

Exploring The Influence of Artificial Intelligence Tools on Creative Lesson Planning Among Preschool Teachers in Selangor

Ranjit Kaur P. Gernail Singh^{1*}, Thaneshwari Donavan Krishna Devan^{2*}, Dr Syeda Rabia Tahir^{3*}

^{1,2,3} Faculty of Education and Humanities, UNITAR International University, Kelana Jaya, Selangor, Malaysia

Corresponding Author email:

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ABSTRACT

This study investigates the role of Artificial Intelligence (AI) tools in enhancing teachers' creativity in lesson planning within early childhood education (ECE) settings in Selangor, Malaysia. While AI applications such as ChatGPT, Canva AI, and lesson plan generators are increasingly used in global education, limited research has explored their impact on teacher practices in Malaysian preschools. Using a qualitative research design, data were collected through semi-structured interviews with ten preschool teachers representing diverse teaching experiences and institutional settings. The findings reveal that AI tools support teachers by saving time, generating fresh ideas, and enabling differentiated instruction for mixed-ability learners. However, challenges include concerns about age appropriateness, curriculum alignment, cultural relevance, and potential over-reliance on technology. Despite these challenges, teachers emphasized maintaining professional autonomy, viewing AI as a supportive assistant rather than a replacement for creativity. The study concludes that AI holds promise in reducing workload and inspiring innovative lesson activities, but its effectiveness depends on teachers' ability to review, adapt, and contextualize AI-generated content. The results provide practical implications for teacher training, curriculum design, and policy development, while also highlighting the need for further research on inclusive AI tools tailored to the Malaysian preschool context.

Keywords: Artificial Intelligence, AI Tools, Lesson Planning, Preschool Teachers

INTRODUCTION

In the era of digital transformation, Artificial Intelligence (AI) has emerged as a powerful tool in the education sector, including in Early Childhood Education (ECE). AI tools such as ChatGPT, Canva AI, and AI-powered lesson plan generators have the potential to assist teachers in designing engaging, creative, and developmentally appropriate lessons for young children. Creativity in lesson planning is essential in ECE to foster holistic development, critical thinking, and active engagement among children. AI tools are increasingly integrated into educational practices, supporting administrative tasks, enhancing classroom engagement, and facilitating language learning and content creation (Ahn et al., 2024; Bonner et al., 2023; Kılıçkaya, 2023). There has also been a growing public interest and increase in the use of AI in teaching and learning globally (Cardona et al., 2023; Walton Family Foundation, 2024). In addition to language learning, AI has the potential to help teachers design lessons that are tailored to the diverse needs and developmental levels of learners, thereby promoting inclusive and differentiated instruction (Chen et al., 2023). Studies have shown that AI can assist educators in generating lesson ideas, creating customized materials, and providing adaptive learning content, which can significantly reduce teachers' workload while enhancing lesson quality (Lee & Wong, 2022). However, despite its potential, there is a lack of empirical research on how AI influences teachers' creativity specifically within

the Malaysian ECE context, particularly in Selangor, where many preschools continue to rely on traditional planning methods without integrating technological innovations (Yusof & Hamid, 2023). Many teachers face time constraints, limited resources, and heavy workloads, making it challenging to consistently plan creative lessons (Yusof & Hamid, 2023). Although AI tools, such as lesson generators and content creators, are increasingly available and can potentially assist teachers in designing engaging lessons efficiently, many early childhood teachers in Malaysia lack training, awareness, and exposure to these tools (Cardona et al., 2023; Bonner et al., 2023). Additionally, teachers are often uncertain about how to effectively use AI to enhance creativity in their lesson planning, leading to underutilization of tools that could support innovative teaching practices in preschool classrooms (Belloula, 2025). Existing research has primarily focused on how AI impacts student learning outcomes and is heavily centered on secondary and higher education contexts, with limited attention given to early childhood education (Ahn et al., 2024; Kılıçkaya, 2023). This research gap limits the development of effective strategies and guidelines for using AI to support teachers' creativity in early childhood education (Chen et al., 2023). By addressing this gap, the study will contribute to the advancement of innovative teaching practices in Malaysian ECE.

LITERATURE REVIEW

Artificial Intelligence (AI) is increasingly utilized in education to support lesson planning, creativity, and content generation among teachers. This chapter reviews recent studies from 2020 to 2024 focusing on the use of AI tools in enhancing teachers' creativity within Early Childhood Education (ECE). The review highlights the methodologies, results, and conclusions of these studies while identifying similarities, differences, and research gaps relevant to the Malaysian ECE context. Several studies have explored how AI tools assist teachers in planning creative and engaging lessons efficiently. Chen et al. (2023), using a quantitative survey of 120 teachers, found that AI-assisted platforms provided structured templates and activity suggestions, reducing teachers' planning time and allowing them to align activities with developmental objectives. Similarly, Lee and Wong (2022), in a mixed-method study involving surveys and interviews with 80 preschool teachers, reported that the use of AI tools increased the variety and creativity in lesson activities, as teachers gained exposure to innovative ideas for their classrooms. While both studies emphasized the role of AI in reducing workload and increasing activity variety, Chen et al. focused on time efficiency, whereas Lee and Wong highlighted creative content development as the key benefit. The potential of AI to enhance teachers' creativity has been supported in recent literature. Belloula, (2025) found that AI allowed teachers to create more interactive and engaging materials, encouraging a shift toward child-centered learning experiences. Teachers' perceptions play a crucial role in the successful integration of AI tools in lesson planning. Cardona et al. (2023), through a large-scale survey of 200 teachers, found that while 65% of teachers believed AI was beneficial for lesson planning, 35% felt unprepared to use AI effectively, highlighting a gap in training and readiness. Ahn et al. (2024), in a systematic review of AI in ECE, similarly found that while AI has the potential to enhance creativity and engagement in teaching, teachers' attitudes towards AI vary based on their familiarity with technology and the support they receive from their institutions. Both studies emphasized that while teachers recognize the potential of AI, effective implementation requires confidence and adequate training, with Cardona et al. providing quantitative insights and Ahn et al. offering a broad thematic analysis. Despite the promising potential of AI, challenges in its integration remain prevalent. Yusof and Hamid (2023), through qualitative interviews with 20 Malaysian preschool teachers, identified challenges including a lack of training, fear that AI may replace the human aspect of teaching, and concerns about aligning AI-generated materials with national curriculum standards. Kılıçkaya (2023), in a systematic review, also reported technological complexity and teachers' resistance due to a lack of confidence as common barriers to AI integration in educational contexts. While both studies highlight the need for training and support, Yusof and Hamid provided a local Malaysian perspective, emphasizing the unique challenges faced by preschool teachers in Malaysia. Comparable qualitative evidence from Malaysian preschool classrooms indicates that although teachers employ a range of creative, play-based strategies to engage young learners, they continue to encounter practical constraints such as limited instructional

time, insufficient teaching materials, and overcrowded syllabi (Nair et al., 2025). The reviewed literature demonstrates that AI tools can enhance teachers' creativity and reduce workload by offering innovative ideas and streamlining lesson planning (Chen et al., 2023). Studies also highlight how AI supports content generation, encourages child-centered approaches, and inspires teachers with new strategies to make lessons more engaging (Lee & Wong, 2022). However, challenges remain, particularly regarding teachers' lack of training, uncertainties about the suitability of AI-generated content for preschool settings, and concerns over over-reliance on technology (Yusof & Hamid, 2023; Kılıçkaya, 2023)

CONCEPTUAL FRAMEWORK

This study is guided by a simple conceptual framework illustrating the relationship between the use of AI tools as the Central Phenomenon and teachers' creativity in lesson planning as the key Influencing Outcome in early childhood education settings. The framework positions AI tool usage as a potential enabler of creativity, where increased awareness, exposure, and application of AI may lead to innovative lesson planning practices among ECE teachers.

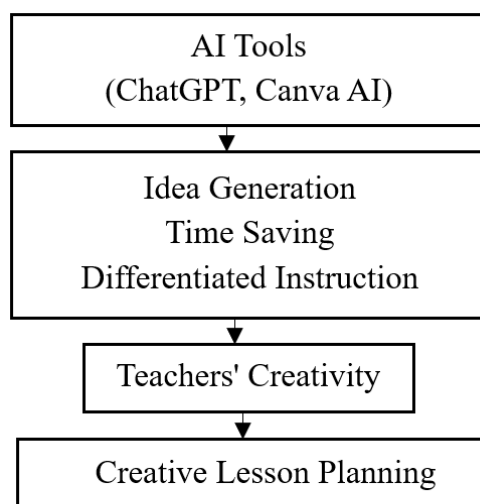


Figure 2.1 Conceptual Framework

This conceptual framework helps to visually and conceptually connect the central focus of the study. In particular, it frames the investigation around whether and how AI tools directly contribute to enhancing creativity in designing lessons, a dimension that is increasingly recognized in the field of early childhood education but remains underexplored in the Malaysian context (Yusof & Hamid, 2023).

THEORETICAL FRAMEWORK

This study is guided by three key theories to support the exploration of how AI tools influence teachers' creativity in lesson planning. First, the Technological Pedagogical Content Knowledge (TPACK) Framework (Mishra & Koehler, 2022; Chai et al., 2021) explains how technology, such as AI tools, can be effectively integrated with pedagogy and content knowledge to enhance teaching practices creatively. It emphasizes the importance of teachers developing the competence to blend technology meaningfully within lesson planning to support engaging and innovative teaching. In the context of this study, TPACK provides a basis for examining how ECE teachers combine their pedagogical and content knowledge with AI technologies to design lessons that are not only relevant but also creatively engaging. Next, Amabile's Componential Theory of Creativity (Amabile, 2023; Zhou & Hoever, 2022) suggests that creativity is influenced by domain-relevant skills,

creativity relevant processes, and task motivation. This theory is highly relevant as AI tools can enhance teachers' creative thinking by providing new ideas, reducing cognitive workload, and supporting teachers in generating diverse and engaging lesson content. The theory aligns with the assumption that by integrating AI, teachers can strengthen their creativity-relevant processes and motivation, leading to improved lesson innovation in early childhood classrooms. Lastly, the SAMR Model (Puentedura, 2021; Trust, 2022) is used to measure the stages of technology integration in teaching, moving from substitution and augmentation to modification and redefinition. This model is useful in evaluating how deeply teachers integrate AI tools into their lesson planning processes and how these tools transform lesson creation from basic usage (e.g., replacing manual tasks) to fostering innovative and redefined teaching practices. In this study, the SAMR model helps to identify whether teachers are using AI only at a surface level (substitution) or whether they are applying AI in ways that fundamentally reshape lesson design, thereby fostering higher levels of creativity. Together, these three theoretical foundations provide a strong basis for understanding the relationship between AI tool usage and creativity in lesson planning. While TPACK explains how AI can be meaningfully integrated with teaching knowledge, Amabile's theory highlights the internal and external factors contributing to creativity, and the SAMR model provides a practical lens to assess the depth of technology integration. This triangulation of theories ensures that the study has a comprehensive framework to explore the role of AI in enhancing creative practices in Malaysian preschool settings.

Research Objectives

1. To explore how early childhood educators in Selangor experience using AI tools in their lesson planning.
2. To understand how the use of AI tools influences teachers' creativity when designing lessons for young children.
3. To investigate early childhood educators' perceptions of the benefits and challenges of using AI to support creative lesson planning.

Research Questions

1. How do early childhood educators in Selangor experience using AI tools in their lesson planning?
2. In what ways does the use of AI tools influence teachers' creativity when designing lessons for young children?
3. What are early childhood educators' perceptions of the benefits and challenges of using AI to support creativity in lesson planning?

RESEARCH METHODOLOGY

Research Design

This study employed a qualitative research design to explore teachers' experiences with AI tools such as ChatGPT, Canva AI, or lesson plan generators. Unlike quantitative methods, which focus on numbers, the qualitative design focuses on words, meanings, and lived experiences (Braun & Clarke, 2021). Semi-structured interviews were chosen as the main method because they provide flexibility. Teachers could freely share their experiences, while the researcher could ask follow-up questions to clarify or expand on their answers. This design was most suitable for the research objective, which aimed to understand how and why AI influences creativity in lesson planning, rather than just measuring how often it is used. The study was conducted in

selected preschools in Selangor, Malaysia. Selangor was chosen because it has a wide variety of preschools, from urban centres with high access to digital tools to smaller schools with more traditional practices. This diversity allowed the researcher to gather balanced insights from teachers working in different educational settings (Yusof & Hamid, 2023). To ensure privacy, the names of the 13 preschools are not disclosed. This decision is aligned with ethical research practices and ensures that participants feel safe to provide honest and open responses. The teachers had limited teaching experience, ranging from one to two years and therefore had different levels of familiarity with AI tools. These teachers are often more willing to adopt new digital tools. A purposive sampling technique was used, where participants were deliberately chosen based on their relevance to the research objectives. Only teachers who were actively planning and delivering lessons in preschool classrooms were selected, ensuring that the data collected was highly relevant to the study. Purposive sampling is widely used in qualitative research to access participants who possess direct experience of the phenomenon being studied (Etikan et al., 2021). Ethical approval was obtained prior to the study. Participants were contacted through WhatsApp messaging, where the study's purpose, procedure, and confidentiality protocols were explained. This method was selected for its accessibility, convenience, and familiarity to teachers, particularly in the Malaysian context where WhatsApp is a common communication platform (Haron et al., 2022). Consent was secured digitally, and participation was voluntary. The interviews were conducted asynchronously over WhatsApp text, allowing participants to respond at their own pace and reflect before providing answers. This flexible format reduced scheduling conflicts and gave participants the opportunity to provide more thoughtful responses, which aligns with best practices in qualitative data collection in education research (Cardona et al., 2023). However, this format also has trade-offs: unlike face-to-face or voice-based interviews, it does not capture tone, hesitation, or nonverbal cues.

Data collection took place over three weeks. Each participant answered six open-ended interview questions that explored how AI tools influenced creativity in lesson planning, the types of tools they used, challenges faced, and their perceptions of AI's role in ECE. The use of semi-structured questions allowed consistency across participants while still leaving room for elaboration and deeper probing. All responses were anonymized, securely stored, and coded for analysis. This ensured both ethical integrity and protection of participants' confidentiality. The main research instrument was a semi-structured interview guide designed based on previous studies on AI in education (Chen et al., 2023). The guide ensured consistency across interviews but was flexible enough to allow follow-up questions.

The collected interview data were analysed using thematic analysis following Braun and Clarke's (2021) six-phase framework. However, instead of coding manually, the researcher used NVivo software to assist in organizing, coding, and visualizing the data. The process began with transcription and careful reading of participants' responses to gain familiarity with the data. The transcripts were then imported into NVivo, where initial codes were created by highlighting relevant sentences or phrases related to AI usage, creativity, benefits, and challenges. NVivo allowed the researcher to group codes into categories systematically and reduce the risk of overlooking key information. NVivo's query and node features were used to search for patterns and relationships between codes. Additionally, NVivo's visualization tools (word clouds and coding stripes) were used to illustrate the frequency of keywords and the distribution of themes across participants. This improved the clarity and reliability of the analysis by providing both textual and graphical representations of the findings (Woolf & Silver, 2022). By using NVivo, the analysis process was more organized, transparent, and traceable compared to manual coding, ensuring the validity and reliability of the research outcomes.

FINDINGS

The findings are organized according to the research questions and themes. Each theme is supported with evidence drawn from participants' responses, as well as interpretations that connect the findings with existing literature. The descriptive analysis will first highlight the participants' socio-demographic information (e.g., years of teaching, type of preschool, and academic level) and then describe the responses related to these two

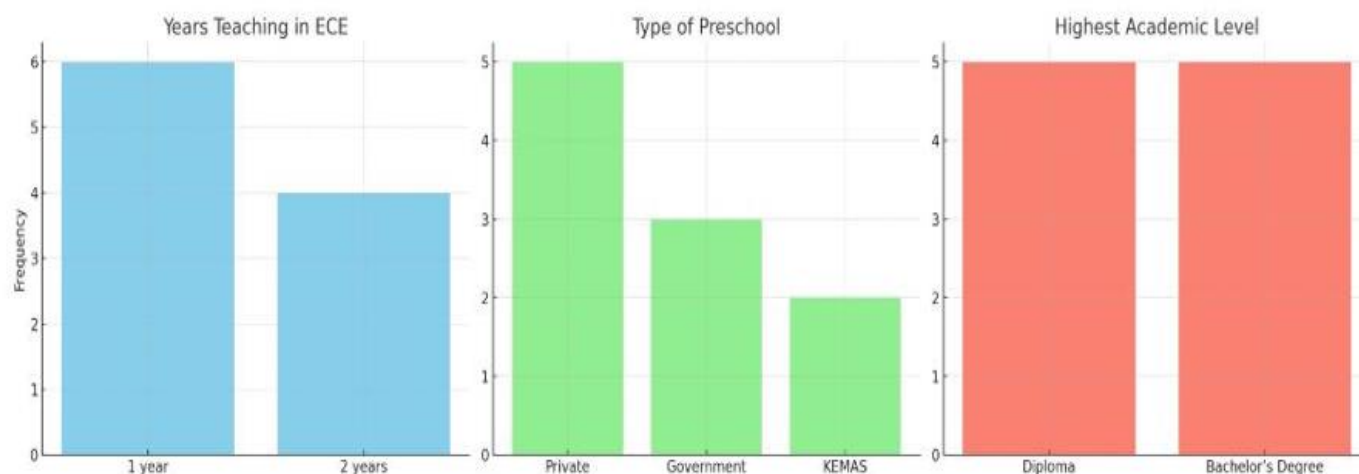
areas. It provides an overview of the socio-demographic characteristics of the respondents, as well as the distribution of responses related to the study's Central Phenomenon and its Influencing Outcome. The Central Phenomenon is the use of AI tools in early childhood education, and the Influencing Outcome examined is teachers' creativity in lesson planning.

Table 4.1 Socio-Demographic of participants

Table 4.1: Socio-Demographic Background of Participants (n = 10)			
Variable	Category	Frequency (f)	Percentage (%)
Years Teaching in ECE	1 year	6	60%
	2 years	4	40%
Type of Preschool	Private	5	50%
	Government	3	30%
	KEMAS	2	20%
Highest Academic Level	Diploma	5	50%
	Bachelor's Degree	5	50%

Table 4.1 shows that the majority of participants had only one year of teaching experience 60% , while the rest had two years of experience 40%. With regard to the type of preschool, half of the participants 50% worked in private preschools, 30% were from government preschools, and 20% were from KEMAS institutions. As for their academic qualifications, an equal distribution was observed, with 50% holding a Diploma and 50% holding a bachelor's degree. This information provides important context for interpreting the study's findings, as the participants' teaching experience, workplace setting, and academic background may influence how they perceive and adopt AI tools in lesson planning.

Figure 1 : Bar chart Socio Demographic



Research question 1

How do early childhood educators in Selangor experience using AI tools in their lesson planning?

Theme 1: Differentiation and Adaptation

This theme examines AI's role in helping teachers in adapting lessons for mixed-ability classrooms and special needs students.

Table 4.2: Differentiation and Adaptation

Sub-theme	Description	Participants
Support for Mixed-Ability Learners	AI assisted teachers in adapting activities for different learning levels	P1–P9
Teacher Adjustment	Teachers modified AI-generated activities based on children's needs	P2, P5, P10

Several participants reported that AI tools helped to adapt activities according to children's varying learning abilities and developmental needs. One participant explained:

“Using AI, we can personally request to give the suitable activities according to children's learning levels. But even the activities based on children milestone some children might not be able to follow the activity and teacher needs to help them during the class.” (P2)

Similarly, another participant said:

“AI suggests activity variations for different levels like simpler counting for beginners and harder tasks for advanced learners, so all children can join in confidently.” (P5)

One teacher highlighted creating tiered activities for mixed-ability classrooms:

“AI has also aided me in generating tiered activities for mixed-ability classes.” The children worked harmoniously since all activities were in concordance with their learning pace and no one got bored or left behind.” (P7)

Research question 2

In what ways does the use of AI tools influence teachers' creativity when designing lessons for young children?

Theme 2: AI as a Creative and Instructional Support Tool

This theme explores how AI tools influence teachers' creativity by generating new lesson ideas, supporting instructional planning, and encouraging more varied teaching approaches.

Table 4.3: Creativity and Lesson Planning

Sub-theme	Description	Participants
Idea Generation	AI provided new lesson ideas and teaching approaches	P1, P2, P3, P4, P5, P7, P8, P9

Instructional Support	AI-assisted teachers in planning and conducting lessons	P2, P6
Visual and Activity Preparation	AI supported the preparation of visual aids and interactive classroom activities	P7, P9
Teacher Creativity and Adaptation	Teachers modified AI-generated suggestions based on classroom needs	P3, P8

Several participants described using AI to generate creative lesson ideas and expanding teaching approaches. One participant stated:

“AI tools have definitely supported my creativity when planning lessons... I will type in a theme or learning objective, and it’ll give me suggestions I hadn’t even thought of. It helps me explore different approaches and add more variety to my lessons.” (P3)

Another participant explained:

“Usually when I’m using AI, I always looking for the key points only how to conduct the lesson. For example, I’m teach special needs children and using AI will help me a little bit about the approach that I can use when I want to conduct the lesson.” (P2)

Participants also highlighted the practical use of AI in preparing lesson materials and interactive classroom activities. One teacher shared:

“Recently, I used Canva AI to prepare visual aids for a lesson on shapes. The tool helped me generate colourful posters quickly, saving preparation time. The children enjoyed the visuals a lot.” (P9)

Theme 3: Teacher Autonomy and Professional Judgment

This theme explores how teachers maintained professional control over AI-generated content by reviewing, modifying, and adapting suggestions to ensure suitability for preschool children and classroom needs.

Table 4.4: Teacher Autonomy and Professional Judgment

Sub-theme	Description	Participants
Maintaining Teacher Control	Teachers remained responsible for selecting and adapting AI suggestions	P4, P7
Reviewing and Modifying Content	Teachers adjusted AI-generated activities to ensure age appropriateness and relevance	P1, P2, P4
Concerns About Overdependence	Some teachers expressed concern about relying too heavily on AI tools	P1

One participant explained:

“I still feel very much in control. AI gives me ideas, but I decide which ones to use and how to adapt them for my class. Sometimes the suggestions are too advanced or not age-appropriate, so I tweak them heavily. If anything, it feels like having an assistant to bounce ideas off, not a replacement for my own creativity.” (P4)

Another participant stated:

“I actually feel more in control now because AI helps me see more possibilities, but I’m still the one making the final decisions. The AI acts like a brainstorming partner, not a replacement for my ideas.” (P7)

One teacher also highlighted concerns regarding dependence on AI:

“It does limit creativity to some extent, as adults nowadays tend to rely on AI instead of using their own ideas or words when completing assignments or tasks. This reduces the natural use of their brains and independent thinking.” (P1)

Research Question 3

What are early childhood educators’ perceptions of the benefits and challenges of using AI to support creativity in lesson planning?

Theme 4: Benefits of Using AI

This theme highlights the benefits that educators reported when using AI in lesson planning. Teachers emphasized that AI provided fresh ideas, improved efficiency, and though less frequently had the potential to enhance classroom engagement.

Table 4.5: Benefits of Using AI Reported by Participants

Sub-theme	Description	Participants
Efficiency and Timesaving	AI reduced planning time and improved efficiency	P1, P4, P5, P6, P7, P8, P9, P10
Access to Fresh Ideas	AI generated new lesson ideas and creative activities	P2, P3, P4
Quick Information Support	AI provided quick responses and planning assistance	P1, P4

One participant stated:

“The benefits include saving time, receiving quick and accurate answers, and avoiding delays.” (P1)

Another participant explained:

“Benefit that I got from using AI, I will have new ideas in creating lessons plan and making a more creative

activity in class.” (P2)

One teacher also emphasized the efficiency of AI in lesson preparation:

“The main benefit is efficiency! It saves me research time and provides fresh ideas quickly. It also helps me find new ways to present familiar topics.” (P4)

Theme 5: Challenges of Using AI

This theme captures challenges educators experience when integrating AI, including age appropriateness, cultural relevance, curriculum alignment, and over-dependence.

Table 4.6: Challenges of Using AI Reported by Participants

Sub Theme	Number of mentions	participants
Age Appropriateness issue	6	P1,P3,P5,P7,P8,P10
Culture context issue	1	P4
Generic Ideas	3	P2,P6,P9
Mismatch with co-curriculum	2	P3.P7
Over-dependance on AI	2	P5,P8

Participants Views:

“However, a concern is the overdependence on AI, which can reduce critical thinking and creativity in the long run.” (P1) “But the challenges that I experienced at the end we might depend on the same activity because AI always keep repeating give the same activity if we search the same ideas.” (P2) “The challenge is that AI sometimes gives content that’s too complex or not aligned with early childhood learning principles, so I need to double-check and adjust.” (P4)

DISCUSSION

The findings highlight that preschool teachers perceive AI as a supportive tool in lesson planning, primarily valued for its efficiency, time-saving benefits, and ability to generate fresh ideas. While teachers acknowledged that AI could enhance creativity by providing inspiration and supporting differentiation in mixed-ability classrooms, they also emphasized the importance of professional judgment in reviewing and adapting AI-generated content. The challenges identified, such as issues of age appropriateness, curriculum alignment, cultural relevance, and the risk of over-dependence, reinforce the need for teacher oversight. Across all themes, it was evident that teachers maintained strong professional autonomy, using AI as an assistant rather than a replacement. Overall, the integration of AI into lesson planning holds promise for enhancing productivity and creativity, but its effectiveness depends on how thoughtfully teachers adapt it to meet the developmental and contextual needs of preschool children.

This chapter summarizes the main findings of the study in relation to the research objectives and questions. It also discusses the implications of the study for teachers, schools, curriculum developers, and policymakers, before highlighting its limitations and offering recommendations for future research. The study explored preschool teachers’ perceptions of the benefits, challenges, and applications of Artificial Intelligence (AI) in lesson planning, focusing on creativity, differentiation, appropriateness, and teacher autonomy. The findings suggest that AI is increasingly recognized as a valuable tool in preschool lesson planning, although its

usefulness depends strongly on teacher judgment and expertise. Regarding differentiation, the study showed that AI could generate activity variations for mixed-ability classrooms, enabling teachers to adapt tasks for learners with different abilities. However, AI was less effective in addressing the needs of children with special educational requirements, revealing a gap in inclusivity (Carter, 2021). With respect to creativity, most participants valued AI primarily as an idea generator that inspired fresh approaches and activities. This reflects Brown's (2020) argument that AI can enhance creativity when used flexibly, although a few teachers worried that over-reliance might restrict originality. The study also highlighted both benefits and challenges of AI. The main benefits were efficiency and timesaving, as teachers were able to reduce their workload and access ready-to-use content ideas (Yadav, 2025). Another benefit was access to fresh lesson ideas, which supported teacher creativity. At the same time, participants identified several challenges, including age appropriateness, generic or repetitive content, and occasional misalignment with the curriculum (Lee, 2021). Some also noted the lack of cultural context in AI-generated materials, aligning that AI tools often fail to consider local cultural elements. Overall, the study concludes that AI has the potential to enhance preschool lesson planning by saving time, sparking ideas, and supporting differentiation. However, it cannot replace professional expertise, as teacher oversight remains essential to ensure developmental suitability, curriculum alignment, and cultural appropriateness. The findings carry several implications for practice, curriculum, and policy. For teachers, AI can be integrated as a supportive planning tool that reduces workload and sparks creativity, but they must apply knowledge of child development to ensure age appropriateness and relevance (Belloula, 2025). For schools and administrators, the results highlight the importance of professional training in AI literacy to help educators maximize its potential while avoiding over-dependence. For curriculum developers, the findings suggest the need to design AI tools that are aligned with the preschool curriculum in Malaysia and which consider cultural and contextual differences (Lee, 2021). For policymakers, the study emphasizes the importance of responsible AI integration that prioritizes teacher autonomy and safeguards children's developmental needs. This study has several limitations. First, the sample size was limited to ten preschool teachers, restricting the generalizability of findings. It was also concentrated among early-career teachers with one to two years of experience, so the findings may not reflect how more experienced teachers engage with AI tools in lesson planning. Second, the research was situated in the Malaysian preschool context, which may not fully reflect perspectives in other educational systems. Third, the study relied on self-reported data through interviews, which may have been influenced by participant bias. Fourth, the asynchronous WhatsApp format responses could not convey tone or hesitation, and the delay between messages made it harder to probe further or capture participants' first, unfiltered reactions. Finally, AI is rapidly evolving, and newer applications or features may have emerged since the completion of this study, meaning the results reflect only the current state of AI tools (Celik., et al 2022).

Future research should build upon these findings by addressing some of the study's limitations. Studies with larger and more diverse samples of teachers across different preschool contexts are needed to generate more generalizable results. In addition, while this study focused on teachers' perceptions, future research should also examine children's outcomes, such as how AI-supported lesson planning affects engagement, creativity, and development (Yadav, 2025). Another important area for exploration is how AI can be adapted to support children with special educational needs, which remains underexplored (Carter, 2021). Longitudinal research would also be valuable to track how teachers' use of AI evolves over time, especially as AI technologies advance. Finally, comparative studies across different cultural and educational systems would deepen understanding of how AI can be localized to meet the needs of diverse preschool environments (Belloula, 2025). In particular, attention to the cultural and linguistic relevance of AI-generated materials will be essential, as recent work on integrating AI within culturally situated educational and research settings highlights both the opportunities and the responsibilities involved in preserving community identity and heritage (David et al., 2025).

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