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Elementary Teachers' Utilization of ChatGPT in Instructional Material Preparation: A Technology Acceptance Model Study

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Abstract: This study investigated elementary teachers' utilization of ChatGPT in developing instructional materials, using the Technology Acceptance Model (TAM) as the guiding framework. A mixed-method research design was employed to capture teachers' perceptions, behaviors, and experiences. Quantitative data were gathered using validated Likert-scaled questionnaires measuring perceived usefulness, perceived ease of use, attitude toward use, behavioral intention to use, and actual system use. Qualitative data, on the other hand, were collected through semi-structured interviews, focus group discussions (FGDs), and Learning Action Cell (LAC) sessions to capture deeper insights into teachers' challenges and practical strategies. Forty elementary teachers from selected schools in the Alcantara District, Cebu, participated in the study. Findings revealed that teachers—mostly young, female, and mid-career—perceived ChatGPT as highly useful in reducing workload, enhancing efficiency, and improving the quality of instructional materials. Teachers also found the tool intuitive and user-friendly. Although teachers displayed strong positive attitudes and a high intention to use ChatGPT, actual system use remained moderate. Factors such as limited prompting skills, internet instability, occasional AI inaccuracies, and concerns about content reliability influenced the frequency of use. Significant differences were found when respondents were grouped by age, grade level handled, and number of subjects taught. Correlation analysis further confirmed strong, positive relationships among TAM constructs, demonstrating their predictive influence on actual use. Overall, the results highlight the need for structured training aimed at strengthening teachers' AI literacy, prompting proficiency, verification habits, and pedagogical integration.

Keywords: *ChatGPT, Elementary Teachers, Instructional Materials, TAM, AI in Education.*

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I. INTRODUCTION

Artificial intelligence (AI) is reshaping many aspects of education, transforming how teachers plan lessons, create materials, and deliver instruction. AI-powered tools, particularly generative models like ChatGPT, are gaining traction among educators due to their ability to provide instant content generation, brainstorming support, language assistance, and task automation. ChatGPT functions as a conversational agent capable of producing text-based outputs, responding to queries, generating draft instructional materials, and assisting with classroom-related tasks such as worksheets, quizzes, and learning guides.

In the Philippine basic education context, teachers continue to face numerous demands. The preparation of instructional materials remains time-intensive, especially for elementary teachers who manage multiple subjects and strive to address varied learner needs. While AI presents opportunities to ease these burdens, many teachers express hesitations brought about by uncertainties related to accuracy, ethical use, and digital literacy. This challenge is especially evident in rural or semi-rural school environments where internet access is inconsistent.

Although global studies highlight the potential benefits of AI in education—improved efficiency, personalized learning, and time savings—there remains limited empirical research focusing specifically on elementary teachers in Philippine public schools. Elementary education requires materials that are developmentally appropriate, culturally responsive, and contextually relevant. Thus, understanding teachers' adoption of ChatGPT within this unique context is essential.

This study is anchored on the Technology Acceptance Model (TAM), which posits that perceived usefulness and perceived ease of use shape an individual's attitude toward

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and intention to use technology. TAM remains a robust framework in explaining technology adoption and continues to be widely used in studies involving AI in education (Xue, Ghazali, & Mahat, 2025). Applying TAM in this study provides a systematic lens to understand teachers' perceptions and behaviors toward ChatGPT.

➢ *Objectives of the Study*

This study aimed to:

- Describe the respondents' profile in terms of age, gender, teaching experience, grade level handled, and number of subjects taught.
- Examine teachers' background and familiarity with AI use.
- Measure teachers' perceptions toward ChatGPT using TAM constructs.
- Identify issues and challenges encountered in using ChatGPT.
- Determine if significant differences in perceptions exist when grouped according to demographic profile.
- Establish the relationships among TAM variables.
- Develop a training design grounded on the study's findings.

II. REVIEW OF RELATED LITERATURE

➢ *AI in Education*

AI has become an increasingly influential force in modern classrooms, offering tools that support lesson planning, content creation, assessment, and data-driven decision-making. Karpouzis et al. (2024) demonstrated how generative AI tools can automatically design lesson plans tailored to learning competencies, student levels, and classroom contexts. These capabilities significantly reduce preparation time and allow teachers to focus more on interactive and learner-centered activities.

AI also supports the creation of assessments. According to Xue, Ghazali, and Mahat (2025), AI tools can generate test items, improve alignment with learning outcomes, and provide immediate feedback. By automating repetitive tasks, AI enables teachers to allocate more time to instructional planning and individualized support.

In terms of personalized learning, AI-powered adaptive systems can guide students through content at their own pace. These systems analyze student performance trends and adjust difficulty levels accordingly. Although such systems are more common in higher education and commercial platforms, they offer a glimpse of AI's potential in elementary settings.

➢ *Technology Acceptance Model (TAM)*

The Technology Acceptance Model (Davis, 1989) explains how users adopt and utilize recent technologies. It identifies two main determinants of adoption:

- Perceived Usefulness (PU): The extent to which a person believes that using a system improves performance.
- Perceived Ease of Use (PEU): The extent to which a person believes that using a system requires minimal effort.

- *These Perceptions Influence:*

✓ Attitude Toward Use (ATU)
✓ Behavioral Intention (BI)
✓ Actual System Use (AU)

Recent studies expanded TAM by integrating additional factors such as digital literacy, trust in AI, and technology anxiety. For instance, Khoo and Jamaludin (2025) found that teachers' acceptance of generative AI is shaped strongly by digital readiness and confidence in technology. Similarly, Lin, Zhang, and Liu (2023) emphasized that trust and perceived accuracy also influence attitudes toward AI.

➢ *Teacher Workload and Digital Support*

Excessive workload is a well-documented challenge in teaching. Teachers manage administrative tasks, grading, lesson planning, and student monitoring. AI tools offer significant support by quickly generating content, producing visuals, drafting lesson plans, and helping with classroom documentation. This potential workload reduction has motivated many educators to experiment with AI tools. However, Ayanwale et al. (2022) noted that digital literacy gaps limit the ability of some teachers to fully benefit from these technologies.

➢ *ChatGPT as an Instructional Tool*

ChatGPT functions as a generative language model capable of producing coherent, contextualized text. Several studies highlight its educational potential. For example, Karpouzis et al. (2024) observed that generative AI can create learning activities and summaries based on teacher prompts, thereby improving efficiency. Although research directly analyzing ChatGPT use among elementary teachers remains limited, early exploratory studies in higher education show strong potential for improving productivity and creativity.

➢ *Challenges in AI Utilization*

Despite its benefits, AI introduces challenges. Generative models can produce inaccurate or fabricated information—referred to as "hallucinations"—requiring teachers to verify outputs carefully. Riordan et al. (2023) emphasized that trust and accuracy remain recurring concerns in AI-supported teaching. Additionally, prompting skills vary widely among educators, influencing the quality of AI-generated content. Infrastructure issues such as internet connectivity also hinder AI adoption in many schools, particularly in developing regions (Rahiman, Ismail, & Yusuf, 2023).

III. METHODOLOGY

A. Research Design

The study utilized a mixed-method research design, combining quantitative survey data with qualitative insights. The quantitative component measured teachers' perceptions across TAM constructs. The qualitative component provided

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detailed narratives describing teachers' experiences, challenges, and context-specific insights. This combination allowed for a more comprehensive understanding (Creswell & Creswell, 2018).

B. Participants and Environment

Forty elementary teachers from Alcantara District, Cebu, participated in the study. The district's mix of urban and rural schools provided a realistic setting to explore AI adoption. Teachers differed in grade level assignments, years of experience, and access to technology, making their perspectives diverse and informative.

C. Research Instruments

Three tools were used:

- Demographic Profile Sheet
- TAM-based Perception Survey adapted from Gonzales and Gonzales (2024)
- Semi-structured Interview and FGD Guides based on Patton (2015)

The instruments were validated by experts in educational technology and research methodologies.

D. Data Gathering Procedure

The researcher obtained permission from district and school administrators. Teachers were introduced to ChatGPT during LAC sessions to ensure basic familiarity. Surveys were administered afterwards. Interviews and FGDs were conducted face-to-face and documented through field notes and recordings. Ethical considerations such as voluntary participation, confidentiality, and informed consent were strictly observed (American Psychological Association, 2020).

E. Data Analysis

Quantitative data were analyzed using:

- Descriptive statistics (frequency, percentage, mean)
- T-tests and ANOVA for group comparisons
- Spearman's rho for correlation analysis

Qualitative data underwent thematic analysis following Braun and Clarke's (2006) six-phase approach. Emerging themes were then used to enrich the interpretation of quantitative results.

IV. RESULTS AND DISCUSSION

➢ *Respondents' Profile*

Most participants were 26–35 years old, female, and with 5–10 years of teaching experience. Many handled multiple subjects, a characteristic typical of Filipino elementary schools. Most teachers relied on mobile phones and prepaid data for internet access, which presented certain limitations for frequent AI use.

Table 1 Respondents' Demographic Profile

Variable	Frequency	Percentage
Age 26–35	25	62.5%
Gender – Female	30	75%
Subjects handled (7–8)	28	70%
Teaching Experience (5–10 yrs)	22	55%
Device & Internet – Mobile & Prepaid	35	87.5%

These findings shown in Table 1 reflect national trends showing increasing digital adoption among young teachers and persistent infrastructure challenges in public schools.

➢ *Teachers' Background in AI Use*

All respondents had prior exposure to AI tools, though usage varied:

- Always: 10%
- Often: 25%
- Sometimes: 50%
- Rarely: 15%

This indicates growing awareness but inconsistent integration in practice.

➢ *Teachers' Perceptions Based on TAM*

Teachers rated ChatGPT highly across all TAM constructs:

Table 2 Teachers' Perceptions

Construct	Mean	Interpretation
Perceived Usefulness	4.44	Very Useful
Perceived Ease of Use	4.48	Very Easy
Attitude Toward Use	4.32	Very Positive
Behavioral Intention	4.32	Very Positive
Actual Use	3.98	Frequent Use

While perceptions were highly positive, actual use slightly lagged, indicating the presence of moderating factors such as accuracy issues or technological constraints as shown in Table 2.

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➢ *Issues Encountered*

Common challenges included:

- Inaccurate or generic AI responses
- Weak prompting skills
- Internet instability
- Concerns about plagiarism
- Lack of deeper AI literacy
- Limited time for exploring advanced features

These concerns align with earlier studies emphasizing accuracy, trust, and digital readiness as barriers to AI adoption (Riordan et al., 2023).

➢ *Differences in Perception*

Statistical analyses showed significant differences in perceptions based on:

- Age
- Subjects taught
- Grade level handled

No significant differences were found based on gender or teaching experience.

➢ *Relationships Among TAM Variables*

All TAM constructs were strongly correlated.

Table 3 Summary of Relationships

Construct	PU	PEU	ATU	BI	AU
PU	1.00	0.82**	0.79**	0.81**	0.76**
PEU	0.82**	1.00	0.84**	0.83**	0.78**
ATU	0.79**	0.84**	1.00	0.87**	0.80**
BI	0.81**	0.83**	0.87**	1.00	0.82**
AU	0.76**	0.78**	0.80**	0.82**	1.00

$p < 0.01$

These findings shown in Table 3 confirm the robustness of TAM as a predictor of ChatGPT adoption among teachers.

V. CONCLUSION

The study concludes that elementary teachers recognize ChatGPT as a powerful tool for improving instructional material preparation. Teachers find the tool highly useful, easy to use, and supportive of their classroom needs. Positive perceptions lead to favorable attitudes and high behavioral intentions.

However, actual use remains moderate, influenced by factors such as internet constraints, inaccurate outputs, and limited prompting skills. The presence of significant differences among groups suggests that adoption patterns vary based on specific teaching contexts.

Overall, the study highlights substantial readiness among teachers to adopt AI, provided they are given proper training and institutional support. Strengthening AI literacy, improving infrastructure, and establishing ethical and verification guidelines will help maximize the tool's benefits in the classroom.

RECOMMENDATIONS

- *Provide Structured AI Literacy Training Focusing on:*

✓ Prompt engineering
✓ Content verification techniques
✓ Responsible AI use and ethics
✓ Integration of AI outputs with curriculum standards

- Improve internet connectivity in schools, particularly for teachers relying on mobile data.
- Develop standardized templates for AI-assisted instructional materials to ensure quality and consistency.
- Establish mentoring or peer-coaching systems within the district to share best practices.
- Incorporate AI discussions in LAC sessions for continuous professional development.
- Encourage reflective practice by requiring teachers to document how they verify and refine AI-generated content.

These initiatives can enhance AI utilization and ensure teachers use ChatGPT effectively, responsibly, and confidently.

REFERENCES

[1]. American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). American Psychological Association.
[2]. Ayanwale, O., Bello, T., & Oladejo, A. (2022). Technology adoption and digital literacy among elementary teachers. *Journal of Educational Technology Research, 15*(2), 45–60.
[3]. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa
[4]. Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
[5]. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340. https://doi.org/10.2307/249008
[6]. Gonzales, R., & Gonzales, M. (2024). Application of the Technology Acceptance Model to AI adoption

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among teachers. *International Journal of Educational Innovation, 10*(1), 12–29.

[7]. Karpouzis, K., Pantazatos, S., Taouki, K., & Meli, D. (2024). Generative AI for lesson planning in primary education. *Computers & Education, 202*, 104–118. https://doi.org/10.1016/j.compedu.2023.104118

[8]. Khoo, Y., & Jamaludin, A. (2025). Teacher acceptance of artificial intelligence using the Technology Acceptance Model. *Education and Information Technologies, 30*(1), 145–162. https://doi.org/10.1007/s10639-024-11512-3

[9]. Lin, H., Zhang, S., & Liu, Y. (2023). TAM-based analysis of AI adoption in education. *Journal of Educational Computing Research, 61*(5), 1205–1226. https://doi.org/10.1177/07356331231100012

[10]. Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). SAGE Publications.

[11]. Rahiman, S., Ismail, N., & Yusuf, F. (2023). Digital literacy and generative AI adoption in schools: Challenges and strategies. *Journal of Educational Technology Development, 21*(3), 78–94.

[12]. Riordan, B., Echeverria, A., Jin, H., Yan, Z., Swiecki, Z., Gašević, D., & Martinez Maldonado, R. (2023). Human-centered AI in education: Challenges of accuracy and trust. *Learning Analytics Review, 12*(1), 34–51.

[13]. Xue, H., Ghazali, S., & Mahat, N. (2025). Teacher adoption of AI in education: A review using TAM. *Computers in Human Behavior, 136*, 107–122. https://doi.org/10.1016/j.chb.2024.107122

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RESEARCH INSTRUMENT

Elementary Teachers' Utilization of ChatGPT in Instructional Material Preparation: A Technology Acceptance Model Study

Part I: Profile

A. Demographic

➢ *Gender*

- ☐Male ☐Female ☐ Other ☐I'd rather not mention

➢ *Age*

- ☐Under 25 ☐26-35 ☐36-45 ☐ 46-55 ☐over 55

➢ *Length of Teaching Experience*

- ☐1-4 ☐5-10 ☐11-20 ☐21-30 ☐over 31

➢ *Grade Level Handled*

- ☐Preschool age ☐1st - 3rd grade ☐4th – 6th grade
- ☐Junior high School/Middle school ☐Senior High School ☐Adults

➢ *Subject(s) Taught*

- ☐ MTB-MLE ☐Filipino ☐ English ☐ESP ☐Math
- ☐ Science ☐Araling Panlipunan ☐MAPEH ☐ EPP

B. Questions About Artificial Intelligence in Education:

➢ *Have you Used Tools in the Educational Process that Include Artificial Intelligence?*

- ☐Yes ☐No

➢ *Experience in Using AI:*

- ☐Always ☐Often ☐Sometimes ☐Rarely ☐Never

➢ *Type of AI used:*

- ☐Chat GPT ☐Grammarly ☐Cici ☐Quilbot ☐Others Please
- Specify: _____

➢ *Technology Used at Home*

- ☐Personal computer ☐Cell phones ☐Smart TV

➢ *Internet Used at Home*

- ☐Prepaid WIFI ☐Post Paid WIFI ☐Mobile Hotspot

Part II. Level of perception towards AI

➢ *Directions:*

The following items assess the level of your perception towards AI. Kindly check the appropriate column to the right of each item to indicate your response. The choices of responses are as follows.

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Score	Description
5	Strongly Agree
4	Agree
3	Moderately Agree
2	Disagree
1	Strongly Disagree

Perceived Usefulness (PU)	SA		A	MA	D	SD
	5		4	3	2	1
Chat GPT improves the performance of my teaching task.						
Chat GPT increases the productivity of my teaching task.						
Chat GPT enhances the effectiveness of my teaching task.						
Chat GPT makes easier for me to carry out my teaching task.						
I find Chat GPT useful for my teaching task.						

Perceived Ease of Use (PEU)	5	4	3	2	1
Learning to operate the Chat GPT is easy.					
I find it easy to get Chat GPT and to do what I want.					
I find interaction with Chat GPT clear and understandable.					
I find Chat GPT flexible to interact with.					
It is easy for me to become skillful at using Chat GPT.					
Using Chat GPT enables me to accomplish my tasks more quickly.					
Overall, I find Chat GPT easy to use.					

Attitudes Toward Use (ATU)	5	4	3	2	1
Using Chat GPT in my teaching task is a good idea.					
Using Chat GPT in my teaching task is a wise idea.					
Using Chat GPT in my teaching task will be pleasant.					
Using Chat GPT would enhance my effectiveness in teaching tasks.					
Overall, I like the idea of using Chat GPT in my job.					

Behavioral Intention to Use (BI)	5	4	3	2	1
I intend to use Chat GPT to assist my teaching task.					
I intend to use functions of Chat GPT to assist my teaching task.					
I intend to use Chat GPT as an autonomous tool in teaching task.					
I would like to see Chat GPT functions implemented further in other tasks.					
I feel confident with Chat GPT and would like to use it more effectively.					

Actual System Use (ASU)	5	4	3	2	1
Overall, I always use Chat GPT?					
I often use Chat GPT last month?					
I often use Chat GPT last week?					
I use the Chat GPT to share/seek solutions to problems in my teaching task.					
I frequently use the Chat GPT to supplement my teaching task.					

➢ *How can Teachers Effectively Utilize ChatGPT in the Classroom while Addressing Associated Challenges?*

- ☐ Balancing ChatGPT's assistance with promoting critical thinking skills among students.
- ☐ Integrating ChatGPT into lesson plans to enhance student engagement and understanding.
- ☐ Addressing potential biases or inaccuracies in ChatGPT's responses.
- ☐ Preventing students from becoming overly reliant on ChatGPT for answers.
- ☐ Overcoming technical hurdles or limitations when using ChatGPT.
- ☐Fostering a collaborative environment for student interaction with ChatGPT.

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- ☐ Considering and addressing ethical concerns related to ChatGPT use.
- ☐ Ensuring ChatGPT interactions align with curriculum goals and standards.
- ☐ Monitoring and assessing students' interactions with ChatGPT for comprehension.
- ☐ Seeking professional development opportunities to maximize ChatGPT's educational potential.

➢ *How can Teachers Effectively Navigate the Drawbacks or Limitations Associated with Using ChatGPT?*

- ☐ Addressing potential biases or inaccuracies in ChatGPT's responses.
- ☐ Managing students' overreliance on ChatGPT for answers.
- ☐ Ensuring ChatGPT responses align with educational standards and curriculum goals.
- ☐ Handling technical difficulties or limitations when utilizing ChatGPT.
- ☐ Monitoring and mitigating potential ethical concerns related to ChatGPT use.
- ☐ Balancing ChatGPT's assistance with fostering critical thinking skills among students.
- ☐ Finding ways to engage students beyond simple Q&A interactions with ChatGPT.
- ☐ Supporting students who may struggle with understanding or utilizing ChatGPT effectively.
- ☐ Incorporating ChatGPT into lesson plans while maintaining a cohesive educational experience.
- ☐ Seeking professional development opportunities to address and overcome limitations associated with ChatGPT use.