

Teacher Agency in AI-Supported Curriculum Enactment in Türkiye: A Qualitative Metasynthesis

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Article Info

Keywords

Artificial intelligence, generative AI, teacher agency, curriculum enactment

Article Type

Review Article



Received: 06 Oct 2026

Accepted: 23 Oct 2026

Abstract

The rapid expansion of artificial intelligence (AI), particularly generative AI, has produced a fragmented literature on how teachers use these technologies in professional practice. This qualitative metasynthesis examined how in-service teachers in Türkiye experience and negotiate AI-supported pedagogical work. National database and repository searches were supplemented by international and targeted retrieval, yielding 43 studies involving 904 in-service teachers. Thematic synthesis generated six descriptive themes and four higher-order analytical themes. Teachers reported that AI supported planning, materials development, differentiation, assessment, access to information, and professional learning, although these benefits remained dependent on professional judgement. Perceived efficiency gains were accompanied by new demands for verification, adaptation, and learning, as well as concerns about accuracy, cognitive dependence, academic integrity, privacy, equity, and human relationships. Teacher agency was reconfigured through selective pedagogical mediation involving selection, verification, adaptation, and boundary-setting. Responsible integration also depended on ecosystem capacity, including professional learning, infrastructure, governance, ethical safeguards, and equitable access. The synthesis conceptualizes the teacher–AI relationship as a conditional pedagogical partnership in which AI broadens pedagogical possibilities while educational legitimacy remains dependent on human judgement and supportive institutional conditions.

1. Introduction

Artificial intelligence (AI) has moved rapidly from a specialized educational technology to an increasingly accessible part of everyday teaching. Generative AI systems can now produce text, images, feedback, assessment items, lesson ideas, explanations, and other instructional resources through natural-language interaction. This growing accessibility has expanded the range of tasks that teachers can delegate, accelerate, or redesign. At the same time, it has raised questions about accuracy, authorship, privacy, equity, cognitive dependency, and the continuing place of professional judgement in teaching. UNESCO's guidance on generative AI therefore frames educational use as a human-centred issue involving agency, ethics, capacity, and institutional responsibility, with technological adoption forming only one part of the picture (Miao & Holmes, 2023). The UNESCO AI Competency Framework for Teachers adopts a similar position by treating AI pedagogy, ethics, human-centred values, foundational AI knowledge, and professional learning as interconnected areas of competence (Miao & Cukurova, 2024). Taken together, these developments direct attention to how teachers interpret, evaluate, and incorporate AI into educational practice.

Teachers occupy a central position in this process because AI does not enter classrooms independently of professional interpretation. Even when generative systems can produce apparently complete instructional artefacts, teachers must still decide whether an output is accurate, appropriate for a

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Baysal, H., & Baysal, O. (2026). Teacher agency in AI-supported curriculum enactment in Türkiye: A qualitative metasynthesis. *Curricular Studies & Perspectives*, 2(2), 176-197. <https://doi.org/10.29329/csp.2026.XXXX.X>

particular group of learners, aligned with educational aims, and suitable for use in a specific context. This emphasis on professional judgement is consistent with Intelligent-TPACK, which extends accounts of technology integration by emphasizing the interaction among technological, pedagogical, content, and ethical knowledge (Çelik, 2023). It also aligns with the concept of evaluative judgement, understood as the capacity to judge the quality of work and processes. As generative systems become capable of producing polished outputs with little effort, teachers' capacity to evaluate those outputs becomes increasingly consequential (Bearman et al., 2024). The extent to which teachers possess and exercise this capacity, however, varies across contexts.

International research shows that teachers' relationships with AI are far from uniform. In a six-country study of K-12 teachers, Viberg et al. (2025) found that AI understanding and self-efficacy were associated with perceived benefits, concerns, and trust. Research with Swedish teachers similarly identified misconceptions about AI, limited understanding of system boundaries, and vague policy or curriculum guidance as barriers to meaningful integration (Velandar et al., 2024). These findings suggest that use, confidence, understanding, and pedagogical competence should not be treated as interchangeable constructs. A teacher may use AI frequently while having only a limited understanding of its constraints; another may understand the technology well but deliberately restrict its use in classroom practice. Such differences make national policy and institutional context important for understanding how AI use develops in practice.

Teachers now use chatbots, image and video generators and AI features embedded in familiar platforms to plan lessons, produce materials, write assessment items and manage administrative work (Kasneci et al., 2023; Miao & Holmes, 2023). Public and policy debate has tended to frame this shift in terms of promise and risk: workload relief, personalization and richer feedback on one side; inaccurate output, academic dishonesty, privacy breaches and student over-reliance on the other (Çelik et al., 2022). Much less attention has been paid to what happens when AI meets the daily realities of teaching, that is, to how teachers who actually use these tools take them up, reshape them or set them aside.

Türkiye offers a distinctive setting in which to ask this question. In June 2025, the Ministry of National Education (MoNE) adopted the Policy Document and Action Plan on Artificial Intelligence in Education (2025–2029), committing to build an AI culture in schools, expand AI content in curricula and provide in-service training for teachers (MoNE, 2025). An Ethics Guide for AI Applications in Education followed in January 2026 (MoNE, 2026). Classroom adoption, however, remains uneven. In TALIS 2024, 23.8% of lower-secondary teachers in Türkiye reported using AI in their teaching, compared with an OECD average of 36.3%, and 71.1% cited inadequate school digital infrastructure as a barrier, almost twice the OECD average of 37.4% (OECD, 2025; TEDMEM, 2025). National policy is therefore moving quickly while classroom practice is still forming.

In this article, we focus on the experiences of in-service teachers who use AI in their work. We use AI use to mean any concrete instructional or professional use of AI tools that teachers describe from their own practice, including generative chatbots, image and video generators, adaptive platforms and AI features within general-purpose tools. In doing so, the study addresses an important gap in the literature by showing how teachers' use of AI is shaped by professional judgement, the additional work involved in using these tools, and the institutional conditions in which practice takes place. This metasynthesis aims to develop an interpretive account of how in-service K–12 teachers in Türkiye experience the use of AI in their work. It addresses three questions:

1. For what purposes and in what ways do in-service teachers in Türkiye use AI in instructional and professional work?
2. How do teachers experience the benefits, tensions and risks that accompany this use?
3. Which individual, institutional and systemic conditions do teachers describe as shaping responsible and sustained integration?

1.1. Conceptual Framework

1.1.1. AI-Supported Teaching as Pedagogical and Professional Work

AI integration can be conceptualized as a form of pedagogical work rather than merely a technology-use decision. Teachers do not simply operate tools; they connect technological outputs with subject matter, learning goals, learner characteristics, assessment demands, and institutional expectations. Intelligent-TPACK is useful in this respect because it treats ethical assessment as integral to professional knowledge for AI-supported teaching (Çelik, 2023). This shifts attention from whether teachers can use an AI system to whether they can use it pedagogically, critically, and responsibly. Generative AI also changes the volume and speed of instructional production. Lesson plans, questions, explanations, differentiated tasks, images, and feedback can be produced in seconds. Yet rapid generation does not resolve questions of quality. Bearman et al. (2024) argue that generative AI increases the need for evaluative judgement because human users must remain capable of identifying and calibrating quality. In teaching, such judgement includes factual verification, curricular alignment, developmental appropriateness, disciplinary adequacy, cultural fit, and the likely consequences of an AI-supported task for student thinking.

1.1.2. Teacher Agency in AI-Mediated Practice

Teacher agency provides a second lens for understanding AI integration. In ecological accounts, agency is not a fixed personal trait but an achievement that emerges through the interaction of teachers' prior experience, future orientations, practical judgement, and the cultural, material, and structural conditions of their work (Priestley et al., 2015). From this perspective, AI adds new affordances and constraints to teachers' working environments but does not determine practice on its own. Recent work on generative AI similarly emphasizes practical-evaluative judgement. Eedelouei's (2026) systematic review of language-teacher research shows that decisions about GenAI are shaped by pedagogical knowledge, competence, contextual conditions, ethical concerns, and structural support. The relevant question is therefore not simply whether teachers accept or reject AI, but how they make situated decisions about its use. The present synthesis uses teacher agency as a sensitizing concept, while allowing the specific mechanism of agency in AI-supported practice to emerge inductively from the included studies.

1.1.3. Responsible Integration as a Human-Centred and Systemic Issue

Responsible AI integration also extends beyond the individual teacher. UNESCO's guidance highlights data protection, age appropriateness, inclusion, equity, human agency, and institutional validation of pedagogical and ethical suitability (Miao & Holmes, 2023). The AI Competency Framework for Teachers similarly links teacher competence to ethics, pedagogy, professional learning, and a human-centred mindset (Miao & Cukurova, 2024). These perspectives imply that responsible practice cannot be reduced to individual digital skill. This systemic dimension is important because teachers act within infrastructures, policies, curricula, leadership arrangements, subscription models, connectivity conditions, and professional learning environments. A teacher may be highly motivated and technically competent yet unable to enact responsible AI-supported pedagogy if institutional guidance is absent, data protection is unclear, premium tools are inaccessible, or school infrastructure is insufficient. The synthesis therefore examined both individual professional judgement and the ecosystem conditions through which such judgement could be enacted.

2. Method

2.1. Research Design

This study employed a qualitative metasynthesis using an adapted thematic synthesis approach. The method was selected because the evidence base included phenomenological studies, case studies, qualitative surveys, qualitative components of mixed-methods designs, and other forms of interpretive research. Thematic synthesis provides an explicit progression from coding findings to

developing descriptive themes and then to higher-order analytical themes, while maintaining a transparent link to primary study evidence (Thomas & Harden, 2008).

Study identification and selection were documented using the PRISMA 2020 principles (Page et al., 2021), and the qualitative synthesis was reported using ENTREQ (Tong et al., 2012). The review was not preregistered. Study identification proceeded in two stages, an initial national database search and a supplementary retrieval audit; both are reported separately in Section 2.2, Table 1, and Figure 1, and the relationship between the 60 broadly eligible studies and the final corpus of 43 is set out in Section 2.3. An audit trail was maintained throughout screening, evidence-type classification, critical appraisal, data extraction, coding, theme development, negative-case analysis, supplementary searching, and sensitivity analysis.

Because this study synthesized previously published articles and publicly available postgraduate theses and involved no new data collection from human participants, ethics committee approval was not required. Findings were extracted only as reported in the original studies, and no identifying information about participants was used.

2.2. Search Strategy and Study Selection

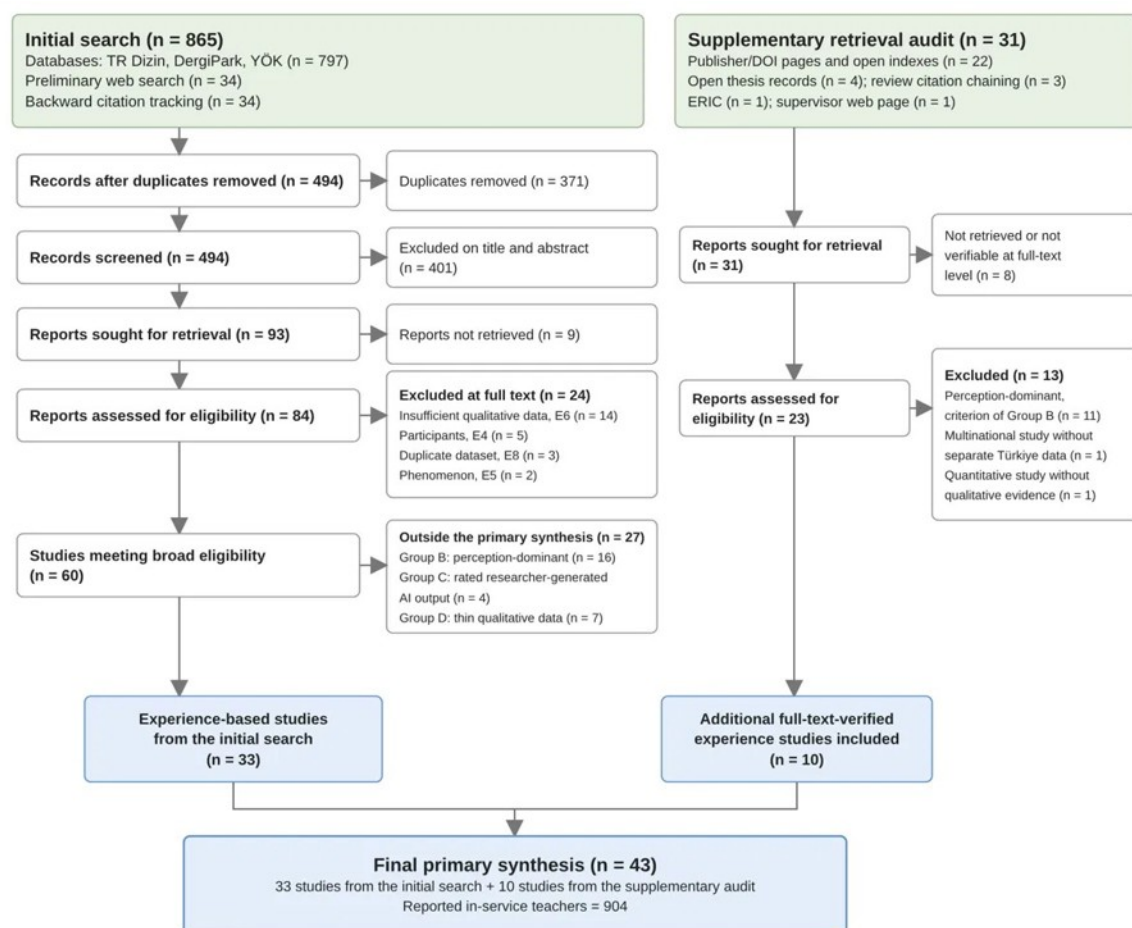
The main national searches were conducted on 20 September 2026 in TR Dizin, DergiPark, and the Council of Higher Education National Thesis Centre. TR Dizin was searched four times, restricted to journal articles published in 2020–2026, using the combinations ‘yapay zeka’ + ‘öğretmen’ (183 records), ‘yapay zekâ’ + ‘öğretmen’ (183 records, identical to the previous search), ‘artificial intelligence’ + ‘teacher’ (275 records), and ‘ChatGPT’ + ‘öğretmen’ (41 records). DergiPark was searched with ‘yapay zeka öğretmen görüş’ (20 records), and the National Thesis Centre was searched with Turkish terms for artificial intelligence and teacher (95 records). A preliminary web search (34 records) and backward citation tracking of eligible studies (34 reports) were used as additional sources. Searches covered 2020–2026. Citation tracking and reference checking were used to locate additional studies. The initial search process identified 865 records or reports before deduplication. After 371 duplicates were removed, 494 records were screened.

93 reports were sought for full-text assessment; 9 were not retrieved, and 84 were assessed for eligibility. Twenty-four reports were excluded at the full-text stage, leaving 60 studies that met the broad review-level criteria concerning teachers’ perspectives, experiences, or use of AI. During the initial synthesis, it became apparent that national database searching underrepresented studies conducted in Türkiye but published primarily through international outlets. Before the analytical themes were finalized, a supplementary retrieval audit was completed on 25 September 2026 using ERIC records, publisher and DOI pages, open scholarly indexes, citation chaining from recent reviews, and targeted searches for Türkiye-based school-teacher AI studies. This step was treated as supplementary study identification rather than represented as a formal Scopus or Web of Science search. Thirty-one additional unique reports were audited. By the route through which they were identified or verified, 22 were located through publisher and DOI pages or open journal indexes, four through open thesis records, three through citation chaining from recent systematic reviews, one through ERIC, and one through a thesis supervisor’s web page. The same eligibility questions and evidence-type criteria used for the initial corpus were applied. For eight reports, the full qualitative findings could not be retrieved or verified at full-text level, so first-hand evidence could not be confirmed. Of the 23 reports assessed for eligibility, 13 were excluded: 11 because their findings were dominated by perceptions or anticipated uses rather than first-hand use (the criterion that defined Group B in the initial corpus; see Section 2.3), one multinational study because data from Türkiye were not reported separately, and one quantitative study without eligible qualitative evidence. The remaining 10 studies provided first-hand qualitative evidence and were added to the primary synthesis (Table 1). An overview of the study identification process and the construction of the primary synthesis corpus is presented in Figure 1.

Table 1*Outcome of the Supplementary Retrieval Audit (25 September 2026)*

Stage	n	Details
Unique reports audited	31	Publisher/DOI pages and open journal indexes (22); open thesis records (4); citation chaining from recent systematic reviews (3); ERIC (1); thesis supervisor's web page (1)
Not retrieved or not verifiable at full-text level	8	Full qualitative findings could not be accessed or verified
Assessed for eligibility	23	Same eligibility questions and evidence-type criteria as the initial corpus
Excluded	13	Perception-dominant findings, Group B criterion (11); multinational study without separately reported Türkiye data (1); quantitative study without eligible qualitative evidence (1)
Added to the primary synthesis	10	First-hand qualitative evidence of teachers' AI use

Note. The audit applied the same eligibility questions and evidence-type criteria as the initial search. Together with the 33 studies retained from the initial search (60 broadly eligible studies minus 27 retained outside the primary synthesis: Group B = 16, Group C = 4, Group D = 7), the 10 added studies form the final corpus of 43 studies.

Figure 1*Flow Diagram of the Identification and Screening Process*

Note. The left column shows the initial national search; the right column shows the supplementary retrieval audit of 25 September 2026. Of the 60 studies meeting broad eligibility, 27 were retained outside the primary synthesis (Group B = 16; Group C = 4; Group D = 7). Of the 31 supplementary reports, 8 could not be retrieved or verified at full-text level, 13 of the 23 assessed reports were excluded, and 10 were included. The primary synthesis therefore comprises 33 + 10 = 43 studies (904 in-service teachers).

2.3. Eligibility Criteria

At the review level, studies were considered when they were peer-reviewed journal articles or postgraduate theses published between 2020 and 2026; were conducted in Türkiye; included practising teachers from preschool through upper-secondary education; addressed AI in educational settings; and contained qualitative evidence. Mixed-participant studies were eligible only when findings from in-service teachers could be separated from those of other groups. Mixed-methods studies were eligible when the qualitative component could be independently extracted. When multiple reports drew on the same dataset, the more detailed representation was retained.

The initial eligibility framework intentionally captured both perspectives and experiences to minimize premature exclusion. Before third-order synthesis, the corpus was re-audited for proximity to the focal phenomenon. Studies based primarily on hypothetical expectations, general attitudes, or opinions without identifiable firsthand use were excluded from the primary synthesis. Studies in which teachers evaluated only researcher-generated AI products were also treated separately, as this evidence did not reflect naturally occurring or teacher-initiated use. Finally, brief open-ended surveys or frequency-oriented qualitative material without sufficient interpretive depth were excluded from the primary higher-order synthesis. Operationally, a study was classified as reporting actual AI use when its findings contained teachers' accounts of having used an AI tool themselves for an instructional or professional task (for example, lesson preparation, materials production, assessment, or their own professional learning), either in routine practice or while applying AI to their own teaching during a professional development programme. Evidence was considered sufficiently rich when these accounts were reported as themes or categories illustrated with participant quotations or paraphrased participant accounts. For example, a study in which preschool teachers designed and implemented activities with generative AI tools over a 13-week programme and then reflected on that experience was included, whereas a study in which primary teachers were asked how AI could be used and themselves reported lacking sufficient AI experience was retained outside the primary synthesis. Of the 60 studies meeting the broad review-level eligibility criteria, 27 were retained outside the primary synthesis: 16 perception-dominant studies (Group B), four studies in which teachers evaluated researcher-generated AI output (Group C), and seven studies with insufficient interpretive depth (Group D). The remaining 33 contained sufficiently rich first-hand evidence of teachers' actual AI use and formed the initial primary synthesis. The supplementary retrieval audit subsequently added 10 further studies meeting the same criteria, resulting in a final primary synthesis corpus of 43 studies (33 + 10; Figure 1). These studies reported 904 in-service teachers. In mixed-participant studies, only in-service teachers were counted, and in mixed-methods studies only the teachers whose qualitative data were analysed were counted.

Methodological appraisal used the 2024 CASP checklist for qualitative research (Critical Appraisal Skills Programme, 2024). The ten domains were considered at item level using Yes, No, or Can't tell judgements. No total score or high/medium/low-quality category was used in the manuscript. Appraisal informed interpretive caution. Qualitative richness was considered separately from methodological reporting because some methodologically adequate reports provided limited evidence for interpretive synthesis. Item-level appraisal judgements for all studies included in the final synthesis are presented in Appendix B. As a sensitivity check, the study with the weakest appraisal profile, Cebeci (2025; Appendix B), was temporarily removed from the synthesis. It was the only study judged Yes on just three items (Q1, Q9, and Q10): methodology, design, recruitment, data collection, ethics, and analysis were rated Can't tell (Q2–Q5, Q7, and Q8), and the researcher-participant relationship was rated No (Q6). Removal reduced the evidence base from 629 to 604 meaning units. It did not alter the six descriptive themes or the four analytical themes, either in their labels or in their interpretive content; its main effect was a modest reduction in gifted-education evidence for T1 and T6, which remained represented by Önal et al. (2026).

2.4. Analysis and Synthesis

A structured extraction framework recorded publication year and type, design, sampling, teacher sample, school level, teaching field, context, data collection, analysis, AI tools or applications, and

methodological notes. Findings were extracted at two interpretive levels. First-order findings represented teachers' reported experiences and participant accounts. Second-order findings represented the primary study authors' interpretations, themes, and explanatory statements.

Both authors were involved in all stages of the review, including study screening, eligibility assessment, data extraction, critical appraisal, supplementary retrieval, line-by-line coding of the extracted meaning units, and the development and refinement of descriptive and analytical themes. The harmonization of codes and the interpretation of relationships, contradictions, and higher-order patterns across studies were discussed jointly.

The final corpus contained 629 meaning units: 496 first-order and 133 second-order findings. Coding proceeded line by line at the level of meaning units. Similar codes were compared across studies and harmonized into 32 researcher-generated codes. These were organized into six descriptive themes. In the final interpretive stage, relationships, contradictions, and explanatory patterns among the descriptive themes were examined to develop four analytical themes. Counts of units and contributing studies were used only for audit purposes; they were not interpreted as measures of thematic importance. To illustrate the analytical pathway, one evidence chain is traced here. In Tümen Akyıldız (2026, p. 11), an in-service EFL teacher described AI as creating more rather than less work in the guidance role, because its outputs had to be checked, corrected, and explained to students (first-order finding). The study's author interpreted experienced teachers' integration of AI as selective and conditioned by prior pedagogical experience, time, and institutional support (second-order finding, pp. 10–11). We coded the account under time and workload efficiency as a disconfirming instance of time saving, which placed it within the descriptive theme of support for professional efficiency and learning (T2), where it was read against the verification practices coded under teacher mediation and professional agency (T3). Across studies, such juxtapositions of reported time savings with new checking and correction work informed the analytical theme that efficiency gains generate new forms of professional and cognitive labour.

Negative and disconfirming evidence was deliberately sought. Examples included time saving alongside additional verification labour, confidence that AI could not replace teachers alongside concerns about weakened professional authority, personalization alongside unequal access, and actual AI use alongside uncertainty about what counted as AI. A study-by-theme matrix, codebook, source-level notes, and evidence chain from first-order material to analytical themes were maintained throughout.

3. Findings

The findings are organized according to three interconnected domains: curricular-pedagogical work, professional learning and teacher agency, and institutional/ethical/technical conditions. The domains are presented separately for clarity, but they were strongly interdependent across studies. Teachers' experiences of AI were rarely explained by a single tool feature; rather, technological affordances interacted with professional knowledge, learner needs, teaching programme expectations, infrastructure, and institutional rules. For presentation, the six descriptive themes were grouped within three broader domains: curricular-pedagogical work (T1 and T4), professional learning and teacher agency (T2 and T3), and institutional, ethical, and technical conditions (T5 and T6).

Across the 629 meaning units, six descriptive themes were retained: expansion of pedagogical production and instructional design (196 units across 42 studies); support for professional efficiency and learning (63 units across 36 studies); centrality of teacher mediation and professional agency (112 units across 40 studies); epistemic and cognitive vulnerabilities (81 units across 29 studies); relational, ethical, and equity tensions (88 units across 35 studies); and capacity and governance for responsible integration (89 units across 36 studies). These counts indicate the distribution of evidence, not thematic importance.

3.1. Curricular-Pedagogical Work

Teachers across subjects described AI as expanding the range of resources they could bring into planning and instruction. AI was used to develop lesson and activity ideas, generate texts and visual materials, produce questions, reorganize information, create examples, and support presentation or explanation (Çelik, 2026; Demir & Demir, 2026; Erol & Erol, 2024; Filiz et al., 2025; Sontay et al., 2024). Comparable patterns appeared in religious culture and ethics, social studies, cross-disciplinary integration, gifted education, and foreign-language contexts, where teachers used AI for visualization, scenario or activity generation, project work, and lesson preparation (Cebeci, 2025; Güneş, 2025; Şahin, 2025; Yaylak, 2025). Foreign-language teachers likewise incorporated AI into routine activity and question preparation, illustrating how generative support had begun to enter ordinary planning work rather than remaining an occasional experiment (Özdemir, 2025). Personalization and differentiation formed a related pattern. Teachers used AI to vary difficulty, wording, examples, pace, or support according to learners' needs and profiles (Arı, 2026; Ciğerci & Uygün, 2026; Derinalp, 2026; Fidan, 2025). Similar emphasis on differentiated support appeared among primary and mixed-subject teachers, including the adaptation of explanations, tasks, and resources to student needs (Akçin et al., 2026; Kurtde Fidan & Kayar, 2025). AI also supported assessment through question generation, response analysis, feedback, and the identification of areas in which students were struggling, while preschool teachers described assessment, guidance, and visualization functions that made otherwise difficult content more accessible (Kalaba Yıldırım & Önder, 2025). Across mixed-subject and classroom contexts, teachers also reported material production, lesson preparation, and AI-supported teaching ideas (Dağıstan & Taşdemir, 2026; Eren et al., 2025). For teachers, the value of AI therefore lay not only in producing more content, but in expanding the number of curricular and instructional alternatives that could be considered within limited planning time.

The expansion of curricular-pedagogical resources did not mean that teachers treated AI output as ready for enactment. Across studies, teachers described checking facts, altering language, simplifying or extending content, localizing examples, comparing alternatives, and rejecting suggestions that did not fit learners or instructional aims (Kutlucan & Seferoğlu, 2026; Özkan & Küpeli, 2025; Uğur Erdoğan, 2026). This requirement was also evident in preschool, primary mathematics, and mixed-subject settings, where teachers reported inaccurate, level-inappropriate, or contextually unsuitable output and described revising or filtering it before classroom use (Karabacak, 2024; Parlakkaya, 2025; Polat & Özkan, 2026; Tekin & Ciğerci, 2025). Filiz et al. (2025), for example, identified curriculum misalignment and cultural barriers as constraints, while Ciğerci and Uygün (2026) showed that AI was typically positioned as a teacher-mediated resource for planning, visualization, problem solving, and assessment.

The same affordances that supported rapid production generated concerns about accuracy, originality, and learner effort. Teachers reported inaccurate or contextually weak outputs, superficial responses, unclear sourcing, and difficulties judging whether students' work represented their own thinking (Pinar, 2026; Taktak, 2024; Uğraş et al., 2025). Academic integrity and ownership were recurring concerns, particularly when students could submit complete AI-generated products with little visible effort. Other teachers associated easy access to ready-made responses with weakened research habits, reduced persistence, and technology dependency (Cengiz & Gümüş, 2025).

3.2. Professional Learning and Teacher Agency

Time saving was among the most frequently reported benefits. Because the synthesis drew on the qualitative evidence of the included studies, this and the other benefits reported below reflect teachers' perceptions and self-reports rather than objective measures of time use, workload, or student outcomes. Teachers used AI to accelerate lesson preparation, resource production, information retrieval, question writing, assessment, and feedback (Adıgüzel et al., 2025; Erol & Erol, 2024; Özsongür & Çeliktürk Sezgin, 2026; Uğur Erdoğan, 2026). Similar efficiencies were reported by language, preschool, and primary/lower-secondary teachers, who described less time spent on routine paperwork, preparation, and repetitive tasks (Altın et al., 2026; Parlakkaya, 2025; Üretmen Karaoğlu & Doğan, 2025). Some teachers perceived these efficiencies as reducing routine workload and freeing

time for other teaching activities. Yet faster production also generated new labour. Teachers had to learn new systems, formulate effective prompts, verify outputs, correct errors, adapt language and difficulty, monitor student use, and keep pace with changing tools. Er and Aksoy (2026) showed that AI use in science teaching was shaped by teaching programme constraints, infrastructure, assessment arrangements, and the need for applied professional development. The contrast is clearest when two studies are read side by side. Primary school teachers in Özsongür and Çeliktürk Sezgin (2026) described generative AI as shortening lesson preparation and materials production, whereas EFL teachers in Tümen Akyıldız (2026) described checking AI outputs and keeping up with changing tools as an additional layer of professional work. The difference appears to lie less in the tools than in the task: savings were reported mainly for routine preparation, whereas additional labour arose where outputs had to be checked for linguistic or disciplinary accuracy before reaching learners and where teachers' professional credibility depended on that accuracy. The two accounts were therefore treated as complementary. Efficiency therefore redistributed labour.

Evidence coded under teacher mediation and professional agency was identified in 40 of the 43 studies. Teachers did not appear as passive recipients of AI-driven change; they made decisions about whether to use AI, which functions to adopt, which outputs to trust, and where to place limits. Some used multiple applications routinely, while others adopted a narrower set of functions or avoided certain practices due to concerns about privacy, accuracy, student dependence, or pedagogical fit. Variation in uptake was also explicit in studies where teachers differed sharply in familiarity with available tools, frequency of use, or willingness to integrate AI into classroom activity (Altın et al., 2026; Dağıstan & Taşdemir, 2026; Kurtde Fidan & Kayar, 2025). Across studies, agency was enacted through four recurring practices: selection, verification, adaptation, and boundary-setting. Teachers selected whether and where AI was relevant; verified the epistemic adequacy of its outputs; adapted suitable material to learners, subject matter, and teaching aims; and set limits on acceptable use. Kara and Aksu (2026) reported teachers explicitly determining where, how, and to what extent technology should be used. Uğur Erdoğan (2026) likewise found that teachers considered the capacity to compare, filter, and evaluate AI outputs a critical professional competence. In another mixed-teacher study, AI was used primarily for lesson preparation, idea generation, and material support rather than as an autonomous classroom substitute, again indicating teacher-centred control over how the technology entered practice (Eren et al., 2025). We conceptualize this recurring process as selective pedagogical mediation. The four practices are not separate techniques but linked judgements: selection determines which outputs enter consideration, verification determines which of them can be trusted, adaptation turns trustworthy output into material that fits learners and aims, and boundary-setting defines what should remain outside AI's reach; a negative judgement at any point can send the teacher back to an earlier one, as when unverifiable output leads to narrower selection. In the ecological account (Priestley et al., 2015), agency is achieved through the interplay of teachers' capacities with the resources and conditions of their environment. Selective pedagogical mediation adds an AI-specific element to this account: the resource itself now generates content that must be judged before it can be used, so agency is enacted not only in choosing among existing curricular resources but in deciding what a generative system's output is worth.

The use of AI also altered how teachers described professional expertise. Teachers increasingly positioned themselves as guides, evaluators, designers, or mediators. This shift was not experienced uniformly. Tümen Akyıldız (2026) raised concerns about professional legitimacy when students placed greater trust in AI responses, while language teachers also described a tension between greater learner autonomy and the fear that automation could threaten forms of human labour or teacher expertise (Üretmen Karaoğlu & Doğan, 2025). Other studies emphasized that empathy, relational knowledge, and contextual judgement could not be replaced by technology. Professional learning shaped these responses. Teachers repeatedly called for opportunities to learn prompting, verification, subject-specific integration, privacy, and ethical use rather than merely receiving demonstrations of particular tools (Araycı & Özyurt, 2026; Uğur Erdoğan, 2026). Kic-Drgas and Kılıçkaya (2026) further showed that in-service language teachers used AI in their self-regulated professional learning while simultaneously identifying digital literacy gaps and uncertainty about how to use specific tools.

The corpus also showed that actual use did not necessarily imply AI literacy: some teachers used AI-supported applications while remaining uncertain about what counted as AI or how systems produced their responses. Adoption and competence therefore diverged in meaningful ways.

3.3. Institutional, Ethical, and Technical Conditions

Teachers' ability to use AI responsibly depended on more than individual motivation. Practice-based professional development, collegial exchange, technical assistance, and school-level support were repeatedly identified as enabling conditions. Teachers preferred subject-specific examples and opportunities to evaluate authentic AI outputs. Studies across mixed-subject samples likewise identified lack of training or limited tool knowledge as practical barriers, with many teachers requesting applied professional learning that could be transferred directly to classroom work (Cengiz & Gümüő, 2025; Dağıstan & Taődemir, 2026; Polat & Özkan, 2026). Where professional learning was sustained, teachers described greater confidence and a more deliberate approach to classroom integration. At the same time, high individual confidence did not guarantee advanced pedagogical use. In gifted education, Önal et al. (2026) found that teachers were more confident in general assistive functions such as material preparation and time management than in enrichment-oriented applications. This suggests that system support must address the pedagogical quality of integration.

Connectivity, devices, paid subscriptions, technical support, and language availability shaped whether AI could be used consistently. Teachers working in less advantaged settings described unstable internet, hardware shortages, or limited access to premium tools as practical barriers (Er & Aksoy, 2026). Similar access constraints were reported in AI-supported classroom-management, preschool, SAC (Science and Art Centre), and language-learning contexts, where differences in infrastructure and resource availability shaped what teachers and students could actually do with AI (Cebeci, 2025; Kızıler, 2026; Özdemir, 2025; Parlakkaya, 2025). Paid tools were also identified as a barrier in primary and lower-secondary settings (Altın et al., 2026). At the same time, some teachers viewed low-cost or flexible AI resources as potentially widening access to instructional materials. AI therefore appeared capable of both mitigating and reproducing inequality depending on the conditions of access.

Teachers raised concerns about data privacy, copyright, disclosure of AI assistance, misinformation, academic integrity, and unclear responsibility for problematic outputs (Kölemen et al., 2026; Önal et al., 2026; Uğraő et al., 2025). These concerns also appeared in studies where teachers conceptualized AI as useful but potentially open to misuse, reinforcing the need for human oversight and explicit ethical boundaries (Güneő, 2025). These issues were especially pronounced when students entered personal information into systems or when schools lacked clear guidance about acceptable use. Relational and developmental concerns were equally prominent. Teachers questioned whether excessive AI-mediated activity could reduce face-to-face interaction, weaken teacher-student relationships, or be inappropriate for younger learners. In preschool contexts, teachers emphasized adult mediation, age-appropriate use, and the continued importance of physical, social, and play-based learning (Kalaba Yıldırım & Önder, 2025; Parlakkaya, 2025; Uğraő, 2024). Responsible use was therefore described as a matter of balance and boundary-setting.

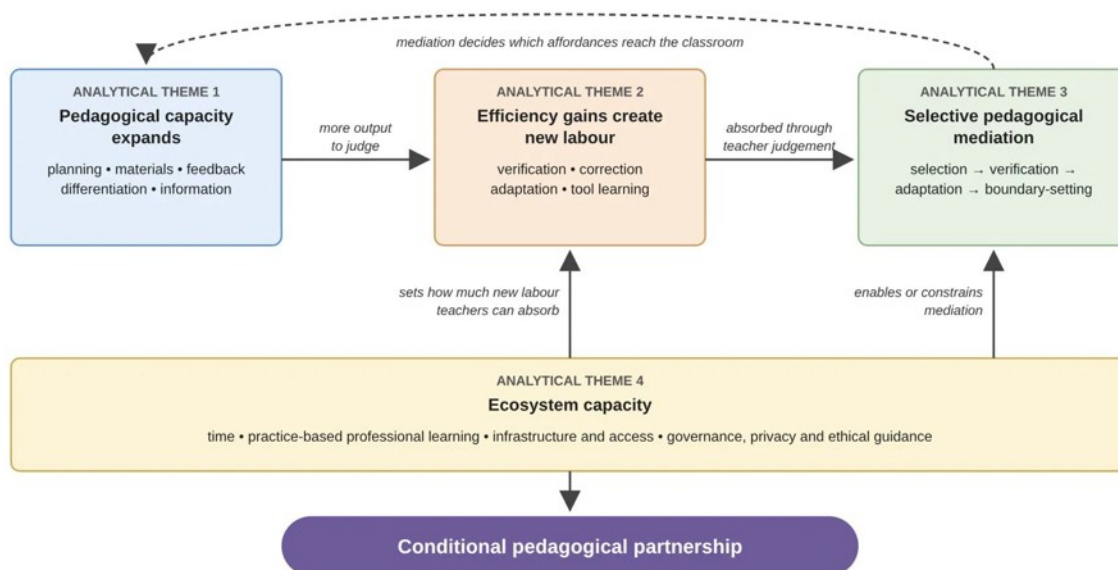
3.4. Interconnections Across Domains

Although the three domains are presented separately, the studies repeatedly showed that teachers experienced them as interconnected. A tool that generated useful resources could still be rejected because its outputs did not align with the teaching programme, because the teacher lacked time to verify them, because student data could not be safely entered, or because the classroom lacked reliable connectivity. Conversely, the same tool could become educationally valuable when teachers had sufficient subject knowledge, time to evaluate outputs, professional learning support, and freedom to adapt material to learners. Across these interconnections, four higher-order analytical claims were retained: pedagogical capacity expands without eliminating professional judgement; efficiency gains generate new forms of professional and cognitive labour; teacher agency is reconfigured as selective pedagogical mediation; and responsible integration depends on ecosystem capacity. Together, these

claims form the line-of-argument developed in the discussion. The relationships among these four analytical claims are summarized in Figure 2.

Figure 2

Line-of-Argument Synthesis



Note. Reading key: read the upper row from left to right and the vertical arrows from bottom to top. AI expands teachers' pedagogical capacity (Theme 1), but the additional output must be judged, which creates new verification and adaptation labour (Theme 2); teachers absorb this labour through selective pedagogical mediation (Theme 3), which in turn determines which affordances reach the classroom (dashed arrow). Ecosystem capacity (Theme 4) sets how much of this labour teachers can absorb and whether mediation is possible, so that the resulting teacher–AI relationship is a conditional pedagogical partnership.

4. Discussion

The purpose of this qualitative metasynthesis was to understand how in-service teachers in Türkiye experience and negotiate AI-supported pedagogical and professional work. Read across the three interconnected domains, the studies show that AI does not have a stable educational meaning outside the conditions of enactment. The same technological capacity can be experienced as enabling or constraining depending on teachers' knowledge, autonomy, available support, curricular fit, infrastructure, and the rules governing use. The discussion, therefore, focuses on interconnections that both constrain and enable responsible professional agency.

Constraining experiences tended to emerge when several conditions converged: unreliable or contextually weak outputs, limited AI literacy, insufficient time for verification, ambiguous governance, poor infrastructure, and pressure for rapid adoption. Under these conditions, AI could increase teachers' overall workload. Teachers might save time on initial production, yet spend it checking facts, rewriting material, dealing with access problems, or managing inappropriate student use. The finding extends common narratives about workload by showing that automation can shift labour from production to evaluation and governance. In this sense, AI may be better described as redistributing and, in some cases, deepening teachers' work than as simply saving it. Constraints also appeared when generated resources were poorly aligned with learners or teaching programmes. AI can rapidly produce plausible instructional artefacts, but teachers remain accountable for developmental appropriateness, disciplinary validity, and curricular coherence. Bearman et al.'s (2024) emphasis on evaluative judgement is therefore particularly relevant: greater generative capacity increases the amount of material that requires professional evaluation. The corpus suggests that when teachers lack the knowledge, time, or autonomy to carry out this evaluative work, technological abundance can become a curricular burden.

Student use created a related form of constraint. Teachers valued AI for explanation and feedback but worried that complete, immediate answers could undermine inquiry, persistence, originality, and academic integrity. Wang and Zhang (2026) show that human–AI partnerships can involve both cognitive vigilance and cognitive offloading. The present synthesis adds a school-teacher perspective: whether offloading becomes productive depends on how teachers structure the task and what intellectual work remains with the learner. Finally, unclear institutional rules could shift system-level responsibility onto individual teachers. Teachers were expected to manage privacy, copyright, disclosure, data security, assessment integrity, and age-appropriate use even when formal guidance was limited. This finding supports UNESCO’s human-centred framing of AI integration (Miao & Holmes, 2023) and suggests that responsible use cannot be sustained through individual competence alone.

Enabling experiences were associated with a different configuration. Teachers were more able to use AI productively when they possessed sufficient subject and pedagogical knowledge, had time and authority to modify outputs, could access practice-based professional learning, and worked within supportive technical and institutional conditions. In these contexts, AI functioned less like a script to be followed and more like a provisional resource to be interpreted. This pattern is consistent with an ecological account of teacher agency (Priestley et al., 2015). Agency was achieved through interaction between teachers’ experience, professional purposes, practical judgement, and the resources and constraints of the setting. Selective pedagogical mediation specifies how that agency appeared in AI-supported practice. Teachers exercised agency by selecting uses, verifying outputs, adapting material, and establishing boundaries. These actions explain why frequent use cannot be equated with professional agency: agency resides in the quality of mediation, not in the quantity of adoption.

Professional learning was particularly important when it was connected to authentic subject-specific tasks. Teachers wanted opportunities to evaluate AI-generated mathematics solutions, adapt language materials, review science explanations, develop age-appropriate preschool activities, and discuss privacy or assessment problems arising from actual practice. This aligns with Eedelouei’s (2026) emphasis on practical-evaluative judgement and suggests that professional development should be organized around pedagogical problems. Enabling conditions also required institutional coherence. Infrastructure, technical support, clear yet flexible rules, local-language access, and opportunities for collegial learning reduced the risk that individual teachers had to absorb. Under these conditions, AI-supported curriculum enactment became more responsive: teachers could use generative capacity to widen options while retaining authority over what entered the classroom.

5. Limitations

This study has several limitations. First, the synthesis focused exclusively on studies conducted in Türkiye, which strengthens contextual interpretation but limits transferability to other education systems. Second, although the national database search was supplemented by ERIC records, publisher and DOI pages, open scholarly indexes, citation chaining, and targeted searches, the supplementary retrieval audit did not constitute a formal Scopus or Web of Science search; some relevant studies may therefore have been missed. Third, the review was not preregistered, and refinement from the broader eligible pool to the final primary synthesis involved researcher judgement, although this process was documented through an audit trail. The evidence consisted of teachers’ self-reported accounts. Reported benefits such as time saving, improved engagement, or learning gains therefore represent perceived rather than measured effects, and the synthesis cannot establish effects on actual workload or student outcomes. Finally, AI was conceptualized inconsistently across studies, and the rapid evolution of AI technologies may limit the stability of technology-specific findings. Sensitivity analysis nevertheless showed that removing the study with the weakest appraisal profile did not alter the six descriptive or four analytical themes.

6. Conclusion

This metasynthesis shows that AI is altering the conditions under which teachers plan, produce, assess, adapt, and govern educational activity, but it is not removing the need for professional

judgement. Across 43 studies, teachers used AI to expand instructional possibilities and professional support, while repeatedly confronting questions of accuracy, learner effort, ethics, privacy, equity, relationships, and institutional capacity.

The central pattern is not replacement but reorganization. AI can accelerate production, yet teachers remain responsible for determining what is educationally legitimate. Efficiency can reduce routine work while creating new verification and governance labour. Teacher agency is therefore reconfigured through selective pedagogical mediation, selection, verification, adaptation, and boundary setting rather than being displaced by automation.

At the system level, responsible use depends on more than individual AI competence. Infrastructure, professional learning, curriculum alignment, leadership, ethical safeguards, and equitable access shape what teachers can enact. The resulting teacher–AI relationship is best understood as a conditional pedagogical partnership: AI can function as a pedagogical partner only while human judgement, meaningful learner activity, sufficient capacity, and human-centred safeguards remain in place. The practical implication is not that schools should maximize or minimize AI use. The more consequential question is whether teachers and institutions can decide when AI meaningfully strengthens teaching and learning, when its outputs require modification, and when its use should be limited or rejected.

Declarations

Acknowledgements: Not applicable.

Authors' contributions: The authors contributed equally to the article.

Competing interests: The authors declare that they have no competing interests.

Funding: The authors declare that this research received no external funding.

Ethics approval and consent to participate: This study is a qualitative metasynthesis of previously published journal articles and publicly available postgraduate theses. No new data were collected from human participants; therefore, ethics committee approval and informed consent were not required.

Thesis and conference disclosure: This study was not derived from a thesis and has not been presented at a scientific conference.

AI declaration: Claude (Anthropic) was used for figure drawing, reference checking, and language editing. The authors reviewed all outputs and take full responsibility for the content.

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Appendix A

Study-Level Mapping of Context, Evidence, Synthesis Themes, and Selective Pedagogical Mediation

Study	AI use/experience focus	Data/evidence base	Themes	Mediation / agency form(s)	Key supporting and qualifying evidence
Adıgüzel et al. (2025)	complementary/supportive AI role; information access/scaffolding; material/content generation	$n=8$; phenomenology; interviews/focus groups	T3, T1, T4, T5	Selection, Verification, Boundary-setting	Supports complementary/supportive AI role, information access/scaffolding. Qualified by accuracy/reliability/context mismatch, academic integrity/originality. AI was positioned as supportive.
Akçin et al. (2026)	personalization/differentiation; material/content generation; time/workload efficiency	$n=45$; phenomenology; semi-structured interviews; open-ended responses	T1, T6, T4, T5	Selection, Verification, Adaptation, Boundary-setting	Supports personalization/differentiation, material/content generation. Qualified by AI literacy/professional development, academic integrity/originality. Teacher review/contextualization remained necessary.
Altun et al. (2026)	time/workload efficiency; personalization/differentiation; assessment/feedback	$n=26$; basic qualitative study; semi-structured interviews; open-ended responses	T1, T3, T2, T5	Selection, Verification, Adaptation, Boundary-setting	Supports time/workload efficiency, personalization/differentiation. Qualified by equity/access/infrastructure, misuse/dependency/attention risks. Teacher review/contextualization remained necessary.
Araycı and Özyurt (2026)	lesson/activity design; professional learning; time/workload efficiency	$n=10$; mixed methods (qualitative component); semi-structured interviews	T1, T2, T3, T4, T5, T6	Selection, Verification, Adaptation, Boundary-setting	Supports lesson/activity design, professional learning. Qualified by AI literacy/professional development, cognitive dependency/skill loss. Teacher review/contextualization remained necessary.
An (2026)	personalization/differentiation; lesson/activity design; material/content generation	$n=15$; mixed methods (qualitative component); semi-structured interviews	T1, T2, T3, T6	Selection, Adaptation	Supports personalization/differentiation, lesson/activity design. Qualified by AI literacy/professional development. AI was positioned as supportive.
Cebeci (2025)	material/content generation; engagement/motivation; professional learning	$n=8$; explanatory sequential mixed methods (qualitative phase); interviews/focus groups; open-ended responses	T1, T2, T6, T5	Selection, Verification, Adaptation	Supports material/content generation, engagement/motivation. Qualified by AI literacy/professional development, equity/access/infrastructure.
Cengiz and Gümüş (2025)	assessment/feedback	$n=15$; case study; semi-structured interviews; open-ended responses	T6, T4, T1, T3	Selection, Verification, Adaptation, Boundary-setting	Supports assessment/feedback. Qualified by AI literacy/professional development, cognitive dependency/skill loss. Teacher review/contextualization remained necessary.
Cığerci and Uygun (2026)	assessment/feedback; lesson/activity design; material/content generation	$n=10$; explanatory sequential mixed methods (qualitative phase); semi-structured interviews	T1, T2, T3, T5, T6	Selection, Verification, Adaptation, Boundary-setting	Supports assessment/feedback, lesson/activity design. Qualified by cognitive dependency/skill loss, equity/access/infrastructure. Teacher review/contextualization remained necessary.
Çelik (2026)	confidence/well-being; lesson/activity design; assessment/feedback	$n=23$; phenomenology; semi-structured interviews; open-ended responses	T1, T2, T5	Verification, Adaptation	Supports confidence/well-being, lesson/activity design. Qualified by replacement/professional future concerns. Teacher review/contextualization remained necessary.
Dağıstan and Taşdemir (2026)	material/content generation; visualization/concretization; time/workload efficiency	$n=30$; phenomenology; semi-structured interviews	T1, T6, T3, T5	Selection, Adaptation	Supports material/content generation, visualization/concretization. Qualified by AI literacy/professional development, equity/access/infrastructure.

Study	AI use/experience focus	Data/evidence base	Themes	Mediation / agency form(s)	Key supporting and qualifying evidence
Demir and Demir (2026)	information access/scaffolding; time/workload efficiency; personalization/differentiation	n=9; phenomenology; semi-structured interviews	T1, T5, T6	Verification, Adaptation, Boundary-setting	Supports information access/scaffolding, time/workload efficiency. Qualified by AI literacy/professional development, equity/access/infrastructure. Teacher review/contextualization remained necessary.
Derinalp (2026)	complementary/supportive AI role; personalization/differentiation; confidence/well-being	n=7; qualitative study; interviews/focus groups; open-ended responses	T6, T3, T2	Selection, Adaptation	Supports complementary/supportive AI role, personalization/differentiation. Qualified by understanding AI and its limits, AI literacy/professional development. AI was positioned as supportive.
Er and Aksoy (2026)	engagement/motivation; complementary/supportive AI role; assessment/feedback	n=6; phenomenology; semi-structured interviews	T1, T2, T3, T5, T6	Selection, Verification, Adaptation	Supports engagement/motivation, complementary/supportive AI role. Qualified by curricular/pedagogical alignment, AI literacy/professional development. Teacher review/contextualization remained necessary.
Eren et al. (2025)	lesson/activity design; material/content generation; complementary/supportive AI role	n=81; phenomenology; semi-structured interviews	T1, T3	Selection	Supports lesson/activity design, material/content generation. AI was positioned as supportive.
Erol and Erol (2024)	creativity/collaboration; role/identity transformation; lesson/activity design	n=16; case study; semi-structured interviews	T5, T1, T4, T3	Selection	Supports creativity/collaboration, role/identity transformation. Qualified by relational/social-emotional loss, cognitive dependency/skill loss. AI was positioned as supportive.
Fidan (2025)	engagement/motivation; role/identity transformation; learning efficiency/retention	n=23; case study; semi-structured interviews; open-ended responses	T1, T6, T5, T3	Adaptation	Supports engagement/motivation, role/identity transformation. Qualified by equity/access/infrastructure, stakeholder collaboration.
Filiz et al. (2025)	lesson/activity design; personalization/differentiation; assessment/feedback	n=66; exploratory qualitative study; online discussion forums	T1, T2, T3, T4, T5, T6	Selection, Verification, Adaptation, Boundary-setting	Supports lesson/activity design, personalization/differentiation. Qualified by curricular/pedagogical alignment, privacy/ethical/legal uncertainty.
Güneş (2025)	complementary/supportive AI role; visualization/concretization; personalization/differentiation	n=20; phenomenology; semi-structured interviews; open-ended responses	T1, T6, T3, T4	Selection, Verification, Adaptation, Boundary-setting	Supports complementary/supportive AI role, visualization/concretization. Qualified by understanding AI and its limits, accuracy/reliability/context mismatch. AI was positioned as supportive.
Kalaba Yıldırım and Önder (2025)	assessment/feedback; visualization/concretization; material/content generation	n=15; phenomenology; semi-structured interviews	T1, T4, T6, T5	Selection, Verification, Adaptation, Boundary-setting	Supports assessment/feedback, visualization/concretization. Qualified by understanding AI and its limits, misuse/dependency/attention risks. Teacher review/contextualization remained necessary.
Kara and Aksu (2026)	time/workload efficiency; personalization/differentiation; assessment/feedback	n=54; qualitative study; semi-structured interviews	T1, T2, T3, T4, T5	Selection, Verification, Adaptation, Boundary-setting	Supports time/workload efficiency, personalization/differentiation. Qualified by misuse/dependency/attention risks, age-appropriate/balanced use. Teacher review/contextualization remained necessary.
Karabacak (2024)	learning efficiency/retention; creativity/collaboration; time/workload efficiency	n=16; case study; semi-structured interviews	T4, T3, T1	Selection, Verification, Adaptation	Supports learning efficiency/retention, creativity/collaboration. Qualified by cognitive dependency/skill loss, accuracy/reliability/context mismatch. Teacher review/contextualization remained necessary.
Kızılar (2026)	creativity/collaboration; engagement/motivation; lesson/activity design	n=22; case study; semi-structured interviews; observations; open-ended responses	T1, T5, T2, T3	Verification, Adaptation	Supports creativity/collaboration, engagement/motivation. Qualified by equity/access/infrastructure, AI literacy/professional development. Teacher review/contextualization remained necessary.

Study	AI use/experience focus	Data/evidence base	Themes	Mediation / agency form(s)	Key supporting and qualifying evidence
Kic-Drgas and Kılıçkaya (2026)	professional learning; lesson/activity design; information access/scaffolding	n=10; case study; semi-structured interviews	T2, T1, T6, T3	Selection, Verification, Adaptation	Supports professional learning, lesson/activity design. Qualified by institutional/technical support, AI literacy/professional development. AI was positioned as supportive.
Kölemen et al. (2026)	lesson/activity design; assessment/feedback; information access/scaffolding	n=42; embedded mixed methods (qualitative component); semi-structured interviews; implementation products	T1, T2, T6	Selection, Adaptation, Boundary-setting	Supports lesson/activity design, assessment/feedback. Qualified by age-appropriate/balanced use, privacy/ethical/legal uncertainty.
Kurtdede Fidan and Kayar (2025)	material/content generation; assessment/feedback; creativity/collaboration	n=13; phenomenology; semi-structured interviews; open-ended responses	T1, T4, T3, T2	Selection, Verification, Adaptation, Boundary-setting	Supports material/content generation, assessment/feedback. Qualified by cognitive dependency/skill loss, understanding AI and its limits. Teacher review/contextualization remained necessary.
Kutlucan and Seferoğlu (2026)	assessment/feedback; material/content generation; time/workload efficiency	n=6; case study; semi-structured interviews	T1, T6, T3	Verification, Adaptation	Supports assessment/feedback, material/content generation. Qualified by institutional/technical support, AI literacy/professional development. Teacher review/contextualization remained necessary.
Önal et al. (2026)	time/workload efficiency; material/content generation; assessment/feedback	n=5; explanatory sequential mixed methods (qualitative phase); semi-structured interviews	T1, T2, T3, T5, T6	Selection, Verification, Adaptation, Boundary-setting	Supports time/workload efficiency, material/content generation. Qualified by relational/social-emotional loss, privacy/ethical/legal uncertainty. Teacher review/contextualization remained necessary.
Özdemir (2025)	material/content generation; time/workload efficiency; engagement/motivation	n=13; phenomenology (as reported); frequency-oriented content analysis in practice; semi-structured interviews	T1, T5, T3, T6	Selection, Verification, Adaptation, Boundary-setting	Supports material/content generation, time/workload efficiency. Qualified by equity/access/infrastructure, AI literacy/professional development. Teacher review/contextualization remained necessary.
Özkan and Küpeli (2025)	assessment/feedback; personalization/differentiation; creativity/collaboration	n=45; qualitative survey; open-ended responses	T1, T5, T3, T4	Selection, Verification, Adaptation, Boundary-setting	Supports assessment/feedback, personalization/differentiation. Qualified by relational/social-emotional loss, privacy/ethical/legal uncertainty. Teacher review/contextualization remained necessary.
Özsongür and Çeliktürk Sezgin (2026)	time/workload efficiency; material/content generation; personalization/differentiation	n=27; basic qualitative study; semi-structured interviews	T1, T2, T6	Selection, Adaptation	Supports time/workload efficiency, material/content generation. Qualified by AI literacy/professional development, equity/access/infrastructure.
Parlakkaya (2025)	time/workload efficiency; role/identity transformation; personalization/differentiation	n=23; phenomenology; semi-structured interviews	T3, T5, T4, T1	Selection, Verification, Adaptation, Boundary-setting	Supports time/workload efficiency, role/identity transformation. Qualified by equity/access/infrastructure, relational/social-emotional loss. Teacher review/contextualization remained necessary.
Pınar (2026)	complementary/supportive AI role; role/identity transformation; information access/scaffolding	n=20; phenomenology; semi-structured interviews; open-ended responses	T3, T1, T4, T5	Selection, Verification, Boundary-setting	Supports complementary/supportive AI role, role/identity transformation. Qualified by academic integrity/originality, policy/ethical guidance/transparency. AI was positioned as supportive.
Polat and Özkan (2026)	material/content generation; engagement/motivation; lesson/activity design	n=10; phenomenology; semi-structured interviews	T1, T5, T3, T4	Selection, Verification, Adaptation, Boundary-setting	Supports material/content generation, engagement/motivation. Qualified by equity/access/infrastructure, AI literacy/professional development. Teacher review/contextualization remained necessary.
Sontay et al. (2024)	material/content generation; confidence/well-being; information access/scaffolding	n=15; phenomenology; semi-structured interviews	T1, T2, T5, T6	Adaptation, Boundary-setting	Supports material/content generation, confidence/well-being. Qualified by privacy/ethical/legal uncertainty, AI literacy/professional development.

Study	AI use/experience focus	Data/evidence base	Themes	Mediation / agency form(s)	Key supporting and qualifying evidence
Şahin (2025)	engagement/motivation; material/content generation; creativity/collaboration	n=7; case study; semi-structured interviews; implementation products	T1, T5, T3, T4	Selection, Verification, Adaptation, Boundary-setting	Supports engagement/motivation, material/content generation. Qualified by equity/access/infrastructure, academic integrity/originality. Teacher review/contextualization remained necessary.
Taktak (2024)	material/content generation; information access/scaffolding; time/workload efficiency	n=21; case study; semi-structured interviews	T4, T1, T2	Verification	Supports material/content generation, information access/scaffolding. Qualified by accuracy/reliability/context mismatch, AI literacy/professional development.
Tekin and Cigerci (2025)	engagement/motivation; time/workload efficiency; personalization/differentiation	n=13; phenomenology; semi-structured interviews	T1, T3, T4, T6	Selection, Verification, Adaptation, Boundary-setting	Supports engagement/motivation, time/workload efficiency. Qualified by accuracy/reliability/context mismatch, AI literacy/professional development. Teacher review/contextualization remained necessary.
Tümen Akyıldız (2026)	role/identity transformation; time/workload efficiency	n=11; qualitative study; focus groups	T3, T6, T2	Selection, Verification, Adaptation	Supports role/identity transformation, time/workload efficiency. Qualified by AI literacy/professional development, institutional/technical support. Teacher review/contextualization remained necessary.
Uğraş (2024)	personalization/differentiation; time/workload efficiency	n=16; case study; semi-structured interviews	T1, T2, T3, T4, T5, T6	Verification, Adaptation, Boundary-setting	Supports personalization/differentiation, time/workload efficiency. Qualified by age-appropriate/balanced use, equity/access/infrastructure. Teacher review/contextualization remained necessary.
Uğraş et al. (2025)	material/content generation; personalization/differentiation; lesson/activity design	n=33; case study; semi-structured interviews; ChatGPT interaction records	T1, T5, T2	Verification, Adaptation, Boundary-setting	Supports material/content generation, personalization/differentiation. Qualified by cognitive dependency/skill loss, equity/access/infrastructure. Teacher review/contextualization remained necessary.
Uğur Erdoğan (2026)	lesson/activity design; material/content generation; assessment/feedback	n=23; qualitative study; semi-structured interviews	T1, T2, T3, T4, T5, T6	Selection, Verification, Adaptation, Boundary-setting	Supports lesson/activity design, material/content generation. Qualified by privacy/ethical/legal uncertainty, institutional/technical support. Teacher review/contextualization remained necessary.
Üretmen Karaoğlu and Doğan (2025)	creativity/collaboration; complementary/supportive AI role; time/workload efficiency	n=14; mixed methods (qualitative component); semi-structured interviews	T3, T1, T4	Selection, Verification	Supports creativity/collaboration, complementary/supportive AI role. Qualified by replacement/professional future concerns, accuracy/reliability/context mismatch. AI was positioned as supportive.
Yaylak (2025)	time/workload efficiency; lesson/activity design; engagement/motivation	n=12; basic qualitative study; semi-structured interviews	T3, T1, T4, T2	Selection, Verification, Adaptation	Supports time/workload efficiency, lesson/activity design. Qualified by academic integrity/originality, relational/social-emotional loss. Teacher review/contextualization remained necessary.

Note. Descriptive themes and forms of mediation are analytically distinct but overlapping. Theme assignments indicate the descriptive themes to which each study contributed in the final full-text synthesis. Mediation forms indicate how teacher agency was enacted through AI-related practice. Assignments are non-exclusive and represent categories developed in the present metasynthesis. The AI use/experience focus and key supporting and qualifying evidence columns provide selective summaries of each study's reported AI uses and findings relevant to the synthesis. Where evidence included both affordances and tensions, the final column reports both supporting and qualifying patterns. T1 = expansion of pedagogical production and instructional design; T2 = support for professional efficiency and learning; T3 = centrality of teacher mediation and professional agency; T4 = epistemic and cognitive vulnerabilities; T5 = relational, ethical, and equity tensions; T6 = capacity and governance for responsible integration.

Appendix B

CASP Critical Appraisal of the Included Studies

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Adıgüzel et al. (2025)	Y	Y	CT	Y	CT	N	Y	Y	Y	Y
Akçin et al. (2026)	Y	Y	CT	Y	Y	CT	Y	CT	CT	Y
Altın et al. (2026)	Y	Y	Y	CT	CT	N	CT	CT	Y	Y
Arayıcı and Özyurt (2026)	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y
Arı (2026)	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Cebeci (2025)	Y	CT	CT	CT	CT	N	CT	CT	Y	Y
Cengiz and Gümüş (2025)	Y	Y	Y	Y	CT	N	Y	Y	Y	Y
Ciğerci and Uygun (2026)	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Çelik (2026)	Y	Y	Y	Y	CT	N	Y	CT	Y	Y
Dağıstan and Taşdemir (2026)	Y	Y	CT	CT	CT	N	Y	CT	Y	Y
Demir and Demir (2026)	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Derinalp (2026)	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y
Er and Aksoy (2026)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Eren et al. (2025)	Y	Y	Y	Y	Y	N	CT	CT	Y	Y
Erol and Erol (2024)	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y
Fidan (2025)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Filiz et al. (2025)	Y	Y	Y	Y	Y	N	CT	Y	Y	Y
Güneş (2025)	Y	Y	Y	CT	Y	N	Y	CT	Y	Y
Kalaba Yıldırım and Önder (2025)	Y	Y	CT	CT	CT	N	Y	CT	Y	Y
Kara and Aksu (2026)	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Karabacak (2024)	Y	Y	Y	CT	Y	N	CT	CT	Y	Y
Kic-Drgas and Kılıçkaya (2026)	Y	Y	Y	Y	Y	CT	CT	CT	CT	Y
Kızılar (2026)	Y	Y	Y	Y	CT	CT	Y	CT	Y	Y
Kölemen et al. (2026)	Y	Y	Y	Y	Y	N	CT	Y	Y	Y
Kurtdede Fidan and Kayar (2025)	Y	Y	CT	CT	Y	N	Y	CT	CT	Y
Kutlucan and Seferoğlu (2026)	Y	Y	Y	Y	CT	N	Y	CT	Y	Y
Önal et al. (2026)	Y	Y	Y	Y	Y	N	Y	CT	Y	Y
Özdemir (2025)	Y	Y	CT	Y	Y	CT	Y	Y	Y	Y
Özkan and Küpeli (2025)	Y	Y	Y	CT	CT	N	Y	CT	Y	Y
Özsongür and Çeliktürk Sezgin (2026)	Y	Y	Y	Y	CT	N	Y	Y	CT	Y
Parlakkaya (2025)	Y	Y	CT	CT	N	N	Y	N	Y	Y
Pınar (2026)	Y	Y	CT	CT	CT	N	Y	Y	Y	Y
Polat and Özkan (2026)	Y	Y	CT	Y	Y	CT	CT	N	Y	Y
Sontay et al. (2024)	Y	Y	Y	Y	Y	N	CT	CT	Y	Y
Şahin (2025)	Y	Y	Y	CT	Y	N	Y	CT	Y	Y
Taktak (2024)	Y	Y	Y	Y	Y	N	Y	N	CT	Y
Tekin and Ciğerci (2025)	Y	Y	CT	Y	Y	N	Y	CT	Y	Y
Tümen Akyıldız (2026)	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y
Uğraş (2024)	Y	Y	Y	CT	Y	N	CT	Y	Y	Y
Uğraş et al. (2025)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Uğur Erdoğan (2026)	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Üretmen Karaoğlu and Doğan (2025)	Y	Y	Y	CT	CT	N	Y	Y	Y	Y
Yaylak (2025)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Note. Critical appraisal was conducted using the 2024 CASP Qualitative Studies Checklist. Y = Yes; N = No; CT = Can't tell. Q1 = clear statement of aims; Q2 = appropriateness of qualitative methodology; Q3 = appropriateness of research design; Q4 = appropriateness of recruitment strategy; Q5 = adequacy of data collection; Q6 = consideration of the researcher–participant relationship; Q7 = consideration of ethical issues; Q8 = rigour of data analysis; Q9 = clarity of findings; Q10 = value of the research. No aggregate CASP score or quality category was used in the synthesis.