

# Navigating Tomorrow's Jamaican Classrooms: Assessing the Impact of AI on Teacher Training During Teaching Practicum in Jamaica

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**Abstract** This research study investigated artificial intelligence (AI) integration into the process of teacher training practicum, in Jamaica. The study utilised a mixed-methods approach, involved the participation of 60 [Primary, Early Childhood, and Secondary] teacher trainees and 15 educators, including cooperating teachers and teacher-educators [practicum supervisors], who responded through questionnaires, interviews, and focus group discussions. The study aimed to assess how AI is applied in the practicum exercises during the 2023-2024 academic year and examine the perceptions of AI's impact on teacher trainees' skills, experiences, and preparedness for future classrooms. Quantitative findings indicated that 75% of teacher trainees found AI useful in lesson planning and personalised feedback, while 70% appreciated its role in managing the classroom. Qualitative data revealed that AI enhanced the practicum experience, through challenges with access to technology, fosters creativity and provides real-time feedback. Teacher trainees reported feeling more confident in managing diverse student needs due to AI's support in differentiated learning. A key recommendation is for the Ministry of Education and Youth, along with other policymakers, to ensure equitable access to AI tools across all practicum settings, providing comprehensive training in AI applications and addressing the technology gap. The study's insinuations are profound, two of which are that through its offering of personalized coaching, AI has the potential to transform teacher training and particularly in the context of teacher shortages, reducing the mentorship burden in Jamaica's education system. These findings underscore AI's capacity to enhance both teaching quality and student outcomes, positioning it as a critical tool in the future of education.

**Keywords:** *integration of artificial intelligence (AI), teacher training, perceptions, teaching practicum process*

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## 1. Introduction

In the ever-evolving landscape of education, the integration of Artificial Intelligence (AI) has garnered significant attention for its potential to transform teaching and learning practices. As educators prepare to navigate 21st-century classrooms particularly during the practicum period, assessing the impact of AI on teacher training is peremptory. It becomes paramount then to understand how AI influences pedagogical approaches and teacher preparation especially for effectively equipping educators with the skills and knowledge necessary to thrive in a technologically advanced educational environment. According to Rodgers & Raider-Roth [1], teacher training programmes are foundational in shaping the capabilities

and methodologies of prospective educators. These programmes along with the practicum serve as a pivotal aspect where trainees gain practical experience in authentic classroom environments, guided by seasoned mentors. However, the advent of AI technologies in education is heralding significant transformations in the dynamics of teacher training, particularly during the practicum phase. As stated by, Iqbal, *et al.* [2], AI-driven tools and platforms are introducing innovative opportunities for trainee teachers to refine their pedagogical competencies, classroom management techniques, and instructional methodologies. For instance, virtual classrooms, intelligent tutoring systems and data analytics tools offer valuable insights and assistance to trainee teachers, personalised learning experiences and targeted feedback as expressed by Shulman [3]. Yet, Koehler, *et al.* [4] states that the effective integration of AI

into teacher training programmes necessitates meticulous consideration of various factors - including ethical considerations, technological adeptness, and alignment with pedagogical principles. However, introducing AI into the classroom is not without its challenges. As such, understanding the impact of AI on teacher training in the digital era, particularly during the practicum phase, is imperative for ensuring the adept preparation of educators to address the evolving demands of students and classrooms. As AI continues to permeate educational landscapes, it becomes increasingly vital for teacher training programmes to adapt and incorporate AI-driven tools and methodologies. However, Koehler and Mishra [4] stated that this adaptation must be conducted by educators [including teacher trainees] with careful attention to ethical guidelines and considerations. To maintain the integrity and fairness of teacher training processes, ethical implications, such as algorithmic bias, data privacy, and equitable access to technology, must be thoroughly addressed by educators. Additionally, in the Jamaican community, some commentators have urged caution due to concerns of the risk of over-reliance on AI, the need for adequate training for teachers to use AI effectively, as well as the ethical implications previously mentioned that may affect the Jamaican education sector. These concerns were echoed by Clarke in a letter [5] to The Jamaica Gleaner, where she advocated for a balanced approach to AI integration, ensuring that it complemented rather than replaced the human elements of teaching.

Furthermore, the successful integration of AI into teacher training programmes hinges on the technological proficiency of both trainee teachers and their mentors. While AI technologies offer promising avenues for enhancing teaching practices, for effective utilization, they also required a certain level of technical expertise. Therefore, as seen from Iqbal, *et al.* [2], teacher training programmes must prioritise the development of digital literacy and technological fluency among educators, to optimise the benefits of AI-driven tools and platforms. Additionally, the alignment of AI technologies with established pedagogical principles is paramount for ensuring their efficacy in teacher training contexts. Shulman [3] believed that AI-driven interventions should complement existing teaching methodologies and instructional approaches, rather than supplanting them entirely. The integration of AI into teacher training programmes holds immense potential for enhancing the preparation of educators in the digital age, particularly during the practicum phase. However, this integration must be approached by the teacher trainees with careful consideration of ethical implications, pedagogical alignment and technological proficiency. By addressing these factors thoughtfully, teacher training programmes can leverage AI-driven tools and platforms to empower educators, with the skills and competencies needed, to thrive in dynamic educational environments.

### 1.1. Purpose of the Study

This study is important for understanding the role of AI in teacher preparation, as it provides valuable insights into how AI tools can enhance the practicum process that is acceptable as a critical component of teacher training.

With increasing teacher shortages and the migration crisis in Jamaica, AI offers a potential solution to bridge the mentorship gap, providing teacher trainees with personalised support, provide real-time feedback, and enhance classroom management skills. By examining the perceptions of both teacher trainees and educators, this research highlights how AI can transform teacher preparation, in making it more adaptable and effective in addressing the evolving needs of modern classrooms. The findings will contribute to the growing body of knowledge on the integration of AI in education, particularly in the context of developing resilient-skilled educators who can leverage technology to improve teaching and learning outcomes.

### 1.2. Research Questions

The study was guided by the following research questions:

1. How is AI currently integrated into the practicum exercise by trainee teachers?
2. What are trainee teachers' perception of the impact of AI on their skills, experiences, and preparedness for future classrooms during the practicum?

### 1.3. Definition of Terms

**Artificial Intelligence** - According to Techtargent [6], this is also known as AI is a computer system which is the simulation of human intelligence processes by machines. This system involves solving problems, analysing data, and providing ideas.

**Teaching Practicum** - Benedicto [7] stated that this is a hands-on component of teacher education programs where teachers, in training, are allowed to undergo internships within the physical or virtual classroom which requires them to apply their theoretical knowledge throughout their education.

**Teacher Trainee** - According to Collins Dictionary [8] teacher trainee is an individual who is enrolled in a teacher training institution with the support of a teacher training provider to become a qualified teacher.

## 2. Literature Review

The utilisation of AI in teacher training has emerged as a promising avenue for enhancing the quality and efficacy of educator preparation programmes. According to Cukurova, *et al.* [9], AI-driven tools and platforms offer unique opportunities for personalised professional development, catering to the individual needs and preferences of teacher trainees. Furthermore, research on "Korean in-Service Teachers' Perceptions of Implementing Artificial Intelligence (AI) Education for Teaching in Schools and Their AI Teacher Training Programs" by Lee, *et al.* [10] highlights the importance of integrating AI education into teacher training programmes, emphasising its potential to enhance pedagogical practices and instructional methodologies. The perceptions of in-service teachers regarding the implementation of AI education and AI teacher training programmes are crucial factors to consider. Lee, *et al.* [10] found that Korean in-

service teachers held positive perceptions towards AI education, viewing it as a valuable tool for improving student-learning outcomes and facilitating innovative teaching practices. However, it is essential to explore how these perceptions may vary within diverse cultural and educational contexts - such as Jamaica - where the socio-cultural and educational landscape may differ significantly from that of Korea. In Jamaica, for instance, the incorporation of artificial intelligence (AI) into educational practices has gained significant attention, with numerous experts and stakeholders discussing its potential to revolutionise student learning and teacher training. Moreover, Prendergast [11] reported that AI is being increasingly recognised by academics, as a tool to enhance the teaching and learning experience in Jamaica's education system. The former Minister of Education and Youth, Mrs. Fayval Williams, has highlighted AI's ability to personalise learning, assist in administrative tasks, and support teachers during the practicum. She went on to further suggest that AI could alleviate some of the burdens faced by educators, thereby allowing them to focus more on student engagement and development. Additionally, AI's role in teacher training, particularly during the teaching practicum, was pivotal. AI tools can provide real-time feedback, personalised coaching, and data-driven insights that could help teacher trainees refine their teaching strategies and improve classroom management skills. The ability of AI to analyse classroom interactions and suggest improvements creates an environment where teacher trainees can continuously learn and adapt. This is particularly beneficial in Jamaica, where the education system faces challenges such as large class sizes, the inability to provide personalised attention to students, and overall, limited resources. Besides these challenges, Jamaica is presently experiencing an exodus of its teachers to overseas (developing countries), which has now become an ongoing issue. This phenomenon, where Jamaican teachers seek opportunities abroad, are often due to better remuneration, health benefits and working conditions and has negatively impacted the country's teacher-population. In this context, AI has been posited as a potential solution to mitigate the impact of teacher migration by supporting the remaining educators and enhancing the teaching process. Consequently, AI's role in teacher training has become even more critical; with fewer educators available to mentor new teachers. Its effective utilization can also provide services such as personalised coaching and real-time feedback during the teaching practicum, as previously stated. Its' adaptation could help to ensure that teacher trainees receive high-quality training, despite the decrease seen in available resources. The ability of AI to analyse classroom dynamics and suggest improvements can also help new teachers quickly adapt to the demands of the classroom, which is crucial in a system constrained by the loss of experienced educators.

While AI presents numerous opportunities for enhancing teacher training, it also brings forth several challenges that must be addressed. Min [12] underscored the need to navigate potential pitfalls associated with AI-powered teacher training, such as ensuring equitable access to technology and addressing concerns related to data privacy and algorithmic bias. Moreover, as

highlighted by Curkurova, *et al.* [9], there was a need for comprehensive professional development initiatives to equip educators with the necessary skills and competencies to effectively utilise AI in their teaching practices. The integration of AI into teaching practice experiences has the potential to revolutionise the way trainee teachers acquire practical classroom experience. According to Lee, *et al.* [10], AI can provide trainee teachers with real-time feedback and insights, enabling them to reflect on and refine their teaching strategies more effectively. Additionally, Curkurova, *et al.* [9] allude us to the fact that AI-driven platforms offer opportunities for simulated teaching environments, allowing teacher trainees to practise classroom management and instructional delivery in a risk-free setting. There have been ongoing discussions that if teacher trainees and in-service teachers are well-trained in AI-integrated methodologies, then they can use AI to enhance their teaching methods, streamline administrative tasks, and provide personalised learning experiences for students. Through AI-driven training, teachers can improve their effectiveness and adaptability in diverse classroom settings. Ultimately, students will benefit from these teachers - where the teachers can not only personalise their own learning experiences, but also identify students' individual learning needs, and offer timely interventions, which may lead to improved academic outcomes and increased student engagement.

While in-service and teacher trainees must improve, it is also important for teacher educators as well to help transform the education sector through teacher training programmes. There is a great need to transform the curriculum, and pedagogical while ensuring ethical consideration. The curriculum needs to become adaptive where it can be tailored to equip future teachers with the necessary technological skills, which involve understanding AI's influences on teaching practices. This will allow for the integration of AI-related content into teacher training programmes, ensuring that educators are prepared to leverage AI tools effectively in their teaching practices. Additionally, it is necessary as well for pedagogical innovation where educators can explore how AI can enhance student learning experiences, facilitate personalised learning, and promote student engagement. This understanding fosters the development of innovative teaching strategies that harness the potential of AI to improve educational outcomes. However, As AI becomes increasingly prevalent in education, it is essential to consider its ethical implications and the responsible use of AI in educational settings. Ethical considerations, such as data privacy, algorithmic bias, and the potential for inequalities in access to technology, must be addressed to ensure that AI is used in ways that are beneficial to all students and educators. This will require careful planning, regulation, and oversight to ensure AI tools are integrated responsibly and effectively into teacher training programmes.

### 3. Methodology

#### 3.1. The Design

This study employs a mixed-method approach design from which both the quantitative and qualitative methodologies are utilized. This design is aimed at providing a comprehensive analysis of the impact artificial intelligence (AI) has on teacher training while conducting their practicum in Jamaica. The qualitative component involved in-depth interviews and focus group discussions with teacher trainees to explore their perceptions of AI integration, while the quantitative component consisted of a survey instrument used to measure the extent of AI tool usage and its impact on specific teaching skills.

### 3.2. The Participants

The participants selected for the study are sixty (60) teacher trainees and fifteen (15) educators including cooperating teachers and teacher-educators involved in the teaching practicum process during the 2023-2024 academic year. The participants were taken from six (6) teacher training institutions, including universities and teachers' colleges, in Jamaica. These institutions are located in the parishes of Manchester, Kingston & St. Andrew. All participants have used AI-based tools as part of their practicum, either for lesson planning, classroom management, or student assessment. The sample includes both male and female trainees, aged mostly between 17 and 45, with diverse backgrounds in early childhood, primary and secondary education. The teacher trainees were selected from years 2, 3, and 4 of the teacher education programme using snowball sampling. The testing started with an initial group of trainers who were known to have participated in the teaching practicum during the 2023-2024 academic year. These trainees were asked to refer to other eligible trainees within their cohort who had also used AI tools in their practicum. This method allowed for the identification of a broader sample of trainees across different years, who could provide valuable insights into the integration of AI during their practicum experiences. Snowball sampling was particularly useful in reaching participants who might not have been easily identifiable through traditional recruitment methods, given the novelty of AI integration in the practicum process. On the other hand, purposive sampling was used to select teacher-educators and cooperating teachers who were directly involved in the practicum process during the 2023-2024 academic year. These individuals were selected based on their knowledge and experience in working with trainee teachers during the practicum phase, particularly those who had overseen or facilitated the use of AI tools in the classroom. Purposive sampling ensured that the selected teacher-educators and cooperating teachers had relevant expertise to provide valuable perspectives on the integration of AI in the training process and its impact on teacher trainees' preparedness for future classrooms.

### 3.3. Data Collection and Data Analysis

This study collected data using the following instruments: focus group discussions, questionnaires and interviews. The focus group discussions involved bringing together some teacher trainees online along with face-to-face to discuss their experiences, perceptions, and

attitudes towards AI in education and how it has assisted or impacted them throughout their practicum experiences. Additionally, other participants [teacher trainees] were invited to respond to a structured online survey, and also a few participated in face-to-face semi-structured interviews selected based on survey responses, to delve deeper into their experiences and perceptions which fostered a deeper exploration of each participant's experiences, beliefs, and reactions related to AI in teacher training. The educators were interviewed to help triangulate the data. Also, informed consent was gathered from all participants, and they were informed about the data privacy of their information. Qualitative data collected from interviews and focus group discussions were analysed thematically, identifying key themes related to the impact of AI on skills development, classroom management, and overall readiness for teaching. Quantitative data collected from the surveys were analysed using descriptive statistics to summarise AI tool usage and its perceived impact on the teacher trainees' pedagogical skills. Inferential statistical methods, such as the ANOVA test (using the online Good Calculator [13] focusing on a one-way ANOVA test), were employed to examine the relationship between AI tool usage and trainees' perceptions of preparedness for future classrooms.

## 4. Findings

The findings from the study are organised according to research questions in that sequence.

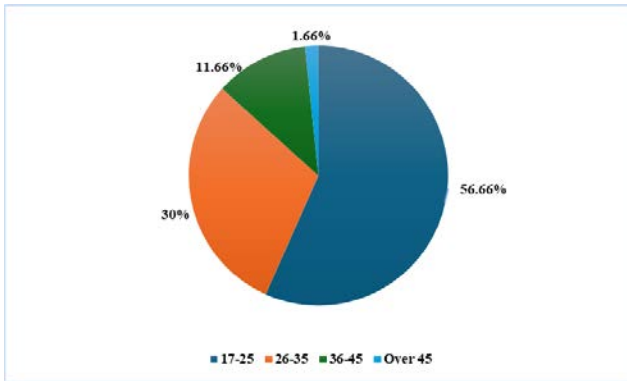
### 4.1. Results Based on Research Question 1

#### *How is AI currently integrated into the practicum exercise by trainee teachers?*

This research question explored the ways in which artificial intelligence (AI) was incorporated into the practicum exercises undertaken by trainee teachers. It focused on identifying the specific AI tools and technologies used during practicum, the purposes they served in supporting teaching and learning, and the impact they had on both trainee teachers and students. Additionally, the study investigated how AI enhanced or challenged traditional teaching methods within the practicum context, as well as the preparedness of trainee teachers to effectively integrate AI into their instructional practices.

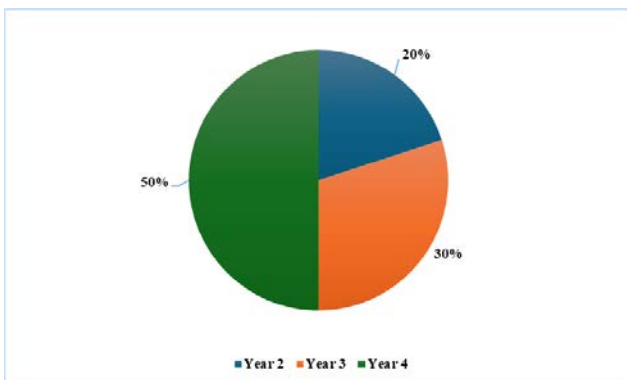
The demographic findings for the study revealed a diverse group of participants in terms of age group, academic level, and programme of study (see [Figure 1](#) and [Figure 2](#)). Most of the participants (56.66%) were between the ages of 17 and 25, reflecting the typical demographic of undergraduate teacher trainees. Within this group, 12 were Year 2 trainees, 9 were Year 3 trainees, and 13 were Year 4 trainees. Another significant portion (30%) fell within the 26-35 age range, including 9 Year 3 trainees and 9 Year 4 trainees. Older age groups were less represented, with 11.665 of participants being between 36 and 45 years old, all of whom were Year 4 trainees, and 1.66% of participants being over 45 years, represented by a single Year 4 trainee. This distribution highlights the predominantly younger population of teacher trainees, while also incorporating perspectives from more mature

and potentially experienced individuals.



**Figure 1.** Trainee teachers' familiarity with the AI technologies during their practicum experience

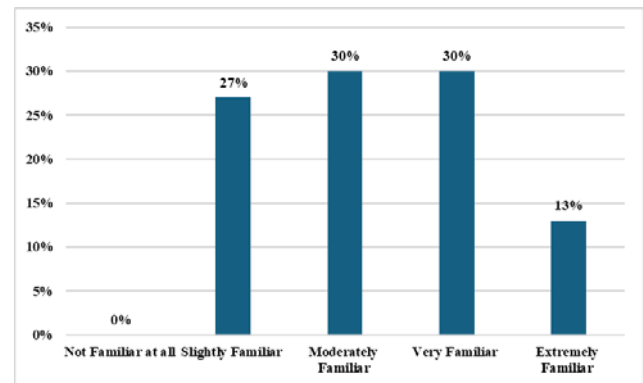
The study also featured participants from various bachelor's degree programmes, ensuring a comprehensive exploration of AI's impact across different teaching specialisations. Teacher trainees were enrolled in Early Childhood Education, Primary Education (with specialisations in English Language, Mathematics, and Sciences), and Secondary Education (also with specialisations in English Language, Mathematics, and Sciences). In the Early Childhood Education programme, the participants included 2 Year 2 trainees, 3 Year 3 trainees, and 4 Year 4 trainees. For the Primary Education programme, there were 4 Year 2 trainees, 5 Year 3 trainees, and 5 Year 4 trainees. The Secondary Education programme had the highest representation, with 6 Year 2, 10 Year 3 trainees, and 21 Year 4 trainees. The high number of participants from Secondary Education, especially Year 4 trainees, provides valuable insights into how AI is influencing subject-specific teaching practices at more advanced levels of training. This diverse representation of programmes and years of study enhanced the scope of the study, offering a well-rounded understanding of how AI was integrated into teacher training during the practicum.



**Figure 2.** Year groups trainee teachers fall in during practicum

The data shows that trainee teachers possessed varying levels of familiarity with AI technologies during their practicum experience, emphasising notable differences across year groups and specialisation areas (see Figure 3). Only 13% of the respondents, comprising 2 Year 2 Early Childhood trainees and 6 Year 3 trainees (1 Primary and 2 Secondary) reported being extremely familiar with AI tools. This suggested that a small subset of trainees had

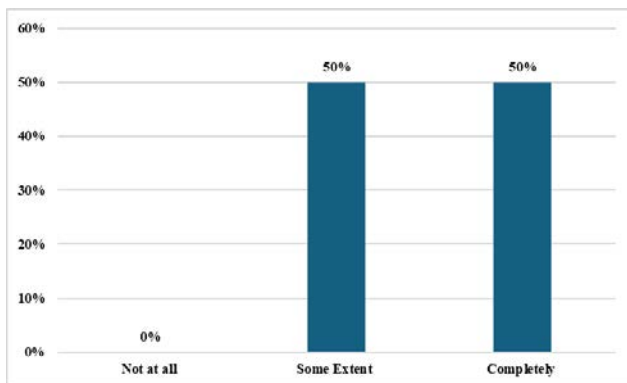
achieved significant exposure to these technologies and had become comfortable in using them, potentially through personal interest, advanced training, or opportunities to engage with AI during their studies. Meanwhile, 30% of the respondents indicated that they were very familiar with AI, including trainees from all three-year groups and specialisations. These included 3 Year 2 trainees (1 Primary and 2 Secondary), 5 Year 3 trainees (1 Early Childhood, and 3 Secondary), and 10 Year 4 trainees (1 Early Childhood, 2 Primary, and 7 Secondary). Notably, the secondary trainees dominated this category, which may reflect differences in the emphasis placed on AI technologies across disciplines or varying levels of integration within curricula. A significant portion, 30%, reported being moderately familiar with AI technologies. This group consisted of 3 Year 2 trainees (1 each from Early Childhood, primary, and Secondary), 4 Year 3 trainees (1 Primary and 3 Secondary), and 11 year 4 - all specialising in Secondary Education. Interestingly, no early Childhood or primary Education trainees reported moderate familiarity at the Year 4 level, suggesting that Secondary Education teacher trainees may have greater opportunities or exposure to AI tools as they progress through their training. The remaining 27% of the participants described themselves as slightly familiar with AI technologies, underscoring a segment of trainees with limited understanding or use of these tools. These findings indicate a clear need for more structured training and curriculum development to ensure equitable AI exposure and proficiency across all specialisations and year groups. Addressing this gap could help equip all trainees with the skills and confidence necessary to integrate AI effectively into their future teaching practice.



**Figure 3.** Trainee teachers' familiarity with the AI technologies during their practicum experience

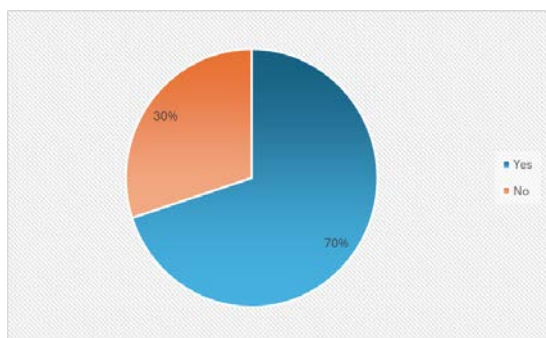
The trainee teachers' perception of AI's impact on the Jamaican education system is generally positive with an even split between those who believe AI has a complete impact and those who feel its impact is partial. According to Figure 4, 50% of respondents, comprising 30 Secondary trainees across Years 2, 3, and 4, believe that AI completely impacts the Jamaican education system. This perspective likely reflected their exposure to AI tools and technologies, particularly, in subjects like Mathematics, Science, and English, where AI applications are more prominent. These respondents may have encountered AI's potential to streamline teaching, personalise learning, and foster innovative educational

practices, contributing to their belief in its comprehensive role in education. This strong endorsement from Secondary trainees highlighted the potential of AI to revolutionise teaching practices, particularly in STEM-related fields. On the other hand, the remaining 50%, comprising 9 Early Childhood across all year groups, 2 Year 4 Secondary trainees, and 19 Primary trainees across all year groups, believed that AI impacted education only to some extent. This more cautious view may stem from limited exposure to AI technologies, fewer applications tailored to Early Childhood and Primary Education, or challenges in accessing resources. This group's perspective underscores potential limitations or barriers, such as infrastructural deficiencies, unequal access to AI tools, and uncertainties about how to integrate AI into pedagogical practices effectively in Jamaican schools.



**Figure 4.** Trainee teachers' thoughts on AI's impact on the Jamaican educational system

When asked about their direct use or observed use of AI technologies during their practicum, 70% of the trainee teachers (comprising 27 Secondary trainees, 5 Early Childhood and 10 Primary across all year groups) confirmed either using or observing the use of AI tools during practicum. This high percentage highlighted the growing integration of AI tools in Jamaican classrooms, particularly in Secondary Education, where applications like adaptive learning platforms and subject-specific AI tools may be more prevalent. The presence of AI in these practicum environments suggested that many schools were recognising the value of incorporating technology to enhance teaching and learning outcomes. However, the remaining 30% (5 Secondary trainees, 4 Early Childhood, and 9 Primary across all year groups) who did not experience the use or observation of AI tools indicate a gap in adoption (see [Figure 5](#)).

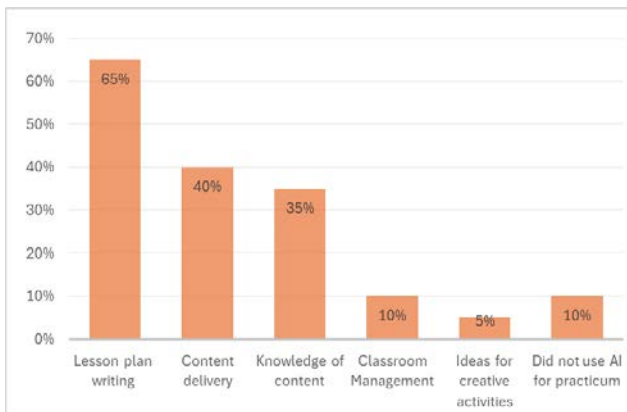


**Figure 5.** Trainee teachers' use or observed use of AI technologies during their practicum experience

This divide was related to the specific school settings, particularly for Early Childhood and Primary Education, varying resources, and differing attitudes [beliefs] towards integrating AI in classroom teaching. In the follow-up responses, where the researchers asked trainees to describe specific AI tools or technologies used, the majority mentioned ChatGPT, Quillbot, and OpenAI. Several trainee teachers highlighted using ChatGPT for lesson planning assistance, problem-solving in mathematics, and generating creative ideas for teaching certain topics. Three of the educators (cooperating teachers and practicum supervisors) who the researchers interviewed, also justified that trainee teachers have mostly used ChatGPT to assist in completing administrative tasks such as planning as well as classroom dynamics. One of the interviewees shared that trainee teachers were observed by educators using ChatGPT to create personalised teaching materials for the subject area such as class notes, designing learning activities and preparing assessments for the students with the hope of improving students' learning content and increasing students' performance. Other tools like Eduaide.AI, used for educational assistance, and specific AI science simulations, were also utilised for educational assistance. However, a small number of respondents mentioned they did not know the AI tools available and as such did not use any. This illustrates the central role ChatGPT, and similar AI tools played in assisting with routine teaching tasks, such as content creation and planning. The variety of responses indicates that while some trainee teachers actively leverage AI to enhance their teaching practice, others were either unaware of AI's potential or have yet to fully explore its capabilities. This was mostly attributed to the fact that training was not provided on a wide scale as part of professional development sessions at the schools. Additionally, two of the interviewed educators expressed that their schools provided workshops, online courses, and collaboration with EdTech companies to facilitate training on AI tools. So, the vast majority of the trainee teachers who utilised AI tools have spent time learning on their own. This suggested that AI is an emerging component in teaching training.

In terms of how AI tools or technologies impacted various aspects of their teacher training experience, 65% of respondents (20 secondary trainees, 4 Early Childhood trainees, and 15 Primary trainees) stated that AI tools improved their lesson plan writing, making this the most significant area of impact (see [Figure 6](#)). This suggested that AI technologies, such as curriculum-focused platforms and automated planning tools, were helping trainees create more structured, efficient and engaging lesson plans. The next largest group is 40% (16 Secondary trainees, 4 Primary trainees, and 4 Early Childhood trainees), indicating that AI improved content delivery, facilitating a better structure and presenting their lessons. These findings highlight the transformative role of AI in supporting critical aspects of teacher preparation, particularly in areas directly tied to instructional quality. Additionally, 35% of respondents (10 Secondary trainees, 5 Primary trainees, and 6 Early Childhood trainees) found that AI helped improve their knowledge of the subject content, through research assistance and access to information, emphasising AI's value as a tool for

professional development and content mastery. Interestingly, only 10% ((8 Secondary trainees - 2



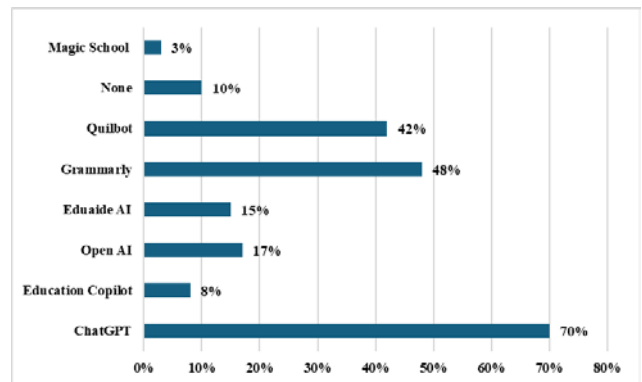
**Figure 6.** Trainee Teachers' current use of specific AI tools or technologies impact on their teacher training experience

Year 2, 2 Year 3 and 4 Year 4, 1 Primary Year 4 trainee, and 1 Early Childhood Year 4 trainee) reported that AI aided in classroom management, which might suggest that AI tools were not yet widely applied to behavioural or organisational aspects of teaching. Furthermore, 10% (7 Secondary trainees, 5 Primary trainees and 6 Early Childhood trainees), indicated that they did not use any AI tools, showing that some trainees either lacked access or preferred not to incorporate AI in their teaching practice. Moreover, a small group 5% (3 Secondary trainees across all year groups, 1 Primary Year 4 trainee and 1 Early Childhood Year 4 trainee) noted that AI improved their ability to generate activity ideas, which demonstrated AI's role in fostering creativity and engagement in lesson planning. These findings collectively underscore AI's progressing yet uneven role in shaping teacher training experiences, with room for broader application and adoption in less explored areas like creativity in teaching and classroom management.

Figure 7 outlined the specific AI tools used by trainee teachers during their practicum, with ChatGPT emerging as the dominant tool. This tool was used by 70% of respondents (comprising 24 Secondary trainees, 11 Primary and 7 Early Childhood across all year groups). This reinforced ChatGPT's reputation as a practical and widely accessible tool for generating content, answering questions, and facilitating instructional tasks. ChatGPT's popularity reflected its broad applicability across subject areas and its role in simplifying complex teaching tasks, enhancing the overall practicum experience for teacher trainees. In addition to ChatGPT, other tools, such as Grammarly and Quillbot were also frequently used, with 42% and 48% of trainees, respectively, relying on these tools to refine and edit written content like essays and lesson plans. These tools demonstrated a significant focus on improving presentation and quality of teaching materials underscoring the importance of content clarity and effective communication in teacher training.

However, the data revealed a more varied adoption of other AI tools. Eduaide.AI was utilised by 15% of the respondents (comprising 5 Secondary trainees, 2 Primary and 2 Early childhood across all year groups), serving as a supplementary educational tool for developing ideas and aiding instruction, though it was less commonly use than

the more mainstream tools like ChatGPT. Education Copilot had an even lower uptake, with only 8% of the trainee teachers (5 Secondary trainees) reporting its use, suggesting that it may not be as popular or well-known compared to ChatGPT. Magic School was also used by just 3% of trainees (including 1 Year 4 Early Childhood and 1 Year 4 Primary), pointing to limited exposure or application with the practicum setting, indicating that it may not have achieved widespread recognition or relevance. Notably, 10% of respondents (consisting of 2 Secondary trainees, 2 Early Childhood and 2 Primary trainees) reported not using any AI tools, which highlights that these trainees either lacked access to the technologies or preferred traditional methods in their teaching practice. This variation in AI tool usage underscored the differing levels of familiarity, access, and integration of AI technologies within teacher training, with some trainees readily adopting these tools, while others remain less engaged or equipped.



**Figure 7.** Types of AI tools used by trainee teachers during practicum

These findings offer a comprehensive view of the role AI currently played in the teacher practicum in Jamaica. The data showed that many trainee teachers have started to incorporate AI into key teaching tasks, particularly in lesson planning and content delivery. However, challenges remained regarding uniform familiarity and usage of AI technologies across the cohort. While tools like ChatGPT were widely adopted, there was still a gap in the use of more specialised AI applications, and some trainee teachers have yet to fully engage with these resources. Additionally, the potential of AI to improve classroom management and foster deeper learning has not yet been fully realised, with only a small portion of respondents acknowledging these benefits.

## 4.2. Results from Research Question 2

### *What are trainee teachers' perceptions of the impact of AI on their skills, experiences, and preparedness for future classrooms during the practicum?*

This research question explored trainee teachers' perceptions of how AI has influenced their skills, experiences, and overall preparedness for future classrooms during their practicum. It aimed to understand how the integration of AI technologies has shaped their teaching practices, whether AI has enhanced their ability to plan and deliver lessons, and how it has impacted their classroom management and problem-solving abilities. The study also investigated whether AI

has prepared trainee teachers for the evolving demands of modern classrooms, equipping them with the necessary skills to effectively incorporate technology into their teaching practices in the future.

All of the interviewed educators have shared that AI had positively influenced efficiency in lesson planning and classroom management by automating administrative tasks which had enabled not just trainee teachers but themselves to focus more on content delivery. However, in most areas targeted (breaking complex concepts into simpler and easily understood forms, improving creative skills, improving content knowledge, Improving classroom management), most participants had a poor perception of AI impact with favourability ranging from a low of 8.33%-43.33%). In fact the highest favourability rating was 75% deposited for differential learning. **Table 1** shows that 63.33% of the trainee teachers (28 Secondary trainees, 3 Early Childhood, and 4 Primary across all year groups) who participated in this study reported that AI significantly improved their lesson plan writing skills. Trainees indicated that AI made the lesson planning process less stressful, provided innovative ideas for structuring lessons, and helped make lesson plans more engaging. One trainee mentioned that AI provided a helpful guide on how to enhance lesson writing, reducing the burden of lesson preparation. This suggested that AI was becoming a useful tool for alleviating some of the pressures associated with lesson planning. The interviewed educators shared that they believe AI tools helped to boost confidence in the trainee teachers especially since it aided in reducing the planning workload. On the other hand, 11.66% of the participants (comprising 4 Secondary trainees, 1 Early Childhood, and 2 Primary across all year groups) highlighted AI's ability to break down complex concepts for students, helping teachers make these ideas more digestible. This was crucial in classrooms where understanding difficult topics was essential for students' progress. For example, one trainee mentioned that AI helped simplify concepts that students found challenging, thus improving their comprehension. Additionally, 28.33% of the participants (9 Secondary trainees, 4 Early Childhood, and 4 Primary across all year groups) perceived AI as enhancing their creative skills, enabling them to think outside the box and develop multiple activities for content delivery. AI provided tools for creativity, allowing trainees to diversify their instructional approaches. One trainee noted that AI fostered innovation by generating a variety of lesson activities, ensuring that content was delivered in engaging ways. Moreover, 43.33% of the trainees (comprising 17 Secondary trainees, 5 Early Childhood, and 4 Primary across all year groups) reported that AI improved content delivery, with some stating that AI gave them different methods to teach and present their lessons. It provided suitable strategies to make learning more interactive and enjoyable for students. AI tools like simulations allowed students to visualise complex topics, which one trainee pointed out as a way to engage students more effectively.

Content knowledge was another area where 36.66% of trainees (including 11 Secondary trainees, 4 Early Childhood, and 4 Primary across all year groups) believed that AI was helpful (see **Table 1**). Participants mentioned that AI assisted in clarifying areas where traditional

lectures were less effective. AI provided supplementary information that improved their understanding of the material they were teaching, this added knowledge gave trainees more confidence in their subject matter. In addition, differentiated learning was seen as a significant benefit, with 75% of participants (27 Secondary trainees, 7 Early Childhood, and 11 Primary across all year groups) and all interviewed educators indicating that AI helped them find ways to tailor plans to accommodate diverse learners. AI gave trainees ideas to address the needs of students with varying abilities, making their teaching more inclusive. One trainee shared that AI helped cater to students' unique learning styles, an essential skill for fostering an equitable learning environment. However, the interviewed educators have shared concerns about trainee teachers' over-reliance on AI that may make them miss out on opportunities to develop their problem-solving and adaptive skills.

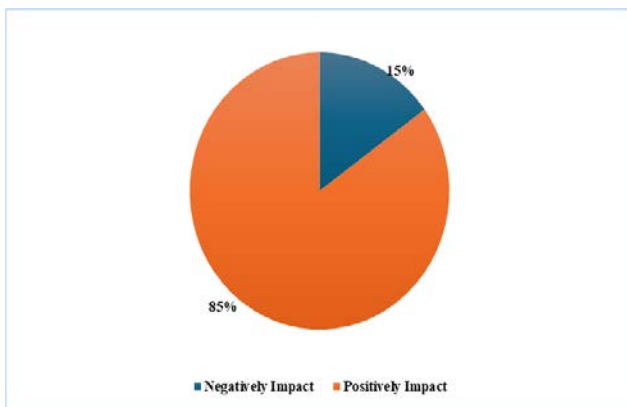
**Table 1. Trainee teachers' perceptions of the impact of AI on teaching practice**

Perceptions of Impact	Indicators	Percentage of Participants
Improve lesson plan writing skills	It gave me ideas on what to do during the lesson and how to better write and engaging lesson plan; It help to improve my lesson writing skills; make lesson planning less stressful	63.33%
Breakdown complex concepts	It can help break down complex concepts in a more digestible way for students	11.66%
Improve creative skills	AI embraces creativity and enhances individuals' ideas; the AI technologies help you come up with multiple activities to deliver the content; It helps me to think outside the box.	28.33%
Improve Content Delivery	It helps to improve my content delivery; It gives different ways to teach and to deliver content; It aids in providing suitable strategies that were used to aid the delivery of my lessons and also helped to make my lessons more fun.	43.33%
Improve Content Knowledge	improve content knowledge if used correctly; I know my content a little better; It assesses in areas where the lecture isn't clearing up some points or getting across the lesson well; It has aided in the content knowledge to some extent.	36.66%
Differentiated learning	It helps to find ways in developing lesson plans that can easily teach students with different learning ability; I get ideas to help with differentiation and addressing the needs of all types of learners.	75%
Improve classroom management	The integration of AI tools allowed for managing classroom dynamics, fostering a more organised and conducive learning environment.	8.33%

**Figure 8** highlights that 85% of trainees (comprising 32 Secondary trainees, 8 Early Childhood, and 11 Primary across all year groups) believe AI tools positively impacted their teaching experience. These respondents



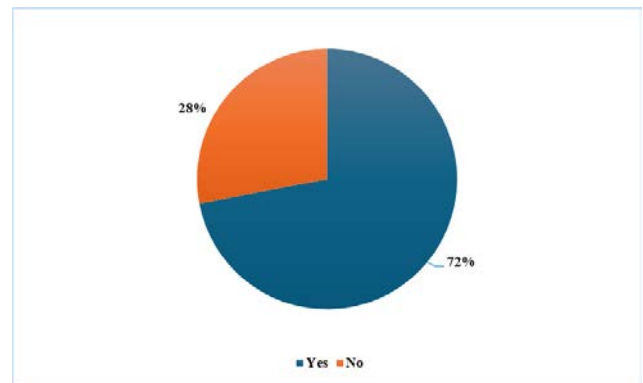
justified their opinions by stating that AI enhanced their lesson planning, content delivery, and creative abilities. The trainees noted that AI-enabled tools streamlined their ability to develop structured and engaging lessons, enhanced their capacity to deliver content effectively, and inspired innovative teaching approaches through access to diverse resources. As trainees adapt to evolving educational technologies, these insights underscored the transformative potential of AI in shaping teaching practice. However, 15% of the participants (5 Secondary trainees, 2 Primary and 2 Early Childhood across all year groups) viewed AI's impact negatively. Their concern centred on the notion that over-reliance on AI tools could undermine deeper skills development and learning. The educators who were interviewed also expressed mixed feelings about AI as it relates to creativity. They stated that while it facilitated creative lesson planning through its provision of learning resources, it may hinder teacher trainee's skills development, particularly critical pedagogical competencies, encouraging dependency. This suggested a need for balance in the use of AI ensuring that it complements - not replaces - traditional teaching skills. Structured guidance on integrating AI effectively could help mitigate concerns while maximising its benefits.



**Figure 8.** Trainee teachers' opinion of whether AI tools positively or negatively impacted their teaching experience during practicum

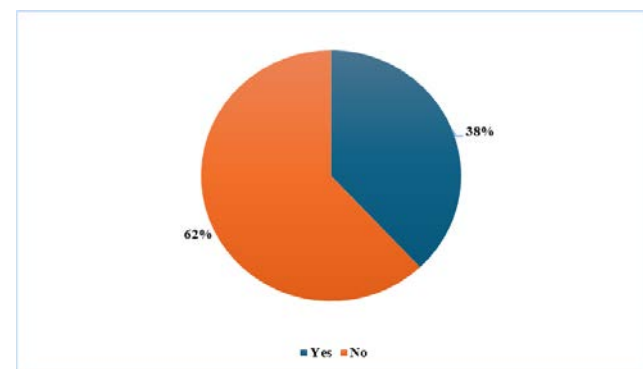
**Figure 9** uncovered that 72% of trainees (25 Secondary trainees, 8 Early Childhood, and 10 Primary across all year groups) believe AI tools could effectively address the diverse needs of students. These trainees noted that AI provided a variety of strategies for differentiation, helping them plan lessons suited to different learning styles. They found that AI helped them design inclusive lessons, catering to students with different levels of understanding and unique preferences. This suggested that AI was increasingly recognised as a practical aid in promoting equitable and adaptive teaching practices within the classroom. Conversely, 28% (11 Secondary trainees, 3 Primary, and Early Childhood across all year groups) expressed doubts, arguing that students often need more physical interaction and hands-on support to fully grasp concepts. This perspective underscores a limitation of AI: its ability to replicate the nuanced, interpersonal aspects of teaching that were critical for holistic student development. These findings suggested that while AI was a powerful complement to teaching, it was not a substitute for human-lead, personalised, educational approaches. Striking a balance between AI integration and traditional methods

was essential to maximise its benefits while addressing its limitations.



**Figure 9.** Indication of whether or not trainee teachers believed that AI tools can adequately address the diverse needs of students

**Figure 1** revealed that 62% of trainees (23 Secondary trainees, 7 Primary, and Early Childhood across all year groups) encountered inconsistencies or incorrect answers when using AI tools during lesson preparation. While some reported no issues, others found that AI occasionally provided inaccurate [or incomplete] information. This was particularly evident in technical subjects like mathematics, where precise answers were critical. For instance, one trainee mentioned receiving incorrect responses on binary operations, which required consulting traditional textbooks for further clarification.



**Figure 10.** Indication of any inconsistencies or incorrect answers observed using any AI tools in lesson preparation

These experiences highlighted that while lesson preparation could be enhanced by AI tools, their outputs must be critically evaluated to ensure reliability and accuracy. The findings suggest that despite AI's growing role in education, it was not infallible and may lead to challenges if used uncritically. One of the teacher-educators pointed out that trainees who relied solely on AI without verification risked incorporating errors into their teaching, potentially impacting students' understanding. She expressed that there was a need for trainees to develop strong critical thinking and cross-referencing skills when utilising AI tools. Additionally, it highlighted the importance of ongoing training for teachers [including teacher trainees], ensuring they were equipped to navigate the limitations of AI effectively and integrate it alongside traditional resources for a balanced approach to lesson preparation. In **Figure 1**, trainees rated the overall effectiveness of AI tools during their practicum

experience. It was revealed that a total of 63.32% of trainees found that AI tools were either very effective (31.66%) or effective (31.66%), highlighting the value of AI in generating new ideas, supporting differentiated instruction, and improving lesson delivery. Trainees acknowledged AI's potential to and streamline their preparation process and enhance creativity, emphasising its role as a complementary resource in modern teaching. However, they noted that to enhance teaching effectiveness, AI must be used alongside human judgement, particularly when addressing complex or nuanced students' needs. On the other hand, 36.66% (consisting of 9 Secondary trainees, 11 Primary, and 2 Early Childhood, across all year groups) expressed a neutral opinion, suggesting that AI's utility might vary depending on the subject area or teaching context. This neutral stance indicated that while AI tools provide benefits, they were not entirely reliable or universally applicable for all aspects of teaching. Some trainees felt that AI was an excellent tool for fostering new ideas and differentiation, but they stressed that AI should be used in conjunction with human input to ensure teaching effectiveness. Moreover, the over-reliance on AI could compromise the depth of understanding and personal engagement in lesson preparation. These findings underline the need for a balanced approach, integrating AI with traditional pedagogical methods to optimise its impact while addressing its limitations.

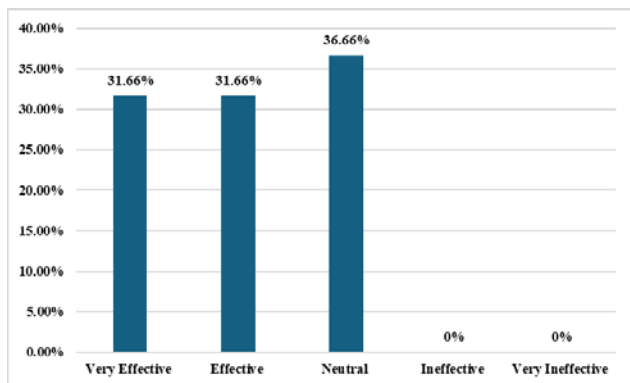
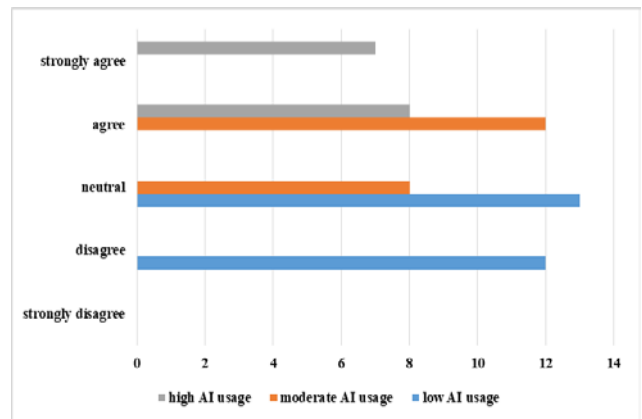


Figure 11. Rating the overall effectiveness of AI tools in enhancing teaching and learning experiences during practicum

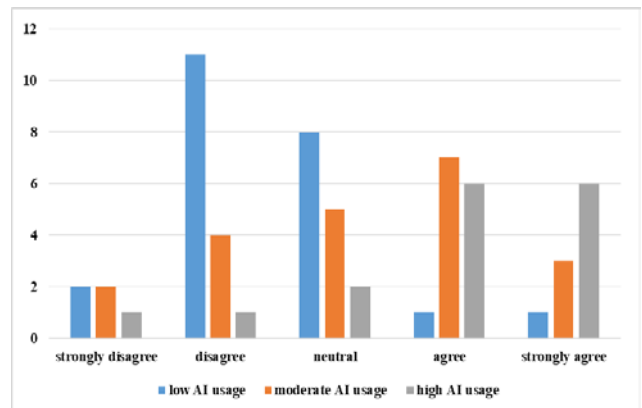
The data in Figure 1 revealed varied perceptions among teacher trainees regarding the impact of AI usage on their skills development, with responses strongly correlated to the frequency of AI usage. A significant portion of respondents who reported high AI usage perceived it as having a strong positive impact on their skills. Seven secondary trainees strongly agreed, and 8 trainees (comprising 2 Early Childhood, 2 Primary and 4 Secondary) agreed that frequent use of AI contributed significantly to their professional growth. This suggested that consistent interaction with AI tools enabled trainees to develop essential skills such as lesson planning, content creation, and instructional delivery, underscoring the transformative potential of AI in teacher training. In contrast, perceptions among those with moderate or low AI usage were less enthusiastic. Of those with moderate AI usage, 12 trainees (6 Secondary, 3 Primary, and 3 Early Childhood) agreed it positively impacted their skills, while 8 trainees (4 Secondary, 2 Early Childhood, and 2

Primary) remained neutral. Among those with low AI usage, the majority expressed either neutrality (13 trainees) or disagreement (12 trainees) regarding its benefits for skills development. These findings highlight the crucial role of frequency in AI engagement, as trainees who rarely or never use AI appear less likely to perceive its advantages. This discrepancy emphasises the need for structured AI integration in training programmes to ensure all trainees can access and leverage AI tools effectively, thereby fostering equitable skill enhancement across all trainee groups.



Key: Low AI usage: Trainee rarely or never use AI; moderate AI usage: Trainee occasionally or sometimes use AI; high AI usage: Trainee frequently or very frequently use AI

Figure 12. AI usage perceived impact on teacher trainees' skills development

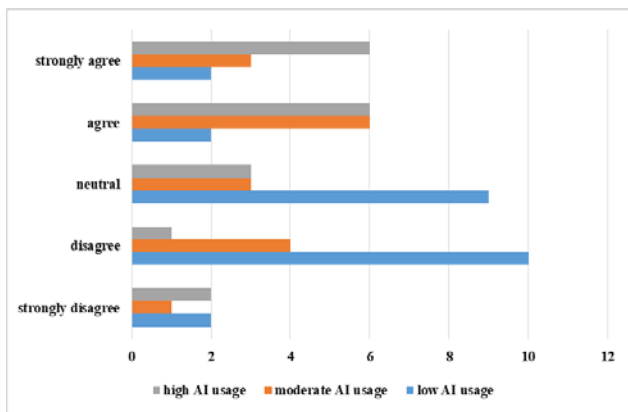


Key: Low AI usage: Trainee rarely or never use AI; moderate AI usage: Trainee occasionally or sometimes use AI; high AI usage: Trainee frequently or very frequently use AI

Figure 13. AI usage perceived impact on practicum teaching experiences

The data in Figure 1 reflects the varied perceptions of training teachers, regarding the impact of AI usage on their practicum teaching experiences, segmented by the frequency of AI usage. Among those with low AI usage, the majority held negative views. Eleven respondents (comprising 6 Secondary, 3 Early Childhood and 2 Primary trainees) disagreed, and 2 (1 Secondary and 1 Primary) strongly disagreed that low AI usage had a positive impact. Only 2 respondents (1 Early Childhood and 1 Secondary) expressed agreement or strong agreement. These results suggested that limited interaction with AI tools during the practicum does not significantly enhance teaching experiences, potentially due to missed

opportunities for leveraging AI's instructional and organisational benefits. For trainees with moderate and high AI usage, perceptions were more positive, particularly among those with high AI engagement. Seven trainees (including 6 Secondary and 1 primary) with high AI usage either strongly agreed or agreed that AI had a meaningful impact on their teaching experiences. In contrast 1 trainee expressed negative views (disagreeing or strongly disagreeing), and 2 remained neutral, indicating a minority of scepticism even among frequent AI users. Moderate AI usage received mixed reactions, with 5 respondents remaining neutral, while 7 agreed and 3 strongly agreed that it improved their teaching experiences. Overall, the data suggested that higher levels of AI engagement correlated with more favourable perceptions underscoring the potential for AI tools to enrich teaching practices when consistently and effectively applied. However, the neutral and dissenting responses highlight the need for targeted training and support to address reservations and optimise AI integration.



Key: Low AI usage: Trainee rarely or never use AI; moderate AI usage: Trainee occasionally or sometimes use AI; high AI usage: Trainee frequently or very frequently use AI

**Figure 14.** Perceived AI usage impact on preparedness for future classrooms

Figure 1 uncovered teacher trainees' perceptions of how AI usage impacts their preparedness for future classrooms. Among those with high AI usage, 12 trainees (6 strongly agree and 6 agree) reported feeling well-prepared for future classrooms, recognising that frequent interaction with AI tools enhances their ability to adapt to evolving educational technologies. These respondents viewed AI as an enabler for innovative lesson planning, personalised instruction, and efficient resource utilisation. However, a smaller group (3 neutral, 1 disagree, and 2 strongly disagree) indicated that even with high usage, AI alone might not be sufficient for comprehensive preparation, underscoring the need once again between AI-driven and traditional pedagogical methods. For moderate and low AI usage, perceptions were less favourable. Only 7 trainees with moderate usage (3 strongly agree and 4 agree) felt adequately prepared, compared to 5 trainees who disagreed or strongly disagreed. This mixed response suggests that infrequent exposure to AI tools limits their perceived value in building classroom readiness. Trainees with low AI usage had the most negative outlook, with 12 trainees (10 disagree and 2 strongly disagree) feeling unprepared for

future classrooms. The large neutral group (9 trainees) in this category highlighted uncertainty or limited engagement with AI tools, reflecting a missed opportunity to integrate these technologies effectively into their training experience. Overall, the findings emphasise that frequent and meaningful AI usage positively influences teacher readiness for future classrooms, but insufficient exposure can hinder perceived preparedness.

#### 4.4. Further Discussions and Implications

In exploring how AI is currently integrated into the practicum exercise by trainee teachers, the findings highlight the varied ways AI is being employed to enhance teacher training in Jamaica. Trainee teachers have been utilising AI tools to streamline lesson planning, monitor student progress, and facilitate classroom management. These integrations align with findings from the literature, such as the work of Cukurova [9], who emphasised the value of AI in offering real-time feedback and personalised professional development. In the Jamaican context, AI has been particularly helpful in addressing classroom challenges like large student populations and limited resources, allowing trainees to focus more on instructional methods and student engagement rather than administrative burdens.

Trainee teachers also perceive AI as an instrumental tool for refining their teaching strategies and fostering creativity during their practicum experiences. As illustrated in Figure 8, 85% of respondents reported that AI positively influenced their teaching experience, citing its utility in lesson planning, content delivery, and creative engagement with students. This aligns with prior studies such as Lee, *et al.*, [10], which highlighted the global recognition of AI's potential to support education. Specifically, AI-driven platforms or tools such as ChatGPT (used by 70% of trainees, as shown in Figure 7) were identified as instruments in providing personalised coaching and analysis of classroom interactions, as noted in the literature that mirrors the Jamaican experience where AI tools have helped trainee teachers improve their classroom management and instructional techniques. However, it is also evident that while AI offers numerous benefits, its integration is not without challenges. The remaining 15% of respondents who held a negative view noted concerns about over-reliance on AI, which they feared might dilute essential teaching skills like problem-solving and adaptability. The educators in this study have also raised concerns, just like Lee, *et al.*, [10], about equitable access to AI technologies and data privacy, which resonate with the experiences of Jamaican trainees. Limited access to advanced AI tools in rural or underfunded areas has resulted in uneven opportunities for trainees to benefit from AI's full potential. Furthermore, the issue of algorithmic bias and the ethical considerations surrounding AI usage in education were highlighted in the literature, underscoring the need for careful oversight and training in the responsible use of AI tools.

The study's findings provide compelling evidence of AI's significant role in shaping teacher trainees' skills development, teaching experiences, and preparedness for future classrooms. As outlined in Table 2 and illustrated in Figure 1, the hypothesis related to perceived skills

development ( $H_0$ : no significant difference among the three AI usage groups vs  $H_1$ : significant difference exists) revealed an F-statistics of 71.69176 and a p-value of 0.000 [using ANOVA test], indicating a statistically significant difference among the groups. This result aligns with the qualitative feedback from teacher trainees, who noted that high AI usage enhanced their ability to adapt, create, and confidently deliver classroom lessons. AI-powered simulations, as discussed by Cukurova [9], have been used to offer risk-free teaching environments where trainees can practice instructional delivery and classroom management. These experiences help trainees better navigate the unpredictable nature of real classrooms, which is critical given the shortage of experienced mentors due to teacher migration in Jamaica. Moreover, trainees with frequent AI interaction highlighted how these tools facilitated differentiated instruction and innovative teaching strategies, particularly in complex subjects like mathematics. However, those with low AI usage showed limited perceived benefits, underscoring the importance of integrating AI into teacher training programmes to bridge this gap.

**Table 2. Hypotheses related to perceived impact on skills development**

<p>Null Hypothesis (<math>H_0</math>): There is no significant difference in perceived skills development among the three AI usage groups.</p> <p><math>H_0: m_1 = m_2 = m_3</math></p>
<p>Alternative Hypothesis (<math>H_1</math>): There is a significant difference in perceived skills development among the three AI usage groups.</p> <p><math>H_1: m_1 \neq m_2 \neq m_3</math> (at least one group mean is different)</p>

F-statistic value = 71.69176

P-value = 0

ANOVA Summary					
Source	Degrees of Freedom	Sum of Squares	Mean Square	F-Stat	P-Value
	DF	SS	MS		
Between Groups	2	37.1611	18.5806	71.6918	0
Within Groups	57	14.7728	0.2592		
Total:	59	51.9339			

**Figure 15.** ANOVA: One-way analysis test result for perceived impact on skills development

Similarly, Table 3 and Figure 1 demonstrate the impact of AI on perceived teaching experiences. The hypothesis test ( $H_0$ : no significant difference vs  $H_1$ : significant differences exist) yielded an F-statistic of 8.665 and a p-value of 0.0051, confirming that AI usage levels significantly influence teaching experiences. Trainees with high AI usage reported positive outcomes such as enhanced classroom management and lesson planning capabilities, mirroring the findings of Lee, *et al*, [10] that highlight AI's role in fostering innovative pedagogy.

**Table 3. Hypotheses related to perceived impact on teaching experiences**

<p>Null Hypothesis (<math>H_0</math>): There is no significant difference in perceived teaching experiences among the three AI usage groups.</p> <p><math>H_0: m_1 = m_2 = m_3</math></p>
<p>Alternative Hypothesis (<math>H_1</math>): There is a significant difference in perceived teaching experiences among the three AI usage groups.</p> <p><math>H_1: m_1 \neq m_2 \neq m_3</math> (at least one group mean is different)</p>

**Analysis of Variance Results**

F-statistic value = 8.665

P-value = 0.0051

ANOVA Summary					
Source	Degrees of Freedom	Sum of Squares	Mean Square	F-Stat	P-Value
	DF	SS	MS		
Between Groups	2	20.6305	10.3153	8.665	0.005
Within Groups	58	69.0462	1.1905		
Total:	60	89.6767			

**Figure 16.** ANOVA: One-way analysis test result for perceived impact on teaching experiences

**Table 4. Hypotheses related to perceived impact on preparedness for future classrooms**

<p>Null Hypothesis (<math>H_0</math>): There is no significant difference in perceived preparedness for future classrooms among the three AI usage groups.</p> <p><math>H_0: m_1 = m_2 = m_3</math></p>
<p>Alternative Hypothesis (<math>H_1</math>): There is a significant difference in perceived preparedness for future classrooms among the three AI usage groups.</p> <p><math>H_1: m_1 \neq m_2 \neq m_3</math> (at least one group mean is different)</p>

**Analysis of Variance Results**

F-statistic value = 4.35047

P-value = 0.01744

ANOVA Summary					
Source	Degrees of Freedom	Sum of Squares	Mean Square	F-Stat	P-Value
	DF	SS	MS		
Between Groups	2	12.0492	6.0246	4.3505	0.0174
Within Groups	57	78.9345	1.3848		
Total:	59	90.9837			

**Figure 17.** ANOVA: One-way analysis test result for perceived impact on preparedness for future classrooms

Meanwhile, moderate and low AI users displayed mixed responses, with some neutral or negative perceptions regarding AI's ability to address real-world classroom challenges. This variability highlights the nuanced role AI plays, requiring a balanced approach

where AI complements rather than substitutes teaching methods.

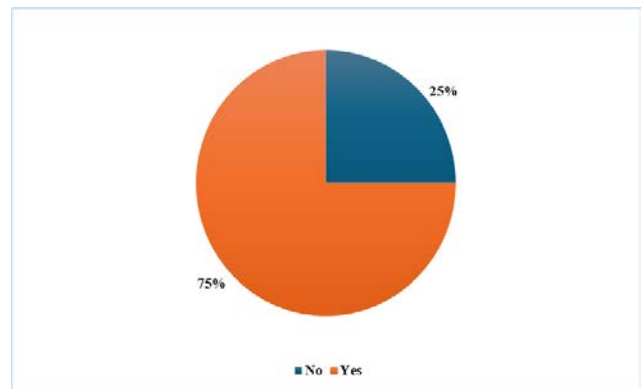
The study also examined AI's impact on teacher trainees' preparedness for future classrooms, as shown in Table 4 and Figure 1. The hypothesis test revealed an F-statistic of 4.35047 and a p-value of 0.01744, demonstrating significant differences among the three groups. Trainees with high AI usage were more confident, confident, as 12 (6 strongly agree and 6 agree) of them, depicted in Figure 1, emphasised AI's ability to simulate classroom scenarios and personalise learning experiences.

Conversely, trainees with low AI expressed scepticism, with 10 disagreeing and 2 strongly disagreeing about their readiness to handle future classrooms effectively. The study highlighted AI's pivotal role in mitigating the mentorship gap mostly due to the shortage of experienced educators in Jamaica, a challenge that the literature attributes to the ongoing teacher migration crisis. As detailed in Figure 1, trainees with high AI usage expressed confidence in their preparedness for the challenges of modern classrooms. These trainees emphasised AI's ability to simulate effective teaching strategies, providing personalised learning experiences and insights typically offered by experienced mentors. Conversely, trainees with low AI usage reported significant challenges about AI's impact on their classroom preparedness, as shown in Figure 1. This disparity reflects the uneven adoption of AI tools among teacher trainees and highlights the critical need for institutional support in integrating AI into teacher training programmes. This was also expressed by the interviewed educators who stated that AI can help with addressing large class size by supporting classroom management and personalised learning. As experienced educators leave, trainee teachers face a gap in mentorship. AI fills this gap by providing continuous support and personalised coaching, ensuring that trainee teachers still receive high-quality training. This, combined with AI's role in providing timely feedback and suggestions for improvement, is critical for developing resilient and adaptable educators who can thrive in increasingly complex educational environments.

Finally, the integration of AI into practicum experiences underscores the importance of transforming the teacher training curriculum to incorporate AI literacy, as supported by Figure 1, which reveals a significant relationship between AI usage and perceived skills development. Teacher trainees who frequently used AI tools during their practicum experiences reported greater adaptability and confidence in teaching, with AI's role in enhancing lesson delivery and classroom management frequently cited. The literature, such as the work by Cukurova [9] and Lee, *et al.*, [10], supports the notion that curricula must adapt to prepare future educators to use AI effectively. In the Jamaican context, a shift towards incorporating AI training into the teacher education curriculum would help ensure that future teachers are equipped with the necessary skills to leverage AI's potential, facilitating better learning outcomes for students while addressing the broader challenges facing the education system. While this is welcomed by the educators (cooperating teachers and practicum supervisors), they expressed valid concerns about teachers [including teacher trainees] becoming complacent due to

AI's ability to handle content generation, which may affect long-term teaching effectiveness. This dual perspective highlights the necessity of designing a curriculum that balances AI training with critical pedagogical practices, ensuring that future educators are both technology adept and deeply skilled in traditional teaching methodologies. By addressing these issues, the education system can harness AI's transformative potential while maintaining a robust foundation of teaching effectiveness.

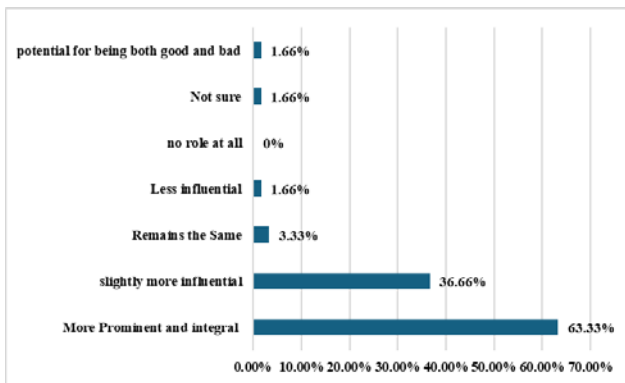
Additionally, Figure 1 uncovered that 75% of trainees, comprising 27 Secondary trainees, 7 Early childhood and 11 Primary across all year groups, advocate for integrating AI into teacher training practice, citing its ability to save time, provide diverse ideas, and enhance teaching and learning experiences. However, 25%, including 5 Secondary trainees, 2 Early Childhood, and 8 Primary across all year groups, were hesitant, warning that over-reliance on AI might stifle teachers' independence and critical thinking. For instance, one teacher trainee cautioned that while AI can simplify lesson planning, teachers must maintain their skills and not depend solely on technology. This dichotomy underscores the importance of incorporating AI into teacher training while ensuring that it complements foundational teaching competencies.



**Figure 18.** Consideration of whether to recommend the integration of AI in teacher training practicum

Finally, Figure 1 indicates that 63.33% of trainees, including those from Secondary, Early Childhood and Primary levels, envision AI becoming more prominent and integral in teacher training over the next five years. They believe AI will continue to evolve and enhance educational practices by offering innovative solutions to challenges in the classroom. However, 36.66% see it as only slightly more influential, indicating a more cautious perspective on its integration. Notably, 3.33% (2 Secondary trainees) expect AI's role to remain the same, suggesting they feel current applications are already sufficient. A small percentage (1.66%), consisting of one Secondary trainee, expressed concern that while AI has the potential to contribute positively, it could also limit the development of critical thinking among trainee teachers if not used responsibly. This highlights the need for a balanced approach to AI implementation, ensuring it enhances teaching without diminishing essential cognitive skills. These findings suggest that AI has a growing role in shaping how trainee teachers prepare for future

classrooms, offering both opportunities and challenges for the teaching profession.



**Figure 19.** Trainee teachers' vision of the role of AI in teacher training over the next 5 years

Based on the findings from the study, several insightful implications arise, shedding light on how AI integration can shape the future of teacher training:

- Revolutionising Pedagogical Practices:** The integration of AI into teacher training signifies a major shift in pedagogical methods. AI-driven tools provide teacher trainees with personalised feedback, enabling them to refine their teaching approaches in real-time. This shift could lead to a more dynamic, data-informed approach to education, where teaching strategies are continuously improved based on AI insights. As the findings of the study revealed, AI's ability to simulate classroom scenarios and offer tailored suggestions had been crucial in enhancing trainees' classroom management and adaptability, reinforcing the need for continuous professional development through AI tools.
- Addressing Teacher Shortages and Migration Issues:** Given Jamaica's ongoing challenge with teacher migration, AI has the potential to mitigate the impact by supporting the remaining educators. AI-driven platforms can fill the mentorship gap by providing real-time coaching and classroom management assistance, ensuring that teacher trainees receive adequate guidance, even in the absence of experienced mentors. The research findings support this, as trainees who frequently used AI tools felt more confident in their readiness for real-world classrooms, suggesting that AI tools felt more confident in their readiness for real-world classrooms, suggesting that AI's role as a mentorship substitute is already having a positive effect on teacher preparedness.
- Equity in Access to Educational Technology:** The findings highlight the need for equitable access to AI tools across all schools in Jamaica. Without addressing technological disparities, some teacher trainees may be disadvantaged in their practicum experiences. Ensuring widespread access to AI platforms is crucial to realising its full potential in enhancing teaching training. As shown in the data, trainees who had limited access to AI tools reported lower levels of preparedness and confidence in their teaching abilities. This disparity emphasises the importance of bridging the technological divide to

ensure all trainees benefit equally from AI-enhanced education.

- Ethical Considerations in AI Integration:** The rise of AI in education calls for careful attention to ethical concerns, such as data privacy and algorithmic fairness. As AI becomes a central tool in teacher training, there is a pressing need for clear policies and guidelines to safeguard the integrity and ethical use of AI technologies in educational settings. The study findings underline the need for responsible AI usage, with trainees expressing concern about over-reliance on AI potentially stifling critical thinking. Ensuring ethical integration will help mitigate these risks and ensure AI remains a supportive tool rather than a substitute for essential cognitive skills.
- Long-term Impact on Student Learning Outcomes:** By equipping teachers with AI-driven tools and methodologies, the potential long-term impact on student learning is profound. Teachers will be better prepared to offer personalised learning experiences, improve classroom engagement, and enhance overall academic outcomes, ultimately transforming Jamaica's educational landscape.

These implications highlight the transformative power of AI in teacher training and underscore the need for strategic planning and ethical considerations to ensure its successful integration in the Jamaican education system. The research findings suggest that when used effectively, AI not only enhances teacher preparedness but also holds promise for improving student learning outcomes through more tailored and efficient teaching practices.

## 4.5. Conclusion

From the study, the integration of AI is proving to be a transformative force in educator preparation into the practicum exercises for trainee teachers in Jamaica. By offering personalised feedback, streamlining administrative tasks, and enhancing classroom management, AI tools have empowered trainee teachers to focus on engaging students more effectively while refining their pedagogical techniques. These innovations not only address the challenges of large class sizes and unlimited resources but also bridge the mentorship gap caused by teacher migration, ensuring that trainee teachers still receive high-quality guidance. AI's role in the Jamaican content, much like its global counterparts, demonstrates the potential for revolutionising teacher training and classroom preparedness. The study found that a significant proportion of trainees (75%) recommended integrating AI into teacher training practices, citing its timesaving and teaching-enhancing capabilities. However, 25% expressed concerns about over-reliance on AI, which was also attested by the educators in this study, highlighting the need for a balanced approach.

Trainee teachers perceive AI as a valuable asset that enhances their skills, creativity, and adaptability, making them more confident and prepared for the dynamic nature of modern classrooms. As AI provides real-time coaching and opportunities for simulated teaching environments, it fosters a more resilient and versatile educator, capable of

navigating the complexities of today's education system. The findings underscore the importance of embracing AI in teacher training programmes, with 63.33% of trainees envisioning AI becoming a more integral part of teacher training in the next five years. This suggests a strong belief in AI's potential to enhance educational practices and outcomes. The research highlights its potential to support teacher development by creating a new generation of educators who are well-equipped to use AI for personalising learning, promoting student engagement, and driving educational innovation in Jamaica and beyond, particularly to address the broader challenges of the educational landscape.

#### 4.6. Limitations

The study revealed a key constraint which was found to be the limited number of teacher trainees who participated, which does not fully represent the broader population of individuals undergoing teacher training in Jamaica. Including a larger sample size would have provided a more robust dataset, capturing diverse perspectives and experiences with AI tools during teaching practicums. Additionally, there could have also been other teaching institutions in the study particularly those in rural or resource limited settings, where access to AI technology and training may differ significantly. Broadening the participant pool in future research could enhance the study's generalisability, offering a more comprehensive understanding of how AI impacts teacher training across various contexts and educational environments.

#### 4.7. Recommendations

Based on the findings from the study, several insightful recommendations can be made to enhance the integration of AI in teacher training programmes:

- **Expand AI Training for Teacher Educators and Trainee Teachers:** Teacher training institutions should implement comprehensive AI-focused professional development programmes to equip both educators and teacher trainees with the necessary skills to effectively incorporate AI tools into their practice. This training should focus on practical applications such as lesson planning, classroom management and personalised learning, allowing educators to enhance their teaching strategies and better engage their students.
- **Incorporate AI Simulations into Practicum Exercises:** AI-driven simulated teaching environments should be integrated into the practicum to allow trainee teachers to practise and refine their instructional strategies in a risk-free setting. These simulations can provide valuable hands-on experience, helping trainees gain confidence in managing real classroom dynamics before facing them in actual teaching scenarios.
- **Leverage AI for Personalised Feedback and Reflection:** AI tools that provide real-time feedback and data-driven insights should be further utilised to offer personalised coaching for teacher trainees. This will help trainees continuously adapt and improve their teaching methods, fostering a culture of

reflective practice and ongoing professional growth.

- **Address Technological Accessibility and Ethical Concerns:** To ensure equitable access to AI tools, it is crucial to address the technological gaps in schools across Jamaica, particularly in under-resourced areas. This will aid in maximising the impact of AI in teacher training. Additionally, ethical considerations such as data privacy and algorithmic bias should be prioritised to maintain transparency and trust in AI-powered education systems.
- **Promote AI-Enhanced Collaboration:** AI platforms that facilitate collaboration among trainee teachers, mentors, and teacher educators should be encouraged. These platforms can enable knowledge-sharing, support collaborative problem-solving, and promote peer learning, fostering a more interconnected and innovative teacher training ecosystem that encourages continuous improvement.

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