	AI tools should prepare teachers to organize the educational process, but not interfere directly with it.	4/50 (8%)
(Broad5) Wider range of actions, strategies, and solutions for FoS	There are many problems to generate, so students cannot solve them by asking for an answer.	12/50 (24%)

assistants and immersive simulation tools that adapt to each student's abilities, pace, and learning style.

As teachers are responsible for providing comprehensive education that emphasizes subject-specific knowledge (Chan et al., 2017) they may worry that excessive dependence on AI technologies could result in a fragmented learning experience, enabling students to gain knowledge but hindering their development of critical life skills (Broad5: 24% and Broad2: 18%; see Table 2). This concern is echoed by other research data, suggesting it is vital to enhance teachers' competencies and abilities (AI literacy), to enable them to collaborate effectively with AI for future teaching support (Kim et al., 2022).

Additionally, participants reflected on increasing mastery of core concepts, theories, and domain-specific information within each FoS (Broad0: 14%). This comprised relevant disciplinary knowledge of AI, including its capabilities, limitations, and ethical issues. Expanding this is important because it demonstrates that participants based their insights on a strong understanding of the discipline rather than merely speculating about future possibilities in an abstract way.

Analysis of an approaching marker for visions of the future

The analysis of the approaching theme revealed that teachers perceived future possibilities as increasingly aligned with their imaginations, current realities, and paths of personal, social, and professional development. The predominant indicators regarding this perception were Ap1 (30%) and Ap2 (28%) – see Table 3. Therefore, inclusive education based on teachers' visions strengthens the role of teachers as human agents by making complex concepts more accessible through rich visualizations

and adaptive support. The answers reflect plausible futures – scenarios which might occur based on the current understanding of how the world functions (Voros, 2003). The prominence of Ap1 indicates a shift in cognition, with teachers seeing future possibilities as more attainable and personally relevant. Discussions and examples related to AI, helped make these futures more tangible. The strong presence of Ap2 suggests that teachers are increasingly aware of how current actions influence future results, emphasizing that significant change results from a series of deliberate choices rather than large-scale interventions.

Developing future-scaffolding skills

The future-scaffolding skills were categorized into two main groups, namely structural skills (St) and dynamical skills (Dyn). Structural skills focus on organizing knowledge and developing systematic perspectives through intentional scaffolding. Evidence in teachers' visions is identified through causal relationships and multiple, interconnected aspects of educational problems, which they use to structure their reasoning and plan strategies. These skills support engagement with probable futures rooted in ongoing trends.

Conversely, dynamical skills equip individuals to handle complex information without oversimplifying the relationships between specific details and broader concepts, and to understand the connections between past, present, and future, as well as the dynamics between individual and collective actions. Therefore, dynamical skills emerged when teachers shifted from present-centred to future-oriented thinking, engaged in creative envisioning, and moved from necessity-based thinking toward exploring multiple possibilities. Such skills underpin engagement

TABLE 3 The approaching markers for changes in future perception.

Approaching		
Description of marker	Examples of teachers' responses	Fraction of respondents
(Ap1) The future became more imaginable and less distant for teachers	I see the good, in that education will become a value to pursue. Perhaps AI will increase the value of the living human teacher.	15/50 (30%)
(Ap2) The future felt closer, linked to teachers' present realities and actions	More visualization would make it easier to explain certain historical and geographical discoveries.	14/50 (28%)
(Ap3) The future became personally and professionally relevant, with teachers seeing themselves as active shapers of it	I believe that language teaching in the future will be more interactive through artificial intelligence, with tasks that are more personalized and immediately adaptable to the level of the learner.	7/50 (14%)

with preferable futures, grounded in values and aspirations and often expressed through imaginative scenarios where learning environments are more adaptive, accessible, and inclusive.

The most frequently cited structural skills were St3 (22%) and St4 (20%) – see Table 4 – with responses aligning with probable futures, including those considered “likely to occur” primarily based on current trends (Voros, 2003). As structural skills play a central role in enabling individuals to navigate this complexity, participants have identified causal, temporal, and logical relationships across topics in their scenarios (St3 and St4). These skills enable learners to develop coherent, rational interpretive frameworks. Among these possible futures, some are viewed as more plausible than others, with the most likely scenario – commonly called “business-as-usual” – being a simple, linear progression of current trends (Voros, 2003). This framework serves as the basis for using dynamical skills to craft scenarios, visions, and innovative ideas about the future.

The predominant dynamical skills (Dyn) demonstrate participants' capacity to think beyond present boundaries and explore a wider array of possible futures (Dyn2: 22%, Dyn4: 18%, and Dyn7: 18%) – see Table 5. In this context, preferable futures represent our aspirations, primarily guided by emotions rather than logic. These futures rely on personal value judgments, making them more subjective than earlier categories. As values vary widely among individuals, these skills naturally encompass a diverse range of visions and expectations. It illustrates the ability to shift from a present-focused mindset to a future-oriented outlook (Dyn2) by imagining how learning could evolve if technological constraints are removed. Additionally, fostering thinking entails envisioning new

TABLE 4 Structural skills as part of future scaffolding skills.

Structural skills		
Description of marker	Examples of teachers' responses	Fraction of respondents
(St1) Distinguish disciplinary details from the overall FoS perspective	You want more autonomy in the education process. Students would work independently with the help of the AI; the teacher would only be there to moderate and support the activities.	5/50 (10%)
(St2) Break the FoS into manageable components	More visualization would make explaining certain historical and geographical discoveries easier.	4/50 (8%)
(St3) Identify causal relationships	Integration of simulation and virtual reality. These IoT tools continuously monitor student progress and adaptively select tasks and challenges.	11/50 (22%)
(St4) Differentiate problems, objectives, and solutions to organize strategies and plans	AI tools are limited without accuracy checks but useful for automating routine tasks. Students should learn to use AI critically and verify outputs. In physics, AI-based models and data analysis can build math and computing skills through automated calculations.	10/50 (20%)

possibilities and actionable developments (Dyn4), with both the humanities and technology accessible to everyone. It also signifies a creative rethinking of existing systems. Instead of accepting the current limitations of standardized instruction, the scenario envisions a future in which tasks dynamically adapt to each learner's level, needs, and abilities (Dyn7).

The ethical and governance-related dimensions of AI were less prominent in teachers' narratives than its immediate pedagogical opportunities and challenges. Issues such as algorithmic bias, transparency, data privacy, accountability, and human oversight were not among the most salient spontaneously expressed concerns. This relative absence should not be interpreted as evidence that teachers consider these issues unimportant. Rather, it may suggest that their current understanding of AI is more strongly oriented toward its immediate classroom applications and consequences. It may also reflect the nature of

TABLE 5 Dynamical skills as part of future scaffolding skills.

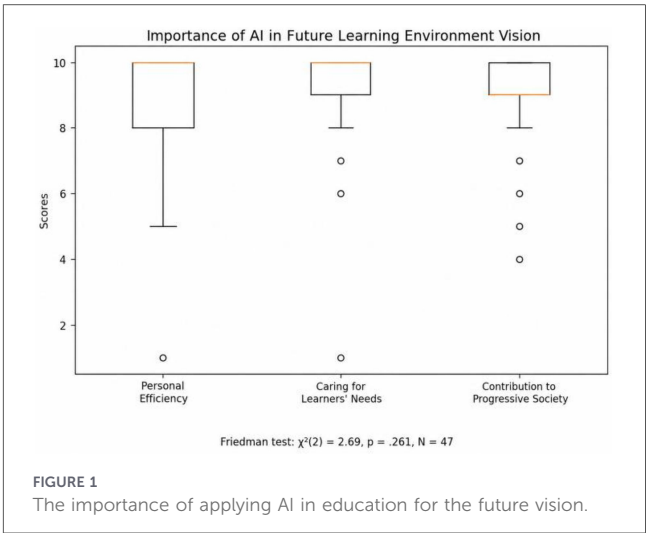
Dynamical skills		
Description of marker	Examples of teachers' responses	Fraction of respondents
(Dyn1) Shift between local and global perspectives	I envision confidently using AI tools to create an innovative, child-centred learning environment that fosters curiosity and active learning. Each child and teacher has access to sufficient technology to support exploration and engagement.	6/50 (12%)
(Dyn2) Move between present realities and future possibilities	AI could read any online book aloud and explain complex ideas like a knowledgeable lecturer. It could also generate test questions to encourage critical thinking, making education in both the humanities and sciences free and accessible to anyone with an internet connection.	11/50 (22%)
(Dyn3) Shift from individual to societal and stakeholder perspectives	AI can help teachers create personalized tasks and serve as a virtual assistant for students. However, it raises concerns about academic honesty, as students might rely on AI to complete work. With increasing digitalization, each student could use a school-specific tablet for such activities.	3/50 (6%)
(Dyn4) Envision new possibilities and practical actions	I believe that language teaching in the future will be more interactive through artificial intelligence, with tasks that are more personalized and immediately adaptable to the level of the learner.	9/50 (18%)
(Dyn5) Balance aspiration with realism	The only aspect where artificial intelligence would help us is in processing big data. It will be very sad if we think it will help us learn. The only thing that I learned using AI is AI.	7/50 (14%)
(Dyn6) Integrate multiple disciplines	AI tools require accuracy checks, while IoT tools support routine automation. Students should learn to use AI critically and evaluate outputs. In physics, AI-based models and data analysis can strengthen math and computing skills through automated calculations.	4/50 (8%)
(Dyn7) Shift from single necessities to multiple options	Personalized, differentiated training according to the needs and abilities of everyone.	9/50 (18%)

the data collection method, as participants were not explicitly prompted to address each dimension of AI ethics.

Analysis of the future visions

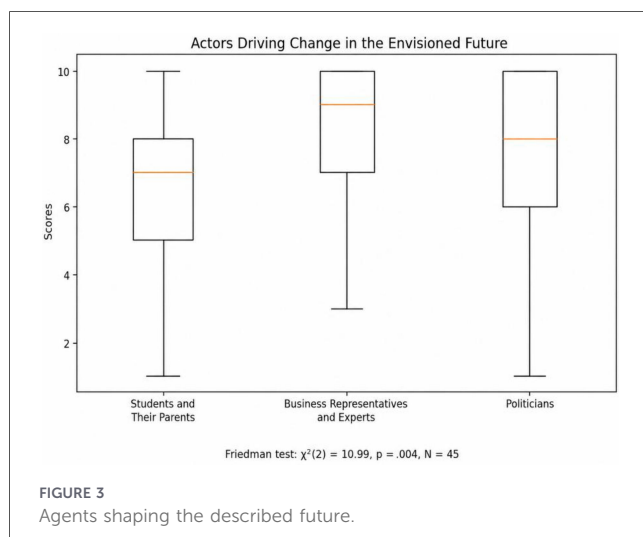
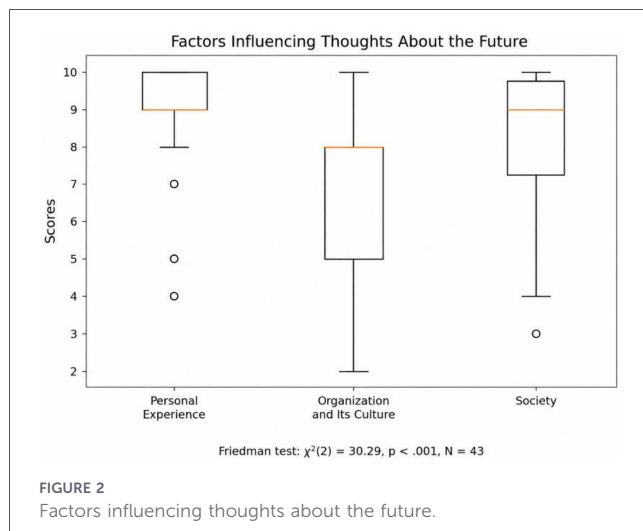
Participants rated all three purposes of AI use in future learning environments highly. The median rating for personal efficiency was 10 (IQR=8–10) for caring for learners' needs – 10 (IQR=9–10) for contribution to a progressive and creative society – 9 (IQR=9–10). The Friedman test indicated no statistically significant differences among the three dimensions, $\chi^2(2) = 2.69$, $p = 0.261$ (Figure 1). Therefore, participants attributed similarly high importance to all three purposes of AI use.

Participants' views differed significantly by the extent to which personal experience, organizational culture, and societal factors shaped their thinking about the envisioned future. Personal experience received the highest ratings, with a median of 9 (IQR=9–10), followed by societal factors, also with a median of 9 but a wider distribution (IQR=7.25–9.75). Organizational culture was rated lower, with a median of 8 (IQR=5–8). A Friedman test indicated statistically significant differences among the three dimensions, $\chi^2(2) = 30.29$, $p < .001$ ($N = 43$) (Figure 2). *Post-hoc* Wilcoxon signed-rank tests with Holm correction showed that personal experience was rated significantly higher than organizational culture ($p < .001$) and



societal factors ($p = .009$), while societal factors were rated significantly higher than organizational culture ($p = .014$).

Participants perceived business representatives and experts as the most influential actors in driving change in the envisioned future, with a median rating of 9 (IQR=7–10), followed by politicians, with a median of 8 (IQR=6–10), and students and their parents, with a median of 7 (IQR=5–8). A Friedman test indicated statistically significant differences across the three groups, $\chi^2(2) = 10.99$, $p = .004$ ($N = 45$) (Figure 3). *Post-hoc*



Wilcoxon signed-rank tests with Holm correction showed that business representatives and experts were rated significantly higher than students and their parents ($p = .001$), whereas the other pairwise differences were not statistically significant after correction. In Figure 3, boxplots show the distribution of ratings for students and their parents, business representatives and experts, and politicians based on all available valid responses for each item.

Overall, teachers expressed cautiously positive views of AI in inclusive education. They perceived AI as having substantial potential to support learners' needs, enhance teaching efficiency, and contribute to broader educational and societal development. At the same time, their responses suggest that the realization of this potential depends on more than technological availability alone: it is shaped by teachers' experience, organizational conditions, and the actions of other stakeholders. Therefore, teachers' future visions combined optimism about AI-enabled change with awareness of the contextual, professional, and ethical conditions required for its inclusive and equitable implementation.

Participants generally regarded their envisioned educational futures as plausible ($M = 5.21$, $SD = 1.32$) and perceived

themselves as having some capacity to contribute to their realization ($M = 4.90$, $SD = 1.39$). At the same time, there was a particularly strong perception that the envisioned changes would require active effort from participants in the educational process rather than occurring spontaneously ($M = 5.88$, $SD = 1.58$).

Participants also expressed a high level of concern about the future of education ($M = 6.00$, $SD = 1.15$). Nevertheless, this concern was accompanied by a generally positive orientation toward the broader implications of AI: participants tended to associate AI with human progress rather than regression ($M = 5.41$, $SD = 1.97$). This illustrated that concern about educational futures did not necessarily correspond to pessimism regarding AI.

Greater heterogeneity was evident in the perceptions of the factors shaping envisioned futures and the purposes attributed to AI. Participants did not demonstrate a strong overall preference between the concrete actions of others and their worldviews or perspectives ($M = 4.34$, $SD = 1.88$). Views were even more dispersed regarding whether AI should primarily facilitate everyday work or contribute to improving societal quality of life ($M = 3.85$, $SD = 2.23$). The comparatively high variability for this item suggests that participants held substantially different perceptions of the role AI should play in future educational environments.

Taken together, these findings suggest that participants combined substantial concern about the future of education ($M = 6.00$) with a strong recognition that meaningful change requires active effort ($M = 5.88$), while generally perceiving AI as a force associated with progress ($M = 5.41$).

Discussion

The teachers' narratives included both probable and more speculative futures, recognizing that some desirable outcomes rely on knowledge and skills not yet available (Voros, 2003). Their fiction about the "later-than-now" and the frames they use to invent these imaginary futures illuminated the values, assumptions, and aspirations that shape their understandings of educational change. Engaging with these imagined futures can expand the variety of possible actions, strategies, and solutions for FoS (Broad5), prompting educators to challenge prevailing assumptions about technological change in education (Bishop et al., 2007; Miller, 2018). However, capabilities that are not yet accessible can sometimes make educators serve as mere implementers of externally created technological solutions rather than agents of educational change (Selwyn, 2019; Williamson, 2021).

On the other hand, the findings indicate that teachers' involvement with speculative and probable futures signifies a deeper grasp of futures thinking in FoS (Broad1). It demonstrates anticipatory skills through engaging with multiple possible futures, thereby broadening conscious anticipation (Miller, 2018). By exploring various layers of possibility – from practical improvements to transformative visions – teachers demonstrate their ability to navigate uncertainty and place current decisions within broader future contexts. This future-focused reflection enhances the projective aspect of teacher agency, helping educators to envision different paths and adjust

their current practices as needed (Priestley et al., 2015). Second (Broad2), these narratives indicate a wider variety of methods for tackling FoS. Rather than relying solely on technological solutions, teachers consider pedagogical, ethical, and relational strategies, suggesting an understanding of AI as a sociotechnical system embedded in broader educational values (Holmes et al., 2022; Selwyn, 2019). The lowest level of reflection emphasized enhancing the participation of non-expert stakeholders, such as citizens and policymakers, as well as defining the roles of expert stakeholders. Teachers rarely emphasized participatory or community-based approaches to shaping future practices, suggesting that broader societal engagement was not a central aspect of their envisioned change processes. This aligns with research showing that debates about educational technology are often driven by experts and involve insufficient participation from wider stakeholders (Selwyn, 2019; Williamson, 2021).

Analysis indicates that most teachers perceive a change in understanding, with an increased number seeing future possibilities as both attainable and relevant (Ap1). Discussions and examples about AI helped to make these future scenarios more concrete. The prominent mention of Ap2, indicates that teachers are becoming more conscious of how their current actions impact future outcomes. This highlights that meaningful change stems from a series of intentional decisions rather than broad interventions. It can be seen as an expansion of the projective aspect of teachers' agency, where future goals influence current actions (Priestley et al., 2015). So, agency involves not only responding to current conditions but also imagining alternative paths and aligning decisions with expected futures (Biesta et al., 2015; Biesta and Tedder, 2007; Priestley et al., 2015). The teachers' narratives revealed in this study, suggest that future-oriented thinking is part of their ongoing pedagogical reflection, rather than a distant or abstract ambition.

This finding can also be explained by psychological distance. According to Construal Level Theory (Trope and Liberman, 2010), distant futures are usually thought of more abstractly, while near futures are perceived more concretely, making them more likely to prompt action. The narratives show a move toward more concrete, context-specific ideas of the future, helping them to identify practical steps within their current educational settings. Similar trends have been noted in research on futures literacy in education, where engaging concretely with future scenarios fosters more actionable thinking about change (Miller, 2018; UNESCO, 2018).

Another important contribution is identifying a set of future-focused skills crucial for effectively integrating AI into inclusive education. Teachers recognized essential skills, divided into structural skills – such as understanding causal relationships and evaluating AI's benefits – and risks and dynamical skills, which involve shifting from present-focused to future-oriented thinking and fostering innovative problem-solving. These competencies are vital for teachers to adapt to working with AI and to navigate the growing complexity of the educational environment. This division aligns with the frameworks of AI-readiness and future-skills research (OECD, 2021). Structural skills highlight essential AI literacy, including understanding how AI systems operate (Ng et al., 2021a, 2021b). This knowledge enables teachers to make informed choices about when, how, and why to incorporate AI into inclusive education.

Conversely, dynamical skills relate to futures thinking and 21st-century abilities, emphasizing cognitive flexibility, scenario planning, and resilience in uncertain settings (Griffin et al., 2012). These skills are becoming increasingly critical in the context of rapid and nonlinear technological transformation. Teachers who develop these competences themselves and encourage them in students are better prepared to co-create learning environments that are adaptable rather than reactive – fostering innovation while upholding educational values (Eynon, 2024). Importantly, these skills are not solely technical but also pedagogical (Eynon, 2024). As AI becomes more integrated into educational systems, the shift in teachers' roles from transmitting information, to acting as AI mediators and ethical guides helping students to interpret technology within the context of broader human goals (Eynon, 2024). This will demand systemic investment in professional development, curriculum updates, and policy adjustments to empower educators with intelligent systems (Eynon, 2024; Gillani et al., 2023).

This perspective emphasizes adaptability, innovation, and continuous growth. In the Lithuanian educational context, teachers primarily view AI as a supportive tool that complements their role, rather than replacing it, particularly in addressing emerging educational challenges. This finding reflects the ongoing digital transformation in Lithuanian schools, where AI is increasingly perceived as an opportunity to enhance teaching while preserving teachers' professional autonomy and pedagogical responsibility (OECD, 2025). The dynamic perspective aligns with modern AI integration models in education that highlight the co-evolution of technology and pedagogy (Holmes et al., 2022). Teachers who embrace this approach tend to view AI as a supportive, adaptable partner – a tool that enhances their professional roles. This perspective reflects the “human-in-the-loop” model, whereby educators remain at the core of instructional decision-making while utilizing AI to expand their capabilities (Holmes et al., 2022).

Our findings respond to the call for studying educational challenges – including learning loss, increasing classroom diversity, personalization, student engagement, and equity as context sensitive phenomena (Eynon, 2024). The relative absence of concerns about the ethical risks of AI in education in the participating teachers' narratives may change as international and national guidelines for the responsible use of AI in schools are increasingly implemented. In the Lithuanian context, and in line with recent international developments promoting trustworthy and human-centred AI in education, this year, national guidelines for AI use in schools have been developed under the leadership of the Lithuanian Ministry of Education, Science and Sport, with contributions from the National Agency for Education and other stakeholders (Ministry of Education, Science and Sport of the Republic of Lithuania, 2026). The guidelines establish principles for the safe, ethical, responsible, and purposeful use of AI and provide a framework to support schools in developing their own institutional rules and practices for AI use.

Furthermore, this perspective reflects a professional approach rooted in ongoing growth, where teachers are proactive contributors to educational change rather than passive users of technology. As Luckin (2018) states, allowing teachers to collaboratively influence the development and implementation

of AI systems, helps to ensure that innovations stay pedagogically appropriate and ethically responsible. In summary, favoring a dynamic over a static view of AI highlights the crucial role of adaptability, collaborative design, and professional autonomy in shaping the future of education. The theoretical contribution of this study lies in connecting teacher agency with futures thinking and inclusive education, conceptualizing their agency not only as the capacity to respond to present educational conditions but also as the capacity to imagine, evaluate, and shape possible educational futures in ways that attend to learner diversity, participation, and inclusion.

At the same time, these findings should be interpreted within the cultural and policy context of Lithuania which still struggles with allocating resources for implementing inclusive education nationwide. Consequently, while the dynamic perspective identified in this study is consistent with broader international discussions on AI in education, it also reflects the specific experiences, priorities, and institutional conditions in Lithuanian schools.

Limitations and future directions

This study has several limitations. As a retrospective narrative, it can be affected by selective emphasis or the desire to create coherent stories, which may impact the accuracy and completeness of the interpretation – especially when discussing emerging and uncertain phenomena like AI in education. Building on these findings, future research should investigate whether teachers' opinions on AI are polarized, nuanced, or shaped by emerging trends influenced by data collection. Understanding these perspectives would shed light on how teachers envision the future and how these views influence their preparedness for technological changes. Ultimately, such research can guide the development of teaching strategies that improve learners' skills, knowledge, and attitudes for engaging with an AI-integrated society. Additionally, future studies should examine teachers' perceptions, use, and adaptation of AI tools in inclusive education as part of institutional contexts. Moreover, further research into high school administration's support for teachers' use of AI tools would further deepen the understanding of teachers' agency in the context of the high school setting.

This study was based on a relatively small, context-specific sample of teachers from Lithuania. Although such a sample is consistent with the interpretative orientation of the study, prioritizing an in-depth understanding of participants' perspectives rather than statistical representativeness, the findings cannot be assumed to reflect the views of the broader population of teachers. Instead, they should be understood as contextually grounded insights that may inform, rather than represent, broader patterns. Perceptions of AI-supported inclusive education are likely to be influenced by the specific educational, policy, technological, and institutional context in which teachers work. Consequently, comparative studies across different educational systems could examine the extent to which these perspectives are analytically generalizable.

The use of convenience sampling may have introduced self-selection bias. Teachers who chose to participate may have had a greater interest in inclusive education, AI, or educational

innovation, or may have held particularly positive or critical views about these issues. The perspectives of teachers who are less engaged with AI, have limited digital competence, or are more reluctant to use emerging technologies may therefore be less visible in the data. This potential bias is particularly relevant when interpreting the reported perceptions of the opportunities and challenges associated with AI in inclusive education. This limitation can be addressed by larger-scale quantitative or mixed-method studies employing purposive or maximum-variation sampling across different school types, geographical areas, teaching experience, levels of experience with AI and inclusive education. Longitudinal research, in particular, is crucial to understanding how emotional and relational dynamics between teachers and students evolve in AI-enabled classrooms over time.

Our data was collected through written narratives which offered several advantages, including allowing participants to reflect on their experiences and formulate responses in their own time, reducing potential interviewer influence. Nevertheless, this method limited opportunities for the researchers to ask follow-up questions, clarify ambiguous statements, probe emerging themes, or explore participants' reasoning and experiences in greater depth. Combining written narratives with semi-structured interviews or focus groups in future studies would enable interpretations to be explored and clarified in greater depth.

Conclusion

This study examined teachers' perspectives on AI-supported inclusive education and their visions of future-oriented practices. The narratives demonstrated an ability to navigate both probable and speculative futures, recognizing that desirable outcomes – particularly those related to AI – depend on emerging knowledge and skills that are not yet fully available. This indicates that teachers were not only exploring AI as a technological tool but also strengthening their ability to envision, organize, and act in complex future scenarios. While recognizing the benefits of AI, they also expressed concerns that over-reliance on these technologies could fragment learning. Importantly, many anticipated a future where inclusive education could greatly benefit from AI-driven personalization, adaptive learning tools, and immersive simulations, while emphasizing that such systems should support teachers. As AI continues to reshape education, teachers' visions and professional judgment are crucial when guiding these changes. Understanding how educators imagine and prepare for AI-integrated futures helps promote a more nuanced, human-centred approach to inclusive educational innovation.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by the Research Ethics Committee of Kaunas University of Technology approved the study on June 28, 2024 (Protocol No. M6-2024-12). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

LD-B: Validation, Formal analysis, Resources, Visualization, Project administration, Writing – review & editing, Writing – original draft, Supervision, Investigation, Data curation, Methodology, Conceptualization, Software. LG: Validation, Formal analysis, Data curation, Writing – review & editing, Supervision, Methodology, Project administration, Conceptualization, Writing – original draft, Software, Investigation, Resources, Visualization, Funding acquisition. RP: Data curation, Supervision, Formal analysis, Project administration, Visualization, Writing – original draft, Conceptualization, Investigation, Writing – review & editing, Software, Validation, Resources, Methodology.

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Conflict of interest

The author(s) declared that this work was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declared that generative AI was used in the creation of this manuscript. During the preparation of this manuscript, the author used Grammarly as AI writing assistance for English proofreading purposes. After using this tool, the author reviewed and edited the content as needed and takes full responsibility for the content of the publication.

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