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Utilization of AI in Enhancing Teachers' Instructional Materials and Work Efficiency

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Abstract:

In response to the increasing demand for innovative instructional practices in the digital age, this action research explores the integration of Artificial Intelligence (AI) tools in enhancing teachers' instructional materials and work efficiency among public elementary teachers in Batangas. The study was driven by the need to address limited teacher familiarity and underutilization of AI despite its global emergence in educational technology. The research aimed to determine the frequency of AI tool usage, the perceived usefulness of AI in instructional planning, learning outcomes, and efficiency, challenges encountered, and propose a guide for effective AI integration. Employing a descriptive quantitative research design, a validated researcher-made questionnaire using a 4-point Likert scale was administered via Google Forms. Data were analyzed using weighted mean. Findings revealed that AI tools are often used, particularly for editing content, generating differentiated materials, and time-saving instructional planning. However, multimedia content creation scored lower, indicating a gap in more advanced AI use. Respondents rated AI tools as useful across planning, learning outcomes, and efficiency. Key challenges included data privacy concerns, lack of training, and platform compatibility issues. As a result, the study proposed a comprehensive 6-month AI integration guide featuring phased capacity-building sessions, curated tools (e.g., ChatGPT, Canva AI, Quizizz), ethical protocols, and stakeholder collaboration strategies. This guide is intended to equip teachers with responsible, pedagogically sound AI practices aligned with DepEd curriculum goals. In conclusion, AI holds substantial potential to streamline instructional tasks and enhance learning, but its effectiveness hinges on ethical implementation, digital literacy, and supportive infrastructure. The study recommends ongoing professional development, ethical frameworks, and periodic evaluation of AI's educational impact.

Keywords: ***AI Tool, Utilization, Instructional Material, Work Efficiency.***

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I. INTRODUCTION

In the evolving landscape of education, the integration of Artificial Intelligence (AI) has transformed teaching and learning practices globally. AI-powered tools such as chatbots, content generators, personalized learning platforms, and automated grading systems are now being

leveraged to improve instructional delivery and administrative efficiency (Luckin et al., 2016; Holmes et al., 2019). In particular, the use of AI in developing instructional materials has emerged as a promising approach to enhance the quality of educational resources, save time, and improve learning outcomes (Zawacki-Richter et al., 2019).

AI technologies can assist teachers in designing differentiated and engaging learning materials tailored to students' unique needs. With tools such as generative AI, text summarizers, language translation software, and adaptive learning platforms, teachers can create lesson plans, visual aids, assessments, and digital content more efficiently (Bates et al., 2020). Furthermore, AI-based analytics tools help educators identify learning gaps and recommend personalized interventions (Chen et al., 2020). These innovations hold potential to significantly reduce teachers' workload and foster more student-centered approaches.

However, despite these benefits, many teachers face challenges in fully utilizing AI tools. A primary concern is the insufficient knowledge and skills of educators regarding the proper and ethical use of AI technologies (Zawacki-Richter et al., 2019; Holmes et al., 2022). Research shows that a lack of training, limited access to technology, and misconceptions about AI hinder its effective adoption in classrooms (Chatterjee & Bhattacharjee, 2020). Additionally, concerns about data privacy, content accuracy, and over-reliance on AI systems also contribute to hesitance in usage (Nguyen et al., 2021).

In the context of this growing demand for AI in education, this study aims to examine the utilization of AI in developing instructional materials and improving teachers' work efficiency. It specifically addresses the problem of limited AI literacy among teachers, which prevents them from maximizing the potential of AI-assisted educational tools. This research highlights the urgent need to capacitate teachers through targeted programs that enhance their competence in using AI responsibly and effectively.

The significance of this study lies in its contribution to the professional development of teachers by equipping them with essential digital skills. It seeks to empower educators to harness AI tools in creating high-quality, engaging, and inclusive instructional materials, ultimately improving both teaching efficiency and student learning outcomes. Moreover, as an output of this research, proposed guidelines for the responsible and effective utilization of AI in education will be developed. These guidelines will serve as a practical framework for teachers to integrate AI into their instructional design, ensuring ethical use, accuracy, and relevance of AI-generated materials.

II. OBJECTIVES

By fostering responsible AI use among teachers, this study aims to bridge the knowledge gap, enhance teaching practices, and promote innovation in education in the digital age

The research determined the frequency of the use of AI's tools in making instructional materials.

Moreso, this study aimed to determine the usefulness of AI tools and to identify the challenges and limitations of using AI for instructional work. materials. Specifically, this research sought the following objectives:

1. To determine the frequency of the use of AI's tools in making instructional materials.
2. To determine the usefulness of AI tools in the following areas of instructional work:
2.1 instructional planning,
2.2. learning outcome, and
2.3 work efficiency.
3. To identify the challenges and limitations encountered by teachers in using AI for instructional work.
4. To propose teachers' guide for effective utilization of AI.

III. MATERIALS AND METHODS

This study utilized a descriptive design to determine the usefulness of AI tools in the following areas of instructional work among public elementary schools in the Division of Batangas,

with the goal of proposing a teacher's guide for effective utilization of AI.

According to Bhandari (2022), the process of gathering and interpreting numerical data is known as quantitative research. It may be used to discover patterns and averages, make predictions, verify causal linkages, and generalize results to larger groups. The researchers used 39 public school teachers in Batangas from kinder to grade six teachers.

The study utilized a researcher-constructed questionnaire as the main data gathering instrument. The questionnaire divided into three parts: (1) - frequency of the use of AI's tools in making instructional materials, (2) usefulness of AI tools, and (3) challenges and limitations encountered.

The first draft was presented to the adviser for comments and suggestions, which were then incorporated in the second draft. After several refinements of the questionnaire items, upon approval of the adviser, Google Forms were prepared for the administration of the questionnaire.

The questionnaires were properly distributed to the respondents of the study. The researchers used the social media platform to communicate with the respondents. The researchers used Google form to easily collect and retrieve the answered questionnaires

The researchers collected the data and information required for the study. They recorded and treated it statistically using weighted mean. This was used to determine the frequency of the use of AI's tools in making instructional materials, usefulness of AI tools and to identify the challenges and limitations encountered by teachers in using AI for instructional work.

IV. RESULTS AND DISCUSSIONS

1. Frequency of the Use of AI's Tools in Making Instructional Materials

Table 1 presents the frequency of the use of AI tools in making instructional materials as perceived by the respondents. The study aimed to determine how often teachers utilize various AI platforms to support lesson planning, content creation, and other instructional tasks. The results provide insights into the extent of AI integration in the preparation of teaching materials, indicating whether teachers have fully embraced these tools or use them only occasionally.

Based on the results shown in Table 1, it is clear that AI tools are frequently used by teachers for various instructional tasks. The table reflects an Average Weighted Mean of 2.59, which falls under the Often-Used category based on the verbal interpretation. This suggests that, in general, teachers are becoming comfortable with integrating AI tools into their teaching practices.

Table 1. Use of AI Tools

Indicators	Weighted Mean	Verbal Interpretation
1. Edit and proofread learning materials using AI tools such as Grammarly or Quillbot.	2.85	Often
2. Simplify complex topics or concepts for instructional use through AI explanation tools or chatbots.	2.85	Often
3. Draft sample essays or reading passages using AI text generators.	2.83	Often
4. Design visual learning aids (e.g., posters, slide decks) using AI tools like Canva AI or Microsoft Designer.	2.75	Often
5. Translate instructional materials into different languages using AI translation tools like Google Translate or DeepL.	2.65	Often
6. Brainstorm creative ideas for classroom activities or projects with AI-assisted tools.	2.55	Often
7. Generate worksheets or activity sheets using AI-powered platforms.	2.48	Often
8. Develop quizzes or assessments with the help of AI tools.	2.38	Often
9. Create lesson plans using AI tools such as ChatGPT or Google Bard.	2.35	Often
10. Produce instructional videos or multimedia presentations using AI-powered video editors or voice generators.	2.23	Seldom
Composite Mean	2.59	Often Used

The increasing frequency of AI tool usage in instructional tasks reflects a global trend of integrating digital technologies into education. According to Chen, Chen, and Lin (2020), artificial intelligence has gained significant attention in the educational field due to its capacity to assist teachers in automating routine tasks, generating instructional content, and improving overall efficiency. Teachers' growing comfort in utilizing

AI tools aligns with the findings of Chatterjee and Bhattacharjee (2020), who highlighted that educators often use AI for lesson planning, assessment creation, and content curation because of its time-saving and resource-enhancing capabilities. Similarly, Zawacki-Richter, Marín, Bond, and Gouverneur (2019) emphasized that AI technologies are frequently adopted by teachers to personalize learning materials and provide innovative instructional approaches. This growing reliance on AI suggests that teachers not only recognize its usefulness but also view it as an essential component of modern teaching practices.

Among all the listed tasks, the most frequently performed activities are editing and proofreading learning materials and simplifying complex topics using AI tools (both with a weighted mean of 2.85). This indicates that teachers highly value the capability of AI tools like Grammarly, Quillbot, and AI explainers to improve clarity and correctness in instructional content and to simplify difficult topics for learners.

Tasks such as drafting sample essays or reading passages (2.83), designing visual learning aids (2.75), and translating instructional materials (2.65) also rank high, showing that teachers leverage AI for content creation, language translation, and producing reading materials, which are crucial in addressing diverse student needs and enhancing literacy skills.

Interestingly, the least frequently performed task is producing instructional videos or multimedia presentations (weighted mean of 2.23, interpreted as "Seldom Used"). This suggests that while teachers are open to using AI for text-based and design tasks, they are less likely to explore advanced multimedia tools, possibly due to time constraints, lack of familiarity, or technical challenges.

Furthermore, tasks such as generating worksheets, developing quizzes, and brainstorming creative ideas for classroom activities also fall within the "Often Used" range but with slightly lower means compared to content creation and editing tasks.

In summary, the analysis shows that teachers in the surveyed group are proactive in utilizing AI tools, particularly in tasks related to text generation, editing, and lesson content creation. However, there remains room for improvement in expanding their use of multimedia-focused AI tools for video production and presentations. This trend highlights the evolving role of AI in education, where it is now seen as an essential partner in lesson preparation, instructional design, and learner support.

2. Usefulness of AI Tools in Instructional Work

The study presents the respondents' assessment of the usefulness of AI tools in instructional work, particularly in instructional planning, enhancing learning outcomes, and improving work efficiency. This section highlights how AI applications contribute to the teaching process, providing support in lesson preparation, content delivery, and productivity. The results reflect the teachers' perception of how AI tools enhance the quality and effectiveness of their instructional tasks.

2.1. Instructional Planning. Based on the results shown in Table 2, it is evident that teachers generally find AI tools useful across all areas of instructional work.

The general assessment weighted mean of 2.77 reflects a consistent assessment of usefulness, showing that AI tools are becoming a vital part of instructional planning among educators.

According to Bates, Gallagher, and Holmes (2020), AI systems are becoming essential in creating adaptable and efficient learning resources, reducing the time educators spend on repetitive planning tasks. Similarly, Chatterjee and Bhattacharjee (2020) noted that AI applications assist teachers by generating differentiated learning activities tailored to the needs of diverse learners, allowing educators to focus more on student engagement and less on content creation. Holmes, Bialik, and Fadel (2019) also highlighted that the provision of ready-to-use instructional templates and sample materials by AI tools significantly improves teachers' productivity and creativity, enabling them to prepare lessons that are both time-efficient and pedagogically effective.

Table 2.
Usefulness of AI tools in terms of Instructional Planning

Statements	Weighted Mean	Verbal Interpretation
1. Provide sample instructional materials for specific grade levels or subjects using AI.	2.90	Useful
2. Offer time-saving templates and ready-made outlines for instructional planning through AI.	2.85	Useful
3. Create differentiated learning activities for diverse learners using AI suggestions.	2.85	Useful
4. Suggest appropriate teaching methods and strategies using AI tools.	2.83	Useful
5. Recommend suitable learning resources (e.g., videos, articles, apps) for lessons through AI.	2.83	Useful
6. Generate lesson objectives aligned with curriculum standards using AI tools.	2.80	Useful
7. Assist in mapping out weekly or monthly instructional plans using AI tools.	2.68	Useful
8. Organize lesson content and instructional flow with the help of AI platforms.	2.65	Useful
9. Develop unit plans and learning modules through AI-assisted tools.	2.65	Useful
10. Identify potential learning gaps or difficulties based on AI-generated analyses or insights.	2.65	Useful
Composite Mean	**2.77**	**Useful**

Among all the listed indicators, the most useful function identified is providing sample instructional materials for specific grade levels or subjects (2.90), followed closely by creating differentiated learning activities for diverse learners (2.85) and offering time-saving templates and ready-made outlines (2.85). These results indicate that teachers highly appreciate the ability of AI tools to provide ready-to-use materials, adaptable activities for various learner needs, and efficient planning templates, making instructional work less time-consuming and more effective.

Additionally, suggesting appropriate teaching methods and strategies (2.83) and recommending suitable learning resources such as videos, articles, or apps (2.83) also received high ratings. These findings highlight the value of AI in supporting teachers' instructional design and resource curation, enabling them to craft well-rounded and engaging lessons.

Functions such as generating lesson objectives aligned with curriculum standards (2.80) and assisting in mapping out weekly or monthly instructional plans (2.68) were also rated as useful, indicating that teachers rely on AI to streamline their planning process and to align with educational standards.

Even tasks like organizing lesson content and instructional flow (2.65), developing unit plans and learning modules (2.65), and identifying potential learning gaps (2.65) were deemed useful, suggesting that teachers see AI tools as helpful partners in both lesson preparation and identifying students' academic needs.

Overall, teachers regard AI tools as useful in instructional planning, particularly for creating lesson materials, offering differentiated instruction, and saving time. These tools help simplify instructional tasks while ensuring quality, relevance, and learner-centered approaches, which explains the consistent useful rating across all areas.

2.2 Learning Outcomes. Based on the results presented in Table 3, it is evident that teachers generally find AI tools useful in enhancing learning outcomes.

All indicators were interpreted as useful, showing that AI-assisted technologies are now considered valuable in improving the teaching and learning process.

According to Chen, Chen, and Lin (2020), AI-assisted technologies can significantly boost student engagement by providing interactive and adaptive learning experiences tailored to individual needs. Similarly, Holmes et al. (2022) emphasized that AI-powered content and enrichment materials allow for deeper understanding of lessons by offering real-time feedback and additional resources suited to diverse learning styles. Luckin, Holmes, Griffiths, and Forcier (2016) also highlighted that AI promotes active learning and personalized instruction, enabling teachers to deliver lessons that are both engaging and effective. These findings resonate with the present study's results, which show that teachers highly value AI tools for improving learners' engagement and reinforcing comprehension.

Table 3.
Usefulness of AI tools in terms of Learning Outcomes

Statements	Weighted Mean	Verbal Interpretation
1. Enhance learners' engagement through AI-powered interactive content.	2.78	Useful
2. Reinforce understanding of lessons by providing AI-recommended enrichment materials.	2.78	Useful
3. Support learners' mastery of lesson objectives by providing AI-generated activities.	2.70	Useful
4. Motivate learners by integrating AI tools that promote creative outputs (e.g., digital projects).	2.70	Useful
5. Improve learners' retention of key concepts through AI-guided practice exercises.	2.68	Useful
6. Offer immediate feedback to learners through AI-based assessment tools.	2.65	Useful
7. Facilitate differentiated instruction to meet diverse learning needs using AI.	2.58	Useful
8. Evaluate the effectiveness of instructional strategies through AI-generated learning analytics.	2.58	Useful
9. Adjust lesson content based on AI analysis of learners' performance and progress.	2.55	Useful
10. Recommend personalized learning paths for students through AI platforms.	2.53	Useful
Composite Mean	**2.65**	**Useful**

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Among the highest-rated areas were enhancing learners' engagement through AI-powered interactive content and reinforcing lesson understanding through AI-recommended enrichment materials, both with a weighted mean of 2.78. This indicates that teachers highly appreciate the role of AI in boosting student engagement and in deepening comprehension through additional learning resources.

Similarly, the use of AI tools to motivate learners by integrating creative outputs such as digital projects, as well as supporting mastery of lesson objectives through AI-generated activities, also received high ratings with a weighted mean of 2.70. These findings suggest that AI plays a significant role in encouraging student participation and in helping them meet specific academic goals through tailored activities and creative outputs.

Meanwhile, slightly lower but still favorable ratings were noted for AI's ability to recommend personalized learning paths and adjust lesson content based on AI analyses of learner performance, with weighted means of 2.53 and 2.55, respectively. These results imply that while AI tools are useful in personalizing instruction, there may still be challenges related to their full utilization, possibly requiring more teacher training or improvements in AI-generated analyses.

Overall, with a general assessment weighted mean of 2.65, the results demonstrate that AI tools are consistently seen as useful by teachers in achieving better learning outcomes. These tools are recognized for enhancing engagement, supporting mastery, and promoting differentiated instruction, making them valuable components of modern classroom practices.

2.3 Work Efficiency. Based on the data presented in Table 4, it is evident that teachers found AI tools to be useful in improving their overall work performance. The general assessment yielded a weighted mean of 3.00, which corresponds to the verbal interpretation useful". This indicates that, overall, AI tools effectively assist teachers in their daily instructional tasks and administrative work.

The finding that AI tools are useful in enhancing teachers' work efficiency is consistent with prior research highlighting AI's capacity to

reduce preparation time and streamline instructional workflows. Chen, Chen, and Lin (2020) report that AI applications automate routine academic tasks such as drafting materials, organizing content, and generating formative assessments, thereby freeing teachers to focus on higher-order pedagogical decisions. Similarly, Chatterjee and Bhattacharjee (2020) found that adoption of AI in educational settings is driven largely by perceived productivity gains and the reduction of repetitive tasks (e.g., formatting, grammar checking, and initial item generation).

Table 4.
Usefulness of AI tools in terms of Work Efficiency

Statements	Weighted Mean	Verbal Interpretation
1. Save time in preparing instructional materials using AI tools.	3.23	Useful
2. Summarize long documents and references efficiently through AI summarization tools.	3.15	Useful
3. Facilitate faster creation of reports and documentation using AI tools.	3.13	Useful
4. Speed up the creation of presentations and visual aids through AI design platforms.	3.13	Useful
5. Automate repetitive tasks such as proofreading and formatting through AI applications.	3.00	Useful
6. Improve task management and prioritization using AI-based productivity tools.	2.93	Useful
7. Reduce workload in checking and grading through AI-powered assessment tools.	2.88	Useful
8. Assist in managing communication with students or parents through AI chatbots or drafting tools.	2.88	Useful
9. Streamline lesson planning processes by using AI suggestions and templates.	2.85	Useful
10. Organize teaching schedules and task reminders with AI-based planning apps.	2.83	Useful
Composite Mean	**3.00**	**Useful**

AI also contributes to efficiency through data-driven personalization and rapid feedback cycles. Zawacki-Richter et al. (2019) note that AI-enabled analytics assist educators in monitoring learner progress more quickly than traditional manual methods, allowing timely instructional adjustments. Bates, Gallagher, and Holmes (2020) further emphasize that intelligent systems provide templated structures and reusable content frameworks that shorten planning time while maintaining instructional quality. Holmes, Bialik, and Fadel (2019) observe that such scaffolding preserves teacher creativity by reallocating effort away from mechanical preparation toward reflective design and adaptive facilitation.

Moreover, broader analyses underscore that ethical and well-designed AI integration, when accompanied by professional development, supports sustainable workload management. Holmes et al. (2022) caution that efficiency gains are maximized when transparency and teacher agency are maintained, while Luckin et al. (2016) argue that "intelligence amplification" (supporting rather than replacing teachers) is central to genuine productivity improvement. Nguyen et al. (2021) add that efficiency benefits must be balanced with attention to responsible use and potential overreliance.

Among the listed items, the highest-rated indicator is time saving in preparing instructional materials using AI tools," with a weighted mean of 3.23. This suggests that most teachers significantly benefit from AI in reducing the time and effort needed to develop learning materials. Other highly rated tasks include summarizing long documents and references efficiently through AI summarization tools" (3.15) and facilitating faster creation of reports and documentation using AI tools" (3.13), both of which show that AI tools are greatly valued for reducing the time spent on documentation and administrative reports. Similarly, speed up the creation of presentations and visual aids through AI design platforms," also scored 3.13, confirming AI's role in simplifying the preparation of visual learning materials. Other tasks, such as automating repetitive work like proofreading and formatting (3.00), streamlining lesson planning (2.85), and reducing workload in checking and grading (2.88) were also found to be useful. Teachers also acknowledged the usefulness of AI in organizing schedules (2.83), managing communication through AI chatbots (2.88), and improving task management and prioritization (2.93).

In summary, the table shows that AI tools are consistently viewed as useful across various

work efficiency aspects. These tools help in saving time, reducing workload, and boosting productivity, making them valuable companions for teachers in managing instructional and administrative responsibilities effectively.

4. Challenges and limitations encountered by teachers in using AI

The study also presents the challenges and limitations encountered by teachers in using AI tools for instructional work. This section identifies the common difficulties faced by educators, such as lack of training, accessibility issues, accuracy concerns, and ethical considerations. The results provide insights into the barriers that may hinder the effective utilization of AI in teaching and learning processes.

Based on the results presented in Table 5, it can be interpreted that teachers generally agree that several significant barriers affect their effective utilization of AI tools in teaching. The general weighted mean of 3.01 falls under the verbal interpretation agree, indicating that these challenges are common and experienced by many teachers.

Challenges and limitations in the integration of AI tools in education are well-documented across multiple studies. According to Nguyen et al. (2021), teachers often encounter barriers such as inadequate training and a lack of familiarity with AI technologies, which limit their ability to fully utilize these tools for instructional purposes.

Similarly, Zawacki-Richter et al. (2019) observed that accessibility issues—including insufficient infrastructure, unreliable internet connection, and limited access to advanced AI platforms—remain a major hindrance, especially in developing regions.

Table 5. Challenges and Limitations

Indicators	Weighted Mean	Verbal Interpretation
1. Data privacy and security concerns personal data, which raises concerns about student privacy and compliance with data protection laws.	3.13	Agree
2. Limited time to explore, experiment with, and adapt AI tools into their already packed schedules.	3.08	Agree
3. Lack of training and digital literacy of teachers to navigate and maximize the use of AI tools.	3.05	Agree
4. Difficulty in using AI due to compatibility issues with existing school platforms or learning management systems.	3.05	Agree
5. Assessment accuracy of AI-driven grading tools, they might not capture the depth of student understanding, especially in complex or open-ended tasks.	3.00	Agree
6. Limited access to up-to-date computers, fast internet, or the required software to use AI tools effectively.	2.98	Agree
7. Generic content generation of materials that do not fully align with local curriculum standards or student needs.	2.98	Agree
8. Lack of administrative support such as policies, incentives, or infrastructure from school.	2.98	Agree
9. Lack full understanding of cultural or classroom context, which may affect the appropriateness of its outputs.	2.98	Agree
10. Over-reliance of teachers on AI-generated content, which can weaken instructional creativity and personalization.	2.90	Agree
Composite Mean	**3.01**	**Agree**

Accuracy and reliability of AI-generated content are also key concerns raised by educators. Chatterjee and Bhattacharjee (2020) pointed out that while AI can produce content efficiently, its outputs often require thorough validation and editing to ensure correctness and alignment with curriculum standards. Ethical issues such as plagiarism risks, data privacy, and algorithmic bias have also been highlighted by Holmes et al. (2022), who emphasized the need for ethical frameworks and policies to guide AI use in education.

Furthermore, Luckin et al. (2016) stressed that over-reliance on AI without proper teacher oversight can reduce creativity and critical thinking in lesson design. Bates, Gallagher, and Holmes (2020) added that teacher apprehension towards AI adoption is sometimes linked to fears of technological replacement rather than augmentation. These studies align with the current findings,

confirming that a range of significant barriers—including training, infrastructure, accuracy, and ethical considerations—are widely experienced by teachers when integrating AI into teaching and learning processes.

Among the listed indicators, the highest-rated challenge is data privacy and security concerns with a weighted mean of 3.13. This reflects teachers' strong apprehension regarding student data privacy and compliance with data protection laws when using AI platforms. Close to this is the item on limited time to explore, experiment with, and adapt AI tools into their already packed schedules," which scored 3.08. This highlights how teachers' busy workloads prevent them from fully maximizing AI tools in their classrooms.

Additionally, teachers also expressed difficulties related to compatibility issues with existing school platforms (3.05) and lack of digital literacy and training (3.05). These challenges limit the ability of teachers to navigate and use AI tools effectively in their instructional practices. Other concerns include assessment accuracy of AI-driven tools (3.00) and generic AI-generated content that may not fully align with local curriculum standards (2.98), suggesting that teachers still need to review and customize AI outputs to suit their instructional goals.

Concerns were also raised about over-reliance on AI, which could weaken instructional creativity and personalization (2.90), as well as limited access to fast internet, updated computers, or required software (2.98). Moreover, the lack of administrative support in terms of policy, infrastructure, or incentives (2.98) also adds to the difficulty of integrating AI into teaching.

Lastly, teachers noted the AI tools' limited understanding of cultural or classroom context (2.98), which may affect the appropriateness of generated content.

In summary, the findings reveal that while teachers acknowledge the usefulness of AI tools, they equally recognize substantial challenges that hinder their full adoption. These include technical limitations, training gaps, time constraints, and ethical concerns. Addressing these issues through enhanced infrastructure, digital literacy programs, better AI customization, and institutional support will be crucial in maximizing the benefits of AI in education.

5. Propose Teachers' Guide for Effective Utilization of AI

This section presents the proposed teachers' guide for the effective utilization of AI tools in instructional work. The guide is formulated based on the findings of the study, addressing the identified challenges and maximizing the benefits of AI in lesson planning, learning outcomes, and work efficiency. It aims to provide practical strategies and recommendations to help teachers integrate AI effectively and responsibly in their teaching practices.

I. Introduction

In the 21st century, educators are constantly adapting to new tools that can help to teach better and work smarter. Artificial Intelligence (AI) is one of the newest and most promising innovations available for teachers, not to replace their role as teachers but to enhance their craft and reduce the weight of their daily responsibilities.

Based on the survey conducted, many teachers have already started using AI tools like ChatGPT, Canva AI, Grammarly, and others in creating lesson plans, designing materials, and even grading. However, there are still areas for growth and support. This guide is created to help understand how to effectively and responsibly use AI in the delivery of instructions at own pace, and with students' best interests at heart.

II. Purpose

This guide aims to assist teachers in effectively integrating AI tools in their teaching practices to enhance learning outcomes, promote work efficiency, and ensure ethical, safe, and meaningful use of technology in line with the DepEd Revised K to 12 Curriculum and school-based goals.

III. Objectives

The proposed teachers' guide aims to guide the effective and responsible integration of AI tools in education. Specifically, objectives focus on:

1. Improve teachers' competency in using AI tools for instruction and classroom management;
2. Foster responsible, ethical, and safe use of AI technologies in teaching-learning processes;
3. Maximize AI tools for lesson planning, instructional material development, assessment, and communication;
4. Enhance students' learning experiences by using AI-supported, engaging, and inclusive learning activities; and
5. Promote collaboration among teachers, administrators, parents, and learners in the use of AI.

IV. Key Guidelines and Strategies

1. Build AI Awareness and Digital Competency

a. Attend AI training programs, webinars, and hands-on workshops.

b. Start with beginner-friendly AI tools for lesson planning, assessment, and productivity.

c. Study DepEd policies related to technology use and data privacy.

2. Identify Suitable AI Tools for Education

Purpose	AI Tools
Lesson Planning	ChatGPT, Bing AI, AI lesson planners
Content Creation	Canva AI, Adobe Express, Slidesgo AI
Assessment and Grading	Quizizz AI, Edmodo, AI-powered quiz apps
Writing and Summarization	Grammarly, QuillBot, Scribe AI
Communication and Productivity	AI chatbots, Microsoft Copilot, Google AI Workspace

3. Integrate AI Effectively in Teaching

a. Use AI to generate lesson plans aligned with learning competencies.

b. Apply AI to design learning activities such as quizzes, puzzles, reading comprehension materials, and math problems.

c. Automate repetitive tasks like proofreading, formatting, and summarizing documents.

d. Incorporate AI tools for visual learning aids and presentations.

4. Apply Ethical and Safe AI Practices

a. Ensure student privacy and confidentiality; avoid sharing personal data on AI platforms.

b.Check AI-generated content for appropriateness, accuracy, and cultural sensitivity.

c. Balance AI use with human creativity—don't rely solely on AI for instruction.

d. Always verify AI outputs to align with DepEd curriculum and classroom context.

5. Collaborate with Stakeholders

a. Share AI tools and best practices with fellow teachers through LAC (Learning Action Cell) sessions.

b. Engage parents by showing how AI supports learning at home.

c. Seek technical assistance from ICT coordinators or administrators.

d. Involve learners by teaching responsible use of AI in learning activities.

V. Suggested Application Plan

Month	Activities
1st	Orientation on AI basics and tool familiarization
2nd	Practice integrating AI in lesson plans and assessments
3rd	AI-supported instructional materials and classroom activities
4th	Monitoring of AI-assisted teaching practices and adjustments
5th	Collaborative sharing and feedback within the teaching staff
6th	Evaluation of AI use impact on teaching efficiency and learning outcomes

VI. Monitoring and Evaluation

a. Use self-reflection checklists and peer reviews.

b. Submit sample AI-generated lesson plans and outputs for quality check.

c. Gather student feedback on the effectiveness of AI-supported learning.

d. Conduct evaluation at the end of the semester to identify areas for improvement.

IV. CONCLUSIONS

Based on the findings, the researchers have drawn the following conclusions:

1. AI tools are often used by teachers in making instructional tasks.
2. AI tools are useful in instructional work, particularly in planning, learning outcomes, and work efficiency.
3. Data privacy and security of personal data, and limited time to explore, experiment with, and adapt AI tools are the topmost challenges and limitations in using AI for instructional work.
4. The Teachers' Guide is proposed for effective utilization of AI for instructional and work efficiency.

VI. RECOMMENDATIONS

Based on the findings and conclusions, the following recommendations are endorsed:

1. The proposed Teachers' guide for effective utilization of AI may be reviewed and analyzed prior to its actual use and implementation.
2. The identified use of AI tools in making instructional materials may be improved or sustained to ensure effective use and delivery.
3. Future research on the effectiveness of the proposed teachers' guide may be conducted.

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