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Exploring Pre-Service Teachers' Difficulties of ChatGPT as a Tool for Planning the Learning Process

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Abstrak

Penelitian ini bertujuan untuk menyelidiki tantangan yang dihadapi oleh guru-guru prajabatan dalam menggunakan ChatGPT sebagai alat untuk merencanakan proses pembelajaran. Terlepas dari potensi ChatGPT untuk meningkatkan efisiensi, kreativitas, dan inovasi dalam konteks pendidikan, implementasinya di kalangan guru prajabatan masih terbatas karena berbagai kesulitan. Hal ini termasuk tantangan dalam merumuskan tujuan pembelajaran, memilih metode dan alat pengajaran yang tepat, dan menilai relevansi konten yang dihasilkan AI dengan standar kurikulum. Dengan menggunakan pendekatan penelitian kuantitatif, sebuah survei dilakukan terhadap 30 guru prajabatan di Sumatera Utara, Indonesia, untuk mengeksplorasi hambatan yang dihadapi dalam tahap perencanaan, implementasi, dan evaluasi proses pembelajaran. Temuan menunjukkan bahwa meskipun ChatGPT menawarkan dukungan yang berharga, guru-guru prajabatan mengalami tingkat kesulitan yang sedang hingga tinggi di area-area penting seperti mengidentifikasi sumber daya yang relevan, menyusun kegiatan pembelajaran, dan memfasilitasi keterlibatan siswa yang efektif. Tantangan-tantangan ini menggarisbawahi perlunya pelatihan yang ditargetkan dan dukungan pedagogis untuk mengoptimalkan integrasi alat bantu AI dalam program pendidikan guru. Studi ini memberikan wawasan tentang kompleksitas dalam mengadopsi AI dalam pendidikan dan mengusulkan strategi untuk mengatasi hambatan-hambatan ini, yang berkontribusi pada wacana tentang pembelajaran yang ditingkatkan dengan teknologi dalam konteks pendidikan yang sedang berkembang.

Kata Kunci: *ChatGPT, Guru Prajabatan, Proses Pembelajaran, Pendidikan Guru, Kecerdasan Buatan*

Abstract

This study aims to investigate the challenges faced by pre-service teachers in using ChatGPT as a tool for planning the learning process. Despite the potential of ChatGPT to enhance efficiency, creativity, and innovation in educational contexts, its implementation among pre-service teachers remains limited due to a range of difficulties. These include challenges in formulating learning objectives, selecting appropriate teaching methods and tools, and assessing the relevance of AI-generated content to curriculum standards. Using a quantitative research approach, a survey was conducted with 30 pre-service teachers in North Sumatra, Indonesia, to explore the barriers encountered across the planning, implementation, and evaluation phases of the learning process. Findings indicate that while ChatGPT offers valuable support, pre-service teachers experience moderate to high levels of difficulty in critical areas such as identifying relevant resources, structuring learning activities, and facilitating effective student engagement. These challenges underscore the need for targeted training and pedagogical support to optimize the integration of AI tools in teacher education programs. The study provides insights into the complexities of adopting AI in education and proposes strategies for overcoming these barriers, contributing to the discourse on technology-enhanced learning in developing educational contexts.

Keywords: *ChatGPT, Pre-Service Teachers, Learning Process, Teacher Education, Artificial Intelligence*

INTRODUCTION

Artificial intelligence (AI) is transforming education by offering innovative tools such as ChatGPT, which facilitate various teaching processes, including lesson planning, content creation, and instructional design. AI technologies have demonstrated their potential to enhance teacher productivity and support creative teaching approaches (Holmes et al., 2021). Nonetheless, ethical concerns persist, particularly regarding issues like plagiarism, data privacy, and the over-reliance on AI-generated materials. Pre-service teachers, who are still developing both their pedagogical and technological expertise, often encounter challenges when attempting to adopt these advanced tools (Zawacki-Richter et al., 2019). Globally, the effective integration of AI tools, such as ChatGPT, into teaching practices by pre-service teachers remains an area requiring further exploration.

In higher education, there is growing interest in leveraging technological advancements to improve learning experiences (Aljawarneh, 2020; García Botero et al., 2019; Hoi, 2020; Parmaxi & Demetriou, 2020; Shadiev & Yang, 2020; Sun & Gao, 2020). Among these technologies, ChatGPT, a sophisticated large language model (Kasneci et al., 2023; Perkins, 2023), employs advanced algorithms and deep learning techniques to generate text that closely resembles human writing (Brown et al., 2022; Khalil & Er, 2023; Schwitzgebel et

al., 2023). While prior studies have highlighted ChatGPT's potential in education, there is limited research on its impact in the context of language learning in higher education. Specifically, the difficulties pre-service teachers face when using ChatGPT as a lesson-planning tool remain under-researched.

To establish a foundation for this inquiry, it is essential to examine the existing body of literature. Previous research on technology and language learning has assessed the effectiveness of various tools in supporting language acquisition (Albiladi & Alshareef, 2019; Hoi, 2020; Shadiev & Yang, 2020). For instance, studies have explored the application of chatbots and virtual assistants in language education (Chuah & Kabilan, 2021; Huang et al., 2022; Jeon, 2021; Kim et al., 2019). However, the role of advanced AI tools like ChatGPT in language learning within higher education has yet to be thoroughly examined. This study seeks to fill that gap by exploring both the advantages and challenges associated with incorporating ChatGPT into higher education language courses and programs. Research into this area has significant potential, as it could provide valuable insights into the impact of ChatGPT on language learning outcomes, particularly through empirical studies comparing learners who use the tool with those who do not. Additionally, investigating the accuracy and consistency of ChatGPT's output and addressing issues such as potential bias or stereotyping in its content could enhance the tool's effectiveness and safety in educational settings.

Indonesia has made notable progress in integrating technology into education, particularly under initiatives like "Merdeka Belajar," which promote innovation and flexibility in teaching practices. Despite these advancements, pre-service teachers in Indonesia face unique challenges. Many teacher education programs continue to prioritize traditional methods, offering limited exposure to digital tools. ChatGPT, with its capacity to generate lesson plans and instructional ideas, could bridge these gaps. However, pre-service teachers often struggle with technical proficiency, aligning AI-generated content with curricula, and critically evaluating the outputs provided by AI tools. Research has emphasized the potential of AI in education; for example, Afiyah Jamal (2023) found that AI significantly enhanced teacher productivity and creativity by generating diverse teaching ideas and reducing preparation time. Similarly, studies from developed countries have highlighted how AI reduces teacher workloads, enabling educators to focus more on student engagement (Luckin et al., 2020). Nonetheless, these studies primarily focus on experienced teachers rather than pre-service educators, who are still building foundational skills in pedagogy and technological integration.

This study aims to explore the challenges faced by pre-service teachers in utilizing ChatGPT as a lesson-planning tool. By identifying these obstacles, the research seeks to provide actionable recommendations for teacher education programs to better prepare future educators for the integration of AI in their teaching practices. Additionally, this study aims to contribute to the broader discourse on AI in education by examining these issues within the context of Indonesia's educational landscape. The research addresses the following key question: What are the main challenges faced by pre-service teachers when using ChatGPT for lesson planning?

RESEARCH METHOD

This study utilizes a quantitative approach, Quantitative research is a research strategy that focuses on quantifying data collection and analysis (Bryman, 2016). This study employs a survey of 30 pre-service teachers enrolled at one of the universities in north Sumatra. The objective of the study is to ascertain the challenges encountered by pre-service teachers in leveraging Chat-GPT for pedagogical purposes.

The rationale for selecting these respondents stems from the difficulties they encounter in planning the learning process using Chat-GPT, particularly given their role as pre-service teachers who are still developing their teaching skills and incorporating technology into their education. Additionally, the integration of Chat-GPT as a tool for designing lessons is a recent development, suggesting that pre-service teachers may face challenges in fully leveraging the capabilities of the tool, which could impact the effectiveness of their lesson-planning processes.

The subsequent distribution of the questionnaire occurred online, employing a Likert scale with items derived from the components of the learning process standards. A Likert scale, as delineated by Likert (1932), is a method for measuring responses in a survey, typically through a series of items. The difficulties encountered in each component were then formulated, as illustrated in Table 1.

Table 1. Learning aspect with several indicators

Learning Aspect	Indicators
Planning Aspect	1.1. I have difficulty formulating learning objectives using Chat-GPT. 1.2. I am confused about determining the appropriate learning media from Chat-GPT.

	1.3. I find it difficult to choose the right learning tools with the help of Chat-GPT. 1.4. I have difficulty finding relevant learning resources using Chat-GPT. 1.5. I feel confused about determining effective teaching methods with the help of Chat-GPT. 1.6. I have difficulty determining suitable teaching techniques from Chat-GPT's suggestions. 1.7. I find it difficult to structure the learning activities using Chat-GPT. 1.8. I have difficulty formulating the form of assessment using Chat-GPT.
Learning Aspect	Indicators
Learning Implementation Aspect	2.1. Preliminary Activities 2.1.1. I have difficulty preparing the mental and psychological readiness of students using Chat-GPT. 2.1.2. I have difficulty explaining the learning objectives to be achieved with the help of Chat-GPT. 2.1.3. I feel confused about explaining the scope of the material using Chat-GPT.
	2.2. Main Activities 2.2.1. I have difficulty facilitating students to remain active in online learning with Chat-GPT. 2.2.2. I feel confused about using various online learning media recommended by Chat-GPT. 2.2.3. I have difficulty leading discussions during the learning process with the help of Chat-GPT. 2.2.4. I find it difficult to facilitate creative activities for students using Chat-GPT

	2.2.5. I am confused about conducting various forms of learning competitions with the help of Chat-GPT.
	2.3. Closing Activities
	2.3.1. I have difficulty facilitating students to conclude the learning with Chat-GPT.
	2.3.2. I have difficulty connecting the current learning topic with the next topic using Chat-GPT.
Learning Aspect	Indicators
Learning Evaluation Aspect	3.1. I have difficulty assessing students' attitudes during learning with the help of Chat-GPT.
	3.2. I have difficulty performing cognitive assessments of students using Chat-GPT.
	3.3. I have difficulty assessing students' skills with the help of Chat-GPT.
	3.4. I am confused about using written evaluation applications from Chat-GPT.
	3.5. I have difficulty facilitating written assessments of students with the help of Chat-GPT.

To compare the degree of difficulties with learning using an independent sample t-test and to summarize the findings of detecting learning difficulties, the collected data was then subjected to descriptive statistics analysis. The scores were divided into three categories. The scoring procedure used to determine qualitative criteria is based on the reference score in Table 2.

Table 2. Score Range and Criteria

Score and Criteria		
No	Score Range	Criteria
1	85-115	High
2	54-84	Middle
3	23-53	Low

RESULT AND DISCUSSION

Education and Status Background of Pre-Service Teacher

This research study focuses on pre-service teachers, individuals currently enrolled in a program to become a professional educator at a university in the North Sumatra region. The participants of this study are preparing to enter the teaching profession. The research profile encompasses several key aspects, including gender, educational background, and the current study program at the Faculty of Education. The data on these characteristics is presented in greater detail in Tables 3 and 4 to provide a comprehensive depiction of the characteristics of the research participants.

Table 3. Gender and Percentage

Gender	Percentage
Female	87%
Male	13%

As demonstrated in Table 3, a conspicuous imbalance exists in the gender composition of pre-service teacher participants. The data reveals that 87% of the participants are female, while the male demographic constitutes 13% of the sample. This discrepancy signifies the predominance of women who opt for the teacher education and training pathway at the Faculty of Education.

Table 4. Respondents background

Respondents education background		
Study Program	Semester	Percentage
English Education	VII	30%
Physics Education	VII	13%
Mathematics Education	VII	3%
Arabic Language Education	V	3%
Arabic Language Education	VII	7%
Biology Education	V	3%
Biology Education	VII	7%
Primary School Teacher Education	VII	7%
Early Childhood Education	VII	3%
Islamic Religious Education	VII	13%
Physical Education and Sports Education	III	7%

Education Management	VII	3%

Table 4 clearly shows the distribution of pre-service teacher participants across study programs. The English Education program has the highest number of participants (30%), followed by Physics Education and Islamic Religious Education at 13% each. Other programs, such as Mathematics Education, Biology Education, and Education Management, have lower percentages (3-7%). Most participants were in Semester VII, indicating they were approaching their studies' final stage.

Difficulties of Planning in the Learning Process

Planning is the most essential part of creating an activity program. Without good planning, activities will be directionless and poorly organized (Szulanski, Amin, 2001). Descriptive data regarding planning in the learning process using Chat-GPT clearly shows the difficulty faced by its users in various aspects of learning planning. These aspects include formulating learning objectives and selecting media, tools, resources, teaching methods, teaching techniques, activity steps, and assessment methods. This provides an overall picture of the perceived difficulties experienced by Chat-GPT users in each aspect of planning, as shown in Table 5.

Table 5. Results of Planning in the Learning Process

Descriptive Statistics							
Difficulty Indicator	N	Min.	Max.	Sum	Mean	Std. Deviation	Criteria
Difficulty formulating learning objectives using Chat-GPT.	30	1.00	4.00	76.00	2.5333	12.72	Middle
Confusion in determining suitable learning media from Chat-GPT.	30	2.00	4.00	75.00	2.5	11.53	Middle
Challenges in selecting appropriate learning tools based on Chat-GPT's suggestions.	30	2.00	5.00	79.00	2.6333	12.30	Middle
Difficulty finding relevant learning resources using Chat-GPT.	30	2.00	5.00	85.00	2.8333	11.49	High
Confusion in determining effective teaching methods with the help of Chat-GPT.	30	2.00	5.00	78.00	2.6	12.89	Middle

Difficulty identifying suitable teaching techniques based on Chat-GPT's recommendations.	30	1.00	5.00	83.00	2.7666	12.81	Middle
Challenges designing learning activity steps using Chat-GPT.	30	1.00	5.00	80.00	2.6666	11.77	Middle
Difficulty formulating assessment methods through Chat-GPT.	30	2.00	4.00	84.00	2.8	2	Middle

A review of the descriptive data regarding the use of Chat-GPT in learning process planning reveals that users encounter diverse levels of difficulty in various aspects of learning planning. Generally, most indicators of difficulty, such as the formulation of learning objectives, selection of media, tools, teaching methods, and activity steps, exhibited an average score ranging from 2.5 to 2.8, categorizing as "moderate" difficulty. However, a notable exception emerged in identifying relevant learning resources, which exhibited a significantly higher average score of 2.83, categorizing it as a "high" difficulty level. This observation suggests that while users generally encounter challenges in planning their learning experiences with Chat-GPT, the most significant obstacle is procuring suitable resources. The comparison of teacher difficulties in preparing learning plans using Chat-GPT is shown in Figure 1.

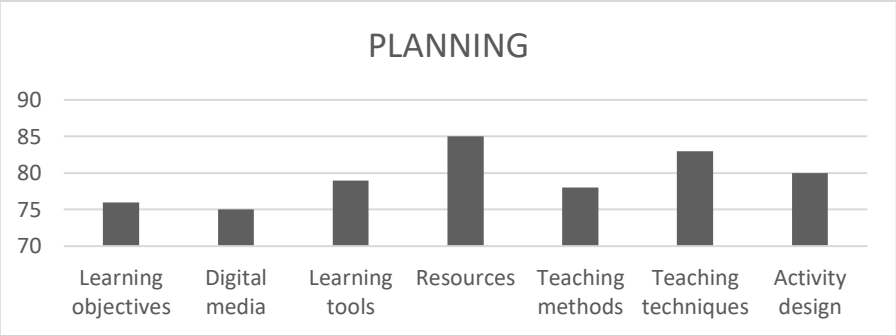

Figure 1. Difficulties encountered by pre-service teachers in designing lesson plans.

Difficulties of Preliminary Activities in the Learning Process

Descriptive results regarding implementing preliminary activities in the learning process using Chat-GPT. This data illustrates the difficulty users face in preparing students' mental and psychological readiness and explaining the learning objectives to be achieved with the help of Chat-GPT. The full results can be seen in Table 6.

Table 6. Results of Learning Implementation of Preliminary Activities in the Learning Process

Descriptive Statistics							
Difficulty Indicator	N	Min.	Max.	Sum	Mean	Std. Deviation	Criteria
Challenges in preparing students' mental and psychological readiness using Chat-GPT.	30	1.00	5.00	94	3.1333	10.12	High
Difficulty explaining learning objectives to be achieved with the help of Chat-GPT.	30	1.00	5.00	86	2.8666	13.74	High
Confusion in explaining the scope of the material using Chat-GPT.	30	2.00	5.00	90	3.00	14.77	High

Based on the descriptive data, Chat-GPT users faced serious difficulties in implementing early learning activities, especially in preparing students' mental and psychological readiness (average 3.13), explaining learning objectives (average 2.87), and explaining the scope of the material (average 3.00). This indicates significant challenges in using Chat-GPT in the early stages of learning. This is related to the analysis conducted by Metin (2013), which states that teachers face difficulties in preparing early learning activities, such as explaining learning objectives and preparing students' mental readiness, because they lack understanding of how to design and assess appropriate performance tasks. The comparison of teacher difficulties in preparing preliminary activities in the learning process using Chat-GPT is shown in Figure 2.

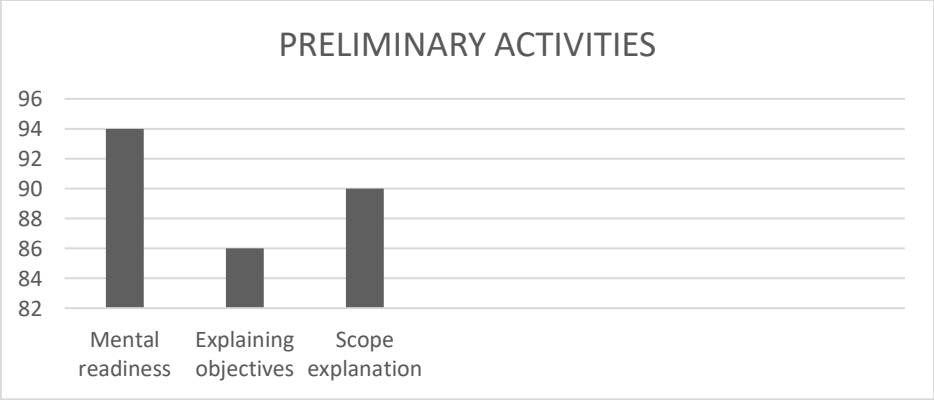

Figure 2. Difficulties encountered by pre-service teachers in developing preliminary activities.

Difficulties of Main Activities in the Learning Process

The following section presents the descriptive results regarding implementing key activities in the learning process using Chat-GPT. These results include the following difficulties: facilitating students to stay active, using learning media, leading discussions, and managing creative activities and learning competitions. The full results can be seen in Table 7.

Table 7. Results of Learning Implementation of Main Activities in the Learning Process

Descriptive Statistics							
Difficulty Indicator	N	Min.	Max.	Sum	Mean	Std. Deviation	Criteria
Difficulty facilitating students to stay active in learning through Chat-GPT.	30	2.00	5.00	98.00	3.2666	6.96	High
Confusion in using various learning media recommended by Chat-GPT.	30	2.00	4.00	83.00	2.7666	15.29	Middle
Difficulty leading discussions during learning with the help of Chat-GPT.	30	2.00	5.00	85.00	2.8333	15.54	High
Challenges in facilitating students' creative activities using Chat-GPT.	30	2.00	5.00	90.00	3.00	14.48	High
Confusion in implementing various learning competitions with the help of Chat-GPT.	30	2.00	4.00	90.00	3.00	13.21	High

The findings, as indicated by the data, revealed that pre-service teachers encountered significant challenges in their efforts to encourage students to remain engaged, facilitate discussions, and manage creative activities and learning competitions through the utilization of Chat-GPT, with an average score exceeding 3.00. Conversely, the complexity of employing the recommended learning media by Chat-GPT was less pronounced, with an average score of 2.766. This observation signifies a substantial impediment in the execution of the main learning activities.

Darling-Hammond (2017) emphasizes the importance of time and resources for teacher development, as well as the recognition of professional learning as an essential part of the job. Another challenge is the multitude of task demands that reduce time for

professional development. In addition, teacher development that is not tailored to the specific needs of the school can reduce its impact on teaching practice and student outcomes (Ingersoll & Strong, 2011), while customizing learning experiences can increase its effectiveness (Darling-Hammond, 2017). Building strong school support systems, such as mentoring programs, instructional training, and professional learning communities, is essential for developing teachers (Knight, 2009). The comparison of teacher difficulties in preparing main activities in the learning process using Chat-GPT is shown in Figure 3.

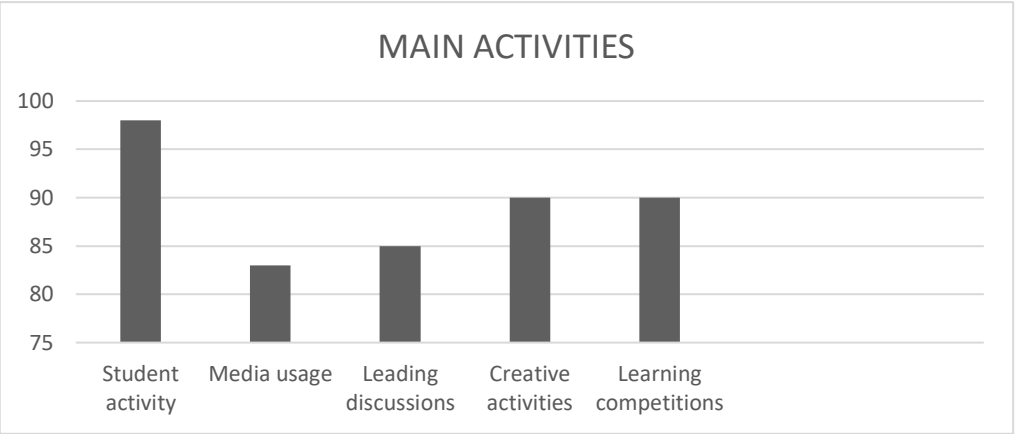

Figure 3. Difficulties encountered by pre-service teachers in developing main activities.

Difficulties of Closing Activities in the Learning Process

Descriptive results regarding difficulties in implementing closing activities in learning using Chat-GPT. This data includes difficulties in facilitating students to draw conclusions from learning and connecting the current learning topic with the next topic. The full results can be seen in Table 8.

Table 8. Results of Learning Implementation of Closing Activities in the Learning Process

Descriptive Statistics							
Difficulty Indicator	N	Min.	Max.	Sum	Mean	Std. Deviation	Criteria
Difficulty facilitating students in concluding learning using Chat-GPT.	30	2.00	5.00	98.00	3.2666	6.96	High
Challenges in connecting the current learning topic with the next one through Chat-GPT.	30	2.00	4.00	83.00	2.7666	15.29	Middle

Based on the descriptive results in Table 08, teachers face high difficulties in facilitating students to draw conclusions from learning using Chat-GPT, with an average score of 3.2666. In addition, there is a moderate level of challenge in connecting the current learning topic to the next one through Chat-GPT, with an average score of 2.7666. This shows that although Chat-GPT can help, teachers still experience obstacles in utilizing this technology optimally to support closing activities in learning.

Based on Bruner's (1966) theory of constructivism, learning is considered an active process in which students construct new ideas based on prior knowledge. According to Magnaye (2023), although closure strategies are important to help students draw conclusions and connect learning topics, teachers often face difficulties in implementing effective strategies, as found in the Chat-GPT related analysis. The comparison of teacher difficulties in developing main activities in the learning process using Chat-GPT is shown in Figure 4.

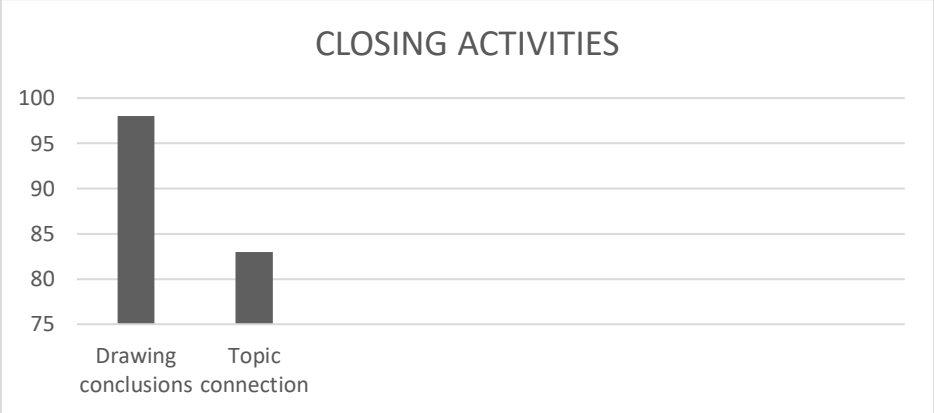

Figure 4. Difficulties encountered by teachers in developing closing activities.

Difficulties of Learning Evaluation Aspect in the Learning Process

The following descriptive results describe the difficulties experienced by teachers in implementing learning assessment using Chat-GPT. This data includes challenges in assessing students' attitudes, cognitive abilities, and skills, as well as difficulties using the written evaluation application and facilitating students' written assessments. The full results can be seen in Table 9.

Table 9. Results of Learning Evaluation Aspect in the Learning Process

Descriptive Statistics							
Difficulty Indicator	N	Min.	Max.	Sum	Mean	Std. Deviation	Criteria
Difficulty assessing students' attitudes during learning with the help of Chat-GPT.	30	1.00	5.00	98	3,2666	11.68	High
Challenges performing cognitive assessments of students using Chat-GPT.	30	2.00	4.00	93	3,1111	15.66	High
Difficulty assessing students' skills through Chat-GPT.	30	1.00	5.00	93	3.1111	14.9	High
Confusion in using written evaluation applications from Chat-GPT.	30	2.00	5.00	88	2.9333	16.7	High
Difficulty facilitating students' written assessments with the help of Chat-GPT.	30	1.00	4.00	85	2.8333	16.93	High

Based on Table 9, teachers experienced high difficulties in various aspects of evaluating learning using Chat-GPT. The main difficulty was seen in assessing students' attitudes with an average of 3.2666, followed by challenges in conducting cognitive (3.1111) and skills (3.1111) assessments. Teachers also faced confusion in using the written evaluation application (2.9333) and facilitating students' written assessments (2.8333). This indicates that although Chat-GPT offers support, teachers still need better understanding and skills in utilizing this technology for learning evaluation.

According to Jorgensen (2019), the evaluation process should produce visible and actionable findings that drive innovation. Innovation requires future considerations of change that combine evaluation and planning activities. The comparison of teacher difficulties in preparing main activities in the learning process using Chat-GPT is shown in Figure 5.

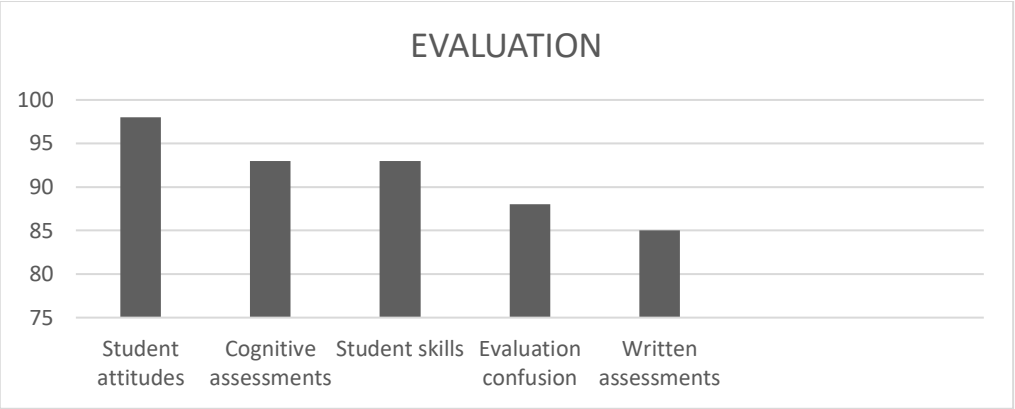

Figure 5. Difficulties encountered by teachers in developing evaluations in the learning process

CONCLUSION

Chat-GPT has the potential to be a valuable tool for lesson planning, but it poses significant challenges for pre-service teachers. They struggle to formulate learning objectives, select media and tools, and determine effective methods. The most pressing problems are finding relevant resources and designing activities that maintain student engagement, lead discussions, and facilitate creative tasks. These difficulties extend to the initial stages of learning, such as preparing students' mental readiness and explaining learning objectives, and culminate in the final stages, like helping students draw conclusions. The findings underscore the necessity for pre-service teachers to develop not only technical but also pedagogical skills in leveraging technology. Moreover, there is a clear call for professional support to optimize its utilization in educational settings.

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