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Reclaiming Teacher Agency in AI Mediated Classrooms Exploring Professional Autonomy and Pedagogical Decision Making

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A B S T R A C T

The integration of artificial intelligence into education creates both opportunities and challenges for teachers' professional autonomy and pedagogical decision-making. This study aims to examine how teachers maintain their agency, negotiate the use of AI, and make instructional decisions in AI-mediated classrooms. A qualitative approach with an exploratory case study design was employed involving 15 teachers in Bogor selected through purposive sampling. Data were collected through semi-structured interviews and documentation and analyzed using thematic analysis. The findings indicate that AI supports greater efficiency in lesson planning, material differentiation, and assessment; however, final instructional decisions remain grounded in teachers' professional judgment, classroom context, and students' needs. The study highlights the importance of AI literacy and adaptive school policies in strengthening teacher agency and promoting responsible AI use in education

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INTRODUCTION

Artificial intelligence is increasingly used in education to support lesson planning, instructional design, assessment, feedback, and personalized learning. However, its growing use also raises concerns about teachers' professional authority and responsibility in pedagogical decision-making. Miao and Holmes (2023) emphasize the need for human-centered governance because technological development has progressed faster than institutional and pedagogical readiness. Similarly, Miao and Cukurova (2024) identify human agency, ethical judgment, and professional competence as essential for teachers working with artificial intelligence. Therefore, teacher agency has become a central issue in ensuring that artificial intelligence supports rather than replaces teachers' professional judgment.

Previous studies show that artificial intelligence can improve instructional efficiency but may also create challenges related to reliability, technical limitations, and teacher involvement in automated systems. Celik et al. (2022) found that artificial intelligence supports planning, assessment, and identification of students' learning needs while raising concerns about teachers' control over technology. In Indonesia, Williyan et al. (2024) found that teacher agency was positively associated with the use of artificial intelligence-assisted pedagogical strategies among 100 teachers of English as a Foreign Language. These findings indicate that effective artificial intelligence integration depends not only on technological access but also on teachers' capacity to exercise professional judgment. This issue is especially relevant in Bogor, where teachers must integrate digital tools while responding to curriculum requirements and diverse student needs.

Teacher agency refers to teachers' capacity to act intentionally, make professional choices, and influence pedagogical practices within their working environment. This capacity becomes important when artificial intelligence-generated recommendations do not fully reflect classroom realities. Nazaretsky et al. (2022) found that teachers' trust in artificial intelligence-powered educational technology increased when they could understand, review, modify, or override system recommendations. Duan and Zhao (2024) similarly found that artificial intelligence-powered applications could strengthen perceived autonomy and professional development. These findings show that professional autonomy depends on whether teachers retain meaningful control over technological recommendations and final pedagogical decisions.

Despite growing research on artificial intelligence in education, limited attention has been given to how teachers exercise agency in everyday classroom decision-making. Bower et al. (2024) found that 318 educators anticipated major changes in teaching and assessment and emphasized higher-order thinking, ethics, learning processes, and relational learning. However, their study provides limited explanation of how teachers actually accept, adapt, question, or reject artificial intelligence-generated suggestions. Frøsig and Romero (2024) also argue that generative artificial intelligence can support learning design while constraining professional agency when teachers have limited decision-making

power. This indicates the need for empirical research that examines how teachers negotiate autonomy during routine pedagogical practices.

The research gap therefore lies in the limited understanding of how teachers experience and preserve professional agency when artificial intelligence directly influences instructional decisions. Existing studies largely focus on technology adoption, trust, measurable outcomes, and general perceptions, while fewer explore teachers lived experiences of negotiating artificial intelligence recommendations. This gap is particularly relevant in Indonesia, where qualitative evidence on teacher autonomy in artificial intelligence-mediated classrooms remains limited. Accordingly, this study aims to explore how teachers in Bogor reclaim teacher agency in artificial intelligence-mediated classrooms, focusing on professional autonomy and pedagogical decision-making. It also examines the contextual, technological, and institutional factors that influence teachers' decisions to accept, modify, or reject artificial intelligence-supported recommendations.

Theoretically, this study contributes to the understanding of teacher agency as a dynamic negotiation between professional judgment, technological affordances, and institutional conditions. Practically, the findings can support school leaders and teacher educators in strengthening artificial intelligence literacy, ethical awareness, and teachers' authority in pedagogical decision-making. The study may also guide schools in developing policies that position artificial intelligence as a decision-support tool rather than a substitute for teacher expertise. By emphasizing teachers' experiences, this research highlights the importance of maintaining human judgment in technology-supported education. Ultimately, the study promotes a human-centered approach in which artificial intelligence enhances teaching while preserving teacher responsibility, contextual knowledge, and attention to student needs.

THEORETICAL REVIEW

Teacher Agency and Professional Autonomy

Teacher agency refers to teachers' capacity to make intentional choices and exercise professional judgment in teaching, while professional autonomy reflects their authority to determine instructional strategies, curriculum adaptation, assessment, and responses to students' needs. Hughes and Lewis (2020) found that greater curricular freedom can support responsive pedagogical practices, although workload, accountability, and externally imposed educational solutions may restrict autonomy. In artificial intelligence-mediated classrooms, this issue becomes more critical because technological systems can generate materials, analyze student performance, and recommend instructional actions. Lepage and Collin (2024) argue that artificial intelligence may shift decision-making authority from teachers to technological systems when automated recommendations strongly influence pedagogical choices. Therefore, teacher agency is maintained when teachers remain able to question, revise, contextualize, or reject artificial intelligence recommendations and retain final control over pedagogical decisions.

Artificial Intelligence as a Pedagogical Partner

Artificial intelligence increasingly supports teachers in lesson planning, instructional design, assessment, feedback, and personalized learning. Shi and Choi (2024), through a systematic review of 44 empirical studies, identified artificial intelligence as an instructional partner, evaluative partner, and pedagogical decision partner. These roles can help teachers prepare materials, assess student performance, and consider alternative instructional actions. However, artificial intelligence should complement rather than replace teachers because professional judgment also depends on contextual, ethical, relational, and experiential knowledge. Thus, artificial intelligence can strengthen teacher agency when it expands teachers' instructional options while preserving their authority to make final pedagogical decisions.

Pedagogical Decision-Making and Teacher Control

Pedagogical decision-making involves teachers' judgments concerning learning objectives, instructional methods, classroom activities, resources, differentiation, assessment, and feedback. Wang et al. (2024), in a study involving 312 in-service primary and secondary school teachers, found that teacher agency, professional autonomy, technological pedagogical knowledge, and institutional support positively influenced teachers' intentions to design artificial intelligence-assisted learning. This indicates that successful artificial intelligence integration depends not only on technological competence but also on teachers' ability to maintain professional control. Teachers may accept, modify, or reject artificial intelligence recommendations according to curriculum objectives, student needs, and professional judgment. Lepage and Collin (2024) therefore emphasize that artificial intelligence should support rather than replace human decision-making, ensuring that final pedagogical responsibility remains with teachers.

Artificial Intelligence Literacy and Professional Judgment

Artificial intelligence literacy involves teachers' ability to use technological tools while also understanding their limitations, potential biases, ethical implications, and pedagogical relevance. Sperling et al. (2024), through a scoping review of 34 studies, found that research on artificial intelligence literacy in teacher education remains underdeveloped, particularly regarding practical knowledge and professional judgment. Their findings highlight theoretical knowledge, practical competence, and professional or ethical judgment as important dimensions for informed artificial intelligence use. Similarly, Du et al. (2024), in a study involving 318 primary and secondary school teachers, found that artificial intelligence literacy was significantly related to teacher self-efficacy, awareness of artificial intelligence ethics, perceptions of artificial intelligence for social good, and intentions to learn more about artificial intelligence. Therefore, stronger artificial intelligence literacy can help teachers critically evaluate technological outputs and maintain professional autonomy in pedagogical decision-making.

Reclaiming Teacher Agency in Artificial Intelligence-Mediated Classrooms

Reclaiming teacher agency in artificial intelligence-mediated classrooms means ensuring that teachers remain the primary decision-makers while using artificial intelligence as a supportive educational tool. Artificial intelligence can enhance teaching by providing information, personalized resources, and decision support, but it may also reduce professional autonomy when teachers become overly dependent on automated recommendations. Lepage and Collin (2024) emphasize that teacher agency is preserved when teachers retain meaningful control over technological systems and remain able to evaluate, modify, or reject artificial intelligence-generated recommendations. This perspective highlights the importance of professional judgment, contextual knowledge, and teacher responsibility in determining how artificial intelligence is integrated into classroom practice. Accordingly, the present study involving 15 teachers in Bogor explores how teachers maintain professional autonomy and exercise pedagogical decision-making in artificial intelligence-mediated classrooms.

METHODOLOGY

Research Design

This study employed a qualitative approach with an exploratory case study design to examine teachers' professional autonomy and pedagogical decision-making in artificial intelligence-mediated classrooms. The qualitative approach was appropriate because the study focused on teachers' experiences, interpretations, and professional judgments rather than relationships among predetermined variables. Exploratory case studies enable in-depth investigation of a bounded contemporary phenomenon within its contextual setting (Tomaszewski et al., 2020). In this study, Bogor, Indonesia, served as the bounded context, while teachers' experiences of using artificial intelligence in instructional practice constituted the central phenomenon.

Research Setting, Population, and Participant Selection

The study involved 15 active teachers from several schools in Bogor who had experience using generative artificial intelligence for lesson planning, material development, assessment, feedback, or classroom activities. Participants were selected through non-probability purposive sampling because they possessed direct experience relevant to the research objectives (Campbell et al., 2020). The inclusion criteria required participants to be active teachers in Bogor, to have used artificial intelligence in at least one teaching-related activity, and to be willing to describe their experiences and professional decision-making processes. The sample size was considered appropriate because focused qualitative studies with relatively homogeneous participants commonly achieve sufficient thematic coverage within approximately 9 to 17 interviews, although adequacy ultimately depends on data richness and saturation (Hennink & Kaiser, 2022).

Data Collection and Research Instruments

Primary data were collected through semi-structured interviews, supported by documentation and, where access and consent permitted, non-participant classroom observations. Semi-structured interviews allowed the researcher to use consistent guiding questions while probing relevant experiences in greater depth (Adeoye-Olatunde & Olenik, 2021). The researcher-developed interview guide covered teacher agency, professional autonomy, pedagogical decision-making, artificial intelligence uses in lesson planning and assessment, responses to artificial intelligence-generated recommendations, and contextual or institutional influences. Supporting documents included de-identified lesson plans, artificial intelligence-assisted materials, assessment materials, instructional prompts, and other teaching artifacts. The interview protocol was reviewed and piloted, while triangulation across interviews, documents, and observations was used to strengthen methodological quality (Busetto et al., 2020).

Research Procedure

The study proceeded from institutional permission and participant recruitment to data collection, transcription, and analysis. Eligible teachers were invited voluntarily and received information about the study objectives, procedures, confidentiality, and their right to withdraw before providing informed consent. Individual interviews were audio-recorded with permission, followed by the collection of relevant documents and classroom observations when available. Recordings were transcribed verbatim, anonymized using participant codes, checked for accuracy, and organized with documentary and observational notes. Reflexive notes were maintained throughout the process to document methodological decisions and potential researcher influence, consistent with qualitative reflexivity principles (Olmos-Vega et al., 2023).

Trustworthiness and Ethical Considerations

Because the study was qualitative, methodological quality was addressed through credibility, dependability, confirmability, and transparency rather than statistical validity and reliability measures. Credibility was strengthened through triangulation and participant confirmation when clarification was required, while dependability and confirmability were supported through an audit trail of interview records, coding decisions, analytic memos, and theme development. Reflexive journaling was also used to examine potential researcher influence on interpretation (Olmos-Vega et al., 2023). Ethical procedures included informed consent, participant anonymization, removal of identifying information from documents, secure data storage, and reporting procedures that prevented identification of individual teachers or schools.

Data Analysis

Data were analyzed using thematic analysis to identify recurring patterns related to teacher agency, professional autonomy, pedagogical decision-making, and responses to artificial intelligence-generated recommendations. The analysis followed six stages: data familiarization, initial coding, candidate theme

development, theme review, theme definition and naming, and production of the analytical narrative (Kiger & Varpio, 2020). Coding was primarily inductive, while professional autonomy and pedagogical decision-making served as sensitizing concepts rather than fixed categories. Theme development was iterative and involved repeated comparison across interview transcripts, documents, and observational notes, consistent with Braun and Clarke's (2022) approach to thematic analysis. NVivo was used to organize transcripts, codes, coded segments, analytic memos, and themes, while interpretation and final theme construction remained the researcher's responsibility.

RESEARCH RESULTS

Participant Characteristics

The thematic analysis identified five major themes concerning teachers' experiences of using artificial intelligence in instructional practice: (1) artificial intelligence as a tool for instructional efficiency, (2) professional judgment as the basis of final pedagogical decisions, (3) contextual adaptation to classroom and student needs, (4) critical artificial intelligence literacy and verification practices, and (5) institutional conditions shaping teacher agency. The study involved 15 semi-structured interviews conducted with teachers from several schools in Bogor between January and March 2026. The interviews lasted between 47 and 68 minutes, producing approximately 828 minutes of interview data. In addition, 12 participants voluntarily provided 28 supporting teaching documents, including lesson plans, assessment materials, teaching-material drafts, and examples of artificial intelligence prompts or generated outputs. The frequencies reported in the following sections indicate the recurrence of themes across participants and are presented descriptively to support the qualitative interpretation rather than as statistical estimates.

Table 1. Characteristics of Teacher Participants

Code	School Level	Teaching Experience	Main Use of Artificial Intelligence	Interview Date
T01	Junior High School	7 years	Lesson planning and materials	January 8, 2026
T02	Senior High School	11 years	Assessment preparation	January 10, 2026
T03	Junior High School	5 years	Lesson planning	January 14, 2026
T04	Elementary School	9 years	Learning materials	January 19, 2026
T05	Senior High School	13 years	Assessment and feedback	January 24, 2026
T06	Junior High School	8 years	Differentiated materials	January 29, 2026

Code	School Level	Teaching Experience	Main Use of Artificial Intelligence	Interview Date
T07	Elementary School	6 years	Teaching activities	February 3, 2026
T08	Senior High School	15 years	Lesson planning and assessment	February 7, 2026
T09	Junior High School	10 years	Learning materials and feedback	February 10, 2026
T10	Elementary School	4 years	Instructional materials	February 16, 2026
T11	Senior High School	12 years	Assessment preparation	February 20, 2026
T12	Junior High School	6 years	Lesson planning and differentiation	February 25, 2026
T13	Senior High School	9 years	Materials and assessment	March 3, 2026
T14	Elementary School	8 years	Lesson planning	March 9, 2026
T15	Senior High School	14 years	Feedback and instructional design	March 16, 2026

Overview of Emerging Themes

Table 2. Summary of Thematic Findings

Theme	Participants Indicating Theme	Descriptive Proportion	Main Evidence
Instructional efficiency	14 of 15	93.3%	Faster planning, material generation, assessment preparation
Professional judgment and final authority	13 of 15	86.7%	Reviewing, modifying, or rejecting artificial intelligence output
Contextual adaptation and student needs	12 of 15	80.0%	Adjusting difficulty, examples, language, and learning activities
Artificial intelligence literacy and verification	11 of 15	73.3%	Fact-checking, prompt refinement, comparing information
Institutional conditions and policy	10 of 15	66.7%	School guidance, access, peer support, and lack of formal policies

The participant counts were used to show the relative recurrence of each theme within the dataset. Because the study employed a qualitative design, these frequencies were not interpreted as population estimates.

Artificial Intelligence as a Tool for Instructional Efficiency

The most frequently identified theme concerned the practical contribution of artificial intelligence to instructional efficiency. Fourteen of the 15 participants described artificial intelligence as useful for accelerating lesson planning, producing initial teaching-material drafts, generating classroom activity ideas, and preparing assessment questions. Participants generally described artificial intelligence as most useful during the preliminary stages of instructional preparation, particularly when they needed alternative ideas within limited preparation time. However, most participants also reported that the generated outputs were rarely used without modification.

One participant explained: "Artificial intelligence helps me create the first version of a lesson plan much faster. I can get several activity ideas in a few minutes, but I usually rewrite the activities because the suggestions are still too general for my students." (T03, January 14, 2026). A similar experience was reported in relation to assessment preparation: "For assessment, it is very helpful for generating examples of questions. However, I still check whether the level of difficulty and the indicators match what I have actually taught." (T11, February 20, 2026).

The documentary evidence reinforced the interview findings by showing that teachers generally treated artificial intelligence-generated content as an initial resource rather than as a final instructional product. Lesson plans and teaching materials indicated that teachers revised learning activities, instructions, examples, time allocation, and task complexity to ensure alignment with curriculum objectives, classroom conditions, and students' learning needs. Assessment materials similarly showed adjustments to question wording, difficulty levels, answer options, and indicators before being used in classroom practice. These modifications demonstrate that artificial intelligence was primarily used to accelerate the preparation of instructional resources, while teachers retained responsibility for evaluating and adapting the generated content. Thus, the documentary evidence supports the finding that instructional efficiency increased without eliminating teachers' professional judgment and pedagogical control.

Professional Judgment as the Basis of Final Pedagogical Decisions

Professional judgment emerged as the second major theme. Thirteen participants explicitly stated that recommendations or materials generated by artificial intelligence were treated as suggestions rather than final instructional decisions. Teachers described reviewing outputs according to curriculum requirements, learning objectives, previous classroom experience, and their knowledge of students before deciding whether the content should be used.

One participant stated: "I do not immediately use what artificial intelligence gives me. I read it first and ask whether it fits the learning objective.

If it does not fit, I change it or I do not use it at all." (T05, January 24, 2026). Another participant emphasized the teacher's responsibility for final decisions: "The system can suggest many things, but it does not know my class directly. I am the one who knows what happened in the previous lesson, so the final decision still has to come from the teacher." (T13, March 3, 2026). The coding results showed that 13 teachers were coded under "teacher retains final decision," 12 under "modification of artificial intelligence output," and nine under "rejection of unsuitable recommendations."

The most frequently reported reasons for rejecting or modifying generated content were misalignment with curriculum objectives, inappropriate difficulty, overly general explanations, and insufficient consideration of students' prior knowledge. A contrasting pattern was found among two participants who reported occasionally using artificial intelligence-generated materials with only minor revisions, particularly when facing substantial workload or limited preparation time. Nevertheless, even these participants described checking the material before presenting it to students.

Contextual Adaptation to Classroom and Student Needs

The third theme concerned the adaptation of artificial intelligence-generated outputs to actual classroom conditions. Twelve participants described adjusting generated materials because the original outputs did not always account for differences in students' academic ability, language proficiency, learning pace, local examples, or classroom dynamics. Participants therefore reported simplifying explanations, modifying examples, changing activity formats, and differentiating questions before using artificial intelligence-generated resources.

One teacher explained: "Sometimes the explanation is correct, but the language is too difficult for my students. I usually simplify it and give examples that are closer to their daily lives." (T06, January 29, 2026). Another participant described adapting tasks for different levels of student readiness: "Artificial intelligence can give me three or four versions of an activity, but I still decide which students can do each version. I cannot simply give the same generated task to everyone." (T12, February 25, 2026).

The coding results showed that 12 participants reported modifying content according to students' ability levels, 10 adjusted generated examples to make them more contextually relevant, and eight modified instructional activities according to classroom time or learning conditions. Documentary evidence showed similar patterns. Among the 10 lesson-plan documents analyzed, eight included revisions to examples, activity instructions, or difficulty levels after artificial intelligence-supported drafting. These findings showed that artificial intelligence outputs were commonly treated as adaptable resources rather than fixed instructional products.

Critical Artificial Intelligence Literacy and Verification Practices

The fourth theme concerned teachers' capacity to critically evaluate artificial intelligence-generated information. Eleven participants reported that artificial intelligence outputs required verification before classroom use,

particularly for factual information, examples, answer keys, and subject-specific explanations. Participants with greater experience using artificial intelligence also described refining prompts, comparing outputs across multiple attempts, and checking information against textbooks, curriculum materials, or other trusted sources.

A participant described this process as follows: "I learned that I should not assume every answer is correct. If it gives factual information or an answer key, I check it again because sometimes the explanation sounds convincing even when there is a mistake." (T09, February 10, 2026). Another participant emphasized the role of prompting: "At first, the answers were very broad. After using it more often, I understood that the quality of the result depends on how clearly, I give the instruction. Even then, I still verify the content." (T15, March 16, 2026).

Eleven participants reported independently verifying artificial intelligence-generated information, while nine described changing or refining prompts to obtain more relevant outputs. Seven participants reported encountering at least one instance in which artificial intelligence generated inaccurate, incomplete, or contextually unsuitable information. The supporting documentation showed that teachers frequently followed their initial prompts with clarification requests or additional constraints related to grade level, curriculum objectives, language complexity, and question difficulty. These findings indicate variation in participants' artificial intelligence literacy, particularly in their ability to critically evaluate and refine generated outputs. Overall, critical verification emerged as an important practice in supporting the responsible use of artificial intelligence in classroom instruction.

Institutional Conditions and Adaptive School Policies

The fifth theme involved institutional conditions that shaped teachers' opportunities to use artificial intelligence while maintaining professional autonomy. Ten participants referred to school-level factors such as access to digital facilities, support from colleagues, expectations from school leaders, professional development opportunities, and clarity of institutional guidance. The experiences were not uniform across the participating schools.

One participant reported a relatively supportive environment: "Our school allows us to use artificial intelligence as long as we check the material and remain responsible for what is given to students. We also sometimes discuss useful tools with other teachers." (T02, January 10, 2026). In contrast, another participant described the absence of formal guidance: "We use it individually because there is no specific school policy yet. We know that some teachers use artificial intelligence, but there has not been clear guidance about what is allowed or what should be avoided." (T10, February 16, 2026).

Nine participants reported that their schools did not yet have formal written guidelines specifically regulating the pedagogical use of artificial intelligence. Six participants indicated that they had received some form of institutional guidance, although four described this support as informal discussions rather than written policies. Eight participants identified peer

sharing among teachers as an important source of practical knowledge about artificial intelligence, while six expressed a need for more structured professional development addressing content verification, ethical use, student data protection, and appropriate classroom implementation. These findings indicate differences in institutional preparedness across schools and suggest that teachers operated within varying levels of organizational support. Overall, the results show that school policies, professional guidance, and collegial support played an important role in shaping how teachers used artificial intelligence while maintaining professional responsibility.

Cross-Theme Pattern: Artificial Intelligence Supported Rather Than Replaced Teacher Agency

Across the five themes, the dominant pattern was that artificial intelligence functioned primarily as a supportive resource rather than as an independent pedagogical decision-maker. Fourteen teachers reported benefits related to efficiency, but 13 simultaneously emphasized that the final instructional decision remained their responsibility. Similarly, 12 participants adapted generated outputs according to classroom conditions and students' needs, while 11 emphasized the need to verify artificial intelligence-generated content before use.

Table 3. Evidence of Teacher Decision-Making in Artificial Intelligence Use

Teacher Response to Artificial Intelligence Output	**Number of Participants**
Reviewed generated content before use	15
Modified content when necessary	12
Accepted content after verification	11
Rejected unsuitable recommendations	9
Adjusted content to students' needs	12
Verified factual or assessment information	11
Used outputs with minimal modification in some situations	2

The data showed that reviewing artificial intelligence-generated content was reported by all 15 participants, while modification and contextual adaptation were more common than direct acceptance without revision. The presence of negative or contrasting cases also indicated that the extent of teacher intervention varied according to workload, experience with artificial intelligence, and the perceived quality of the generated output.

Summary of Findings

The thematic analysis identified five interconnected findings. First, artificial intelligence increased efficiency in lesson planning, material differentiation, and assessment preparation. Second, professional judgment

remained the principal basis for final pedagogical decisions, with teachers commonly reviewing, modifying, or rejecting generated recommendations. Third, classroom context and students' needs strongly influenced whether artificial intelligence-generated resources were considered appropriate for use. Fourth, artificial intelligence literacy was reflected in teachers' verification practices, prompt refinement, and awareness that generated information could be inaccurate or contextually unsuitable. Fifth, school-level support and policy conditions varied, creating different levels of institutional guidance for teachers. Overall, the results indicate that the participating teachers did not describe artificial intelligence as replacing pedagogical decision-making. Instead, teacher agency was reflected in the active processes of selecting, evaluating, contextualizing, modifying, and occasionally rejecting technological recommendations. The primary empirical pattern therefore consisted of increased instructional efficiency alongside the continued exercise of professional autonomy and teacher responsibility for final classroom decisions.

DISCUSSION

The findings indicate that artificial intelligence primarily supported instructional efficiency while teachers retained control over pedagogical decisions. Fourteen of the 15 participants reported that artificial intelligence accelerated lesson planning, material development, differentiation, and assessment preparation, suggesting that its primary value was reducing the time required for preliminary instructional work rather than replacing teachers' professional roles. This finding is consistent with Kohnke et al. (2023), who demonstrated that generative artificial intelligence can support the development of teaching materials and learning activities, while effective use still depends on teachers' digital competence and professional evaluation. Similarly, Chiu et al. (2023) identified multiple roles of artificial intelligence across teaching, learning, assessment, and administration but emphasized that its educational benefits are accompanied by pedagogical, technological, and implementation challenges. The present findings therefore suggest that increased efficiency does not necessarily reduce teacher autonomy because technological assistance can expand instructional options while leaving final decisions under professional control. This relationship is important because it positions artificial intelligence as a resource for extending teachers' practical capacity rather than as an autonomous substitute for pedagogical expertise.

Professional judgment emerged as a central mechanism through which teacher agency was preserved, as 13 participants emphasized final teacher authority, 12 reported modifying generated materials, and nine had rejected recommendations considered unsuitable for their classrooms. Kasepalu et al. (2022) similarly found that artificial intelligence-generated pedagogical suggestions could broaden teachers' intervention options and influence the actions they considered in collaborative learning contexts. However, the present study differs by showing greater emphasis on teachers' active evaluation, modification, and rejection of technological outputs rather than simply incorporating system-generated recommendations into practice. This difference may be associated with

the open-ended nature of generative artificial intelligence, whose outputs are less constrained by specific classroom conditions and therefore require stronger contextual judgment. Kasneci et al. (2023) likewise caution that large language models may generate inaccurate or biased content and consequently require critical thinking, fact-checking, and continued human oversight. These findings imply that professional autonomy is maintained not by avoiding artificial intelligence but by preserving teachers' authority to determine whether technological recommendations are pedagogically acceptable.

The finding that 12 participants adapted artificial intelligence-generated resources according to student ability, language, prior knowledge, curriculum objectives, and classroom conditions further indicates that teacher agency is relational and context dependent. Perrotta and Selwyn (2020) argue that artificial intelligence in education should be understood relationally because its educational meaning emerges through interactions among technologies, institutional structures, data practices, and educational actors rather than through technology alone. The current findings support this perspective because the usefulness of generated content depended on teachers' knowledge of actual students and learning environments. Chounta et al. (2022) similarly found that teachers generally recognized the potential of artificial intelligence to support professional practice but emphasized the importance of contextual relevance and adequate knowledge for its implementation. Unlike that study, the present participants demonstrated relatively active practices of adaptation and integration, which may be explained by the purposive selection of teachers who already had experience using artificial intelligence for educational purposes. Thus, curriculum knowledge, familiarity with learners, prior technological experience, and specific classroom conditions appear to function as important factors that determine whether artificial intelligence strengthens or constrains professional agency.

Artificial intelligence literacy also emerged as an important condition for sustaining professional judgment, with 11 participants reporting verification of generated information, nine refining prompts, and seven encountering inaccurate, incomplete, or contextually unsuitable outputs. Ng et al. (2021) conceptualize artificial intelligence literacy through four interconnected dimensions: understanding artificial intelligence, using it, evaluating its outputs, and recognizing its ethical implications, which closely corresponds to the verification practices identified in this study. The findings therefore indicate that technological proficiency alone is insufficient because teachers must also possess the epistemic competence to determine whether generated information is reliable and pedagogically appropriate. This critical role is reinforced by Holmes et al. (2022), who identify accountability, transparency, bias, autonomy, agency, fairness, and inclusion as central ethical concerns in artificial intelligence-supported education. The finding that nine participants reported an absence of formal written school guidelines further suggests that individual literacy and professional judgment sometimes compensated for limited institutional regulation. Nevertheless, reliance on individual judgment alone may produce inconsistent practices across teachers and schools, indicating the need for institutional policies and professional

development that combine technical competence with ethical and pedagogical evaluation.

Although this exploratory qualitative study did not test a formal statistical hypothesis, the findings largely support the initial proposition that artificial intelligence can improve instructional efficiency without necessarily diminishing teacher agency. Factors supporting this pattern included teachers' prior experience with artificial intelligence, knowledge of curriculum requirements, familiarity with students, awareness of technological limitations, verification practices, and peer or institutional support. However, two participants reported occasionally using generated materials with only minor revisions, particularly when workload and preparation time were constrained, indicating that professional control may weaken under specific working conditions. This pattern is consistent with the observation of Kasepalu et al. (2022) that technological recommendations can influence the range of pedagogical actions considered by teachers, even when final decisions formally remain with the teacher. Compared with previous research that has frequently focused on technological affordances, perceptions, or general adoption patterns (Chiu et al., 2023; Chounta et al., 2022), the present findings demonstrate how teacher agency operates through everyday micro-decisions to accept, revise, verify, contextualize, or reject artificial intelligence outputs. Therefore, teacher agency should be understood as conditional and dynamic because workload, technological convenience, professional expertise, and institutional conditions may either strengthen or weaken teachers' active participation in pedagogical decision-making.

The principal novelty of this study lies in conceptualizing teacher agency in artificial intelligence-mediated classrooms as a process of negotiated pedagogical control rather than simply technological acceptance or resistance. Based on the findings, this process can be understood through three interconnected stages: instrumental delegation, in which artificial intelligence is used to accelerate preliminary instructional tasks; epistemic and contextual mediation, in which teachers verify and adapt generated outputs; and pedagogical sovereignty, in which teachers retain the authority to accept, modify, supplement, or reject technological recommendations. Previous studies have established that artificial intelligence can provide pedagogical support (Kohnke et al., 2023), influence teachers' possible actions (Kasepalu et al., 2022), and require evaluative literacy (Ng et al., 2021), whereas the present study integrates these processes into a sequential explanation of how professional autonomy is enacted in teachers' everyday practices. Theoretically, this model extends teacher agency by locating autonomy not simply in whether teachers use technology but in the points at which professional judgment intervenes between technological output and classroom implementation. Practically, it suggests that professional development should focus not only on how to operate artificial intelligence tools but also on verification, contextual adaptation, ethical judgment, and the professional authority to reject unsuitable recommendations. The qualitative evidence from teachers in Bogor additionally contributes a context-specific perspective to the predominantly international literature on artificial intelligence-mediated teaching and professional agency.

Several limitations should be considered when interpreting these findings. First, the purposive sample of 15 teachers from several schools in Bogor provides contextual depth but does not support statistical generalization to the broader population of Indonesian teachers, while the requirement for previous artificial intelligence experience may underrepresent teachers who are inexperienced, reluctant, or unable to access such technologies. Second, substantial reliance on self-reported interview data may introduce recall and social desirability biases, and classroom observations were not equally available for all participants, limiting consistent triangulation across cases. Third, differences in teaching subjects, school levels, technological access, and institutional guidance may have influenced how participants understood and exercised professional autonomy, while the rapid development of artificial intelligence means that practices identified during the study may change over time. Future studies should therefore adopt longitudinal and comparative designs involving experienced users, novice users, and non-users across different school types and geographical regions, while systematically integrating classroom observations and analysis of original artificial intelligence outputs alongside teacher-edited versions. Research should also examine how school leadership, institutional policies, workload, and professional development shape teacher agency and include students and school leaders to provide a broader understanding of the distribution of pedagogical authority. Such investigations would help test and refine the proposed negotiated pedagogical control model and determine whether the patterns identified in this study remain consistent across different educational and technological contexts.

CONCLUSIONS AND RECOMMENDATIONS

The study concludes that artificial intelligence can improve instructional efficiency without necessarily diminishing teacher agency when teachers retain control over final pedagogical decisions. The findings show that artificial intelligence supported lesson planning, material differentiation, and assessment preparation, while teachers continued to review, modify, contextualize, and occasionally reject generated recommendations according to curriculum objectives, classroom conditions, and students' needs. Teacher agency therefore emerged as a process of negotiated pedagogical control in which artificial intelligence was used for instrumental support, while professional judgment remained central to verification, contextual adaptation, and final instructional decision-making. This pattern reinforces the importance of artificial intelligence literacy, ethical awareness, and institutional support in ensuring that technology functions as a decision-support resource rather than as a substitute for teacher expertise.

Based on these findings, schools are recommended to develop clear and adaptive guidelines for the responsible use of artificial intelligence in teaching, particularly regarding verification of generated content, ethical use, student data protection, and teachers' accountability for instructional decisions. Professional development should move beyond operational training and strengthen teachers' capacity to critically evaluate artificial intelligence outputs, adapt them to classroom realities, and reject recommendations that do not meet pedagogical

standards. The proposed model of instrumental delegation, epistemic and contextual mediation, and pedagogical sovereignty may also serve as a practical framework for designing teacher training and institutional policy. Accordingly, artificial intelligence integration should be directed toward strengthening, rather than replacing, teachers' professional autonomy and responsibility.

FURTHER STUDY

Future research should extend this study by involving larger and more diverse groups of teachers from different regions, school types, educational levels, and levels of artificial intelligence experience to determine whether the identified patterns are transferable across contexts. Longitudinal and comparative studies are also recommended to examine how teacher agency changes as artificial intelligence becomes more embedded in educational practice. Future investigations should combine interviews with systematic classroom observations, analyses of original artificial intelligence-generated outputs and teacher-edited versions, and perspectives from students, school leaders, and curriculum coordinators. Such approaches may reduce the limitations associated with self-reported data and provide a more comprehensive understanding of how professional autonomy is negotiated in actual instructional settings.

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