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The Use of Artificial Intelligence in Differentiated Instruction Classrooms

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Abstract

This study investigates the integration of Artificial Intelligence (AI) in differentiated instruction classrooms. The research aims to determine teachers' perceptions of AI integration in teaching and evaluate its use in differentiated instruction classrooms. A quantitative methodology was implemented, involving a survey of 30 primary school teachers in Kuala Lumpur. The results reveal that teachers are generally confident in using AI-based tools, but they express a need for further training to fully understand the range of AI tools available. Teachers acknowledge the benefits of AI in enhancing student engagement and personalizing learning. However, they exhibit a need for more support in implementing differentiated instruction strategies and leading their colleagues in the integration of AI tools. The study concludes that AI tools have potential to enhance teaching and learning outcomes, but there is a need for continuous support and training for teachers. These findings have significant implications for educational practice and policy. Future research is suggested to dig deeper into the factors influencing teachers' perceptions of AI in teaching, the impact of AI integration on student outcomes, and the role of school leadership in supporting AI integration. This study provides valuable understanding into the potential of AI in education and the need for ongoing teacher support and training.

Keywords: Artificial Intelligence in Education, Differentiated Instruction, Mixed-Ability Classroom, Teachers' Perceptions

Introduction

The academic significance of this study lies in its exploration of a relatively new and rapidly evolving field - the application of AI in education. Artificial intelligence (AI) is a branch of computer science that deals with creating smart machines that can do jobs usually only capable by human intelligence. This includes recognizing objects, understanding and speaking languages, making decisions, and translating between different languages. The purpose of AI is to create machines that can learn independently on their own and get better at solving tasks over time. Large amounts of data and complex instructions are being process by today's AI systems to help machines understand information, gain knowledge from what they do,

and become more efficient as they learn more. Significant advancements in various fields achieved through the evolution of AI including healthcare, finance, and autonomous driving, demonstrating its potential to transform industries and impact every aspect of our daily lives.

It is important to understand how the evolution of AI can be effectively integrated into various educational contexts, including differentiated instruction classrooms (Johler & Krumsvik, 2022). The integration of AI in education help in promoting personalized learning where it can customize the content of lessons to suit students' individual needs and provide a more beneficial and meaningful learning experience. This study contributes to the growing body of research on AI in education and provides valuable insights for educators, policymakers, and researchers.

There are significant evidences that the use of AI in education enhance the quality of teaching and learning. For instance, Chen et al. (2020) observed a remarkable improvement in the efficiency and effectiveness of administrative tasks handled by educators due to AI. Seo et al. (2021) also reported that AI systems provide significant assistance in online education, promotes personalized student learning experiences, efficiently organized routine tasks for instructors, and enabling adaptive evaluations. Furthermore, research by Kim and Kim (2023) indicated that a majority of STEM educators have had positive experiences with AI, particularly in its role as an advanced support mechanism for learning.

While there is an abundance of literature on the application of AI in educational settings, there is insufficient studies that focus specifically on AI in the context of differentiated instruction classrooms. This study aims to bridge this research gap by looking into teachers' perceptions of AI integration within their differentiated instruction practices. It is important to understand these perceptions for the successful adoption of AI technologies in educational environments. By contributing a fresh perspective on AI's role in differentiated instruction, this research not only enriches the academic discourse but also paves the way for developing practical strategies that address the challenges highlighted in existing literature. Furthermore, it seeks to utilize AI's potential to expand the potential of teaching and learning in differentiated instruction settings.

Hence, the objectives of this study are to assess teachers' perceptions of integrating AI into their teaching practices and to evaluate teachers' perceptions of the use of AI in differentiated instruction classrooms.

Literature Review

Artificial Intelligence in Education System

The interest about the use of Artificial Intelligence (AI) in education has increase significantly over the years among researchers. A systematic review by Chen et al. (2020) found that AI has shown remarkable improvement in regards of the efficiency and effectiveness of administrative functions performed by instructors, such as reviewing and grading students' assignments. The study also highlighted that AI systems have been able to tailor and personalize curriculum and content according to students' needs, therefore improving learners' experience and the overall quality of learning.

Result from an experiment by Essel et al. (2022) found that students show positive response in the form of academic performance when they interacted with a chatbot compared to interacting with the course instructor. The students react positively in regards of the chatbot's integration into the course. Kim and Kim (2023) conducted a qualitative study on STEM teachers' perception of using AI for scientific writing. The study revealed that most STEM teachers positively experienced AI as a source for superior scaffolding. However, they also raised several issues caused by using AI such as the change in the role played by the teachers in the classroom and the transparency of the decisions made by the AI system.

Celik (2023) conducted a survey on 428 teachers to understand their knowledge to integrate AI into education. The study found that as long as teachers have more knowledge to interact with AI-based tools, they will have a better understanding of the pedagogical contributions of AI. However, only technological knowledge is not sufficient for the educational integration of AI-based tools. For teachers to deploy AI in education efficiently, technological knowledge is meaningful when it is combined with pedagogical knowledge.

A systematic review by Chichekian and Benteux (2022) emphasizes the need to better understand, empirically evaluate, and design learning experiences about the impact of AI-driven technologies on students' academic success. A study by Seo et al. (2021) found that AI systems offer effective support for online learning and teaching, including personalizing learning for students, automating instructors' routine tasks, and powering adaptive assessments. Although AI systems have been positively recognized for improving the quantity and quality of communication, for providing just-in-time, personalized support for large-scale settings, and for improving the feeling of connection, there were concerns about responsibility, agency, and surveillance issues.

Besides that, a study by Lai et al. (2023) on the influence of AI on adolescent social adaptability found that the application of artificial intelligence in education (AIEd) negatively affects adolescent's social adaptability, and that family support (a form of social support) plays an intermediary role between AIEd and social adaptability.

Finally, a systematic review by Celik et al. (2022) showed that AI offers teachers several opportunities for improved planning (e.g., by defining students' needs and familiarizing teachers with such needs), implementation (e.g., through immediate feedback and teacher intervention), and assessment (e.g., through automated essay scoring) of their teaching.

In conclusion, AI presents significant advantages in enhancing teaching methodologies and the educational system at large. It empowers educators to fully realize their students' potential. Nonetheless, it is important for teachers to actively assume their roles, ensuring that students derive the utmost benefit from the integration of AI in education.

Differentiated Instruction Classroom

Differentiated Instruction (DI) is an instructional approach that allows teachers to meet the diverse needs of students in a classroom. It involves modifying the content, process, product, and learning environment to cater to the individual learning styles, readiness, and interests of students (Van Geel et al, 2019).

A study by Ismail and Abdul Aziz (2019) found that teachers are aware that DI is an excellent strategy and can fulfill academic needs. However, they struggle to implement it due to challenges such as designing differentiated lesson plans, time constraints, and lack of funding. Similarly, Nayman and Altun (2022) found that teachers do not implement DI because they do not know the method, there are central exams, lack of materials, and class size.

On the other hand, teachers implement DI because they believe that each student learns differently and administrative support for the instructional model. Krishan and Al-rsa'i (2023) found that the use of technology-oriented DI helps in increasing students' motivation towards learning science.

Shareefa (2023) found that longer teaching experience does not guarantee any better use of DI in teaching. The implementation of DI is the result of intentional attempt combined with adequate knowledge and intention to really use it and engage in the process. Sulistianingrum et al. (2023) found that teachers with a longer educational background and tenure have a better ability to implement students' sensory learning styles in creating differentiated content so they can manage the class well.

However, Smets et al. (2020) found that teachers struggled in assessing students' differences. Moreover, teachers' responsibility appeared to be determined. These studies highlight the need for professional development and support for teachers to effectively implement DI in their classrooms.

Pozas et al. (2021) found that teachers' DI practice is positively associated with students' school well-being, social inclusion, and academic self-concept. However, teachers do not implement DI frequently as DI is a demanding and challenging approach. Zakarneh et al. (2020) revealed that teachers find it challenging to strike a balance between weak, average, and fast learners in mixed-ability classrooms. Bidari (2021) reported that DI was not even close to the initial stage of implementation due to large class size, syllabus constraint, time constraint, lack of teacher professional development events, and digital incompetency during the COVID-19 pandemic.

In conclusion, while DI has the potential to cater to the diverse needs of students, its implementation is not without challenges. Training, resources, and administrative backing are some of the supports needed by teachers to implement DI effectively in their classrooms.

Technological Pedagogical Content Knowledge (TPACK)

The TPACK framework is an important model to understand the complex interaction of technology, pedagogy, and content knowledge necessary for effective teaching. It outlines the idea that successful instructional technology integration requires understanding not just of the technology itself but also of how it relates to pedagogical techniques and subject matter content. Brianza et al. (2022) emphasize the importance of context in TPACK development, promoting a comprehensive view that supports different educational settings. Zhang and Tang (2021) extend this perspective by reviewing TPACK literature and proposing model adaptations that encourage experiential learning for pre-service teachers.

The practicality of TPACK is further validate through the work conducted by Juhaevah and Kaliky (2023), who explore the implementation of the framework in microteaching scenarios within mathematics education, including online platforms. In addition, a case study from Australia conducted by Gromik et al. (2023) observe the incorporation of TPACK within teachers' professional expertise. The role of innovativeness in adopting TPACK is highlighted by Çoklar and Özbek (2017), who insist that a teacher's readiness for innovation significantly influences their technological competencies and intentions.

Tondeur (2018) advocate for a personalized approach to pre-service teacher education in digital competencies, challenging the effectiveness of uniform educational strategies. A revision of the TPACK framework by Mishra (2019) was proposed to make it accurately represent the contextual knowledge necessary for technology integration in teaching. This

modification calls for semantic consistency within the diagram to reflect the evolving understanding of TPACK.

The TPACK framework plays a very important role in helping educators to effectively integrate technology into their teaching practice. As education evolves, this framework guides teachers through the complicated aspects of digital learning and ensure that they can cater to the different needs of students. Additionally, TPACK offers the adaptability needed to integrate AI effectively in classrooms that use differentiated instruction, supporting personalized learning paths for each student.

Methodology

Survey study was employed where data is collected through a set of questions answered by participants. This method was chosen because it is better in term of cost-effectiveness where limited resources is not an issue to distribute this questionnaire to many people. It is also practical where it can be easily managed and distributed. This study utilizes purposive sampling to choose the participants. This sampling method was selected for its ability to enable researchers to identify individuals who possess the specific characteristics required for the study.

The participants of this study were a specific sample of 30 primary school teachers (13 male and 17 female) who teach various subjects in schools based in Kuala Lumpur. Each participant has implemented AI in their teaching practice at least once. The teaching experience of the participants ranged from three to 22 years. All teachers were given a modified questionnaire based on TPACK questionnaire by Celik (2023). The collected data was analyzed using descriptive analysis and Statistical Package for the Social Sciences (SPSS) software as a tool. The Questions Related to this Study Were:

1) What are Teacher's Perceptions of the Integration of Ai in their own Teaching Practice?
2) What are Teachers' Perceptions of the Integration of AI in Differentiated Instruction Classrooms?

Findings and Discussion

This section presents the results of the analysis based on the interview questions.

Teachers Perceptions of The Integration of AI In their own Teaching Practice

Teachers' Perceptions of Technological Knowledge (TK)

Table 1
Teachers' Perceptions of Technological Knowledge (TK)

	N	SDA	DA	NA/D	A	SA	Mean	SD
TK1: I know how to do some tasks with AI-based tools.	30	1 (3.3)	1 (3.3)	4 (13.3)	17 (56.7)	7 (23.3)	3.93	0.91
TK2: I know how to start a task using AI-based technologies by text or speech.	30	1 (3.3)	2 (6.7)	3 (10)	12 (40)	12 (40)	4.07	1.05
TK3: I have enough knowledge to use AI-based tools.	30	1 (3.3)	1 (3.3)	8 (26.7)	15 (50)	5 (16.7)	3.73	0.91
TK4: I am familiar with AI-based tools.	30	1 (3.3)	1 (3.3)	7 (23.3)	14 (46.7)	7 (23.3)	3.83	0.95

The results in Table 1 suggest that teachers feel relatively confident in their ability to use AI-based tools, with mean scores ranging from 3.73 to 4.07 on a scale of 1 to 5. The standard deviations (SD) demonstrate a moderate level of variability in the responses, suggesting differing levels of familiarity and comfort with AI-based tools among the teachers surveyed. The item with the highest mean score is TK2 with a mean score of 4.07. This suggests that, on average, teachers feel quite optimistic in initiating tasks using AI-based technologies. The item with the lowest mean score is TK3 with a mean score of 3.73. While this is still a relatively high score, it is the lowest among the TK items, suggesting that teachers feel slightly less assured in their overall knowledge of AI-based tools**.**

Teachers' perceptions of Technological Pedagogical Knowledge (TPK)

Table 2
Teachers' Perceptions of Technological Pedagogical Knowledge (TPK)

	N	SDA	DA	NA/D	A	SA	Mean	SD
TPK1: I understand how AI-based tools can help me teach.	30	-	1 (3.3)	6 (20)	15 (50)	8 (26.7)	4.00	0.79
TPK2: I understand the advantages of using AI tools to adapt teaching materials.	30	-	1 (3.3)	5 (16.7)	12 (40)	12 (40)	4.17	0.83
TPK3: I feel comfortable using AI-based tools in my teaching practice.	30	-	2 (6.7)	4 (13.3)	11 (36.7)	13 (43.3)	4.17	0.91
TPK4: I know how to select AI-based tools.	30	1 (3.3)	1 (3.3)	7 (23.3)	11 (36.7)	10 (33.3)	3.93	1.02

Results in Table 2 suggest that teachers generally feel confident in their ability to use AI-based tools, with mean scores ranging from 3.93 to 4.17 on a scale of 1 to 5. The standard deviations indicate a moderate level of variability in the responses, suggesting differing levels of comfort and familiarity with AI-based tools among the teachers surveyed. The item with the highest mean score is TPK2 with a mean score of 4.17. This suggests that teachers strongly agree that they understand the benefits of using AI tools to adapt teaching materials. The item with the lowest mean score is TPK4 with a mean score of 3.73. This suggests that teachers feel slightly less confident in their ability to select appropriate AI-based tools.

Teachers' perceptions of Technological Content Knowledge (TCK)

Table 3
Teachers' Perceptions of Technological Content Knowledge (TCK)

	N	SDA	DA	NA/D	A	SA	Mean	SD
TCK1: I can use AI-based tools to find educational material in my teaching field.	30	-	2 (6.7)	5 (16.7)	13 (43.3)	10 (33.3)	4.03	0.89
TCK2: I know about different AI-based tools that professionals use in my teaching field.	30	1 (3.3)	1 (3.3)	5 (16.7)	17 (56.7)	6 (20)	3.87	0.91
TCK3: I can use AI-based tools to understand the contents of my teaching field better.	30	1 (3.3)	1 (3.3)	5 (16.7)	14 (46.7)	9 (30)	3.97	0.96
TCK4: I know how to use my field-specific AI-based tools (like using ChatGPT to adapt teaching materials).	30	1 (3.3)	1 (3.3)	7 (23.3)	15 (50)	6 (20)	3.80	0.92

Based on Table 3, the results suggest that teachers generally feel confident in their Technological Content Knowledge related to AI-based tools, with mean scores ranging from 3.80 to 4.03 on a scale of 1 to 5. The standard deviations indicate a moderate level of variability in the responses, suggesting differing levels of comfort and familiarity with AI-based tools among the teachers surveyed. The item with the highest mean score is TCK1 with a mean score of 4.03. This suggests that teachers feel quite confident in their ability to use AI-based tools to find educational material. The item with the lowest mean score is TCK4 with a mean score of 3.80. This suggests that teachers feel slightly less confident in their ability to use specific AI-based tools in their teaching field.

Teachers' perceptions of Technological Pedagogical Content Knowledge (TPACK)

Table 4:
Teachers' Perceptions of Technological Pedagogical Content Knowledge (TPACK)

	N	SDA	DA	NA/D	A	SA	Mean	SD
TPACK1: I can use AI-based tools for personalized learning.	30	1 (3.3)	1 (3.3)	5 (16.7)	7 (23.3)	16 (53.3)	4.20	1.06
TPACK2: I can teach a subject using AI-based tools with diverse teaching strategies.	30	1 (3.3)	1 (3.3)	6 (20)	12 (40)	10 (33.3)	3.97	1.00
TPACK3: I can teach lessons that appropriately combine my teaching content, AI-based tools and teaching strategies.	30	1 (3.3)	1 (3.3)	6 (20)	13 (43.3)	9 (30)	3.93	0.98
TPACK4: I can take a leadership role among my colleagues in the integration of AI-based tools into my teaching field.	30	1 (3.3)	3 (10)	9 (30)	13 (43.3)	4 (13.3)	3.53	0.97

The results in Table 4 suggest that teachers generally feel confident in their Technological Pedagogical and Content Knowledge related to AI-based tools, with mean scores ranging from 3.53 to 4.20 on a scale of 1 to 5. The standard deviations indicate a moderate level of variability in the responses, suggesting differing levels of comfort and familiarity with AI-based tools among the teachers surveyed. The item with the highest mean score is TPACK1 with a mean score of 4.20. This suggests that teachers strongly agree that they can use AI-based tools for personalized learning. The item with the lowest mean score is TPACK4 with a mean score of 3.53. This suggests that teachers feel less confident in their ability to take a leadership role in integrating AI-based tools among their colleagues.

Teachers' Perceptions of The Integration of Ai in Differentiated Instruction Classrooms

Table 5
Teachers' Perceptions of Integrating Ai in Differentiated Instruction Classrooms

	N	SDA	DA	NA/D	A	SA	Mean	SD
AIDI1: I often differentiate instruction in my classroom based on students' learning styles and abilities.	30	-	4 (13.3)	10 (33.3)	13 (43.3)	3 (10)	3.50	0.86
AIDI2: I am comfortable integrating AI tools into my differentiated instruction practice	30	-	-	4 (13.3)	16 (53.3)	10 (33.3)	4.20	0.66
AIDI3: AI tools enhance the learning outcomes in a differentiated instruction classroom	30	-	-	-	10 (33.3)	20 (66.7)	4.67	0.48
AIDI4: I am confident in integrating AI into my teaching practices while considering the pedagogical methods and content.	30	-	2 (6.7)	11 (36.7)	14 (46.7)	3 (10)	3.60	0.77
AIDI5: AI-based tools help in tailoring the learning experience for each student in a differentiated instruction classroom.	30	-	-	1 (3.3)	15 (50)	14 (46.7)	4.43	0.57
AIDI6: I have observed an improvement in student engagement after integrating AI in my differentiated instruction classroom.	30	-	-	-	11 (36.7)	19 (63.3)	4.63	0.49
AIDI7: The integration of AI is effective in facilitating differentiated	30	-	-	-	14 (46.7)	16 (53.3)	4.53	0.51

instruction in my classroom.

These results suggest that teachers are optimistic in their AIDI practices, with mean scores ranging from 3.50 to 4.67 on a scale of 1 to 5. The standard deviations show an adequate level of variability in the responses, suggesting differing levels of comfort and familiarity with AI-based tools among the teachers surveyed. AIDI3 has the highest score with a mean of 4.67. This suggests that teachers strongly agree that AI tools enhance the learning outcomes in a differentiated instruction classroom. The item with the lowest mean score is AIDI1 with a mean score of 3.50. This suggests that teachers are somewhat uncertain in differentiating instruction based on students' learning styles and abilities.

Discussion

The integration of Artificial Intelligence (AI) into teaching practices is an expanding field of interest in the education domain. This study aimed to focus on teachers' perceptions of incorporating AI into their teaching practice in the context of differentiated instruction classrooms. The research address two important questions: What are teachers' perceptions of the integration of AI in their own teaching practice? And, what are teachers' perceptions of the integration of AI in differentiated instruction classrooms?

The survey includes various elements of AI integration in teaching, including Technological Knowledge (TK), Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), Technological Pedagogical and Content Knowledge (TPACK), and integrating AI in Differentiated Instruction (AIDI). The results revealed that teachers express optimism in their ability to use AI-based tools, with mean scores ranging from 3.50 to 4.67 on a scale of 1 to 5. However, there were certain areas where teachers felt less confident.

In the TK category, teachers felt most optimistic about initiating tasks using AI-based technologies, but in contrast, they seek more improvement in the context of their overall knowledge of AI-based tools. This suggests that teachers feel uncertain about their capabilities and skills in using AI while feeling confident in integrating the AI-based tools in their teaching practice. Thus, further training or resources are needed to fully optimized the AI-based tools available for teaching.

In the TPK category, teachers strongly agreed that AI-based tools provided valuable benefits to adapt their teaching materials. This is in line with the study by Akram et al (2022) where teachers exhibit positive attitudes towards the integration of technology in pedagogical methods. However, uncertainties in choosing the appropriate AI-based tools for their practice dominate their thoughts. This indicates that teachers know the potential AI tools that can enhance their practice but more guidance and exposure are needed in choosing the suitable tools for their specific teaching contexts.

In the TCK category, teachers show positive attitudes in their ability to use AI-based tools to find educational material. However, they felt slightly less confident in their ability to use specific AI-based tools in their teaching field. More exposure or training that involves field-specific AI tools are needed even though they feel comfortable in using AI tools in. A study by Marzuki et al. (2023) supports this observation, indicating that while teachers acknowledge the benefits of AI writing tools in improving students' writing quality, they are also aware of the need for more specialized training to fully utilize these technologies.

In the TPACK category, teachers feel strongly confident in using AI-based tools for personalized learning. However, they felt unsure in their ability to take a leadership role in integrating AI-based tools among their colleagues. This suggests that when it comes to guiding and motivating their colleagues in using AI tools in their respective teaching practices, teachers may feel less prepared even though they have the ability to apply it themselves. Previous study by Kim (2023) suggests that effective teacher enhance their subject expertise and build capacity through data-informed methods and reflective assessment. Teachers need to develop their data literacy and teamwork skills, alongside anticipate AI tools to possess TPACK competencies and conflict resolution abilities.

In the AIDI category, teachers strongly agree that significant improvement is present in the form of student engagement after integrating AI in their DI classroom. However, the teachers felt less confident in employing DI based on students' various learning styles and abilities. This gives the impression that despite seeing the increasing student engagement when using AI, they still feel the needs for more support in implementing DI using AI tools.

Generally, teachers are excited in using AI-based tools in their practice but they agree of the need for further training to fully understand the most effective way to integrate AI in their practices better. Teachers observe the potential and benefits of AI in enhancing student engagement and personalize their learning experience but they feel the need for extra support in implementing DI strategies and guiding their colleagues in promoting the use of AI in their respective teaching practices.

These findings highlight the importance in providing teachers with ongoing support and training in using AI tools effectively. Professional development courses that focused on AI integration in teaching should be provided by state education department and Ministry of Education (MOE). Courses such as workshops on how to choose the suitable AI tools according to their teaching context, seminars on the latest AI trends in education, and collaborative learning communities where teachers can have sharing sessions amongst them to share their efforts should be promoted by the ministry.

Furthermore, more distinct roles should be played by technology companies and AI developers where they can work closely with educators to ensure that AI tools are user-friendly and meet the needs of teachers. As stated by Park et al (2023), teachers should be provided with comprehensive AI resources. These entities (AI companies and developers) should encourage the use of AI in education by providing resources and tutorials to help teachers learn how to use their tools effectively.

Implications of the Study

The findings of this study hold remarkable implications for both educational practice and policy. Generally, while teachers feel optimistic in their ability to use AI-based tools, there are areas where they feel uncertain, such as personalizing instruction based on students' needs, and taking a leadership role in guiding their colleagues in integrating AI-based tools. This shows that ongoing professional development and support for teachers in these areas is needed.

From a policy perspective, MOE should propose a partnership or joint venture with technology companies to provide access to the latest AI tools and resources for teachers. Additionally, policies should be put in place to encourage the sharing of best practices and success stories of integrating AI in DI classrooms among teachers.

From a practice perspective, hands-on experience with AI tools such as workshops, collaborative learning communities, or even through the integration of AI tools into teacher training programs could benefitted the teachers. This will motivate teachers to experiment with different AI tools and strategies in their classrooms, and also allow them to reflect on what works best for their students.

Suggestions for Future Research

Future research could look into the factors that influence teachers' perceptions of AI in teaching. For instance, investigating whether teachers' perceptions of AI vary depending on their teaching subject, years of teaching experience, or previous exposure to technology in teaching would provide valuable insights to the use of AI in education as a whole.

In addition, future research could explore the impact of AI integration on student outcomes. It is important to understand how students react and benefit from the use of AI tools in their learning. Various methods such as surveys, interviews or even experimental studies could be conducted with students where comparison of students' performance in classrooms with and without AI integration can be look into.

Finally, future research could also explore the role of state education department and MOE in supporting the integration of AI in teaching. This could involve studying the strategies initiated these entities to support teachers in using AI tools, or exploring the difficulties faced by them in implementing AI-related policies and initiatives.

Conclusion

In conclusion, this study provides valuable insights into teachers' perceptions of integrating AI into their teaching practices and differentiated instruction classrooms. The findings emphasize on the potential of AI tools to enhance teaching and learning outcomes, while also pointing to the need for ongoing support and training for teachers in using these tools effectively. It is important to continue exploring and understanding teachers' perceptions and experiences as AI continues to evolve and become more integrated into education to ensure that AI is used in ways that truly optimize teaching and learning.

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