

# From Chalkboards to Chatbots: The Role of Generative AI in Philippine Teacher Education Assessment



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**Abstract** This chapter examines the emerging role of generative artificial intelligence (AI) in transforming assessment practices within Philippine teacher education. Drawing from case studies of pre-service teachers across various disciplines, it explores how AI-powered tools support the design, implementation, and evaluation of assessments tailored to diverse learning needs. The chapter analyzes both the pedagogical benefits, such as enhanced efficiency, individualized feedback, and adaptive testing, and the ethical challenges related to bias, academic integrity, and cultural sensitivity. Practical recommendations are offered for teacher education institutions, policymakers, and educators, emphasizing ethical integration, curriculum design, infrastructure development, and capacity-building. The findings contribute

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to ongoing global discussions on responsible AI adoption in education, particularly within developing contexts.

**Keywords** Assessment · Generative AI · Higher education · Quality education · Teacher education · Philippines

## 1 Introduction

### 1.1 Background and Rationale

Teacher education in the Philippines has evolved significantly over the decades, shaped by shifting pedagogical paradigms, policy reforms, and technological advances [1, 2]. Historically, assessment practices were grounded in traditional methods such as written examinations, oral recitations, and manual grading, which offered limited adaptability to diverse learner needs [3, 4]. While technology-aided assessment gradually emerged in the late 20th and early twenty-first centuries, including the use of online quizzes, spreadsheets, and computer-based grading tools [5, 6], these innovations often served as supplements rather than fundamentally reshaping assessment design [7].

More recently, national policy directives from the Department of Education [8] and the Commission on Higher Education (CHED) [9, 10] have emphasized the integration of digital tools into teaching and assessment, preparing educators for the challenges of 21st-century classrooms. These policies reflect growing recognition of technology's role in enhancing assessment validity, inclusivity, and responsiveness.

Among the most recent advancements, generative AI tools, such as ChatGPT, Grammarly, and Quillbot, offer new possibilities for automating feedback, generating adaptive assessments, and supporting individualized learning [11, 12]. However, these technologies also raise complex ethical, cultural, and practical considerations that require careful examination [13].

Against this backdrop, this chapter investigates the use of generative AI in assessment practices within Philippine teacher education. Drawing on real-world experiences of pre-service teachers, it examines how these tools are being adopted, the benefits they offer, and the challenges they present. The chapter offers actionable insights to guide responsible integration of AI into teacher preparation programs, ensuring that future educators are equipped not only with technical skills, but also with the ethical and critical competencies necessary for effective assessment in increasingly AI-mediated learning environments.

## 1.2 Purpose and Scope of the Chapter

This chapter explores how generative AI tools can enhance assessment practices in Philippine teacher education. Specifically, it investigates the role of these tools in addressing challenges such as efficiency, accuracy, and inclusivity in assessments. The chapter provides practical insights into integrating generative AI in pre-service teacher training programs, ensuring that future educators can maximize its potential while addressing its limitations.

To ground these discussions in real-world contexts, the chapter highlights case studies involving pre-service teachers from various majors, such as Science, Mathematics, Technology and Livelihood Education, Filipino Language, Special Needs Education, and Elementary Education. These case studies illustrate how generative AI tools are used to design, implement, and evaluate assessments tailored to diverse learning needs. For example, one case discusses how AI-supported assessment fosters inclusivity for learners with special needs, while another examines its role in enhancing the evaluation of technical competencies in vocational education.

Focusing on these practical applications, the chapter aims to provide actionable strategies for teacher education programs to incorporate generative AI tools effectively. The insights presented are intended to inform policy development, curriculum design, and teacher training practices, ensuring that AI integration supports the overarching goals of equity and excellence in education.

Taken together, this chapter underscores the transformative potential of generative AI in Philippine teacher education, emphasizing the importance of preparing future educators for the demands of a technology-driven educational landscape. As the global education sector continues to embrace AI, this chapter contributes to the growing discourse on its responsible and effective use, particularly in developing contexts like the Philippines.

To guide readers through these discussions, the chapter is organized as follows:

- Section 2 presents the theoretical foundations and framework underpinning the study, including assessment theories that support AI integration and generative AI assessment frameworks.
- Section 3 provides an overview of the current landscape of generative AI in teacher education, discussing both the adoption of AI in assessment practices and the challenges encountered in AI-driven assessments.
- Section 4 offers detailed experiences of using generative AI in pre-service teachers' assessment practices, featuring six individual case narratives across various disciplines.
- Section 5 examines generative AI as both a formative and summative assessment tool, addressing AI-driven formative assessment, applications in summative assessment, and issues of authenticity and creativity in AI-generated assessments.
- Section 6 explores ethical and practical considerations, including discussions on bias in AI assessment tools, academic integrity concerns, and practical recommendations for responsible AI use.

- Section 7 outlines policy and practice implications for teacher education institutions, policymakers, and pre-service teachers.
- Section 8 concludes the chapter by synthesizing key insights and offering future directions for research and practice.

## 2 Theoretical Foundations and Framework

### 2.1 Assessment Theories Supporting AI Integration

The integration of generative AI tools in teacher education assessments is rooted in established assessment theories that emphasize the dynamic interplay between evaluation practices and learning outcomes [14]. Central to these theories are formative and summative assessments, which have long been pillars of teacher education programs [15].

Formative assessments, often referred to as “assessments for learning,” are designed to provide continuous feedback to learners, enabling them to identify gaps in their understanding and adjust their learning strategies accordingly [16]. Generative AI enhances formative assessments by offering real-time, individualized feedback based on student responses [17]. For example, AI tools like ChatGPT can analyze short-answer questions and provide constructive feedback that helps students refine their understanding of complex concepts [18].

Summative assessments, on the other hand, evaluate student learning at the end of an instructional unit, typically through standardized tests, projects, or performance-based evaluations [19]. AI-powered tools streamline these assessments by automating grading processes and ensuring consistency in evaluation criteria [20]. Moreover, AI’s ability to analyze patterns in summative assessments can provide educators with insights into areas where students may need further support [21].

Constructivist theories of learning, which emphasize active engagement and knowledge construction, also underpin the integration of generative AI in assessments [22]. According to Piaget [23], learners construct their understanding through experiences and interactions with their environment. Technology-enhanced assessments, supported by AI, align with this perspective by fostering learner-centered environments where students can engage in exploratory and collaborative activities [24]. For instance, AI tools can facilitate project-based assessments that require students to synthesize information and solve real-world problems, thereby promoting critical thinking and creativity [25].

Aligning with formative and summative assessment principles and constructivist learning theories, generative AI presents transformative potential for teacher education [26]. These tools enhance assessment efficiency and accuracy while fostering the development of higher-order thinking skills crucial for 21st-century educators.

## 2.2 *Generative AI and Assessment Frameworks*

The effective integration of generative AI in assessments is guided by established frameworks, including the SAMR model and emerging ethical guidelines for AI use.

The SAMR model (Substitution, Augmentation, Modification, Redefinition), developed by Puentedura [27], as cited in Blundell et al. [28], provides a roadmap for technology integration in education, including assessments. At the substitution level, AI tools can replace traditional assessment methods, such as using AI to grade multiple-choice quizzes. Moving to augmentation, these tools not only perform traditional functions but also add features like immediate feedback for student improvement. At the modification level, AI allows for significant redesign of assessments, such as adaptive testing that tailors questions to individual learner profiles. Finally, the redefinition stage represents transformative practices, such as AI-supported collaborative assessments where students work on interdisciplinary projects, with AI providing real-time analysis and suggestions [29].

Incorporating generative AI within the SAMR framework enables teacher education programs to transition from basic technology adoption to innovative, student-centered assessment practices [30]. For instance, pre-service teachers can leverage AI to design assessments that adapt to diverse learning styles, fostering inclusivity and equity in education [31].

Equally important is the need for a framework for ethical and effective AI-based assessment, as the deployment of AI tools raises concerns about fairness, bias, and data privacy [32]. Ethical guidelines emphasize transparency in AI algorithms, ensuring that assessment outcomes are unbiased and reflective of student capabilities [33]. Moreover, educators must be trained to critically evaluate AI-generated results and use their professional judgment to make informed decisions [34].

An effective AI-based assessment framework must balance both psychometric rigor and the complex nature of educational assessment. While reliability and validity remain important, particularly for standardized tasks, AI tools must also be sensitive to the nuanced, often non-observable aspects of learning such as creativity, critical thinking, and reflective practice, which are central to teacher education. For example, integrating rubrics within AI grading systems can support alignment with learning objectives and criteria [35], but such frameworks must also recognize the limitations of AI in fully capturing the depth of cognitive and metacognitive processes involved in authentic learning experiences.

Adopting the SAMR model, as outlined in Table 1, alongside established ethical guidelines provides a structured pathway for the responsible integration of generative AI tools in teacher education. This combined approach not only guides programs in selecting appropriate levels of AI integration, from substitution to redefinition, but also ensures that assessments remain pedagogically meaningful and ethically sound. In doing so, teacher education programs enhance the quality of assessment practices while preparing pre-service teachers to critically and effectively navigate AI technologies in their future classrooms.

**Table 1** SAMR model in AI-based assessment for teacher education

SAMR component	Level	Definition	Examples
Substitution	Enhancement	Technology acts as a direct substitute for traditional tools, with no functional improvement	Using an AI-powered tool like Grammarly to check spelling and grammar in lesson plans or essays without altering content
Augmentation	Enhancement	Technology substitutes traditional tools but with added functionality to enhance efficiency	Employing an AI platform to auto-grade multiple-choice quizzes while providing itemized score breakdowns to pre-service teachers
Modification	Transformation	Technology significantly redesigns tasks to allow new, innovative approaches to assessment	Utilizing AI to create adaptive assessments that adjust question difficulty in real-time based on pre-service teachers' performance
Redefinition	Transformation	Technology enables the creation of entirely new assessment tasks that were previously impossible	Designing AI-based simulations where pre-service teachers analyze virtual classroom scenarios and receive instant feedback from the AI

### 3 Current Landscape of Generative AI in Teacher Education Assessment

#### 3.1 Adoption of AI in Assessment Practices

The integration of generative AI in teacher education assessments has gained momentum, especially in Philippine universities where its applications are becoming increasingly diverse. AI tools are now being utilized for quizzes, essays, and simulations, significantly enhancing the efficiency and personalization of assessments. For instance, platforms like ChatGPT and QuillBot are being used by pre-service teachers to generate ideas, refine essays, and craft quizzes tailored to specific learning objectives [36]. Similarly, AI-driven platforms like Edmodo and Google Forms with add-on AI plugins are supporting instructors by automating the grading of objective tests and generating insights from student performance data.

Generative AI also plays a pivotal role in lesson planning and microteaching evaluations, which are integral components of teacher education [37]. Tools like Canva AI and Microsoft Education Insights are enabling pre-service teachers to develop visually engaging and pedagogically sound lesson plans [38, 39]. AI-generated feedback on microteaching sessions, based on speech patterns, pacing, and use of instructional materials, provides actionable insights to help aspiring educators improve their teaching competencies [39, 40].

Some Philippine universities are piloting AI-powered learning management systems that leverage generative AI to automate student administration, enhance student services, and provide instructional support during examinations, including its integration into pre-service teacher training programs. These systems assist educators in designing adaptive assessments that cater to diverse learner needs, promoting inclusivity and equity in classrooms [41]. These developments reflect a growing recognition of the transformative potential of AI in teacher education, particularly in enhancing the quality and relevance of assessments.

### ***3.2 Challenges in AI-Driven Assessments***

Despite its potential, the adoption of AI-driven assessments in Philippine teacher education faces significant challenges. One primary limitation is AI's understanding of context and cultural nuances. Generative AI tools often fail to recognize local idioms, regional languages, or culturally specific teaching practices, elements that are crucial in the Philippine educational context [42]. This misalignment can lead to feedback or assessment outcomes that are inconsistent with local educational goals and norms [43].

A major barrier is the persistent infrastructure gap. According to the World Bank [44], from 2019 to 2022, the broadband access gap between the wealthiest and poorest population quintiles in the Philippines widened from 26 to 42%, reflecting a 16-percentage-point increase. Rural households, which account for over half of the population, continue to struggle with stable internet access and modern hardware. National fixed broadband penetration remains low, at approximately 4 subscriptions per 100 inhabitants [45], significantly lagging behind global averages. Furthermore, Ookla's [46] Speedtest Global Index reports that as of August 2023, the average fixed broadband speed in the Philippines was approximately 25 Mbps, with rural areas experiencing substantially lower speeds and mobile broadband speeds often falling below 10 Mbps in regions such as BARMM. These infrastructure limitations not only disrupt access to AI-powered platforms but also perpetuate unequal opportunities for pre-service teachers, particularly those from geographically isolated and disadvantaged areas [47].

Ethical concerns further complicate the use of generative AI in assessments. Issues involving data privacy, algorithmic bias, and inconsistent feedback are prevalent. Some pre-service teachers have reported that AI tools tend to favor certain writing styles or inadvertently penalize unconventional yet valid responses. In addition, the growing reliance on AI risks diminishing essential skills such as critical thinking and creativity, as students may become overly dependent on AI-generated solutions [48].

Addressing these multifaceted challenges requires a comprehensive and balanced approach. Key measures include expanding and modernizing digital infrastructure, improving internet accessibility especially in rural areas, investing in updated hardware, and providing faculty and students with technical and ethical training in responsible AI use. Moreover, developers and policymakers must ensure that AI tools are

adapted to align with local languages, cultural contexts, and curricular frameworks to support inclusive and equitable learning outcomes [49]. Through such coordinated efforts, the full transformative potential of generative AI in teacher education assessments can be responsibly and equitably realized.

## **4 Experiences of Using Generative AI in Pre-service Teachers' Assessment**

This section investigates the real-world applications of generative AI in assessment practices within higher education, guided by a qualitative multiple-case study methodology. Following Yin's [50] framework for case study research, which emphasizes in-depth, contextualized inquiry into contemporary phenomena within real-life settings, this chapter aims to explore how pre-service teachers experience, adopt, and integrate AI-driven assessment tools into their academic coursework and practice.

The study focused on six individual cases of pre-service teachers enrolled in the Assessment in Learning 1 course, a core subject in teacher education programs at a public university in Central Visayas, Philippines. Each participant was purposively selected based on their active engagement with generative AI tools in completing various assessment-related tasks. While all participants were enrolled in the same course, they represented different disciplinary tracks in STEM and non-STEM education, allowing for both shared and discipline-specific insights.

Data collection took place in January 2025 using a structured qualitative questionnaire administered asynchronously via Google Forms. This method enabled participants to provide reflective, narrative accounts of their experiences, highlighting specific AI tools utilized, pedagogical intentions, perceived benefits, encountered challenges, and institutional or ethical concerns related to their use of AI in assessment.

In compliance with research ethics, all participants provided informed consent prior to data collection. The study adhered to the ethical standards outlined in the Declaration of Helsinki and conformed to the provisions of the Philippine Data Privacy Act of 2012, ensuring confidentiality, anonymity, and responsible data management throughout the research process.

The cases presented capture a wide range of innovative applications of generative AI in assessment practices. Participants described using AI to create customized rubrics for project-based assessments, generate quiz items aligned with learning outcomes, analyze student work, and provide individualized feedback. Specific examples include sourcing experiments and resources for science education, streamlining quiz creation in mathematics, assisting with paraphrasing and grammar checking in language subjects, clarifying concepts for special education lessons, and providing ideas for assessment tasks in technology and livelihood education. While many participants emphasized the efficiency and convenience that generative AI offers in designing assessments and supporting learning, some also expressed

caution, citing concerns about accuracy and the need to validate AI-generated content with reliable sources.

Each case is presented as an individual narrative to retain the richness and depth of participants' experiences while allowing for the identification of recurring themes through thematic analysis. This approach facilitates a nuanced understanding of both common patterns and discipline-specific variations in the use of AI for assessment in teacher education.

Beyond documenting innovative practices, the cases also illuminate critical ethical, cultural, and institutional considerations. Participants expressed optimism about AI's potential to enhance assessment efficiency, provide timely feedback, and support differentiated instruction. However, concerns were also raised about algorithmic bias, data privacy risks, limited institutional support, and the need for clear ethical guidelines governing AI use in educational contexts.

Collectively, these narratives contribute valuable, experience-based insights into the evolving role of generative AI in assessment practices within higher education. The findings underscore that while generative AI offers promising opportunities to enhance assessment quality and efficiency, its effective integration requires sound pedagogical foundations, strong institutional support, and robust ethical frameworks to navigate the complexities of AI-driven educational innovation.

#### ***4.1 Rose's Case: Science Education***

Rose, a second-year Science education student, incorporates generative AI tools such as ChatGPT and Grammarly to support her academic work. She values how these tools simplify certain tasks and enhance her writing and communication skills. "These tools help my studies a lot; their main purpose is to make our lives easier," she explained, highlighting Grammarly's effectiveness in correcting grammar and ChatGPT's ability to generate relevant text-based content.

In assessment creation, Rose finds generative AI particularly helpful, describing the process as "easier, less hassle, and not time-consuming." However, she also recognized the risk of over-reliance on AI tools, acknowledging that "I am more dependent on using AI." This self-awareness reflects the importance of maintaining a balance between leveraging AI for efficiency and actively engaging in the cognitive demands of assessment design, particularly crucial for developing teachers in science education, where task authenticity and conceptual rigor are foundational.

Rose further noted that generative AI supports creativity and resourcefulness in science education by helping locate experiments, simulations, and teaching resources. She emphasized that such tools can "enhance creativity, efficiency, and fairness" in both assessment design and evaluation. Nevertheless, she raised important concerns about potential bias and fairness in AI-generated assessments. "These tools may favor certain demographics or reinforce stereotypes due to biases in their training data," she cautioned, adding that AI's reliability could be questionable,

especially when grading open-ended or subjective responses that require scientific reasoning and deeper analysis.

To mitigate these challenges, Rose suggested proactive measures such as careful review of AI outputs, systematic bias testing, and maintaining human oversight to ensure equity and accuracy. She proposed further improvements in AI tools, advocating for greater transparency in algorithms, customizable features aligned with learning objectives, adaptive learning functionalities, and built-in rubric generation to streamline evaluations while preserving pedagogical control. “Transparency in how AI generates or grades assessments and incorporating adaptive features for personalized learning would enhance their reliability and effectiveness,” she recommended.

As a future educator, Rose underscored the responsibility of teacher education programs to equip pre-service teachers with not only technical proficiency but also ethical discernment. She recommended that training programs integrate AI literacy across curriculum areas, emphasizing the design, evaluation, and responsible adaptation of AI-generated assessments while directly addressing issues such as bias, fairness, and cultural relevance. “Programs should also emphasize ethical considerations, promote hands-on practice with AI tools, and encourage critical thinking to ensure responsible and effective use in diverse educational contexts,” she concluded.

Rose’s reflections illustrate both the promise and complexity of integrating generative AI into science education assessment. Her nuanced insights demonstrate an emerging understanding of AI’s potential while emphasizing the sustained need for critical human judgment, especially in disciplines that demand conceptual depth and authentic scientific inquiry.

## ***4.2 Anna’s Case: Mathematics Education***

Anna, a second-year Mathematics education student, utilizes generative AI tools such as Gauth to assist with assessment-related academic tasks. She shared that these tools help streamline certain processes, particularly in generating practice problems and verifying step-by-step solutions. “It heightens the productivity of my work or tasks since it helps reduce the time needed to create and check some types of assessments,” Anna noted.

However, Anna also reflected critically on the role of AI in mathematics assessment. She acknowledged that while AI tools can efficiently produce items and solutions, they may limit opportunities for deep engagement with assessment design, an essential skill for pre-service mathematics teachers. “AI reduces its effectiveness when it comes to fostering conceptual understanding and handling non-standard problem-solving situations,” she observed. This recognition highlights a crucial tension: although AI may improve efficiency in generating routine problems, it risks bypassing the labor-intensive process of designing tasks that require careful anticipation of students’ misconceptions and varying levels of mathematical understanding, skills central to effective mathematics teaching.

Interestingly, Anna expressed concerns about the originality of AI-generated responses, noting that some AI-generated content closely resembles existing materials, raising questions about academic integrity. While plagiarism detection may be more relevant for text-based assignments, her caution reflects a growing awareness of ethical considerations surrounding AI-generated content more broadly.

Anna also raised a broader caution regarding over-reliance on AI, not only by students but also by pre-service teachers themselves. “The involvement of AI in education greatly helps, but excessive use will make the value of self-learning less. Students may become highly dependent on AI itself,” she warned. This reflexive insight underscores that AI integration should be accompanied by deliberate training that ensures pre-service teachers experience and internalize the full cognitive process of assessment creation, rather than becoming passive users of automated tools.

At its core, Anna’s reflections reveal the double-edged nature of AI in mathematics education: while offering useful support for efficiency, these tools must be critically integrated to preserve the deep, conceptual, and anticipatory thinking that defines effective mathematics assessment design.

### ***4.3 Gia’s Case: Technology and Livelihood Education***

Gia, a third-year student specializing in Technology and Livelihood Education (TLE), utilizes generative AI tools such as ChatGPT and Quillbot to support her academic tasks, particularly when she encounters difficulties in understanding questions or unfamiliar concepts. “I use both of them to get some information or ideas whenever I don’t really understand the questions or words, especially for my teaching tasks,” she explained. These tools have allowed her to generate assessment materials more quickly, simplifying certain aspects of lesson preparation and evaluation.

However, Gia also recognized the potential drawbacks of using AI extensively in assessment creation. While AI facilitates efficiency, she expressed concerns that such convenience might come at the cost of her own cognitive development as a pre-service teacher. “To be honest, I know it is helpful because it supports our assessments, but sometimes the problem is that we do not develop our own critical thinking, creativity, and authenticity,” Gia reflected. This insight underscores a key tension in teacher preparation: while AI can assist in producing assessments, the process of thoughtfully designing authentic tasks remains a crucial learning experience for future educators, particularly in applied fields like TLE.

In her specialization, which includes Home Economics and hands-on technical competencies, Gia observed that AI tools may have limited utility beyond idea generation and basic content support. “For me, AI tools can be used to measure correctly and make the complete task fast in terms of technical competencies, but for hands-on tasks, maybe only supporting ideas come from AI tools,” she noted. The nuanced, context-specific nature of many TLE assessments, such as cooking, sewing, or practical demonstrations, requires human judgment, contextualization, and anticipatory thinking that AI cannot yet fully replicate.

Gia further raised concerns about fairness, bias, and reliability in AI-generated assessments. She expressed worry that over-reliance on AI could not only diminish her own professional growth but also compromise the personalized nature of student evaluation. “If I rely too much on AI tools, it seems like I did not see the effort all the teachers or instructors are doing to understand the students’ abilities in a personal way,” she explained, recognizing that meaningful assessment often involves understanding students’ unique learning journeys. Moreover, she observed that some AI tools exhibit stylistic biases that may disadvantage students who approach assessments differently. “The bias of AI tools gives some unfair results and prefers certain styles in writing, which could be unfair for others,” she warned. Reliability was also a concern, as Gia acknowledged that not all AI-generated content draws from verified or trustworthy sources.

To improve AI integration in educational assessment, Gia suggested that AI tools should be better equipped to recognize the diverse ways students respond to tasks, particularly in open-ended or creative assignments. “If AI tools could understand these answers better, it would make grading fairer,” she emphasized. She advocated for greater adaptability in AI systems, enabling them to accommodate varied student responses rather than favoring narrow or standardized outputs.

Looking ahead, Gia believes teacher education programs should embed AI literacy early in pre-service training, ensuring that future educators develop both technical competence and ethical discernment. “Teachers should learn how to use AI for creating, grading, and providing feedback on assessments,” she recommended, while emphasizing the need for balanced training that reinforces teacher judgment, personalization, and pedagogical decision-making. Such preparation, she argued, would empower future teachers to leverage AI effectively while safeguarding the individualization and authenticity that are central to meaningful assessment in TLE and related disciplines.

Gia’s reflections highlight both the practical benefits and pedagogical complexities of AI integration in hands-on education fields. Her insights reinforce the importance of critical engagement with AI tools, ensuring that while efficiency is enhanced, the depth of teacher preparation and the authenticity of student assessments remain uncompromised.

#### ***4.4 Martha’s Case: Filipino Language Education***

Martha, a second-year pre-service teacher majoring in Filipino, actively incorporates generative AI tools such as Quillbot and ChatGPT into her academic and teaching-related tasks. She primarily uses these tools for paraphrasing, grammar checking, plagiarism detection, and correcting grammatical or contextual errors. “Generative AI tools have supported my assessment tasks by enabling efficient quiz creation, generating questions tailored to specific topics and difficulty levels,” she explained. This efficiency allows her to devote more time to student guidance and

lesson planning, recognizing that timely feedback is essential for promoting language proficiency.

In the context of Filipino language assessment, Martha finds that generative AI offers practical support in identifying common grammatical errors, analyzing sentence structures, and providing suggestions for language improvement. These capabilities have allowed her to develop adaptive assessments that accommodate students with varying proficiency levels. “I can create adaptive assessments that cater to different proficiency levels in Filipino, ensuring inclusivity,” she noted. Such personalization aligns well with formative assessment goals, particularly in language education where scaffolding is crucial.

However, Martha is also acutely aware of the limitations of generative AI in capturing the richness and complexity of Filipino language and culture. She observed that “sometimes, the questions or feedback might not fully align with the curriculum or what I need,” highlighting the need for ongoing human oversight. Customization and careful verification of AI outputs have become essential parts of her assessment design process. “I verified and customized AI outputs, tailoring them to fit the context,” she shared, recognizing that rigid reliance on AI-generated content may compromise contextual appropriateness.

One significant challenge she identified is AI’s difficulty in interpreting regional dialects, colloquial expressions, and nuanced cultural references embedded in Filipino language use. “AI tools may not fully recognize cultural and contextual details, leading to unfair evaluations,” Martha cautioned. This concern is especially relevant in Filipino language education, where linguistic diversity and cultural specificity are deeply intertwined. Furthermore, she noted that some AI-generated feedback may be unclear or overly generic, limiting its usefulness for learners striving to develop deeper language understanding.

To address these concerns, Martha emphasized the importance of combining AI assistance with informed teacher judgment. She proposed improvements to AI tools that would better account for the linguistic variations in Filipino, including regional dialects and informal expressions. Additionally, she recommended that AI-generated feedback include more detailed explanatory notes, allowing both teachers and students to better understand the rationale behind corrections or suggestions. “This would make feedback not only faster but more educational,” she explained.

Martha strongly advocates for the systematic inclusion of AI literacy training in teacher education programs. She recommended integrating workshops and practice-based sessions that explore both the benefits and limitations of AI in assessments, with particular attention to ethical considerations, cultural sensitivity, and the risks of over-reliance. “Programs should emphasize both the advantages and disadvantages of AI tools while promoting responsible and innovative practices,” she concluded.

Martha’s reflections underscore the complex relationship between efficiency and pedagogical integrity in AI-supported assessments. While recognizing the affordances of generative AI for language instruction, she emphasizes the irreplaceable role of teacher expertise in ensuring contextual accuracy, cultural relevance, and meaningful student learning. Her case offers valuable insights into how pre-service

teachers can develop critical discernment alongside technical skills when integrating AI into language assessment design.

#### ***4.5 Shara's Case: Special Needs Education***

Shara, a second-year pre-service teacher specializing in Special Needs Education, has integrated generative AI tools such as ChatGPT and Grammarly into her academic and instructional preparation. She primarily uses these tools to enhance her understanding of lesson content, generate quiz items aligned with her instructional materials, and ensure grammatical accuracy in her writing. “Generative AI tools have supported my assessment tasks by helping me create quizzes related to my PowerPoint topics. When I am unsure about certain content, I use AI to clarify concepts or generate additional materials,” she shared.

In designing assessments for students with special needs, Shara finds AI particularly useful for generating a broad range of examples and resources that she can adapt for diverse learners. “AI tools assist me in designing and assessing individualized learning activities by suggesting materials that are appropriate for different students’ needs,” she explained. This aligns with differentiated instruction principles, where varied content presentation and task modifications are crucial to accommodate learners with varying cognitive, behavioral, and communication profiles.

However, Shara remains mindful of AI’s limitations, particularly in relation to content accuracy and alignment with her learning objectives. She recounted instances when AI-generated answers were incorrect or irrelevant. “Sometimes the answers provided are wrong, maybe because my questions are not clear,” she noted. This experience has prompted her to refine her questioning techniques and critically evaluate AI outputs rather than adopting them uncritically. In this way, she is developing essential reflective habits that teacher educators aim to foster in pre-service teachers.

Importantly, Shara recognizes both the potential and the risks of AI tools in supporting equity and fairness in Special Needs Education. While AI can generate materials that accommodate different learning styles and levels, she expressed concerns about possible embedded biases within AI systems. “One of my main concerns is that AI may unintentionally reflect biases in the data they are trained on,” she explained. She worries that such biases could inadvertently disadvantage certain student populations, particularly in assessments intended to capture nuanced cognitive or behavioral progress. Furthermore, she noted that some AI-generated assessment items may not fully capture the individualized learning objectives that guide SPED instruction.

Unlike in more standardized subjects, assessment in Special Needs Education often requires highly contextualized, authentic, and student-centered measures that consider social, emotional, and behavioral factors alongside academic performance. Shara acknowledged that while AI can generate suggestions quickly, its ability to fully address the complex, personalized nature of SPED assessment remains limited.

“AI helps in providing suggestions, but ultimately, as teachers, we need to decide what best suits the individual student’s needs,” she emphasized.

Although Shara did not offer specific technical recommendations for improving AI tools, she highlighted the importance of better adaptive capacities that could offer multiple differentiated pathways for assessment design. “AI tools could better cater to individual learning needs by offering more options for differentiated assessments,” she suggested, indicating a desire for AI tools that are more sensitive to the instructional realities of SPED settings.

Finally, Shara advocates for teacher education programs to incorporate explicit AI literacy and ethics training into pre-service preparation. “Pre-service teachers should receive training on the ethical use of AI tools,” she recommended, emphasizing that AI is now embedded in academic and instructional practices. She believes that structured training, coupled with reflective discussion on ethical considerations, will help future educators balance AI’s benefits with professional judgment, especially in contexts that demand individualized, empathetic, and student-centered assessment approaches.

Shara’s reflections illuminate both the promise and complexity of using generative AI in Special Needs Education assessment. While recognizing its usefulness in generating instructional materials and promoting efficiency, she underscores the irreplaceable role of teacher expertise in ensuring fairness, personalization, and the holistic development of learners with special needs.

#### ***4.6 Jenny’s Case: Elementary Education***

Jenny, a second-year pre-service teacher specializing in Elementary Education, adopts a cautious approach to the use of generative AI in her academic work. While she occasionally uses AI tools like ChatGPT to deepen her understanding of certain topics, she intentionally limits their role in assessment-related tasks. “I usually use ChatGPT for further explanation of a certain topic,” she shared. However, when it comes to assessment design or evaluation, she prefers to rely on alternative, verified resources such as YouTube tutorials and reputable educational websites. “Generative AI doesn’t provide accurate information you’re looking up to. I directly use YouTube or look it up on reliable websites to avoid false information,” she explained.

Jenny’s reluctance to fully integrate AI into assessment design stems from her critical awareness of the reliability issues associated with AI-generated content. As she works with younger learners, she recognizes that assessments in elementary education require high levels of accuracy, contextual appropriateness, and developmental sensitivity, areas where AI tools sometimes fall short. “AI tools should not always be the source of every information we use in our daily lives and in our education,” she emphasized, demonstrating a strong sense of professional responsibility even at this early stage in her career.

Nevertheless, Jenny acknowledges the potential role of AI tools as supplementary resources that could assist teachers in assessment design. She noted that generative

AI can offer general templates or suggestions that might inspire the creation of appropriate assessments. “Generative AI tools provided me with lists of proper evaluations to make, categorized by the situations I am facing,” she explained. While she does not rely on AI outputs directly, she sees value in using them as starting points for further refinement through her own professional judgment.

Unlike some of her peers, Jenny did not express major concerns about ethical issues such as bias or over-reliance, primarily because her engagement with AI remains limited and highly selective. However, her approach reflects a healthy skepticism that teacher educators often encourage, emphasizing human expertise over uncritical dependence on technology, especially in the sensitive context of assessing young learners whose developmental needs vary widely.

When asked how AI tools might be improved for educational assessment, Jenny offered no immediate technical suggestions but instead focused on the role of teacher education programs. She stressed that pre-service teachers need structured training that starts by developing a foundational understanding of AI’s capabilities and limitations. “Teacher education programs must first teach pre-service teachers the efficiency, accuracy, and reliability of the tool, as well as the benefits and disadvantages of using AI tools,” she recommended. Only after this foundational literacy is established, she added, should pre-service teachers be trained on how to responsibly integrate AI tools into assessment practices.

Jenny’s perspective represents a reflective and measured approach to AI integration in teacher education. Her case underscores the importance of critical evaluation, resource verification, and professional discernment, key competencies that are essential for pre-service teachers preparing to work with diverse learners in elementary classrooms. While she remains open to the possibilities of AI in supporting assessment design, Jenny’s cautious stance serves as a reminder that technology must remain subordinate to pedagogical expertise and ethical considerations.

## **5 Generative AI as a Formative and Summative Assessment Tool**

Generative AI has emerged as a transformative force in the domain of educational assessments, offering significant advantages in both formative and summative evaluation processes. In the context of teacher education in the Philippines, AI-driven tools are increasingly employed to enhance learning experiences and improve assessment efficiency, accuracy, and inclusivity. This section explores the applications of generative AI in formative and summative assessments, with a particular focus on its potential to foster authenticity and creativity while addressing the challenges associated with its use.

## 5.1 *AI-Driven Formative Assessment*

Formative assessments aim to monitor and support student learning by providing immediate and constructive feedback. Generative AI has proven to be a valuable asset in this regard, enabling educators to design interactive and adaptive assessments that cater to diverse learner needs.

**Immediate Feedback Mechanisms.** One of the key strengths of AI-driven formative assessments lies in their ability to deliver real-time feedback [51]. AI tools such as ChatGPT, Quillionz, and Quizizz are increasingly utilized by pre-service teachers to create quizzes, concept checks, and simulations that adapt to individual student performance. For example, when a pre-service teacher designs a quiz using an AI-powered tool, the system can provide instant feedback on each question, highlighting areas of improvement and reinforcing correct answers [52]. This immediate response fosters a deeper understanding of concepts and enables learners to address misconceptions early.

In simulations, generative AI offers a dynamic environment where pre-service teachers can practice classroom management scenarios or experiment with lesson delivery techniques. Tools like Mursion provide virtual simulations that use AI-generated avatars to mimic student behavior, allowing educators to refine their teaching strategies in a risk-free setting [53].

**AI-Based Reflective Practice Tools.** Reflection is a cornerstone of teacher education, and AI tools are facilitating this process through personalized insights [54]. Platforms such as Edthema and GoReact employ AI to analyze teaching videos uploaded by pre-service teachers, offering data-driven feedback on aspects like pacing, tone, and use of instructional strategies [55, 56]. These insights not only support reflective practice but also encourage the continuous improvement of teaching competencies.

AI-based reflective tools also promote metacognition by guiding pre-service teachers to evaluate their learning progress and set actionable goals. For instance, an AI-driven journaling tool might prompt educators to document their reflections on lesson delivery, identifying areas for growth and celebrating successes [57].

## 5.2 *AI in Summative Assessment*

Summative assessments evaluate student learning at the end of an instructional period, often determining whether specific learning objectives have been achieved. Generative AI tools are increasingly employed to streamline summative assessment processes while ensuring fairness and consistency.

**Automation in Essay Grading and Performance Evaluations.** AI-driven tools such as Gradescope and Turnitin are revolutionizing essay grading by automating the evaluation process. These platforms analyze linguistic patterns, coherence, and alignment with rubrics to generate scores, saving educators significant time and effort. In

performance evaluations, AI tools can analyze video recordings of teaching demonstrations, assessing criteria like engagement strategies, classroom management, and instructional clarity [58].

Comprehensive exams, which are integral to many teacher education programs, also benefit from AI integration. Generative AI can generate customized test questions, analyze student responses, and provide detailed performance analytics. For instance, an AI system might identify patterns in incorrect answers, suggesting targeted interventions to address learning gaps [59].

**Balancing AI-Driven Scoring with Human Judgment.** While the automation of summative assessments offers numerous benefits, it is essential to balance AI-driven scoring with human judgment to ensure fairness and equity. AI tools may struggle to account for nuanced or creative responses that deviate from predefined patterns but are equally valid. For example, a student's innovative teaching strategy might not align with an AI's scoring algorithm, requiring a human evaluator to recognize its merit [60].

To address this limitation, many institutions adopt a hybrid approach, where AI-generated scores are complemented by human oversight [61]. This ensures that assessments are both efficient and reflective of diverse learner strengths, fostering a more inclusive educational environment.

### ***5.3 Authenticity and Creativity in AI-Driven Assessments***

Generative AI tools have the potential to enhance authenticity and creativity in assessments by encouraging pre-service teachers to develop original lesson plans, teaching strategies, and instructional materials. However, these benefits must be balanced against the risks of over-reliance on AI-generated outputs.

**Promoting Originality in Lesson Plans and Strategies.** AI tools like Canva AI and Notion AI are empowering pre-service teachers to create visually engaging and pedagogically sound lesson plans. Generating templates, activity ideas, and multimedia content, these tools serve as catalysts for creativity. For example, a pre-service teacher specializing in science education might use an AI tool to design an interactive lesson on climate change, incorporating virtual simulations and real-time data analysis [62].

AI tools also support the development of innovative teaching strategies by analyzing student data and suggesting personalized approaches [25]. For instance, an AI system might recommend differentiated instruction techniques based on the learning profiles of individual students, enabling pre-service teachers to address diverse classroom needs effectively [63].

**Mitigating Risks of Over-Reliance on AI.** Despite their benefits, generative AI tools pose the risk of fostering dependency among pre-service teachers, potentially undermining their critical thinking and creativity. To mitigate this, teacher education programs must emphasize the importance of using AI as a supportive tool rather than a replacement for human ingenuity. For example, educators might require pre-service

teachers to justify their use of AI-generated lesson plans, demonstrating how they adapted the outputs to align with their instructional goals and contexts [54, 64].

Another challenge lies in ensuring the authenticity of AI-driven assessments [65]. Pre-service teachers must be trained to critically evaluate AI-generated content, verifying its accuracy and relevance to avoid the dissemination of misinformation. Institutions can address this by integrating digital literacy training into their curricula, equipping educators with the skills needed to navigate and critique AI outputs responsibly [11, 61].

Generative AI holds immense promise as a formative and summative assessment tool in Philippine teacher education. Providing immediate feedback, streamlining grading processes, and fostering creativity, AI tools enhance the quality and efficiency of assessments. However, their integration must be guided by a commitment to fairness, authenticity, and the development of critical thinking. With the right balance of innovation and oversight, generative AI can transform assessment practices, preparing pre-service teachers to thrive in an increasingly digital educational landscape.

## 6 Ethical and Practical Considerations in AI-Based Assessments

The integration of generative AI into teacher education assessment practices introduces ethical and practical challenges that must be carefully addressed to ensure equitable and responsible use. Bias in AI tools, concerns about academic integrity, and the need for teacher training are key areas requiring attention. This section explores these dimensions, offering insights and recommendations for navigating the complexities of AI-based assessments in Philippine teacher education.

### 6.1 *Bias in AI Assessment Tools*

One of the most pressing ethical concerns in AI-driven assessments is the presence of bias, which can perpetuate inequities and undermine cultural sensitivity. AI algorithms are trained on large datasets that may inadvertently reflect the biases present in the data, leading to unfair outcomes.

**Addressing Inequities in AI-Based Assessments.** AI tools often struggle to accommodate the cultural, linguistic, and contextual diversity of learners, particularly in multicultural settings like the Philippines [66]. For example, an AI tool trained predominantly on Western educational data might misinterpret or undervalue culturally specific teaching approaches used by Filipino pre-service teachers. Such biases can result in lower assessment scores or less constructive feedback for those who deviate from the AI's normative framework [67].

To mitigate these inequities, it is essential to ensure that AI systems are trained on diverse datasets that represent the unique educational contexts of the Philippines [68]. Collaboration between local universities, AI developers, and educational policymakers can help create culturally sensitive AI models [69]. Additionally, pre-service teachers should be encouraged to provide feedback on AI tools, highlighting instances where the system fails to align with local practices and values [70].

**Ensuring Cultural Sensitivity.** Cultural sensitivity in AI assessments extends beyond dataset diversity to include the design and implementation of AI tools [71]. Developers must work closely with educators to ensure that AI-generated feedback respects the cultural and pedagogical norms of Filipino classrooms. For instance, AI tools evaluating lesson plans should recognize the use of indigenous languages or culturally relevant teaching materials as strengths rather than anomalies. Prioritizing cultural inclusivity, AI tools can better support the professional development of pre-service teachers in diverse educational settings [72].

## 6.2 *Academic Integrity and AI Usage*

The growing reliance on AI in education raises concerns about academic integrity, particularly in relation to plagiarism and the ethical use of AI-generated content. These challenges necessitate a dual focus on detection and education.

**Plagiarism Detection in AI-Based Assessments.** Generative AI tools like ChatGPT and Jasper AI are capable of producing high-quality written content, which pre-service teachers might be tempted to submit as their own work. This poses a significant threat to academic integrity, as the misuse of AI tools undermines the authenticity of assessments. AI-powered plagiarism detection tools, such as Turnitin's AI Writing Detection feature, play a crucial role in identifying instances of unoriginal work. These tools analyze text for patterns indicative of AI-generated content, helping educators uphold academic standards [73].

However, reliance on detection tools alone is insufficient. Institutions must foster a culture of ethical AI use by educating pre-service teachers about the boundaries of acceptable AI assistance. Clear guidelines should be established to distinguish between appropriate collaboration with AI tools and academic dishonesty [48, 61]. For example, students might be permitted to use AI for brainstorming or refining ideas but required to substantiate their work with original analysis and critical thinking [25].

**Fostering Ethical AI Use.** Ethical AI usage in assessment extends beyond plagiarism to encompass broader principles of responsible technology use. Pre-service teachers must be trained to critically evaluate AI-generated outputs, recognizing their potential limitations and biases [70, 74]. For instance, an AI-generated lesson plan might provide a solid foundation but require human intervention to ensure alignment with specific learning objectives and student needs [75].

Institutions can promote ethical AI use by integrating digital literacy and ethics courses into teacher education programs [69]. These courses should emphasize the

importance of transparency, accountability, and the responsible use of AI in educational settings. Role-playing scenarios and case studies can further enhance understanding by allowing pre-service teachers to explore the ethical dilemmas associated with AI-based assessments.

### 6.3 *Practical Recommendations*

To fully realize the potential of AI-based assessments while addressing ethical concerns, teacher education programs must equip pre-service teachers with the skills and knowledge needed to navigate this evolving landscape.

**Training Pre-service Teachers to Critically Evaluate AI Outputs.** One of the most practical steps in promoting ethical AI use is training pre-service teachers to critically assess AI-generated content. Workshops and hands-on activities can help educators identify the strengths and limitations of AI tools, enabling them to make informed decisions about their use [74]. For instance, a workshop on AI-driven feedback might involve comparing AI-generated comments with human feedback, highlighting discrepancies and discussing ways to address them [29].

Critical evaluation skills also involve understanding the algorithms behind AI tools. While pre-service teachers do not need to become data scientists, a basic awareness of how AI systems function can enhance their ability to identify and mitigate biases. Institutions might offer introductory courses on AI principles, focusing on topics such as algorithmic bias, data ethics, and interpretability [25].

**Developing Guidelines for AI Integration.** Clear institutional guidelines are essential for ensuring the ethical and effective use of AI in assessments [69]. These guidelines should address key questions such as:

- What constitutes acceptable use of AI tools in assignments and assessments?
- How should pre-service teachers disclose their use of AI tools?
- What steps should educators take to validate AI-generated content?

For example, a guideline might stipulate that students include an “AI usage statement” in their submissions, detailing how they employed AI tools in their work. This promotes transparency and encourages reflective practice [76].

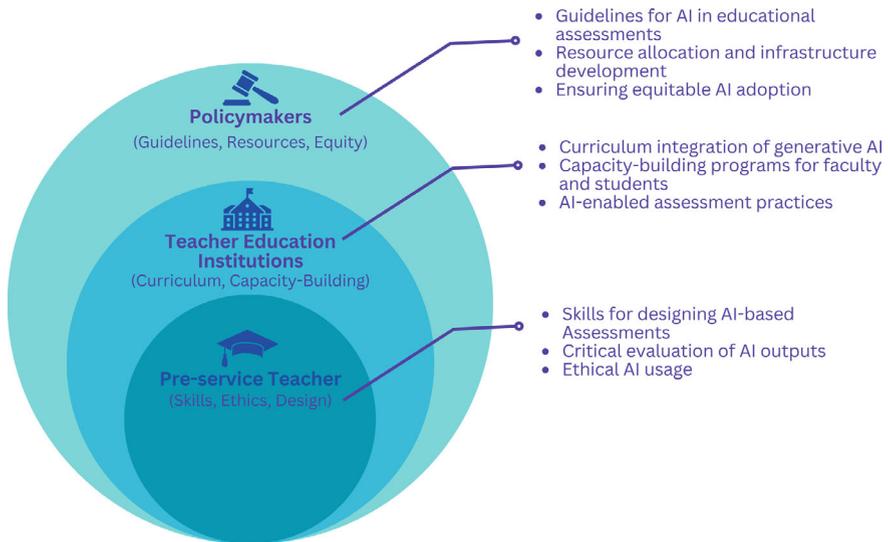
**Promoting Collaborative Approaches to AI Implementation.** Collaboration among stakeholders is crucial for addressing the practical challenges of AI-based assessments [77]. Universities, policymakers, and AI developers must work together to create tools that align with the needs of teacher education programs. Regular consultations with pre-service teachers and faculty can provide valuable insights into the effectiveness of AI tools, ensuring continuous improvement.

Additionally, international collaboration can help Philippine institutions stay abreast of global best practices in AI-based assessments. Partnerships with universities in countries with advanced AI adoption can facilitate knowledge sharing and capacity building, ultimately enhancing the quality of teacher education in the Philippines [78].

Generative AI holds great promise for transforming teacher education assessments, but its integration must be guided by a strong ethical framework and practical considerations. Addressing bias, fostering academic integrity, and equipping pre-service teachers with critical evaluation skills are essential steps in ensuring the responsible use of AI in assessments. Adopting these strategies, Philippine teacher education programs can harness the potential of AI to enhance learning outcomes while upholding the values of equity, transparency, and accountability.

## 7 Policy and Practice Implications

The integration of generative AI into teacher education assessments carries significant implications for institutions, policymakers, and pre-service teachers. This section outlines actionable recommendations to support the effective and equitable adoption of AI-based assessments in Philippine teacher education, ensuring that these technologies enhance learning while addressing challenges related to infrastructure, equity, and ethical considerations (see Fig. 1).



**Fig. 1** Layered framework for practice and policy implications in AI-based assessments

## 7.1 For Teacher Education Institutions

**Integrating Generative AI in Curriculum-Based Assessments.** Teacher education institutions must embrace generative AI as a transformative tool for assessment design and implementation [48, 74]. This requires a shift from traditional assessment models to those that leverage AI for formative and summative evaluations. Institutions should consider embedding AI tools into their courses, particularly those focused on pedagogy, assessment strategies, and instructional technology [68].

For example, AI-driven platforms such as adaptive testing systems can provide real-time feedback on student performance, allowing pre-service teachers to identify areas for improvement. In microteaching sessions, AI can be used to evaluate teaching strategies, offering data-driven insights into classroom management, content delivery, and engagement techniques. Incorporating such tools into the curriculum allows institutions to prepare future educators to harness AI effectively in their professional practice [25].

**Capacity-Building for Faculty and Students in AI Use.** The successful adoption of AI tools hinges on the readiness of faculty and students. Capacity-building initiatives should focus on enhancing digital literacy and fostering a critical understanding of AI's capabilities and limitations. Faculty development programs can equip educators with the skills to integrate AI tools into their teaching and assessment practices, while workshops and seminars for students can demystify AI technologies [79].

For instance, institutions could organize training sessions on using AI-powered platforms for lesson planning, reflective practice, and automated grading. These sessions should emphasize ethical considerations, such as avoiding over-reliance on AI-generated outputs and ensuring transparency in assessment processes. Faculty and students must also be trained to interpret AI-generated feedback, using it as a supplement rather than a replacement for human judgment [78].

## 7.2 For Policymakers

**Guidelines for AI Use in Educational Assessments.** Policymakers play a critical role in establishing the regulatory framework for AI integration in education. Clear and comprehensive guidelines are needed to address the ethical, pedagogical, and technical aspects of AI-based assessments. These guidelines should specify acceptable uses of AI in formative and summative evaluations, outline procedures for ensuring data privacy, and promote transparency in AI operations.

For example, DepEd and CHED in the Philippines could collaborate to develop a national framework for AI adoption in teacher education. This framework might include provisions for the accreditation of AI tools, criteria for their ethical use, and strategies for mitigating biases in AI-driven assessments. Providing a standardized approach, policymakers can ensure that AI technologies are deployed responsibly and equitably across institutions [61].

**Resource Allocation to Support Equitable AI Adoption.** Equitable access to AI tools is essential to prevent disparities between well-funded and resource-constrained institutions. Policymakers must allocate resources to support the infrastructure needed for AI integration, including hardware, software, and internet connectivity [25].

In addition to financial investments, partnerships with private technology firms can provide schools with access to state-of-the-art AI tools. For instance, policymakers might negotiate agreements with tech companies to offer free or subsidized AI software to teacher education institutions. Furthermore, targeted funding for rural and underserved areas can help bridge the digital divide, ensuring that all pre-service teachers benefit from AI-enhanced learning opportunities [70].

### *7.3 For Pre-service Teachers*

**Developing Critical Skills for Designing and Evaluating AI-Based Assessments.** Pre-service teachers must be equipped with the skills to design and critically evaluate AI-based assessments. This involves understanding the principles of effective assessment, recognizing the potential biases in AI-generated feedback, and ensuring the alignment of AI tools with learning objectives [72].

Teacher education programs should incorporate modules on AI literacy, focusing on how to integrate AI into lesson planning, classroom assessments, and reflective practices. For example, pre-service teachers could engage in hands-on projects where they design AI-enhanced quizzes or analyze AI-generated feedback to identify gaps and inconsistencies. These activities foster a critical mindset, enabling future educators to use AI as a supportive tool rather than a prescriptive authority [29].

Moreover, pre-service teachers should be encouraged to reflect on the ethical dimensions of AI in education [70]. Discussions on topics such as data privacy, algorithmic transparency, and the risks of over-reliance on AI can deepen their understanding of the broader implications of technology in teaching. Developing these critical skills will better prepare pre-service teachers to navigate the challenges and opportunities of AI-based assessments in their future careers.

## **8 Conclusion**

The integration of generative AI into teacher education assessments presents both remarkable opportunities and complex challenges. This chapter has demonstrated how pre-service teachers are already leveraging AI tools to enhance assessment design, streamline feedback, and support diverse learner needs across disciplines. Case studies revealed the potential of AI to foster efficiency, creativity, and personalization in formative and summative assessment practices.

However, successful implementation depends on addressing significant barriers, including infrastructural gaps, ethical risks, and cultural contextualization. Without equitable access to reliable internet, updated hardware, and localized AI content, many institutions, particularly in rural and underserved areas, risk being left behind. Furthermore, issues related to algorithmic bias, academic integrity, and over-reliance on AI-generated outputs underscore the need for robust ethical frameworks and ongoing educator training.

While this chapter provides initial insights, several limitations should be acknowledged. The findings are based on qualitative data drawn from six pre-service teachers in the Philippine context. As such, the sample size and scope may limit generalizability across broader populations or international contexts. Moreover, the study relied primarily on self-reported experiences, which may be shaped by participants' varying levels of familiarity and exposure to AI tools. Future research may consider larger, more diverse participant samples, cross-institutional comparisons, and mixed-method or longitudinal designs to explore the evolving role of generative AI in teacher education assessments more comprehensively.

Looking forward, Philippine teacher education institutions must adopt comprehensive strategies that combine technological investment with policy development, capacity-building, and interdisciplinary research. Collaboration among policymakers, educational leaders, technology developers, and teacher educators will be critical to ensure that generative AI strengthens, rather than undermines, the quality, equity, and integrity of assessment practices.

By equipping future educators with both technical proficiency and ethical discernment, the Philippine teacher education system can harness the transformative potential of AI while safeguarding its pedagogical mission. In doing so, it can contribute meaningfully to global efforts in reimagining assessment for a rapidly evolving educational landscape.

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