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The Role of AI in Shaping Effective Teaching Strategies: A Multiple Case Study

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ABSTRACT

Artificial Intelligence (AI) is transforming teaching and learning, particularly in assessment practices, administrative efficiency, and preparation for future careers. However, its integration into classroom strategies faces implementation challenges, including inadequate infrastructure, digital inequality, and limited institutional support. This study examines the experiences, coping mechanisms, and insights of Filipino and Indonesian teachers in utilizing AI-driven strategies to enhance student outcomes within their respective education systems. Using a qualitative multiple case study approach, data were gathered through semi-structured interviews with three Filipino and two Indonesian teachers from private schools. Analysis included descriptive, within-case, and cross-case methods. The results highlight shared obstacles (such as poor internet connectivity, technological issues, and inconsistent digital access), yet also reveal resilience and creativity among teachers. This research emphasizes the importance of professional development and collaboration in achieving inclusive, AI-enhanced learning environments aligned with SDG 4.

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1. INTRODUCTION

Artificial Intelligence (AI) is increasingly being integrated into educational systems worldwide due to its potential to enhance learning outcomes, increase student motivation, and improve teacher efficiency (Slimi, 2023). As a technological platform, AI influences several aspects of the teaching and learning process, including assessment, grading, and preparing students for future career demands. Despite these opportunities, the practical application of AI in classroom management and teaching strategies presents challenges, particularly in contexts with limited technological resources.

In the United States, 76% of teachers reportedly do not use AI tools in their teaching practices; when they do, it is primarily for lesson planning, communication, and individualized instruction (see <https://www.aft.org/press-release/nations-teachers-and-parents-overwhelmingly-embrace-education-technology-classrooms>). Similarly, in Singapore, teachers remain skeptical about the efficacy of AI tools such as Mentimeter and ClassPoint due to inconclusive evidence supporting their pedagogical value (see <https://www.straitstimes.com/singapore/parenting-education/how-a-virus-taught-education-in-singapore-a-lesson-in-adaptability>). In Indonesia, research during the COVID-19 pandemic emphasized the urgency of data processing and real-time decision-making supported by AI (see <https://www.itb.ac.id/news/developments-in-artificial-intelligence-research-at-itb-during-covid-19-pandemic/57590>). A literature review by Nuryadin (2023) highlighted significant progress in AI integration in Indonesian education, particularly in enhancing personalization and curriculum adaptability.

Meanwhile, Filipino educators face comparable challenges. A case study revealed that while Filipino teachers and students are generally open to technological innovations, the lack of institutional support hinders effective AI integration (Bacolod, 2020). The integration of AI is seen both as an opportunity and a disruption within the current educational system (Estrellado & Miranda, 2023).

Various frameworks have been proposed to better integrate AI into educational environments. Thongprasit and Wannapiroon (2022) introduced a model emphasizing users, platforms, intelligent technologies, and curriculum alignment. Studies also suggest the instructional potential of generative AI for tailoring content delivery and fostering deeper engagement (Romainoli, 2022). AI has been found to empower educators by enabling creative, student-centered teaching methods (see https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4391243).

Despite these theoretical advances, there remains a research gap concerning the lived experiences of teachers using AI in diverse cultural and infrastructural contexts. This study addresses that gap by focusing on the insights and coping mechanisms of teachers from the Philippines and Indonesia as they navigate AI-driven strategies in real classroom settings. As digital tools continue to evolve, understanding these experiences is crucial to ensuring effective and inclusive teaching practices.

The use of AI in education also aligns with Sustainable Development Goal 4, which advocates for inclusive and equitable quality education. It highlights the need to review and reshape pedagogical practices, access to educational technologies, and institutional policies that support their use (see <https://www.linkedin.com/pulse/indias-achievements-sustainable-development-goals-role-smriti-walia>).

This study explores the experiences of Filipino and Indonesian teachers in implementing AI-driven teaching strategies in private school settings. It aims to answer the following research questions: (i) What are the experiences of Filipino and Indonesian teachers in

implementing AI-driven teaching strategies in their classrooms? (ii) What coping mechanisms do they employ to overcome associated challenges? (iii) What insights do they offer regarding the potential role of AI in shaping effective teaching strategies? (iv) What explains the similarities and differences in their experiences?

2. METHODS

This study employed a qualitative multiple-case study design to explore the experiences, coping mechanisms, and insights of Filipino and Indonesian private school teachers regarding the use of AI-driven teaching strategies in classroom settings. This approach allowed an in-depth understanding of real-world complexities, offering rich, contextual insights that quantitative methods may overlook (Crowe et al., 2011). A qualitative case study methodology supports the exploration of a phenomenon within its context using multiple sources and perspectives, thus allowing for a multifaceted understanding (Baxter & Jack, 2008).

The researchers used purposeful sampling to identify teachers with direct experience in using AI tools for teaching, as this sampling method ensures relevance to the research objective (Baskarada, 2014). Specifically, maximum variation sampling was applied to capture a broad range of perspectives from teachers with different teaching contexts and digital exposure (see <https://www.statology.org/maximum-variation-sampling/> and <https://www.gfmer.ch/SRH-Course-2016/research-methodology/pdf/Qualitativesampling-techniques-Elmusharaf-2016.pdf>). This method allows the selection of participants that maximize diversity in experiences and background variables pertinent to the phenomenon studied.

The study involved five participants: three Filipino teachers from Davao City, Philippines, and two Indonesian teachers from Bandung, Indonesia. All were from private schools and had implemented AI-related strategies in their classrooms. Multiple-case studies enhance the robustness of findings by enabling cross-case comparisons that strengthen generalizability and theory development.

Data were collected through a combination of written responses, face-to-face interviews, and online interviews, guided by a semi-structured interview protocol. Written reflections allowed participants to articulate initial thoughts, while follow-up interviews enabled researchers to probe deeper into issues needing clarification.

The semi-structured format ensured consistency across cases while allowing flexibility to explore emerging ideas. Participants were asked about their firsthand experiences with AI tools in the classroom, the challenges encountered, their strategies for addressing those challenges, and their reflections on the role of AI in shaping effective teaching.

The collected data were analyzed using a triangulated approach consisting of descriptive-case analysis, within-case analysis, and cross-case analysis (Rashid et al., 2019). Within-case analysis examined each teacher's experiences as a unique and bounded system to ensure the integrity and depth of each narrative. Cross-case analysis, on the other hand, identified patterns, similarities, and contrasts across all five participants.

Themes were derived through open coding, then grouped and refined into major thematic categories. The data were triangulated with observational notes and descriptive insights, ensuring analytic rigor and trustworthiness.

All participants provided informed consent before data collection. They were informed of the study's purpose, assured of their confidentiality, and given the right to withdraw at any point. Pseudonyms and participant codes (e.g., C1, FT1) were used to anonymize their identities.

The findings from the analysis are presented thematically in the next section, Results and Discussion, and are supported by **Table 1** and **Figure 1**, which summarizes the thematic presence across all five participants.

Table 1. AI-Driven Teaching Themes by Teacher.

Theme	FT1	FT2	FT3	IT1	IT2
Poor Internet Connectivity	✓	✓	✓	✓	✓
Slow Processing Speeds	✓	✓	✓	✓	✓
Software Crashes	✓	✓	✓	✓	✓
Uncontrollable Classroom Environment	✓	✓		✓	✓
Limited Student Participation	✓	✓		✓	
Enhanced Student Engagement	✓	✓	✓	✓	✓
Low Digital Competence				✓	✓
Accessible Tools	✓	✓	✓		
Limited Use of Internet Platforms	✓		✓		✓
Tool for Effective Learning	✓		✓	✓	
Technical Support System	✓	✓	✓	✓	✓
Collaborative Support System	✓	✓	✓	✓	✓
Administrative Support System				✓	✓

Legend: FT = Filipino Teacher, IT = Indonesian Teacher; ✓ = Theme mentioned in interview

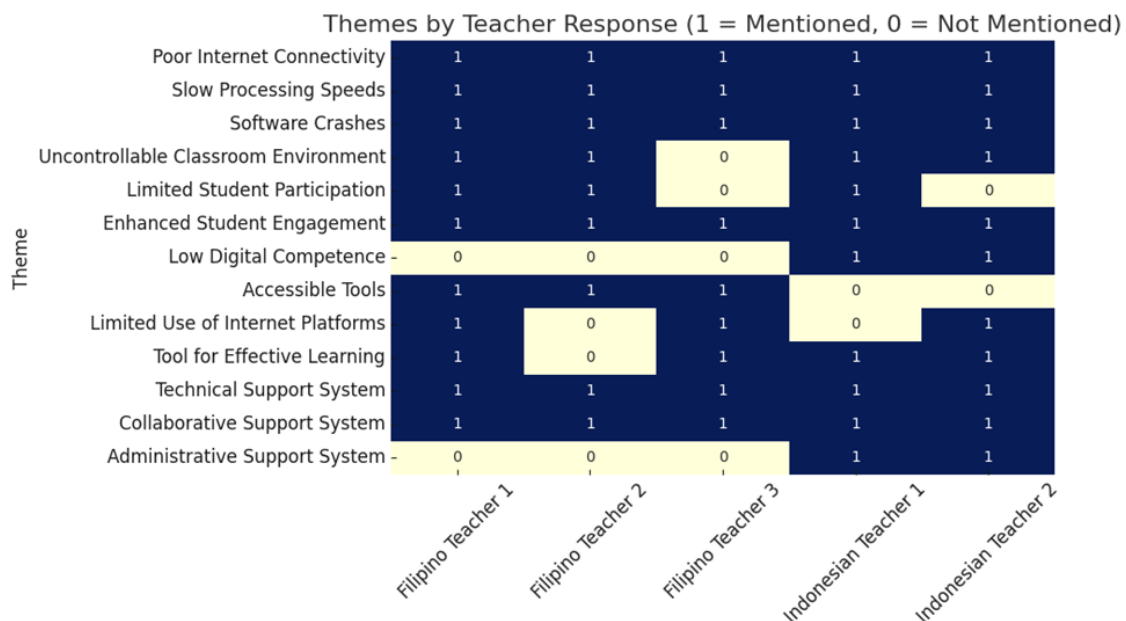


Figure 1. Theme Presence Across Cases.

3. RESULTS AND DISCUSSION

This section presents an in-depth analysis of the findings based on a cross-case thematic analysis of interviews with five teachers—three from the Philippines and two from Indonesia. The aim was to understand their experiences in integrating AI-driven teaching strategies within private school classrooms. The discussion is organized according to key themes that emerged from the data, as outlined in **Table 1** (see *Table 1: AI-Driven Teaching Themes by Teacher*), and follows a comparative lens to illuminate both shared and unique challenges and coping mechanisms across the two countries.

3.1. Interview Results

3.1.1. Poor internet connectivity

Teachers widely expressed challenges related to internet connectivity, identifying it as one of the most critical barriers to effective AI integration in their teaching. The limitations manifest as lagging devices, unreliable signals, or the absence of Wi-Fi access, especially in rural settings. These connectivity issues obstruct the use of digital platforms like Aralinks, simulations, and online assessments. As a result, teachers are often forced to find workarounds, such as using personal mobile hotspots or relying on traditional teaching methods. This reality reflects systemic digital infrastructure gaps that must be addressed to ensure equity in AI-enhanced learning (see **Table 2**).

Table 2. Interview comments on poor internet connectivity

No.	Interviewer	Comments
1	C1, FT1	For me since I mentioned that I am using Aralinks, sometimes the problem is with the laptop because it would lag or have some delay and then for the others such as egg box investigation because it needs internet connection so the problem is with the internet connection or sometimes I do not have a Wi-Fi so I have to use my phone but I do not have a load or the signal is not good so I have to find some spots.
2	C3, FT3	I think the number one factor is internet connectivity, since you need the internet when using the simulation.
3	C3, FT3	I think the challenges for me are the internet connectivity, since we do not have Wi-Fi in each classroom. I should bring my cell phone to connect my data to my laptop for it to work. Also, there are some classrooms with a slow signal that, even though you have the data, it will still not be possible because of the signal.
4	C1, FT1	So one limitation that I foresee in implementing AI in our country, the Philippines, is the limited access to technology and the internet, especially when you are in rural areas where the signal is not good. If internet connectivity in rural areas were improved and access to technology were provided, the use of AI-driven education in the Philippines would be expanded.
5	C4, IT1	Connectivity issues: Not all students have reliable internet at home, so some cannot access online quizzes.
6	C5, IT2	Some students lack reliable internet or devices at home, limiting their access to online exercises.

3.1.2. Technological Issues

In addition to internet limitations, teachers described several hardware and software issues, such as slow or incompatible laptops, frozen screens, and malfunctioning devices. These glitches interrupt teaching flow and create frustration for both teachers and students. Teachers have responded with admirable resilience by using personal phones, seeking student assistance, and remaining flexible in class activities. However, these improvised solutions point to a deeper need for more robust institutional support and access to up-to-date technological infrastructure (see **Table 3**).

3.1.3. Disruptive Impact

While AI integration adds value to classroom engagement, several teachers observed that it can also trigger unanticipated behavioral disruptions. Overexcitement due to gamified elements or unfamiliarity with technology can lead to noise, distraction, or loss of classroom control. Additionally, technological malfunctions—such as lagging or unresponsive tools—break teaching momentum. These disruptions require teachers to strike a balance between

interactive learning and classroom discipline, highlighting the importance of preparation and support systems to ensure learning stays focused (see **Table 4**).

Table 3. Interview comments on technological issues

No.	Interviewer	Comments
1	C2, FT2	Sometimes the AI-driven technology is lagging, so it affects the momentum or the flow of the teaching process.
2	C1, FT1	For me, since I mentioned that I am using Aralinks sometimes, the problem is with the laptop because it would lag or have some delay, and then for the others, such as egg box investigation. After all, it needs an internet connection, so the problem is with the internet connection, or sometimes I do not have Wi-Fi, so I have to use my phone, but I do not have a load, or the signal is not good, so I have to find some spots.
3	C1, FT1	So far, there is none, but with the coping mechanism in issue of the laptop having delays.
4	C2, FT2	The concerns I have regarding the integration of AI are, first, the concerns of the students in it, the compatibility of laptops because some AI-driven teaching activities are not fully functioning on any laptops, and the internet, because sometimes there are AI that need an internet connection to function.
5	C2, FT2	The issue with the laptop having delays I just have to be patient or to ask for students who are knowledgeable with using the technology or I just have to entertain the students with questions to make the class alive and then for the internet connection I tend to use my phone as a mobile hotspot for my laptop to have internet connection and then for the signal I just have to look for some spot where there is a good reception for the signal.
6	C3, FT3	Also, in some schools, they are not lucky enough to have a TV inside the classrooms, so they use the traditional method of teaching, and they cannot use AI-driven technologies. And also the laptop, Sister, because there are very slow laptops, and they hang.
7	C4, IT1	Tech glitches: Occasionally, tools crash or do not work as expected.
8	C5, IT2	And technical glitches can disrupt the flow of a lesson, frustrating both students and teachers alike.

Table 4. Interview comments on disruptive impact.

No.	Interviewer	Comments
1	C1, FT1	Issue with the laptop having delays, I just have to be patient, or ask students who are knowledgeable about using the technology, or I just have to entertain the students with questions to make the class lively.
2	C2, FT2	One of my perceived challenges is that sometimes the students are enjoying the activity with the AI-driven teaching strategy, and they already become very noisy and uncontrollable, and hard to manage.
3	C3, FT3	It is the participation of the students because if they do not participate, then it will not be possible.
4	C4, IT2	And technical glitches can disrupt the flow of a lesson, frustrating both students and teachers alike.

3.1.4. Classroom Dynamics

Teachers also noted that AI can significantly improve classroom atmosphere and student participation. Students respond positively to interactive tools, simulations, and songs used in AI-driven activities. However, excessive engagement can become counterproductive if not managed well. Teachers acknowledged the need to guide students through tools gradually

while maintaining class structure. Encouraging responsible use and setting expectations can help maximize benefits while reducing behavioral issues (see **Table 5**).

Table 5. Interview Comments on Classroom Dynamics.

No.	Interviewer	Comments
1	C1, FT1	So, during my discussion on using Artificial Intelligence, I have witnessed that using AI in my teaching makes the class more enjoyable, and it makes the students engage in the discussion, and also, I have observed that upon incorporating AI, students tend to better understand the lesson.
2	C2, FT2	Sometimes the students are enjoying the activity too much with an AI-driven teaching strategy, and they already become very noisy and uncontrollable and hard to manage, and also sometimes the AI-driven technology is lagging.
3	C3, FT3	I think I don't see any problems for them because they are enjoying whenever there is an integration of technology, and whenever they need to participate, they are enjoying it.
4	C3, FT3	Whenever I use AI-driven technologies, I let the students navigate the laptop. They are the ones going in front and clicking the simulation. Whenever they are having a hard time, I ask guiding questions.
5	C4, IT1	Easily distracted: They sometimes get too caught up in the interactive features.
6	C4, IT1	Over-reliance: A few tend to rely too much on hints or prompts from AI.
7	C4, IT1	Navigation trouble: Some students struggle with using new tools at first.
8	C5, IT2	A memorable instance was when I used songs for vocabulary and reading comprehension lessons. Students got excited talking about their favorite lyrics, which led to lively discussions about the themes and vocabulary.
9	C5, IT2	Others find it difficult to navigate the many features, feeling overwhelmed or lost in the options available.

3.1.5. Digital Accessibility

Another recurring concern involves access to digital tools and software. Some teachers lack the devices or compatible platforms needed to use AI-driven strategies effectively. Despite this, they attempt creative workarounds, like dictating what appears on malfunctioning platforms or substituting with manual tools. These insights reflect the resourcefulness of educators and also emphasize the need for expanded digital equity across schools (see **Table 6**).

Table 6. Interview Comments on Digital Accessibility

No.	Interviewer	Comments
1	C1, FT1	So in my case, during class, I use it as an activity or as a way to make worksheets, and I also use it for recitation, especially the Aralinks technology, because it has a random name generator.
2	C3, FT3	Like, for example, Aralinks. Aralinks don't work sometimes on my laptop, so I just use the traditional way, or I just dictate what's in there if Aralinks do not work.
3	C1, FT1	So there was this one topic in grade 10, which was a combination of objects. I used the egg box investigation from transum.org and witnessed students illustrate combinations.
4	C4, IT1	Access issues: Not all schools have enough devices or reliable internet.

3.1.6. Tool for Effective Learning

Despite limitations, most teachers viewed AI integration as enhancing student learning, participation, and creativity. Game-based learning via platforms such as Aralinks, PowerPoint templates, and adaptive AI quizzes led to higher engagement and even improved test scores.

Teachers praised AI's ability to personalize learning and sustain student attention while reinforcing complex concepts in more digestible formats (see **Table 7**).

Table 7. Interview Comments on Tool for Effective Learning.

No.	Interviewer	Comments
1	C1, FT1	For me, since I am a mathematics teacher, it can help to enhance students' math skills and ensure that everyone has a chance to learn.
2	C2, FT2	I use gamification through Aralinks and PowerPoint templates from Mr. Boory on YouTube. I also use ChatGPT, Grammarly, and CAMI library resources.
3	C2, FT2	I used Aralinks with "Tama o Mali" format. Students engaged actively and scored high during the assessment.
4	C3, IT2	I used songs for vocabulary and comprehension. Students enjoyed the lesson and improved their scores.
5	C3, FT3	On plate boundaries, students remembered the lesson because they could visualize plate movement.
6	C3, FT3	AI enhances classroom creativity and replaces traditional styles with more current tools.
7	C1, FT1	I evaluate platform usability, communicate clearly, and monitor student experience before deciding future use.
8	C4, IT1	When I started using AI quizzes, students' test scores improved by 10% within a few months.

3.1.7. Support System

Support mechanisms play a vital role in navigating the challenges of AI integration. Teachers often rely on students for quick fixes, consult colleagues for shared strategies, or turn to online tutorials and tech support. While formal institutional support remains limited, informal networks have become crucial in enabling teachers to continue innovating in their classrooms (see **Table 8**).

Table 8. Interview Comments on Support System.

No.	Interviewer	Comments
1	C1, FT1	I asked for the help of students when Aralinks didn't display on TV. They guided me to use duplicate instead of extend.
2	C1, FT1	I seek help from students or ask my colleagues who have experienced similar problems.
3	C2, FT2	I ask my co-teachers if they are experiencing the same issues and apply their coping methods.
4	C3, FT3	I call students who are knowledgeable about computers when my laptop doesn't cooperate.
5	C3, FT3	I like surfing the internet for simulations. Teachers also share tech tools inside the school.
6	C4, IT1	Teacher networks, chatting with others facing similar challenges.
7	C4, IT1	Tech support: reaching out to the tech team when tools act up.
8	C4, IT1	Online tutorials: watching videos to better understand features.
9	C5, IT2	Teachers and tech teams offer the best support. Webinars and workshops on AI provide valuable guidance.

3.1.8. Poor Internet Connectivity

All five participants identified internet connectivity as a major obstacle to implementing AI in their teaching practice. Teachers described difficulties such as weak Wi-Fi signals, mobile data limitations, and the lack of classroom infrastructure for stable connectivity. Filipino

teachers, especially those using tools like Aralinks, noted the reliance on personal devices and hotspots due to the unavailability of institutional support. One teacher remarked that the absence of Wi-Fi required her to search for signal reception spots just to complete digital exercises (C1, FT1). Similar experiences were echoed by Indonesian participants, who pointed out that some students were unable to access online quizzes at home due to unreliable internet connections (C4, IT1; C5, IT2).

These challenges illustrate how technological limitations, particularly in under-resourced schools or rural areas, hinder equitable access to AI-enhanced education. Internet connectivity, a foundational requirement for modern educational technology, when absent or weak, results in instructional delays, reduced engagement, and loss of learning continuity. These systemic issues highlight the need to address SDG 9 (Industry, Innovation, and Infrastructure) as a prerequisite to achieving SDG 4 (Quality Education) in digital teaching environments (see <https://www.linkedin.com/pulse/indias-achievements-sustainable-development-goals-role-smriti-walia>).

3.2. Technological Issues: Slow Processing and Software Crashes

All five teachers reported experiencing software crashes and lagging laptops during their AI-integrated lessons. These issues significantly disrupted lesson flow and reduced the effectiveness of AI-based activities. Filipino teachers highlighted how such delays caused them to switch between digital and traditional teaching modes mid-class (C2, FT2). Indonesian participants reported that even minor technical glitches, such as simulation tools freezing during activities, led to both student and teacher frustration (C4, IT1; C5, IT2).

Notably, Filipino teachers demonstrated resilience by engaging students in live Q&A while waiting for systems to reboot or asking tech-savvy students for assistance (C2, FT2). These practices reflect a form of adaptive pedagogy, wherein educators adjust on the fly to maintain engagement, despite technological setbacks.

3.3. Disruptive Impact: Classroom Management Challenges

The integration of AI tools, while designed to enhance engagement, sometimes led to classroom disruptions. Two Filipino teachers (C2, FT2; C3, FT3) expressed that students became overly excited, noisy, or distracted during AI-powered activities. While high engagement is a positive indicator, it also introduces challenges in maintaining discipline and focus. The integration of multimedia elements and gamified interfaces shifted classroom dynamics, making it difficult for teachers to regulate participation levels.

This challenge was also observed by Indonesian teachers, albeit to a lesser extent. The implication is clear: student engagement must be balanced with instructional control. Effective classroom management strategies must evolve alongside technological integration. This highlights the need for pedagogical training that focuses not only on *how* to use AI tools, but also *when* and *to what extent* they should be used to maintain learning outcomes (see https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4391243).

3.4. Classroom Dynamics and Student Engagement

Despite the aforementioned challenges, all five teachers acknowledged the positive impact of AI on student engagement. Activities such as digital simulations, interactive quizzes, and gamified lessons (e.g., “Tama o Mali”) were found to be particularly effective. Filipino teachers noted that students showed greater interest and improved comprehension when lessons included visual aids and gamified interactions (C1, FT1; C2, FT2). Indonesian teachers

shared similar sentiments, emphasizing the enjoyment students experienced during vocabulary and science lessons involving AI simulations (C5, IT2).

AI, in this context, becomes a catalyst for deeper learning, particularly when its features align with student-centered pedagogies. However, this benefit comes with the need for digital competence among students and teachers. While Indonesian participants reported moderate difficulties among students in navigating new tools, Filipino teachers suggested that many learners required additional instruction before effectively using AI platforms.

3.5. Digital Accessibility and Resource Limitations

Issues related to accessibility extended beyond connectivity to include hardware availability and platform compatibility. Filipino teachers mentioned how tools like Aralinks often did not function well on their devices, forcing them to revert to traditional methods (C3, FT3). Indonesian participants pointed out that not all schools had enough devices or digital platforms to support interactive AI-driven tasks (C4, IT1).

Limited access to functioning technology constrains the scalability of AI integration in schools. Unless hardware, software, and connectivity are simultaneously addressed, digital learning inequality will persist, particularly for marginalized groups. This concern echoes global findings that warn of a digital divide emerging not only between countries but also within schools in the same education systems.

3.6. AI as a Tool for Effective Learning

Teachers from both countries highlighted the potential of AI to personalize instruction, reinforce concepts, and enhance participation. Mathematics and science teachers particularly appreciated how AI facilitated gamification, adaptive learning, and automated feedback. One Filipino teacher described how integrating AI quizzes significantly improved student scores (C2, FT2), while another teacher cited the use of ChatGPT and Grammarly to assist in real-time content generation (C2, FT2).

Indonesian teachers emphasized how simulations helped students visualize abstract concepts, thereby improving comprehension and recall (C3, IT2). This demonstrates the relevance of AI in enhancing cognitive and affective domains of learning, especially when it offers content that is visual, interactive, and student-led.

The use of these tools reflects the constructivist approach to learning, emphasizing that students learn best through active engagement and contextual experiences. Integrating AI into lesson planning aligns with this philosophy and advances the pedagogical objectives of SDG 4, especially in fostering inclusive and effective learning environments.

3.7. Support Systems: Technical, Collaborative, and Administrative

All teachers shared strategies they used to overcome implementation challenges. Filipino participants frequently relied on students for technical assistance, highlighting a reverse mentoring dynamic, where digital-native students supported their teachers during troubleshooting (C1, FT1; C3, FT3). Peer collaboration was another key coping mechanism. Teachers consulted each other for advice, shared best practices, and exchanged resources via social media groups or faculty meetings (C2, FT2; C3, FT3).

Indonesian participants emphasized the role of IT support staff and online tutorials as essential resources for mastering AI platforms (C4, IT1; C5, IT2). One teacher noted that professional development workshops and webinars about AI integration were pivotal in boosting confidence and refining teaching strategies (C5, IT2).

However, participants also stressed the lack of consistent administrative support, particularly in schools with low digital budgets. Only one Indonesian teacher (C5, IT2) referenced a formal support mechanism at the school leadership level. This points to the need for institutional frameworks that go beyond individual initiative and offer structured support for AI adoption.

3.8. Cross-Case Insights: Similarities and Differences

Similarities between Filipino and Indonesian educators include:

- (i) High enthusiasm for AI as a pedagogical tool.
- (ii) Consistent challenges in connectivity and device performance.
- (iii) Strong reliance on student and peer support for troubleshooting.
- (iv) Use of gamified tools to increase student motivation.

Differences include:

- (i) Indonesian teachers appeared to have more access to institutionalized tech support.
- (ii) Filipino teachers relied more heavily on peer-sourced content, such as YouTube and Facebook communities.
- (iii) Variability in digital literacy among students was higher in Indonesia, according to teacher observations.
- (iv) Filipino teachers were more likely to blend AI with traditional methods due to infrastructure constraints.

These comparative insights reinforce the importance of contextualizing AI integration policies, ensuring that strategies are adapted to local conditions and educational cultures. International collaborations, such as the one exemplified in this study, play a crucial role in sharing models of success and tailoring AI implementation approaches.

As illustrated in **Table 1**, all five participants reported issues under major themes such as internet connectivity, software glitches, and classroom engagement. The distribution of these themes underscores their prevalence and validates the need for multifaceted solutions to address them.

(Refer to *Table 1: AI-Driven Teaching Themes by Teacher* and the accompanying heatmap for visual distribution.)

3.9. Toward the SDGs: Strategic Reflections

This study directly supports the advancement of SDG 4: Quality Education, with ripple effects on:

- (i) SDG 9 through the call for investment in digital infrastructure.
- (ii) SDG 10 in reducing inequality in educational access.
- (iii) SDG 17 via cross-border university partnerships for innovation.

By tackling these systemic issues (through inclusive policies, teacher training, and infrastructure development), stakeholders can move closer to ensuring that AI becomes a tool of empowerment, rather than exclusion, in the classrooms of the future.

3.10. Discussion of the Findings

This multiple-case study explored the experiences, coping mechanisms, and insights of Filipino and Indonesian teachers in implementing AI-driven teaching strategies in private school classrooms. The findings demonstrate that although AI has strong potential to transform education, its implementation is constrained by systemic issues such as poor internet connectivity, limited access to devices, low digital competence among learners, and lack of structured institutional support (Slimi, 2023). It has been explained in

<https://policycommons.net/artifacts/3854312/ai-report/4660267/>
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4391243.

and

Despite these barriers, teachers displayed remarkable adaptability, often relying on student support, peer networks, and their ingenuity to continue delivering quality education. Teachers recognized the capacity of AI tools to increase student engagement, personalize learning, and enhance concept comprehension, particularly through gamification and simulation-based instruction. However, they also acknowledged that effective integration of AI requires more than individual effort; it demands sustainable digital infrastructure, robust professional development, and administrative alignment with technological goals.

Ultimately, this study reinforces that realizing the full benefits of AI in education requires a systemic approach. The alignment of AI implementation strategies with the Sustainable Development Goals, especially SDG 4 (Quality Education), is critical to ensure inclusive, equitable, and effective learning environments in Southeast Asia and beyond (see <https://www.linkedin.com/pulse/indias-achievements-sustainable-development-goals-role-smriti-walia>).

Based on the insights gathered and analyzed in this study, the following recommendations are proposed for future research, educational policy, and classroom practice:

- (i) **Impact Assessment.** Conduct longitudinal studies to measure how AI-driven teaching strategies influence academic achievement, motivation, participation, and dropout rates across diverse learner groups. This will help clarify the long-term educational outcomes and identify differences in impact based on socio-economic context or student demographics (see https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4391243).
- (ii) **Digital Infrastructure Investment.** Prioritize the enhancement of internet access, especially in rural and underserved areas. Government agencies and private institutions must collaborate to expand digital connectivity, provide devices, and ensure access to high-performance tools needed for AI-based education (see <https://www.itb.ac.id/news/developments-in-artificial-intelligence-research-at-itb-during-covid-19-pandemic/57590>; Estrellado & Miranda, 2023).
- (iii) **Professional Development for Teachers.** Design targeted training programs that equip educators with the technical and pedagogical skills required to integrate AI meaningfully in their classrooms. Such programs should be continuous, reflective, and include mentorship systems or communities of practice to support long-term growth (Romaoli, 2022).
- (iv) **Promoting Equity and Inclusion.** Address the digital divide by creating policies that guarantee access to AI tools regardless of socio-economic status, geographic location, gender, or disability. Equal opportunity in AI-enhanced learning is essential to achieving SDG 10: Reduced Inequalities within education systems (Nuryadin, 2023; Bacolod, 2020).
- (v) **Development of AI-Inspired Pedagogies.** Encourage research and experimentation in pedagogical approaches that leverage AI to foster critical thinking, creativity, collaboration, and communication. AI should not replace human educators but enhance the teacher's role as facilitator, mentor, and curriculum designer (Thongprasit & Wannapiroon, 2022; Artuso & Graf, 2020).

Institutional Partnerships and Cross-National Collaboration. Strengthen international partnerships between universities and schools, similar to the collaboration between the University of the Immaculate Conception and Universitas Pendidikan Indonesia. Such efforts support mutual learning, resource sharing, and research on culturally adaptive AI integration (Tai, 2020).

4. CONCLUSION

This study explored the experiences of Filipino and Indonesian teachers in integrating AI-driven strategies in private school classrooms. Despite facing challenges such as poor internet, technical glitches, and limited digital access, teachers demonstrated adaptability by using student support, peer collaboration, and alternative methods to maintain instructional quality. AI tools were found to enhance engagement, personalize learning, and support creativity, but their effectiveness depends heavily on infrastructure, training, and institutional support. Findings highlight that integrating AI into education must go beyond tool usage; it requires a systemic approach to bridge digital divides and foster inclusive learning. Aligning with SDG 4, the study emphasizes the importance of equitable access to technology, sustained teacher development, and collaboration to ensure AI supports rather than disrupts education.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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