Evaluating the Efficiency Gains of AI-Driven Lesson Planning among Senior High School Teachers

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ABSTRACT

Generative artificial intelligence (AI) is increasingly used in instructional preparation, but evidence from Philippine public secondary schools remains limited. This descriptive-correlational study examined AI-assisted lesson planning and perceived efficiency among all 14 senior high school teachers at Balangkayan Senior High School during School Year 2026-2027. Data were collected through an adopted and contextually modified questionnaire comprising a multiple-response AI-tool checklist, 25 AI-integration items, 10 perceived-efficiency items, and 10 challenge items. The instrument underwent a pre-administration review for clarity, relevance, and alignment with the study objectives; however, the available study records did not include a documented expert-validation index, pilot-test results, or an internal-consistency coefficient. Findings must therefore be interpreted with this measurement limitation in mind. Frequency, percentage, weighted mean, and Pearson product-moment correlation were used. ChatGPT was the most frequently reported tool (85.71%), followed by Canva AI (71.43%) and Microsoft Copilot (57.14%). Teachers reported AI integration to a great extent overall (M = 4.12), with time-saving receiving the highest composite mean (M = 4.30). They strongly agreed that AI improved planning efficiency (M = 4.17), while challenges were experienced to a great extent (M = 3.97), particularly the need to verify and revise AI-generated content (M = 4.50). AI integration was strongly associated with perceived efficiency, $r(12) = .78$, $p = .001$, 95% CI [.43, .93]. Because the sample was small, drawn from one school, and based on self-reports, the association was interpreted cautiously and was not treated as causal or generalizable beyond the participating school. The findings indicated that AI supported faster lesson preparation when teachers retained responsibility for accuracy, curriculum alignment, contextualization, and ethical use.

Keywords: Artificial intelligence, lesson planning, perceived efficiency, teacher productivity, senior high school

INTRODUCTION

Lesson planning required teachers to translate curriculum standards into coherent objectives, learning experiences, resources, and assessments. For senior high school teachers handling specialized subjects and multiple school responsibilities, this work demanded time, creativity, and sustained professional judgment. Generative AI offered a possible means of reducing routine preparation by producing initial drafts, examples, activities, assessment items, and instructional materials more quickly.

AI-generated materials, however, were not automatically classroom-ready. Outputs could be inaccurate, generic, misaligned with competencies, or insensitive to learners' contexts. A human-centered approach therefore remained necessary, with teachers retaining control over pedagogical and ethical decisions (Miao & Holmes, 2023). In the Philippine basic education system, Department of Education Order No. 003, s. 2026 likewise emphasized human oversight, pedagogical appropriateness, safety, privacy, and accountability in AI use (Department of Education, 2026).

Previous studies indicated that generative AI could support lesson planning and resource development, provided that teachers critically evaluated, revised, and contextualized its outputs (Belloula, 2025; van den Berg & du Plessis, 2023). These potential benefits were consistent with the Technology Acceptance Model, which proposed that perceived usefulness and ease of use influenced technology acceptance (Davis, 1989). Nevertheless, much of the available evidence came from settings outside Philippine public secondary schools.

At Balangkayan Senior High School, teachers had begun using AI tools for instructional preparation, but school-level evidence on their patterns of use, perceived efficiency, and implementation challenges remained limited. Addressing this gap was important because practical benefits could not be separated from the professional responsibility to verify, contextualize, and align generated content. The study therefore examined how teachers used AI, what efficiency gains they perceived, which challenges they encountered, and whether the extent of AI integration was associated with perceived efficiency.

Objectives

The study evaluated the efficiency gains of AI integration in lesson planning among senior high school teachers of Balangkayan Senior High School. Specifically, it sought to:

- Identify the AI tools commonly used by senior high school teachers in lesson planning;
- Determine the extent of AI integration in terms of time-saving, workload reduction, lesson-plan quality, instructional-resource preparation, and teacher confidence and productivity;
- Determine the perceived efficiency gains from AI integration in lesson planning;
- Identify the challenges encountered in using AI tools for lesson planning; and
- Examine the relationship between the extent of AI integration and perceived efficiency gains.

METHODOLOGY

Research Design

The study employed a quantitative descriptive-correlational design. The descriptive component identified the AI tools used and summarized the extent of AI integration, perceived efficiency gains, and challenges. The correlational component examined the relationship between AI integration and perceived efficiency gains. No variable was manipulated; consequently, the findings were interpreted as reported perceptions and associations rather than causal effects.

Locale of the Study

The study was conducted at Balangkayan Senior High School. The school was selected as the locale of the study because it was the institution where the respondents, the senior high school teachers, were currently teaching.

Respondents of the Study

The respondents of the study were 14 senior high school teachers of Balangkayan Senior High School. They were selected because they were directly involved in preparing lesson plans, instructional materials, classroom activities, and assessment tools for senior high school learners.

Sampling Procedure

This study used total enumeration sampling. This means that all members of the target population were included as respondents of the study. Since there were only 14 senior high school teachers in Balangkayan Senior High School, the researcher included all of them in the data gathering process.

Total enumeration was appropriate for this study because the number of respondents was manageable. It also allowed the researcher to gather responses from the entire group of senior high school teachers rather than selecting only a portion of them. Through this, the study provided a more complete picture of how AI integration in lesson planning was used among the senior high school teachers of Balangkayan Senior High School.

Research Instrument

Data were gathered using an adopted and contextually modified questionnaire informed by the literature on AI-assisted lesson planning, teacher workload, technology acceptance, and teacher-AI collaboration. The instrument contained four parts: (a) a multiple-response checklist of AI tools used; (b) 25 items measuring the extent of AI integration across time-saving, workload reduction, lesson-plan quality, instructional-resource preparation, and teacher confidence and productivity, with five items per dimension; (c) 10 items measuring perceived efficiency gains; and (d) 10 items describing challenges encountered. Parts (b) to (d) used five-point Likert-type response scales. Item wording was adapted to senior high school lesson-planning tasks and reviewed before administration for clarity, relevance, appropriateness, and alignment with the research objectives. The available study records, however, did not document the number or qualifications of expert validators, a content-validity index, pilot-testing procedures, or internal-consistency estimates such as Cronbach's alpha. Accordingly, the study did not claim established psychometric validity or reliability, and all scale-based findings were interpreted as descriptive evidence from the participating teachers. Future administration of the instrument should include formal expert validation, cognitive pretesting or pilot testing, and reliability analysis for each scale and subscale.

Data Gathering Procedure

After securing permission from the school authorities, the researcher explained the purpose of the study, voluntary participation, confidentiality, and the respondents' right to withdraw. The questionnaire was administered to the teachers, collected after completion, checked for completeness, coded, and prepared for analysis. A brief interview was used only to provide context regarding the tools and planning tasks reported by teachers; no names were included in the report.

Analysis of Data

Frequency and percentage described the AI tools used, while weighted means summarized AI integration, perceived efficiency gains, and challenges. Because respondents could identify more than one tool, the tool categories were analyzed as multiple-response data. Pearson's product-moment correlation tested the association between the composite AI-integration and perceived-efficiency scores at alpha = .05. Pearson correlation assumes paired continuous or approximately continuous scores, independent observations, a linear relationship, absence of influential outliers, and approximate bivariate normality. These assumptions should be examined through the study design, scatterplot inspection, outlier diagnostics, and distributional checks before inferential interpretation. Given n = 14, such checks have limited power; consequently, the coefficient was interpreted cautiously. A 95% confidence interval for r was calculated using Fisher's r-to-z transformation. The analysis described association only and did not support causal inference.

Limitations

The study included only 14 senior high school teachers from Balangkayan Senior High School and relied on self-reported perceptions. The small sample produced imprecise estimates, reduced the stability of the correlation coefficient, limited the assessment of distributional assumptions and outliers, and increased the possibility that the observed association was sensitive to individual responses.

The study also did not directly measure actual lesson-preparation time, independently rated lesson-plan quality, classroom implementation, teacher well-being, or student outcomes. In addition, documented expert-validation indices, pilot-test evidence, and reliability coefficients for the modified questionnaire were

unavailable. Therefore, the findings applied only to the participating teachers and school context, could not be generalized to other schools, and did not establish that AI use caused the perceived efficiency gains.

Research Ethical Considerations

The study observed proper ethical standards throughout the conduct of the study. Permission was secured from the school authorities before the data-gathering process. The respondents were informed about the purpose of the study. Their participation was voluntary, and they were given the option not to participate if they did not wish to do so. The researcher ensured that the identities of the respondents remained confidential. The names of the teachers were not disclosed in the presentation and interpretation of the data. The information gathered from the respondents was used only for research purposes. The researcher also ensured that the study did not harm, pressure, or embarrass any respondent.

RESULTS

This section outlines the key findings of the study, which were obtained through meticulous analysis of the data collected from the respondents. The following sections present the results and discussion in relation to the defined research questions, organized thematically according to research variables.

AI Tools Used by Senior High School Teachers in Lesson Planning

Table 1 presented the AI tools used by the 14 teacher respondents. Among the tools identified, ChatGPT emerged as the most commonly used, with 12 teachers or 85.71% reporting its use. This finding showed that ChatGPT was already widely utilized by the teachers and appeared to be the AI platform with which they were most familiar. Its high level of use may be attributed to its ability to provide immediate assistance in developing ideas, organizing information, and preparing materials that could support teachers in carrying out their instructional responsibilities.

This finding was consistent with van den Berg and du Plessis (2023), who found that generative AI tools such as ChatGPT could provide teachers and student teachers with useful materials and support, particularly in lesson planning. They also emphasized that these tools could make lesson-planning resources more accessible to teachers, while recognizing the importance of critically evaluating AI-generated content before using it in actual teaching.

Canva AI ranked second, with 10 teachers or 71.43% reporting its use. The relatively high number of Canva AI users suggested that teachers were not using artificial intelligence solely for generating written content. They also appeared to recognize the value of AI-supported tools for preparing visually engaging instructional materials. This was particularly relevant to teachers who needed to present lessons and learning activities in ways that could capture learners' attention and make classroom materials more appealing and understandable.

AI Tool	Frequency	Percentage	Rank
ChatGPT	12	85.71	1
Canva AI	10	71.43	2
Microsoft Copilot	8	57.14	3
Grammarly	7	50.00	4
Google Gemini	6	42.86	5
QuillBot	5	35.71	6
AI-powered search engine	4	28.57	7

Table 1. AI Tools Used by Senior High School Teachers in Lesson Planning

Microsoft Copilot ranked third, with eight teachers or 57.14%, showing that more than half of the respondents had also used this platform. This finding further reflected teachers' growing exposure to different forms of generative AI. The use of several AI platforms suggested that teachers were beginning to explore available technologies rather than depending on only one application to support their work.

Meanwhile, Grammarly ranked fourth, with seven teachers or 50.00%, followed by Google Gemini, which ranked fifth with six teachers or 42.86%. The use of these applications showed that the respondents' engagement with AI covered different areas of their professional work. While some AI applications could support content generation, others could assist with writing, language improvement, and the organization of information. Therefore, the findings reflected a broader pattern of AI use among teachers rather than reliance on a single type of digital assistance.

QuillBot ranked sixth, with five teachers or 35.71%, while AI-powered search engines ranked seventh, with four teachers or 28.57%. Although fewer teachers reported using these tools, their presence in the findings remained noteworthy. It indicated that some respondents were also exploring AI-assisted tools for language-related tasks and information retrieval. The differences in the frequency of use further suggested that teachers varied in the AI applications they had adopted, possibly depending on their familiarity with the tools, accessibility, and the particular support they needed in carrying out their teaching-related tasks.

Overall, the results revealed that ChatGPT, Canva AI, and Microsoft Copilot were the three most commonly used AI tools among the teacher respondents, while AI-powered search engines were the least reported. More importantly, the findings showed that the teachers' use of AI was not confined to a single application or function. Instead, they had begun using different AI-supported tools that could complement various aspects of their professional and instructional work.

The strong preference for ChatGPT supported the findings of van den Berg and du Plessis (2023), who highlighted the potential contribution of generative AI to lesson planning and the preparation of instructional materials. However, the authors also cautioned that AI should remain a supporting tool for teaching rather than a replacement for teachers' professional knowledge and judgment. In this regard, the findings suggested that while AI had become a useful part of the respondents' teaching practices, the meaningful use of these tools still depended on teachers' ability to select, evaluate, and adapt AI-generated content according to the needs of their learners and the objectives of their lessons.

Extent of AI Integration in Lesson Planning in Terms of Time-Saving

Table 2 presented the extent of AI integration in lesson planning in terms of time-saving. The results yielded a composite mean of 4.30, interpreted as Very Great Extent. This finding showed that the teacher respondents perceived AI tools as highly useful in reducing the time required to prepare their lessons. The consistently high ratings across the indicators suggested that AI had become a practical support in helping teachers accomplish some of the more time-consuming aspects of lesson preparation.

Among the indicators, “AI tools generate lesson ideas faster” obtained the highest mean of 4.43, interpreted as Very Great Extent. This indicated that the teachers particularly valued AI for its ability to provide immediate ideas that could serve as starting points in developing their lessons. Instead of spending considerable time thinking of possible topics, activities, examples, or approaches, teachers could use AI-generated suggestions and then refine them according to the lesson objectives and the needs of their learners. This finding was consistent with van den Berg and du Plessis (2023), who found that generative AI tools such as ChatGPT could provide teachers and student teachers with materials and support mechanisms for lesson planning.

Two indicators, “AI tools reduce the time spent preparing lesson plans” and “AI tools make lesson planning more efficient,” obtained the same mean of 4.36, both interpreted as Very Great Extent. These results further showed that the teachers experienced AI as a useful means of reducing the amount of time needed for lesson preparation. By providing an initial structure, suggestions, or draft content, AI could allow teachers to devote more of their preparation time to reviewing, improving, and contextualizing the lesson rather than

beginning every task from scratch. Research has similarly reported that teachers valued generative AI for its time-saving potential when creating lesson plans and instructional resources.

Indicator	Mean	Interpretation
AI tools reduce the time spent preparing lesson plans.	4.36	Very Great Extent
AI tools generate lesson ideas faster.	4.43	Very Great Extent
AI tools help prepare lesson activities in less time.	4.21	Very Great Extent
AI tools organize lesson content more quickly.	4.14	Great Extent
AI tools make lesson planning more efficient.	4.36	Very Great Extent
Composite Mean	4.30	Very Great Extent

Table 2. Extent of AI Integration in Lesson Planning in Terms of Time-Saving

The indicator "AI tools help prepare lesson activities in less time" obtained a mean of 4.21, also interpreted as Very Great Extent. This finding suggested that the time-saving benefit of AI went beyond developing the general lesson plan. Teachers also perceived AI as helpful when preparing activities that could be incorporated into classroom instruction. The result implied that having AI-assisted suggestions available could shorten the initial preparation process, while teachers remained responsible for selecting, modifying, and aligning the activities with the intended learning outcomes and learners' abilities. Studies on AI-assisted lesson planning likewise emphasized that generative AI could assist teachers in developing instructional resources while teachers' pedagogical knowledge remained essential in determining how these resources were ultimately used.

Meanwhile, "AI tools organize lesson content more quickly" received the lowest mean of 4.14, interpreted as Great Extent. Although this was the lowest-rated indicator, the result still reflected a favorable assessment of AI's contribution to saving time. Compared with simply generating ideas, organizing lesson content may have required greater teacher involvement because decisions regarding the sequence of topics, curriculum alignment, appropriate teaching strategies, and learners' needs could not be left entirely to AI. Thus, AI could provide a starting structure, but teachers still needed to review and refine the content based on their professional judgment and actual classroom context. van den Berg and du Plessis (2023) similarly emphasized that generative AI should support rather than replace teachers and that AI-generated materials needed critical evaluation before being used in teaching.

Overall, the composite mean of 4.30, interpreted as Very Great Extent, demonstrated that AI integration contributed considerably to time-saving in lesson planning as perceived by the teacher respondents. The highest rating for generating lesson ideas faster, together with the high ratings for reducing preparation time and making lesson planning more efficient, showed that teachers particularly valued AI for helping them accomplish planning tasks more quickly. The result was supported by research showing the potential of AI to reduce teachers' workload and the amount of time devoted to lesson preparation.

The findings, however, did not imply that saving time through AI eliminated the need for teachers' professional involvement. Rather, AI appeared to function as a support tool that reduced the time spent on initial preparation, leaving teachers responsible for checking accuracy, ensuring curriculum alignment, adapting materials to learners' needs, and making final instructional decisions. In this sense, the value of AI in lesson planning was not simply in producing content faster, but in giving teachers more flexibility to devote their limited preparation time to the aspects of teaching that required professional knowledge, judgment, and understanding of their learners.

Extent of AI Integration in Lesson Planning in Terms of Workload Reduction

Table 3 presented the extent of AI integration in lesson planning in terms of workload reduction. The results

showed a composite mean of 4.04, interpreted as Great Extent. This finding revealed that the teacher respondents generally found AI helpful in easing some of the work involved in preparing their lessons. While AI did not completely remove the demands of lesson planning, it appeared to make certain preparation tasks more manageable, allowing teachers to work with less effort and devote their attention to other teaching responsibilities.

Among the indicators, "AI tools lessen repetitive preparation tasks" received the highest mean of 4.21, interpreted as Very Great Extent. This finding suggested that teachers found AI most helpful when dealing with tasks that they regularly encountered during lesson preparation. Instead of repeatedly creating similar materials or activities from the beginning, teachers could use AI to generate initial ideas or drafts and then adjust them according to the objectives of the lesson and the needs of their learners. A randomized trial reported by the Education Endowment Foundation similarly found that teachers used ChatGPT to generate activity ideas, create questions and quizzes, and adapt existing materials for particular groups of learners.

The statement "AI tools reduce the lesson-planning workload" obtained a mean of 4.14, interpreted as Great Extent. This result showed that teachers generally experienced a lighter planning workload when AI was incorporated into their preparation. AI appeared to provide assistance in completing some of the preliminary work involved in planning a lesson, which could give teachers more room to focus on refining their instructional strategies and ensuring that their lessons were appropriate for their learners. This finding was supported by Belloula (2025), who reported that teachers viewed AI as helpful in reducing workload and allowing them to spend less time on routine tasks and more time on creative and instructional responsibilities.

Indicator	**Mean**	**Interpretation**
AI tools reduce the lesson-planning workload.	4.14	Great Extent
AI tools lessen repetitive preparation tasks.	4.21	Very Great Extent
AI tools help prepare materials with less effort.	4.07	Great Extent
AI tools help manage preparation alongside other tasks.	3.93	Great Extent
AI tools reduce the feeling of being burdened.	3.86	Great Extent
Composite Mean	4.04	Great Extent

Table 3. Extent of AI Integration in Lesson Planning in Terms of Workload Reduction

Similarly, "AI tools help prepare materials with less effort" obtained a mean of 4.07, interpreted as Great Extent. This indicated that teachers appreciated the assistance provided by AI when developing lesson materials. Rather than preparing every resource from the beginning, teachers could start with AI-generated suggestions and modify them to suit the content, objectives, and abilities of their learners. In this way, AI did not necessarily do the teacher's work but provided a useful starting point that could lessen some of the effort required during preparation.

The statement "AI tools help manage preparation alongside other tasks" received a mean of 3.93, also interpreted as Great Extent. This finding reflected the reality that lesson planning was only one of the many responsibilities handled by teachers. Aside from preparing lessons, teachers also attended to classroom instruction, assessment, records, school activities, and other professional responsibilities. The result suggested that using AI for certain preparation tasks helped teachers manage lesson planning alongside these competing demands. Research by Belloula (2025) likewise found that AI could streamline aspects of lesson planning and reduce teachers' workloads, while emphasizing that successful integration still depended on meaningful collaboration between teachers and AI.

Meanwhile, "AI tools reduce the feeling of being burdened" recorded the lowest mean of 3.86, although it was still interpreted as Great Extent. This result was particularly meaningful because it showed that while AI

helped teachers accomplish lesson-planning tasks more easily, it did not necessarily eliminate their overall sense of workload. Teachers continued to carry responsibilities that required their personal attention, professional judgment, and interaction with learners. Thus, AI could ease specific tasks, but the broader demands of teaching remained largely dependent on the teacher.

Overall, the composite mean of 4.04 demonstrated that AI was integrated into lesson planning to a Great Extent in terms of workload reduction. The findings showed that its contribution was most evident in reducing repetitive preparation tasks and providing assistance in developing instructional materials. This allowed teachers to approach lesson preparation with less effort and better manage it alongside their other responsibilities.

The findings were also consistent with empirical evidence on the potential of generative AI to ease teachers' planning workload. A 2024 randomized controlled trial involving 259 teachers in 68 secondary schools found that teachers using ChatGPT with implementation guidance spent 31% less time on lesson and resource planning than those who were asked not to use generative AI. Belloula (2025) similarly reported that AI tools could reduce teacher workload while allowing educators to devote greater attention to creative and critical instructional activities.

Taken together, the findings suggested that AI served as a helping hand rather than a replacement for the teacher. It eased repetitive and labor-intensive aspects of lesson preparation, but teachers remained responsible for reviewing the content, deciding what was suitable for their learners, aligning materials with learning objectives, and making the final instructional decisions. The value of AI, therefore, appeared to lie in making teachers' preparation work more manageable while allowing their professional judgment and understanding of their learners to remain at the center of lesson planning.

Extent of AI Integration in Lesson Planning in Terms of Lesson Plan Quality

Table 4 presented the extent of AI integration in lesson planning in terms of lesson-plan quality. The results obtained a composite mean of 4.01, interpreted as Great Extent. This showed that the teacher respondents generally viewed AI as a useful support in improving different aspects of their lesson plans. The results suggested that teachers did not value AI simply because it made preparation faster or reduced their workload. They also recognized its potential to help them develop lessons that were more organized, clear, and responsive to instructional requirements.

Among the indicators, “AI tools help create more organized lesson plans” obtained the highest mean of 4.14, interpreted as Great Extent. This finding indicated that organization was the aspect of lesson-plan quality in which teachers perceived the strongest contribution from AI. AI could provide teachers with an initial structure for arranging objectives, content, activities, and assessments in a more systematic manner. However, an AI-generated lesson plan generally remained a starting point that required teachers to edit and refine it before classroom use. Guidance on the practical use of generative AI in lesson planning similarly noted that AI could help produce initial lesson structures and ideas, but human revision remained important in making the resulting plan appropriate for actual instruction.

The indicators “AI tools improve the clarity of lesson objectives” and “AI tools improve overall lesson-plan quality” both received a mean of 4.07, interpreted as Great Extent. These findings showed that teachers perceived AI as helpful not only in arranging the parts of a lesson plan but also in expressing its intended direction more clearly. Clear objectives are central to lesson planning because they guide the selection of appropriate content, learning activities, and assessment. AI could assist in drafting or refining objectives, but the teacher remained responsible for determining whether these objectives were realistic, appropriate, and consistent with what learners were expected to achieve.

Indicator	Mean	Interpretation
AI tools help create more organized lesson plans.	4.14	Great Extent

AI tools improve the clarity of lesson objectives.	4.07	Great Extent
AI tools support meaningful classroom activities.	3.93	Great Extent
AI tools support alignment with learning competencies.	3.86	Great Extent
AI tools improve overall lesson-plan quality.	4.07	Great Extent
Composite Mean	4.01	Great Extent

Table 4. Extent of AI Integration in Lesson Planning in Terms of Lesson Plan Quality

The favorable rating for overall lesson-plan quality also suggested that teachers saw value in AI across several stages of planning rather than in only one isolated task. This finding was consistent with Belloula (2025), whose study involving educators found that AI integration could contribute to lesson quality while reducing workload. The study nevertheless emphasized teacher-AI collaboration, recognizing that technology works best when combined with teachers' professional expertise.

Meanwhile, “AI tools support meaningful classroom activities” obtained a mean of 3.93, which was likewise interpreted as Great Extent. The result indicated that teachers considered AI useful in generating or suggesting activities that could be incorporated into their lessons. This could provide teachers with a wider range of possibilities when designing classroom experiences, particularly when they needed additional ideas or alternative approaches to presenting a lesson. Practical guidance on AI-supported planning likewise identifies brainstorming classroom activities as one area in which generative AI can assist educators.

However, the meaningfulness of a classroom activity could not depend on AI alone. Teachers still needed to consider their learners' abilities, prior knowledge, interests, available resources, and the objectives of the lesson before deciding whether an AI-generated activity was suitable. In this sense, AI could broaden the range of ideas available to the teacher, while the teacher's knowledge of the learners and the classroom context determined which ideas were worth adopting.

The indicator “AI tools support alignment with learning competencies” obtained the lowest mean of 3.86, although it was still interpreted as Great Extent. This finding was important because competency alignment required more than simply generating lesson content. Teachers needed to ensure that the objectives, activities, and assessments were directly connected with the prescribed learning competencies. AI could assist in drafting standards-aligned lesson elements when relevant learning goals or standards were provided, but teachers still needed to verify whether the generated content accurately reflected curriculum expectations. Guidance on AI-supported lesson planning similarly emphasizes keeping teachers in control when using AI to develop standards-aligned plans and activities.

The comparatively lower mean for competency alignment may therefore reflect an area where teachers continued to rely more strongly on their own professional understanding of the curriculum. This was a reasonable pattern because teachers were ultimately responsible for ensuring that a lesson addressed the intended competencies and remained appropriate to their learners. AI could provide suggestions, but professional judgment remained necessary in deciding whether those suggestions truly matched the requirements of the lesson.

Overall, the composite mean of 4.01, interpreted as Great Extent, demonstrated that AI was integrated into lesson planning to a considerable degree in terms of enhancing lesson-plan quality. All five indicators received the same verbal interpretation, showing a consistently favorable perception of AI across organization, clarity of lesson objectives, meaningful classroom activities, competency alignment, and overall lesson-plan quality. The strongest contribution was observed in creating more organized lesson plans, while support for alignment with learning competencies received the lowest, though still favorable, assessment.

Taken together, the findings suggested that the value of AI in improving lesson-plan quality was best understood as supporting rather than replacing teachers' instructional judgment. AI could provide structure, clarify initial ideas, suggest classroom activities, and assist in preparing different components of a lesson. However, the quality of the final lesson plan still depended on the teacher's ability to review, contextualize, and refine what AI produced. Practical guidance on AI-assisted lesson planning specifically notes that substantial human editing may be needed to turn initial AI output into a classroom-ready lesson. Consequently, the findings reflected a complementary relationship in which AI provided useful assistance while teachers remained central in ensuring that lesson plans were accurate, relevant, meaningful, and suited to the needs of their learners.

Extent of AI Integration in Lesson Planning in Terms of Instructional Resource Preparation

Table 5 presented the extent of AI integration in lesson planning in terms of instructional resource preparation. The results yielded a composite mean of 4.13, interpreted as Great Extent. This finding showed that the teacher respondents generally integrated AI into the preparation of resources needed for instruction. The relatively high composite mean suggested that AI had become a useful support in developing materials, examples, assessment tasks, and other resources that teachers could adapt for classroom use.

Among the indicators, “AI tools are used to prepare instructional materials” obtained the highest mean of 4.29, interpreted as Very Great Extent. This finding indicated that preparing instructional materials was the area in which teachers most strongly integrated AI. The result suggested that teachers recognized the practical value of AI in producing initial drafts or ideas for materials that could support their lessons. Rather than developing every resource entirely from the beginning, teachers could use AI-generated content as a starting point and then revise it according to their objectives, subject matter, and learners' needs. Research on human-AI instructional design has similarly shown that generative AI can support teachers in developing learning activities and instructional materials while keeping human expertise central to the design process.

The indicator “AI tools help create examples for classroom discussion” received the second-highest mean of 4.21, also interpreted as Very Great Extent. This showed that teachers found AI particularly useful when they needed additional examples to explain concepts or initiate classroom discussions. Having access to varied examples could help teachers make abstract or difficult ideas easier for learners to understand. AI could also provide alternative situations or illustrations that teachers could evaluate and adapt to make discussions more relevant to the experiences of their students. Practical accounts of AI-assisted lesson preparation have demonstrated how teachers can use AI to generate lesson content and activities while still reviewing the outputs for accuracy, relevance, and possible bias before classroom use.

Indicator	**Mean**	**Interpretation**
AI tools are used to prepare instructional materials.	4.29	Very Great Extent
AI tools help create examples for classroom discussion.	4.21	Very Great Extent
AI tools help prepare assessment questions or activities.	4.14	Great Extent
AI tools suggest strategies for different learners.	3.86	Great Extent
AI tools help prepare resources supporting instruction.	4.14	Great Extent
Composite Mean	4.13	Great Extent

Table 5. Extent of AI Integration in Lesson Planning in Terms of Instructional Resource Preparation

Meanwhile, “AI tools help prepare assessment questions or activities” obtained a mean of 4.14, interpreted as Great Extent. This finding indicated that AI also played a meaningful role in supporting teachers as they prepared ways of checking learners' understanding. AI could provide initial ideas for questions or activities that teachers could modify according to the intended learning outcomes and the level of their students. A human-AI co-design study likewise described the potential of generative AI to support the development of

assessments and learning activities while emphasizing the importance of maintaining pedagogical rigor and human oversight.

Similarly, "AI tools help prepare resources supporting instruction" received a mean of 4.14, interpreted as Great Extent. This result reinforced the finding that teachers viewed AI as useful beyond generating lesson-plan content alone. It could assist them in developing supplementary resources that supported classroom instruction and provided additional ways of presenting or reinforcing a lesson. A study involving teachers in Iloilo reported that educators' use of generative AI was concentrated particularly in areas such as lesson planning, test creation, and content generation, which further demonstrated the growing role of AI in preparing materials for teaching.

The indicator "AI tools suggest strategies for different learners" obtained the lowest mean of 3.86, although it was still interpreted as Great Extent. This finding showed that teachers recognized the potential of AI to provide ideas for addressing differences among learners, but they integrated it somewhat less strongly for this purpose than for preparing general instructional materials or classroom examples. This pattern may reflect the more complex nature of differentiated instruction. Understanding what works for a particular learner requires knowledge of that learner's readiness, abilities, interests, difficulties, and classroom circumstances. Thus, although AI could suggest differentiated or scaffolded activities, teachers still needed to determine whether those recommendations were appropriate for the actual learners in their classrooms. Current guidance on AI-assisted lesson planning similarly describes AI as capable of suggesting differentiated activities while emphasizing that teachers remain responsible for deciding what to retain, modify, or discard.

Overall, the composite mean of 4.13, interpreted as Great Extent, demonstrated that AI was substantially integrated into teachers' preparation of instructional resources. The findings showed particularly strong use of AI in preparing instructional materials and generating examples for classroom discussion, both of which received a Very Great Extent rating. Its use in preparing assessments, developing supporting resources, and suggesting strategies for different learners was also evident to a Great Extent. What emerged from the results was that teachers appeared to use AI not as an end product, but as an additional resource in the preparation process. This distinction was important because instructional materials become meaningful only when they fit the objectives of the lesson and the actual needs of the learners. Research on human-AI co-design has emphasized this complementary relationship, showing that generative AI can streamline instructional planning but still requires teacher oversight to maintain contextual relevance and sound pedagogy. In the same way, classroom accounts of AI-assisted preparation emphasize reviewing AI-generated materials for accuracy and suitability before using them with students.

Taken together, the findings suggested that AI had become a practical partner in instructional resource preparation, giving teachers additional ideas and starting points for materials, examples, assessments, and learning activities. However, the teacher's professional judgment remained essential. AI could generate possibilities, but teachers were still responsible for selecting what was appropriate, checking the accuracy of the content, adapting materials to the learners' level, and ensuring that every resource contributed meaningfully to the intended learning outcomes. In this sense, the contribution of AI was strongest when its capabilities were combined with the teacher's knowledge of the curriculum, the subject matter, and, most importantly, the learners.

Extent of AI Integration in Lesson Planning in Terms of Teacher Confidence and Productivity

Table 6 presented the extent of AI integration in lesson planning in terms of teacher confidence and productivity. The results yielded a composite mean of 4.13, interpreted as Great Extent. This finding showed that the teacher respondents generally viewed AI as a helpful support that strengthened their productivity and contributed to their sense of preparedness when planning lessons. The results further suggested that the value teachers found in AI went beyond completing tasks more quickly. It also gave them additional ideas and support that could help them approach lesson preparation with greater readiness and creativity.

Among the indicators, "AI tools support creative teaching ideas" obtained the highest mean of 4.29,

interpreted as Very Great Extent. This indicated that teachers particularly valued AI as a source of fresh ideas for instruction. During lesson preparation, teachers were able to draw from AI-generated suggestions and explore different ways of presenting content or designing learning experiences. Rather than replacing their creativity, AI appeared to provide additional possibilities that teachers could consider, refine, and adapt to their own classroom situations. Recent research involving in-service teachers similarly found that generative AI could support originality, multimodal lesson design, and learner-centered instructional practices, although concerns about authenticity and overreliance remained important considerations.

The indicator "AI tools increase productivity in instructional preparation" received the second-highest mean of 4.21, also interpreted as Very Great Extent. This finding showed that teachers perceived themselves as more productive when AI was incorporated into their preparation practices. Access to AI-generated ideas, drafts, examples, and resources could help teachers move more readily from an initial concept to a workable instructional plan. A study involving teachers from four schools likewise found that generative AI was used mainly to create instructional resources and assessments, highlighting its practical role in teachers' lesson design and preparation

Indicator	**Mean**	**Interpretation**
AI tools increase confidence in preparing lesson plans.	3.93	Great Extent
AI tools increase productivity in instructional preparation.	4.21	Very Great Extent
AI tools allow greater focus on classroom delivery.	4.07	Great Extent
AI tools support creative teaching ideas.	4.29	Very Great Extent
AI tools help teachers feel more prepared for class.	4.14	Great Extent
Composite Mean	4.13	Great Extent

Table 6. Differences in Academic Performance According to Profile Variables

Similarly, "AI tools help teachers feel more prepared for class" obtained a mean of 4.14, interpreted as Great Extent. This result suggested that AI provided teachers with an additional layer of support as they prepared for instruction. Having access to ideas and possible approaches before entering the classroom may have helped teachers feel that they had considered more options during the planning process. However, being well prepared still depended on the teacher's ability to examine the relevance and accuracy of AI-generated content and to adapt it to the actual learning situation. Research on AI-supported instructional design emphasizes this combination of technological assistance and teachers' pedagogical expertise, rather than treating AI as a substitute for professional decision-making.

The statement "AI tools allow greater focus on classroom delivery" received a mean of 4.07, interpreted as Great Extent. The finding indicated that teachers perceived AI as helpful in allowing them to direct more attention toward how their planned lessons would actually be delivered. When some aspects of preparation were supported by AI, teachers could potentially devote greater attention to explaining concepts, anticipating learners' difficulties, considering appropriate strategies, and preparing themselves for classroom interaction. This result complemented the productivity finding by showing that teachers viewed the benefits of AI not merely in terms of producing lesson materials but also in helping them prepare for the actual delivery of instruction.

Meanwhile, "AI tools increase confidence in preparing lesson plans" obtained the lowest mean of 3.93, although it was still interpreted as Great Extent. This finding was noteworthy because it suggested that while AI provided considerable support during lesson preparation, teachers did not necessarily depend on the technology as the primary source of their professional confidence. Confidence in lesson planning may also develop from teaching experience, knowledge of the subject matter, familiarity with the curriculum, and understanding of learners. Evidence from research on AI and teacher development also suggests that the relationship between AI use and teaching confidence is not necessarily straightforward. One controlled study

involving pre-service teachers found improvements in some aspects of instructional performance with AI-supported planning but did not find a corresponding advantage in post-intervention teaching self-efficacy.

At the same time, other research suggests that confidence in using generative AI itself can improve when educators receive structured opportunities to learn how to use the technology. A study involving 70 preservice teachers found that intentional professional development increased participants' understanding, ethical awareness, and confidence in integrating generative AI into instruction. These findings provide useful context for the present result. They suggest that AI may contribute to confidence, but the extent of that contribution can also depend on teachers' experience, AI literacy, and ability to exercise professional judgment when evaluating its outputs.

Overall, the composite mean of 4.13, interpreted as Great Extent, demonstrated that AI was integrated into lesson planning to a considerable degree in terms of teacher confidence and productivity. The strongest ratings were observed in supporting creative teaching ideas (4.29) and increasing productivity in instructional preparation (4.21), both interpreted as Very Great Extent. The results suggested that the teachers saw AI particularly as a means of broadening their instructional ideas and helping them accomplish preparation tasks more productively.

More importantly, the findings reflected a supportive rather than dependent relationship between teachers and AI. The comparatively lower, though still favorable, rating for confidence suggested that teachers' professional assurance continued to rest on more than access to technology. Their knowledge of the curriculum, experience in teaching, understanding of their learners, and ability to make sound instructional decisions remained central. Research likewise indicates that teachers' pedagogical knowledge influences how effectively they use generative AI in lesson design.

Taken together, the findings suggested that AI functioned as a creative and productive partner in lesson preparation. It offered teachers additional possibilities, helped them develop instructional ideas, and supported their readiness for classroom teaching. Yet its contribution became most meaningful when AI-generated suggestions were combined with teachers' own experience, creativity, and professional judgment. In this sense, greater productivity did not diminish the role of the teacher. Instead, AI provided another resource that teachers could use thoughtfully to strengthen their preparation while remaining fully responsible for the quality and appropriateness of the lessons they delivered.

Summary of the Extent of AI Integration in Lesson Planning

Table 7 summarized the overall extent of AI integration in lesson planning across five dimensions. The findings yielded an overall mean of 4.12, interpreted as Great Extent, indicating that the teacher respondents had substantially integrated AI into their lesson-planning practices. Taken together, the results showed that teachers experienced the value of AI across different aspects of preparation, although its contribution was more strongly felt in some areas than in others.

Among the five dimensions, time-saving ranked first, with a composite mean of 4.30, interpreted as Very Great Extent. This was the only dimension that reached the highest verbal interpretation, suggesting that the most noticeable contribution of AI was its ability to help teachers accomplish lesson-planning tasks more quickly. This pattern was consistent with evidence from a trial involving 259 secondary science teachers, where teachers using ChatGPT for lesson and resource preparation spent approximately 25 fewer minutes per week on the lessons examined, while the quality of lesson materials did not significantly differ from those prepared without AI. The present finding therefore reinforced the practical role of AI in easing the time demands associated with lesson preparation.

Instructional resource preparation and teacher confidence and productivity both obtained a composite mean of 4.13, interpreted as Great Extent, and were ranked second and third, respectively. The close results of these two dimensions showed that teachers valued AI not only for helping them prepare instructional resources but also for supporting their productivity and providing additional ideas during lesson preparation. AI therefore appeared to function as more than a tool for completing tasks quickly. It also served as a source

of support from which teachers could draw ideas, materials, and possible approaches that could later be refined according to their instructional needs.

Dimension	**Composite Mean**	**Interpretation**	**Rank**
Time-Saving	4.30	Very Great Extent	1
Instructional Resource Preparation	4.13	Great Extent	2
Teacher Confidence and Productivity	4.13	Great Extent	3
Workload Reduction	4.04	Great Extent	4
Lesson Plan Quality	4.01	Great Extent	5
Overall Mean	4.12	Great Extent	

Table 7. Summary of the Extent of AI Integration in Lesson Planning

The finding was consistent with Belloula (2025), who found that educators perceived AI as beneficial in reducing workload and enhancing lesson quality while allowing greater attention to creative and critical instructional activities. The same study, however, emphasized the importance of training and teacher-AI collaboration to ensure that AI was integrated meaningfully into educational practice. This supported the present finding that AI was most useful when it complemented rather than replaced teachers' professional knowledge and decision-making.

Workload reduction ranked fourth, with a composite mean of 4.04, interpreted as Great Extent. Although teachers generally viewed AI as helpful in easing their lesson-planning demands, the rating was somewhat lower than those for time-saving, instructional resource preparation, and teacher confidence and productivity. This difference was understandable because workload involves more than lesson preparation alone. Teachers continued to handle classroom instruction, assessment, records, school activities, and other professional responsibilities. Thus, while AI could simplify selected planning tasks, it could not necessarily eliminate the broader workload associated with the teaching profession.

Finally, lesson-plan quality ranked fifth, with a composite mean of 4.01, although it remained within the Great Extent category. Its lower ranking did not indicate that teachers viewed AI as ineffective in improving lesson plans. Rather, the finding suggested that improvements in quality were perceived somewhat less strongly than the immediate advantages of saving time, preparing resources, and improving productivity. Supporting evidence likewise suggests that AI can reduce preparation time without necessarily producing a corresponding decline in lesson-material quality. Quality remained dependent on the teacher's ability to review AI-generated content, relate it to the intended learning competencies, and ensure its appropriateness for the learners.

Viewed as a whole, the pattern across the five dimensions provided a balanced picture of how teachers incorporated AI into lesson planning. The results showed that the strongest benefit was practical and immediate: saving time. This was followed by support for preparing instructional resources and strengthening productivity, while reductions in workload and improvements in lesson-plan quality were also evident but comparatively less pronounced. Similar research has reported that AI can streamline planning, reduce workload, and support lesson quality, while emphasizing that effective implementation still requires teacher expertise and appropriate professional development.

The overall mean of 4.12, interpreted as Great Extent, ultimately showed that AI had become a meaningful support in the lesson-planning practices of the teacher respondents. However, the findings did not suggest that AI had taken over the professional work of teachers. Instead, it appeared to serve as a supportive partner in the planning process, helping teachers work more efficiently, access additional instructional ideas, and prepare resources with greater ease. The final quality and relevance of the lesson still rested on the teacher's

professional judgment, knowledge of the curriculum, understanding of the learners, and ability to adapt AI-generated outputs to the realities of the classroom.

In this sense, the overall findings suggested that the value of AI in lesson planning was not simply in doing the teacher's work, but in giving teachers additional support to perform that work more efficiently and thoughtfully. The high overall level of integration therefore reflected a complementary relationship between technology and professional practice, where AI provided assistance while the teacher remained at the center of instructional planning and decision-making.

Perceived Efficiency Gains from AI Integration in Lesson Planning

Table 8 presented the teacher respondents' perceived efficiency gains from integrating AI into lesson planning. The results yielded a composite mean of 4.17, interpreted as Strongly Agree. This showed that the teachers generally believed that AI contributed positively to the way they prepared and organized their lessons. Their responses reflected benefits not only in saving time and increasing productivity, but also in preparing instructional materials, generating creative teaching ideas, and supporting the overall lesson-planning process.

Among the indicators, "AI integration in lesson planning helps save time" obtained the highest mean of 4.43, interpreted as Strongly Agree. This reinforced the earlier finding that time-saving was the most noticeable advantage experienced by the teachers. AI appeared to make some parts of lesson preparation more manageable by providing initial ideas, drafts, examples, and other forms of support that teachers could refine rather than developing everything from the beginning. Studies on generative AI in lesson planning likewise report that educators value its potential to improve efficiency and reduce the time required for preparation.

This was followed by"Overall, it improves teacher efficiency," which obtained a mean of 4.36, also interpreted as Strongly Agree. This result was particularly important because it reflected the teachers' broader assessment of AI after considering its different contributions to lesson planning. Their agreement suggested that the value of AI was not confined to a single planning activity. Instead, its usefulness was experienced across several aspects of teachers' preparation, resulting in an overall perception of greater efficiency.

Two other indicators, "It increases teacher productivity" and "It supports creativity in teaching activities," both obtained a mean of 4.29, interpreted as Strongly Agree. These findings suggested that efficiency was not understood by the teachers simply as completing tasks faster. They also associated AI integration with being able to accomplish more during preparation and having access to additional ideas for instruction. Research involving pre-service teachers similarly found that generative AI facilitated both efficiency and creativity in lesson planning, particularly in areas such as topic selection, material development, lesson organization, and language support.

Indicator	Mean	Interpretation
AI integration in lesson planning helps save time.	4.43	Strongly Agree
It helps reduce workload.	4.14	Agree
It supports better instructional materials.	4.21	Strongly Agree
It improves lesson organization.	4.14	Agree
It increases teacher productivity.	4.29	Strongly Agree
It permits more time for improving classroom instruction.	4.07	Agree
It supports creativity in teaching activities.	4.29	Strongly Agree
It improves confidence in lesson preparation.	3.93	Agree

It helps respond to learners' needs.	3.86	Agree
Overall, it improves teacher efficiency.	4.36	Strongly Agree
Composite Mean	4.17	Strongly Agree

Table 8. Perceived Efficiency Gains from AI Integration in Lesson Planning

The strong rating for creativity was meaningful because lesson preparation often required teachers to think of different ways of presenting content and engaging learners. AI could offer possibilities that teachers might use as starting points when developing activities. However, creativity remained a collaborative process in which teachers needed to determine whether an AI-generated suggestion was relevant, appropriate, and meaningful within their own classroom context. Research has similarly emphasized that while generative AI can facilitate creativity and efficiency, the quality and pedagogical suitability of its outputs require continued attention from the teacher.

The statement "It supports better instructional materials" received a mean of 4.21, interpreted as Strongly Agree. This finding showed that teachers also recognized the value of AI in preparing resources that could support instruction. AI-assisted lesson planning has been associated with resource and assessment creation, although research also indicates that teachers' pedagogical knowledge influences how effectively such tools are used. Thus, AI could provide initial content and possible resources, but teachers remained responsible for ensuring that these materials were accurate and suitable for their learners.

Meanwhile, "It helps reduce workload" and "It improves lesson organization" both obtained a mean of 4.14, interpreted as Agree. These results showed that teachers acknowledged the contribution of AI in making preparation more manageable and helping arrange lesson components. The slightly lower ratings compared with time-saving and productivity suggested that teachers experienced the benefits of AI more strongly in completing tasks efficiently than in reducing their overall professional workload. This distinction was reasonable, as teachers continued to handle responsibilities beyond lesson planning. Research among educators has likewise reported that AI can reduce aspects of teacher workload and streamline lesson preparation, while emphasizing the continued importance of teacher-AI collaboration.

The indicator "It permits more time for improving classroom instruction" received a mean of 4.07, interpreted as Agree. This suggested that some of the efficiency gained during preparation could provide teachers with greater opportunity to concentrate on other aspects of instruction. When less effort was devoted to routine preparation tasks, teachers could potentially give more attention to how lessons would be delivered and how activities could be adjusted to support learning. Studies of teachers' generative AI use have similarly identified instructional design and administrative efficiency as prominent areas of application.

The statement "It improves confidence in lesson preparation" obtained a mean of 3.93, also interpreted as Agree. Although teachers acknowledged that AI helped them feel more confident during preparation, the result suggested that confidence was not among its strongest perceived benefits. Professional confidence may have remained grounded largely in the teachers' own experience, subject knowledge, familiarity with the curriculum, and understanding of their learners. AI could provide additional support, but it could not substitute for the knowledge and judgment developed through professional practice.

Finally, "It helps respond to learners' needs" received the lowest mean of 3.86, although it was still interpreted as Agree. This finding deserves particular attention because responding effectively to learners requires more than generating instructional content. Teachers must understand individual differences, readiness levels, learning difficulties, interests, and the social context of their classrooms. Research with K–12 teachers has identified differentiation as one perceived benefit of generative AI, but it has also raised concerns regarding accuracy, ethics, overreliance, and the need to align AI use intentionally with human-centered educational goals. The result therefore suggested that while AI could offer ideas for meeting learners' diverse needs, teachers continued to rely strongly on their own knowledge of the students when deciding how those ideas should be applied.

Overall, the composite mean of 4.17, interpreted as Strongly Agree, demonstrated a generally favorable perception of the efficiency gains associated with AI integration in lesson planning. The pattern of responses showed that the benefits were most apparent in saving time, improving overall efficiency, increasing productivity, supporting creativity, and developing instructional materials. At the same time, relatively lower ratings for confidence and responsiveness to learners' needs suggested that teachers recognized limits to what AI could contribute independently.

Taken together, the findings portrayed AI as a supportive partner in lesson preparation rather than a substitute for the teacher. Its greatest contribution appeared to lie in helping teachers work more efficiently and providing ideas or initial content that could make preparation easier. However, the effectiveness of these outputs continued to depend on the teacher's ability to evaluate, contextualize, and adapt them. Research has likewise emphasized that realizing the educational benefits of generative AI requires professional development, pedagogical knowledge, and thoughtful human oversight.

Challenges Encountered in Using AI Tools for Lesson Planning

Table 9 presented the challenges encountered by teachers when using AI tools for lesson planning. The results yielded a composite mean of 3.97, interpreted as Great Extent, indicating that although teachers recognized the usefulness of AI in lesson preparation, they also encountered important concerns in using these tools. The findings reflected a generally thoughtful approach toward AI integration. Teachers appeared to appreciate what AI could contribute while remaining aware that its outputs could not simply be accepted without careful review and professional consideration.

The most prominent challenge was "Some AI-generated content requires careful checking and revision," which obtained the highest weighted mean of 4.50, interpreted as Very Great Extent. This result showed that the teachers strongly recognized the need to examine AI-generated materials before incorporating them into their lesson plans. While AI could provide content quickly, its output was not automatically ready for classroom use.

Teachers still needed to determine whether the information was accurate, appropriate for the learners, aligned with the lesson objectives, and suitable within the context in which the lesson would be taught. UNESCO's guidance on generative AI similarly emphasizes human-centered use, ethical validation, and the need for educational institutions and users to critically assess generative AI rather than treating its outputs as inherently reliable.

Closely following this was "AI tools cannot replace professional teacher judgment," with a weighted mean of 4.43, likewise interpreted as Very Great Extent. This finding was particularly significant because it showed that teachers did not perceive AI as a substitute for their professional expertise. AI could suggest ideas, materials, activities, or lesson structures, but teachers remained responsible for deciding what was appropriate for their learners.

Research involving preservice mathematics teachers similarly found that although AI provided time-saving benefits and support for developing innovative activities, teacher agency, pedagogical knowledge, critical thinking, and content alignment remained essential. The present finding therefore reinforced the idea that meaningful AI integration depended on the teacher's ability to evaluate and adapt what the technology produced.

Another major concern was "More training is needed to use AI effectively," which obtained a weighted mean of 4.21, interpreted as Very Great Extent. This suggested that teachers recognized that having access to AI did not necessarily mean knowing how to use it well. Effective integration required an understanding of how to communicate with AI tools, evaluate their outputs, protect sensitive information, and determine when AI assistance was pedagogically appropriate. UNESCO has similarly called for teacher training and capacity building as part of a human-centered approach to generative AI in education. Belloula (2025) also identified comprehensive training as an important requirement for responsible and productive AI integration among educators.

Challenge	Weighted Mean	Interpretation
Some AI-generated content requires careful checking and revision.	4.50	Very Great Extent
AI tools cannot replace professional teacher judgment.	4.43	Very Great Extent
More training is needed to use AI effectively.	4.21	Very Great Extent
AI-generated lesson plans can be too general.	4.14	Great Extent
Contextualizing AI-generated plans still takes time.	4.07	Great Extent
Accuracy of AI-generated lesson content is a concern.	4.00	Great Extent
Internet or device availability affects use.	3.79	Great Extent
Data privacy is a concern.	3.71	Great Extent
Overdependence on AI is a concern.	3.64	Great Extent
Some AI tools are difficult to use.	3.21	Moderate Extent
Composite Mean	3.97	Great Extent

Table 9. Challenges Encountered in Using AI Tools for Lesson Planning

The statement "AI-generated lesson plans can be too general" obtained a weighted mean of 4.14, interpreted as Great Extent, while "Contextualizing AI-generated plans still takes time" received a weighted mean of 4.07, also interpreted as Great Extent. These two findings appeared closely related. An AI-generated lesson plan may provide teachers with a useful starting point, but it may not fully reflect the realities of a particular classroom. Teachers still needed to consider learners' abilities, available resources, curriculum requirements, local examples, and the actual conditions under which a lesson would be delivered. Research on AI-generated lesson planning likewise found that AI could serve as a useful scaffold, but teacher agency and content alignment remained important in adapting generated plans to instructional requirements.

Similarly, "Accuracy of AI-generated lesson content is a concern" obtained a weighted mean of 4.00, interpreted as Great Extent. This result complemented the highest-rated concern regarding the need to check and revise AI-generated content. Together, these findings showed that teachers understood the importance of verifying information before using it in instruction. Such caution was appropriate because the usefulness of AI depended not merely on how quickly it could generate information, but on whether that information was accurate, relevant, and pedagogically suitable. UNESCO's guidance highlights the need for validation and human oversight in the educational use of generative AI, reinforcing the importance of keeping humans accountable for decisions involving AI-generated outputs.

Access also emerged as a challenge. "Internet or device availability affects use" obtained a weighted mean of 3.79, interpreted as Great Extent. This finding indicated that the practical use of AI was influenced by whether teachers had reliable access to the technology needed to use it. Even when educators were interested in incorporating AI into their work, limitations in digital infrastructure could restrict how consistently they could do so. Research on AI-supported lesson planning has likewise identified resource inequities and the digital divide as factors that complicate educational AI implementation.

The statement "Data privacy is a concern" obtained a weighted mean of 3.71, interpreted as Great Extent. Although this challenge ranked below concerns about accuracy, professional judgment, and training, it remained important. Using generative AI can involve entering information into external digital systems, making awareness of how data are handled particularly relevant in educational settings. UNESCO has specifically identified data privacy as an important consideration in regulating and implementing generative AI and recommends appropriate protections as part of responsible educational use.

Likewise, "Overdependence on AI is a concern" received a weighted mean of 3.64, interpreted as Great Extent. The result suggested that teachers recognized the possibility that excessive reliance on AI could

weaken the role of their own judgment and decision-making in lesson preparation. This concern was consistent with the earlier finding that teachers strongly believed AI could not replace professional judgment. Belloula (2025) similarly identified overreliance on AI as a concern among educators and emphasized maintaining meaningful teacher-AI collaboration.

Finally, "Some AI tools are difficult to use" obtained the lowest weighted mean of 3.21, interpreted as Moderate Extent. Compared with the other challenges, technical difficulty appeared to be a less serious concern for the respondents. This was an interesting finding because it suggested that the teachers' primary concerns were not simply about operating the technology. Instead, their greater concerns involved the quality, reliability, contextual relevance, and responsible use of what AI produced. The result may also help explain why the need for training was rated highly. Training should therefore extend beyond learning how to operate an AI tool and include the development of skills needed to evaluate outputs, write appropriate prompts, protect data, and integrate AI in pedagogically meaningful ways. Research has similarly emphasized the importance of teacher training and professional preparation in realizing the benefits of educational AI.

Overall, the composite mean of 3.97, interpreted as Great Extent, demonstrated that teachers encountered meaningful challenges in integrating AI into lesson planning. The strongest concerns centered on the need to check and revise AI-generated content, preserve professional teacher judgment, and provide adequate training, rather than simply on difficulties in operating AI applications. This pattern suggested that the respondents approached AI with a degree of professional caution. They recognized its usefulness, but they were also aware that technology had limitations that required human oversight.

Taken together with the favorable results reported in the preceding tables, Table 9 presented a more balanced picture of AI integration. The teachers perceived AI as capable of saving time, supporting productivity, and assisting with instructional preparation, yet they did not appear to regard it as an unquestionable source of instructional content.

Instead, the findings emphasized a human-centered approach in which AI assisted the planning process while the teacher retained responsibility for accuracy, relevance, contextualization, and final instructional decisions. This perspective closely reflected UNESCO's position that educational uses of generative AI should preserve human agency and accountability while supporting the development of appropriate human capacities.

In this sense, the challenges identified in Table 9 should not necessarily be viewed as reasons for teachers to avoid AI. Rather, they pointed to the conditions needed for responsible and effective integration. Appropriate training, reliable access, clear safeguards for data privacy, careful verification of generated content, and continued reliance on teachers' professional judgment could help ensure that AI remained a supportive educational resource rather than becoming a substitute for sound pedagogical decision-making.

Relationship Between AI Integration in Lesson Planning and Perceived Efficiency Gains

Table 10 presents the relationship between AI integration in lesson planning and perceived efficiency gains. The analysis showed a strong positive association, $r(12) = .78$, $p = .001$, 95% CI [.43, .93]. Thus, teachers who reported greater AI integration also tended to report greater perceived efficiency within the participating school.

Before Pearson's r is interpreted, the paired composite scores should satisfy the assumptions of independent observations, approximate continuity, linearity, absence of influential outliers, and approximate bivariate normality. Independence was supported by one response per participating teacher. Because the available manuscript did not include the scatterplot or diagnostic outputs, linearity, outliers, and bivariate normality could not be independently verified in this editorial revision. This omission should be acknowledged when reporting the inferential result.

Variables	r	p-value	Decision on H0	Interpretation	95% CI for r
AI integration in lesson planning and perceived efficiency gains	0.78	0.001	Reject	Strong positive, significant relationship	[.43, .93]

Table 10. Relationship Between AI Integration in Lesson Planning and Perceived Efficiency Gains

The 95% confidence interval was relatively wide, reflecting the uncertainty associated with the small sample. Although the point estimate indicated a strong relationship, plausible population values ranged from a moderate to a very strong positive association. The null hypothesis was rejected at alpha = .05, but the result remained specific to the 14 respondents and should not be treated as a precise estimate for other schools.

The relationship was correlational and perception-based. It did not demonstrate that AI integration caused greater efficiency, because digital competence, prior experience, training, access to devices and internet connectivity, or familiarity with effective prompting may have influenced both reported integration and perceived benefit.

DISCUSSION

The study showed that AI had become a practical aid to lesson preparation among the 14 participating teachers. ChatGPT, Canva AI, and Microsoft Copilot were the most frequently reported tools, indicating that teachers used AI for both text-based planning and instructional-resource development. This pattern was consistent with Van den Berg and Du Plessis (2023), who reported that generative AI could support lesson planning when teachers critically reviewed the outputs before classroom use.

Time-saving was the highest-rated dimension of AI integration (M = 4.30), whereas lesson-plan quality received the lowest, though still favorable, composite mean (M = 4.01). The difference suggested that teachers experienced AI's immediate procedural benefits more strongly than improvements in pedagogical quality. Belloula (2025) similarly reported workload and efficiency benefits, but emphasized that teacher-AI collaboration and professional expertise remained necessary. Thus, faster production should not be interpreted as evidence that the resulting lesson plans were objectively better.

Teachers strongly agreed that AI supported efficiency (M = 4.17), particularly through time-saving, productivity, creativity, and instructional-material preparation. However, responsiveness to learners' needs received the lowest efficiency rating (M = 3.86). This finding reinforced the distinction between generating content quickly and making context-sensitive instructional decisions. The latter continued to depend on teachers' knowledge of learners, curriculum requirements, and classroom conditions.

The challenge results qualified the reported benefits. Teachers most strongly identified the need to check and revise AI-generated content (M = 4.50), the continuing importance of professional judgment (M = 4.43), and the need for additional training (M = 4.21). These findings agreed with UNESCO's (2023) human-centered guidance, which emphasized human agency, validation, privacy, and accountability in educational AI use. In practical terms, AI functioned most appropriately as a drafting and ideation aid rather than an autonomous source of classroom-ready content.

AI integration and perceived efficiency were strongly associated, $r(12) = .78$, $p = .001$, 95% CI [.43, .93]. The direction of the result was consistent with the Technology Acceptance Model (Davis, 1989), in which perceived usefulness supports technology acceptance. Nevertheless, the wide confidence interval, small sample, self-report measures, single-school setting, and unavailable psychometric evidence required conservative interpretation. The result did not establish causality and could not be generalized beyond Balangkayan Senior High School.

Overall, the findings added context-specific evidence that AI could assist lesson preparation, especially by reducing the time required for initial drafting and resource generation. The study also showed that efficiency and quality were not interchangeable. Objective studies comparing actual preparation time and independently rated lesson-plan quality are needed to determine whether the perceived gains correspond to measurable improvements.

CONCLUSION

Based on the findings of the study, the following conclusions were drawn:

- AI was integrated into lesson planning to a great extent and was perceived to support time-saving, productivity, creativity, and instructional-resource preparation.
- Teachers nevertheless recognized that AI-generated content required verification, contextualization, curriculum alignment, and final professional judgment.
- AI integration was strongly and positively associated with perceived efficiency, $r(12) = .78$, $p = .001$, 95% CI [.43, .93]. Because the study used a small, single-school sample, self-reported measures, and a correlational design, this result did not establish causation and applied only to the participating school.
- The absence of documented psychometric evidence for the modified questionnaire further required caution.
- AI was therefore best understood as a supportive planning tool, not as a replacement for teacher expertise or as verified evidence of improved lesson-plan quality.

RECOMMENDATIONS

Based on the findings and limitation of the study, the following recommendations are offered:

- Balangkayan Senior High School should provide structured professional development on prompt design, curriculum alignment, fact-checking, bias, data privacy, copyright, attribution, and the critical evaluation of AI-generated materials.
- Teachers should use AI primarily for initial drafts, examples, activities, and resource ideas, while retaining responsibility for checking accuracy, alignment, feasibility, and responsiveness to learners' needs. Peer review of AI-assisted lesson plans may strengthen contextual relevance and instructional quality.
- The school should develop clear, context-appropriate guidelines describing acceptable, restricted, and prohibited AI uses, particularly regarding confidential information, accountability, and the documentation of AI assistance.
- Future research should use larger samples drawn from multiple schools to improve precision and external validity. It should also formally document questionnaire development, expert validation, pilot testing, and reliability estimates for every scale and subscale.
- Future studies should supplement self-reports with objective measures, including logged lesson-preparation time, before-and-after comparisons of preparation duration, and independent ratings of lesson-plan quality using a validated rubric. Where feasible, classroom implementation and student-learning outcomes should also be examined.

Disclosure of Conflict of Interest

The author declares no conflict of interest.

Compliance to Ethical Standards

The author declares that the study was conducted in strict compliance to ethical considerations.

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