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| RESEARCH ARTICLE

Artificial Intelligence and the Future of Asynchronous Online Teacher Education

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| ABSTRACT

Artificial intelligence (AI) is forcing higher education, and online teacher preparation in particular, to confront difficult questions about integrity, equity, and the very purpose of professional preparation. Online programs have long been valued for their flexibility and accessibility; however, the rise of generative AI (Gen AI) challenges assumptions about what it means to learn, to demonstrate competence, and to become a teacher. This paper examined how AI disrupts online teacher education, raising urgent concerns while offering pedagogical possibilities. The most pressing risks involve the temptation for students to let AI complete their work, the inaccuracy of detection systems that can create unfair accusations, and the persistence of inequities for those with limited access to digital tools. These challenges represent the core of instruction, questioning how educators can design tasks that promote authentic engagement and ensure learning outcomes are met. If left unaddressed, such weaknesses could undermine the credibility of online teacher education at a time when it has already faced skepticism. At the same time, AI offers powerful new avenues for teaching and learning. It can provide adaptive feedback, tailor learning to individual needs, support continuous access to resources, and create rich simulations for practicing essential teaching skills. Approaches such as field -based assignments and pedagogy such as project-based learning, are conducive to AI integration while preserving human-centered, real-life learning experiences that prepare candidates for effective teaching. This paper concludes that the future of online teacher education depends on finding a balance between innovation and accountability, using AI to enrich learning and expand opportunities while ensuring authentic, ethical, and human-centered pedagogy remains central, so programs prepare competent teachers rather than becoming degree mills.

| KEYWORDS

Online teacher education, asynchronous teacher preparation, artificial intelligence, plagiarism, accountability, effective teachers

| ARTICLE INFORMATION

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1. Introduction

Are teacher educators preparing capable teachers, or becoming a factory of degrees largely produced by artificial intelligence (AI)? As flexible, asynchronous teacher preparation programs expand, the use of generative AI (Gen AI) has raised concerns about whether students are truly developing the knowledge and skills needed for effective teaching. Online teacher preparation programs may be facing a crisis as AI tools challenge how learning is measured and demonstrated. Although Gen AI offers potential to support learning, heavy reliance on it makes it difficult to determine if candidates understand the material or are simply completing tasks with AI assistance. This lack of clarity risks weakening academic integrity, especially when candidates rely on AI to produce assignments, reflections, and discussions. Teacher preparation requires the development of complex, human-centered skills such as critical thinking, decision making, and relational practice, which cannot be replaced by AI. This skill development is especially challenging in online formats where instructors have fewer opportunities to observe, interact with students, and verify their progress. As a result, designing assignments that AI cannot easily complete has become increasingly difficult, particularly when tasks such as written reflections or lesson plans can be generated by AI tools in seconds. Without intentional redesign, asynchronous online programs risk becoming degree mills certifying candidates whose learning is performed largely by AI. This risk raises significant concerns about program credibility, professional readiness, and the future of teacher education.

This article reviews existing literature and poses critical issues and questions teacher educators may consider when planning and delivering teaching degrees online. It also presents ideas and recommendations based on experiences teaching and developing online courses, and it offers both AI-integrated and non-AI-integrated options that increase the chances that teacher candidates develop the skills and knowledge needed to serve all students.

2. Literature Review

In recent years, many have praise the flexibility of online programs for expanding access to higher education (Plantak & Štefotič, 2024; Dello Stritto, Underhill, & Aguiar, 2024; Terras, Mahar, Chiasson, Schroeder, & Baker, 2018; Murphy & Coleman, 2004). The COVID-19 global pandemic significantly increased the prevalence of online learning in higher education, with over 14 million postsecondary students, or 75% of the total, taking online classes in Fall 2020 compared to 36% in Fall 2019 (Abri & Elhaj, 2025). According to the Quality Matters et al. CHLOE 10 report (2025), based on a study of 250 senior online leaders (i.e., chief online learning officers) representing their institutions across the United States, nearly 9 in 10 institutions (88%) planned to expand their online offerings within the next 3 years. The report also found that demand for online programs rose across student groups, with 74% of graduate students reporting increased interest, 66% of adult undergraduates, and 60% of traditional-age undergraduates. However, traditionally, this flexibility has also introduced significant challenges that may impact the development of essential pedagogical skills, including meaningful social interaction and hands-on learning experiences (Dell et al., 2008; Faulk, 2010).

In the past, general research comparing synchronous and asynchronous modalities in higher education has highlighted benefits and limitations. Authors have emphasized that synchronous learning, where teachers deliver instruction via platforms such as Zoom, offers real-time interaction and immediate feedback, which can increase student engagement (Padaguri & Pasha, 2021). However, this modality also presents challenges such as limited flexibility, difficulty keeping pace with the instructor, technical issues, and distractions like background noise (Lin & Gao, 2024; Padaguri & Pasha, 2021). Asynchronous learning, on the other hand, where students learn course content without immediate connection with the instructor, allows students to work at their own pace and review content multiple times, potentially fostering deeper reflection and self-directed learning. Yet, this mode may lead to limited degrees of student engagement, delayed feedback, and reduced social interaction, contributing to feelings of isolation; decreased motivation; and superficial participation, for example, in online discussions (Lin & Gao, 2024; Lydia et al., 2023; Murphy & Coleman, 2004).

In response to these concerns, scholars and instructional designers have emphasized the importance of high-quality online course design. In a qualitative research study conducted through a comprehensive literature review to determine a set of quality guidelines and an analysis of existing online courses to assess the application of these guidelines, key recommendations were identified (Abri & Eljah, 2025). These recommendations included thoughtful selection and organization of content (Cuesta, 2010; Gunder et al., 2021), logical course structure (Beach, 2018), and the incorporation of interactive elements to increase student engagement (Gilbert & Moore, 1998). Authentic assessments; clear instructions; and timely, constructive feedback are also crucial components of effective online instruction (Dabbagh et al., 2019). Foundational frameworks such as constructivism (Bergstrom-Lynch, 2019), backward design (Abuhassna & Alnawajha, 2023; Wiggins & McTighe, 2005), and Universal Design for Learning (UDL; Bedir, 2022; CAST, 2018; Nieves et al., 2019) can help ensure accessibility and equity for all learners. Instructors are encouraged to clearly define learning objectives, select engaging and relevant content, organize materials coherently, and adopt user-friendly technologies (Boettcher & Conrad, 2021; O'Keefe et al., 2020).

Online program development has made significant progress in ensuring learning by incorporating these effective approaches; however, the use of AI in higher education has complicated the landscape of delivering programs through this modality. According to the Quality Matters CHLOE 10 Report (2025), AI is an area of uneven progress among institutions of higher education. Although 84% of institutions view AI investments as important for online education, nearly 10% still lack a strategy. Current AI use is focused on operations, with 49% applying it to workload reduction and 46% to course preparation, whereas fewer institutions have adopted AI for student-facing support such as advising or personalized learning. This gap between operational and instructional uses highlights the ongoing tension institutions face in moving from efficiency-driven applications of AI to practices that directly enrich teaching and learning. AI tools may offer many benefits for online education, such as personalized instruction where faculty can tailor content and interaction using chatbots or provide students with 24/7 support (Lydia et al., 2023). In this case, AI tools may provide responsive guidance that supplements faculty interaction and helps candidates engage more deeply with the material.

For instance, AI tools enable faculty to deploy custom chatbots as "AI teaching assistants," through which candidates can engage in personalized dialogue. These chatbots can automatically respond to frequently asked questions about presented content or supplementary materials, helping them build a deeper understanding or expertise (Brooks & Grady, 2025; Goel, 2016). This

model has been tested outside teacher education by faculty at the University of Toronto's faculty, who deployed a system called All Day TA to train on their course materials; over 1 semester, All Day TA addressed 12,000 student queries across 300 students, delivering instant, curriculum-aligned support and freeing instructors to focus on mentoring (Gans & Bryan, 2025).

These potential advantages are accompanied by significant student concerns that must not be overlooked. In a 2024 study, Plantak and Štefotič found students identified several key concerns about using tools like ChatGPT: doubts about the credibility of AI-generated content (125 responses), fear of becoming overly dependent on AI (76 responses), limited understanding of how AI works (60 responses), and worries about data privacy (48 responses). Additional open-response concerns included the spread of inaccurate or manipulated information, the belief that AI tools stifle creativity, and ethical risks posed by unregulated AI use. These findings highlighted the urgent need for clear guidelines and ethical frameworks for integrating AI into education, and more specifically, in online learning contexts. Although the literature on the extent of cheating in online courses in the age of AI remains inconclusive, pregenerative AI research had already indicated a substantial problem (Dendir & Maxwell, 2020; Norris, 2019; Sullivan, 2016).

These longstanding concerns have only intensified with the integration of AI and Gen AI tools into education. In their 2024 study, which surveyed more than 600 students who took at least one online course, Dello Stritto et al. (2024) found students feared increased academic dishonesty, plagiarism, and the erosion of educational value. Many also expressed concerns about becoming overly dependent on AI, potentially undermining the development of their own skills, and about the spread of inaccurate or biased information generated by these tools. These concerns also raise critical questions about the authenticity and effectiveness of learning in online teacher preparation programs.

In addition, a recent report from the American Association of University Professors (AAUP, 2025), compiled by its ad hoc Committee on Artificial Intelligence and Academic Professions, highlighted faculty concerns about AI's impact on education. More than 60% of faculty said AI has worsened classroom conditions, and 76% reported lower job enthusiasm, pointing to heavier workloads, increased surveillance, and threats to academic freedom. These reactions suggested many faculty view AI as a disruptive innovation (Christensen, 1997), but this view may overlook how AI can also expand access to education for people who were previously excluded, helping to promote greater equity. This trend has created a dilemma for educators: their professional standards may lead them to resist a technology that is likely to improve quickly and attract new groups of students and teachers. In response, the AAUP has urged institutions to set up faculty-led AI oversight committees, develop opt-out policies for AI use, and strengthen protections for intellectual property and labor rights. The AAUP report also called for practical resources, such as bargaining guides and organizing tools, to ensure faculty can shape AI policy instead of being pushed aside. As these larger concerns develop, it is also important to examine how the growth of AI impacts online teacher education, a field still working to prove itself as a credible and effective alternative to traditional preparation models.

3. Online Teacher Education and the Emergence of AI

Online teacher education programs have demonstrated significant effectiveness as a viable alternative to traditional campus-based teacher preparation. Studies have shown that students completing online programs can be as well prepared to teach as their on-campus counterparts, with positive outcomes confirmed through student teaching evaluations, faculty observations, and student grades (Dell et al., 2008). These programs are particularly effective in alleviating teacher shortages, especially in rural areas, by providing accessible pathways to licensure for adults tied to their communities (Dell et al., 2008; Terras et al., 2018; Wighting, 2017). Alumni of online programs have shown high retention rates in the profession, with one case study reporting an 82% retention rate after 5 years, impacting children's learning successfully (Wighting, 2017). The flexibility and convenience offered by online delivery methods are highly valued by teacher candidates, allowing them to pursue new careers without leaving their current employment or communities (Fedynich et al., 2015; Wighting, 2017). Furthermore, online environments, particularly through asynchronous discussions, can foster critical thinking and deep learning (Bowden, 2012; Murphy & Coleman, 2004). AI tools, such as ChatGPT, Magic school AI, and Diffit, hold promise for personalizing learning experiences and enhancing teaching methods for future educators (Alexandrowicz, 2024; Plantak & Štefotič, 2024). Among the necessary elements for effective online education, communication, characterized by being ongoing, timely, and varied, has been identified as paramount for student connectivity and retention (Fedynich et al., 2015; Terras et al., 2018).

Despite these benefits, concerns persist about the effectiveness of online teacher education. A survey of public-school administrators, who are key employers, revealed overwhelmingly negative perceptions regarding online teacher education (Faulk, 2010). Many administrators expressed moderate-to-strong reservations about hiring teachers primarily trained online. Specific areas of concern included the ability of online programs to adequately prepare teachers in classroom management, student diversity and special needs, social aspects of teaching, and teacher methodology and pedagogy. These critics argued

that teaching is a "human services profession" requiring extensive face-to-face interaction and hands-on engagement, which online instruction may not provide sufficiently (Faulk, 2010).

In addition, concerns about the effectiveness of preparing teachers online are diverse, stemming from both the nature of online learning and the emerging challenges with AI integration. A key issue in online-only programs is the isolation students may experience, finding it difficult to build relationships with peers and faculty, even when they desire high connectivity with instructors and advisors (Terras et al., 2018). The absence of quality communication can lead to disconnection (Terras et al., 2018). Students in synchronous online courses might struggle to keep up with fast-paced instruction and be distracted by background noise (Lin & Gao, 2024), whereas asynchronous learning can lead to feelings of social isolation, a lack of immediate feedback, and a sense that students do not fully grasp content through self-learning or are overwhelmed by coursework (Lin & Gao, 2024). Technical issues, like slow internet speeds and fatigue from prolonged screen time, may also negatively impact the learning experience (Lin & Gao, 2024). With the rapid advancement of AI, a major concern is that teacher preparation programs are lagging in adapting to new AI demands, often addressing AI with a narrow focus (Weiner et al., 2024). Specific to AI, there remains apprehension about biased or inaccurate AI responses, requiring continuous human oversight, and the problem of plagiarism has been amplified by unreliable detection tools (Alexandrowicz, 2024).

The integration of AI into teacher preparation programs is still in its early stages, with many programs narrowly focusing on plagiarism prevention rather than leveraging AI for transformative teaching practices. A significant challenge is the lack of confidence among teaching faculty in using and integrating AI into their instruction, alongside indifference or resistance to these new technologies (Weiner et al., 2024). For instance, The Center on Reinventing Public Education (CRPE) surveyed over 500 institutions, finding more than two thirds of education schools lacked any policies on AI tool use, and where policies existed, they were typically limited to academic-dishonesty rules (e.g., plagiarism) only (Weiner et al., 2024). Despite this policy vacuum, about 80% of programs planned to expand their AI coursework or offerings, although nearly 1 in 5 had no intentions to enhance instruction. At the state level, only a handful of states, such as California, Oregon, North Carolina, and Virginia, have issued formal AI guidelines, creating a patchwork of fragmented strategies across the country. The CRPE's report urged coordinated action from schools of education, accrediting bodies, policymakers, philanthropies, and researchers, recommending investments in preservice programs already "ahead of the curve," alternative models like residencies and microcredentials, state policy reform, and university–district partnerships to build scalable AI literacy and pedagogy for future teachers (Weiner et al., 2024).

Although this lack of coherent policy and faculty readiness limits the transformative potential of AI in teacher preparation, it has also intensified concerns about academic integrity in online education, where AI use intersects with evolving forms of academic misconduct. Academic integrity is a growing global challenge in online teacher education, and research has shown prevalent "misconduct" in teacher education. For instance, research has shown that cheating rates in online examinations for future educators increased significantly from 29.9% prepandemic to 54.7% during remote learning. This type of misconduct extends beyond simple plagiarism to more complex forms like contract cheating, which has surged to a reported 15.7% of students after 2014 (Vallespir Adillón, 2024).

The rise of Gen AI has further complicated the landscape for teacher education programs, with its use among teachers and students reaching 67% and 70%, respectively, by the 2023–2024 school year (Center for Democracy & Technology, 2025). This change has led to an overreliance on AI detection tools, which are often unreliable, prone to false accusations, and have been shown to disproportionately flag the work of nonnative English speakers, students with disabilities, and Black students (Klein, 2024; University of Illinois, 2024). Rather than viewing cheating as a simple ethical failure, researchers have suggested that many students frame it as a pragmatic strategy to mitigate the "dire" academic and financial risks of failure, which are amplified by high-stakes assessments (McIntire et al., 2024).

In response, a more effective approach for teacher education focuses on proactive prevention through pedagogical innovation, such as the use of frequent, low-stakes assessments and scaffolded assignments that foster intrinsic motivation and make dishonesty less appealing (University Center for Teaching and Learning, n.d.). Rather than viewing AI use as inherently dishonest, policy and pedagogy should evolve to help students integrate these tools in ways that support lifelong learning and professional growth (Balalle & Pannilage, 2025; Eaton, 2023; Sharma & Panja, 2025). It is essential to emphasize that AI tools at one's fingertips rarely substitute for informed instructional or management decisions—especially in the fast-paced context of real classrooms. Faculty should collaborate to design creative assignments that reinforce the value of foundational pedagogical competencies, from well-prepared interview readiness to lesson design and assessment planning grounded in theory and aligned with student needs. Educational guidance now recommends moving beyond policing plagiarism toward nurturing principled judgment—a

process-oriented integrity that encourages reflection, disclosure, and the responsible use of AI (Balalle & Pannilage, 2025; Eaton, 2023; Sharma & Panja, 2025). By reframing assignments to reward process documentation, revision logs, and transparent AI use, instructors underscore the importance of authenticity in professional practice.

In terms of pedagogy, simulations have gained traction in general preservice teacher education by offering sustained, varied, and safe opportunities to rehearse and receive feedback on foundational professional skills such as lesson planning and implementation, classroom management, ethical reasoning, and teaching students with diverse learning needs (Bradley & Kendall, 2014; Girod, 2002). However, when it comes to virtual simulations for teacher practice, several limitations emerge. Technical constraints remain a major challenge, as avatars may not fully replicate physical interactions, and technical glitches can be mistaken for pedagogical shortcomings (Lindberg & Jönsson, 2023). In addition, questions persist about the generalizability of findings from North American contexts to other educational systems (Lindberg & Jönsson, 2023). Concerns also arise around teacher candidates' ability to accurately evaluate their own or peers' performance in virtual environments, where perceptions of authenticity are often mixed (Luke et al., 2021). Finally, the reliance on human operators to control student avatars in most digital teaching simulations restricts both scalability and cost effectiveness (Mikeska & Bhatia, 2025).

To complement these integrity-focused strategies, teacher education programs have increasingly turned to experiential methods such as simulations, which allow candidates to apply knowledge and practice decision making in realistic yet controlled environments. Simulation environments allow teacher candidates to bridge theory and practice more readily, enabling repeated enactments without placing real students at risk (Carrington et al., 2011; Hixon & So, 2009; Kaufman & Ireland, 2016). According to Mikeska and Bhatia (2025), recent technological advances in GenAI have led to new opportunities for developing and using GenAI digital teaching simulations to support teacher learning. In their study on teachers' engagement in and perspectives about one GenAI simulation designed to support them in learning how to elicit student thinking a created GenAI digital teaching simulation, Mikeska and Bhatia found positive findings regarding effectiveness. Findings suggested teachers who took part in the study highly valued the GenAI simulation for practicing questioning strategies and interpreting student responses. Teachers also perceived the GenAI simulation as an engaging and useful learning tool with which to practice a critical teaching skill.

For teacher preparation that considers AI impact, a few authors have written about experimenting with approaches to integrating AI into curriculum, instruction, and fieldwork for in person programs (Alexandrowicz, 2024; Weiner et al., 2024). These approaches included the use of AI for: Sustaining written and oral conversation with experts, theorists, or historical figures; learning from the sources in interactive ways; prompting AI tools for additional examples to bridge theory into practice; and generating materials such as rubrics to assess their own students' learning. Nevertheless, there remains limited evidence that similar or alternative effective practices have been adopted successfully in fully online, asynchronous teacher-preparation programs. The nature of online asynchronous coursework now places heightened demands on coursework developers regarding the kinds of activities and assignments that align with teacher performance standards mandated by credentialing bodies, at least in the United States. The next section poses critical questions about the ethical dimensions of AI use by students and instructors and explores the feasibility of designing remote tasks that foster critical thinking, reflection, and experiential learning so candidates build a solid foundation of expertise before entering the classroom.

The next section presents ideas on teacher preparation practices, with AI and without AI, within the constraints and possibilities of asynchronous online education, raises concerns, and discusses how to potentially address these concerns.

4. Connecting Theory Into Practice for Meaningful Teacher Preparation

In developing online coursework, educators face the question of how to encourage student engagement with and/or independently of AI tools in ways that uphold ethical values, promote agency, ensure accurate attribution of AI use, and discourage misuse and plagiarism. Fostering AI literacy in coursework is no longer optional. Faculty should collaboratively establish a general AI policy for their program and concrete, discipline-specific expectations outlining what types of AI use are acceptable and what are not. Instructors might also set course and assignment-specific guidelines to supplement program-level AI policy. Dialogue with students and providing opportunities for them to ask critical questions about the policy would pave the way for promoting different perspectives and experiences about using AI. In addition, assignments would include reflective elements in which students explain how they used AI tools (e.g., brainstorming ideas, drafting text, proofreading, analyzing data); identify where AI was employed within the submission; describe the purpose behind using it; and reflect on the learning implications, such as how AI shaped their understanding or process, and what steps they took to verify its output. Students may be given prompts such as:

How did you use AI tools to complete your assignment, and which specific tasks did the AI assist you with? (e.g., drafting lesson plans, generating examples, revising content, creating slides)

(b) How did the use of AI impact the quality and effectiveness of your assignment? Do you believe it improved your learning experience? Why or why not?

(c) What challenges arose while using AI tools for your assignment, and how did you address them?

(d) What ethical considerations did you reflect on when using AI for your assignment? How did you ensure the integrity and originality of your work? (including disclosure, citation, avoiding overreliance, and respecting academic norms)

(e) Based on your experience, how do you plan to use AI tools in future assignments? What improvements or changes would you recommend for integrating AI more effectively into your academic work?

(f) How can you ensure that using AI complements rather than replaces your professional judgment and expertise in English language development instruction?

A critical issue in fostering transparency around candidates' use of AI is the need to clarify the purpose of the reflection. Even when students comply with policy, for example, by using AI only for "acceptable" tasks like brainstorming or editing, will they honestly admit to using it in ways that are unacceptable? This raises the question of whether faculty should instead adopt a reflection framework focused on professional growth and learning, rather than on plagiarism, which prompts students to copy and paste text, or "fix" AI-generated assignments, so they look their own.

Reflective prompts in written assignments may yield deep insight into how students think and take ownership of their work (the word "may" is deliberate here, because those reflections can also be artificially produced by AI). When well-structured prompts are provided, they foster greater metacognitive awareness and help make learning visible to both students and instructors. Unfortunately, in asynchronous online courses, where students complete reflective writing without real-time interaction, there is a temptation to treat these reflections as empty tasks. If students are never asked to explain their ideas aloud or respond to follow-up questions synchronously, they may rely on generative AI to produce text in their style rather than thinking authentically about their process. Connecting with peers in discussions where there is room for debate or active questioning may lead to more authentic reflection.

When in person, educators can use classroom time not only to guide reflection and discussion but also to provide relevant demonstrations, such as by walking through and discussing AI-generated lesson plans, assessment items, behavioral recommendations, or language accommodations. In that setting, candidates might be asked not only to reflect, but also to validate, modify, expand, or reject AI given suggestions and to show how any revision aligns with actual student needs individually or in groups. This type of live demonstration offers a glimpse into whether students can engage critically with AI output or whether they are passively accepting it, allowing them to answer questions and discuss concerns on the spot. In live sessions, it is also easier for instructors to demonstrate the danger of trusting AI to address students' holistic needs by asking candidates to generate content for their placement focus student(s) during class and use learned ideas and criteria to analyze the content. In online environments, instructors must be willing to take the time to explain through personal announcements to the class or use other creative formats (e.g., avatars) that AI tools do not observe the whole child, their identities, cultural beliefs, or daily academic and social experiences. Thus, these tools cannot tailor instruction with the detail required and provide similar demonstrations; ideally, they should connect to discussion boards. It is critical that teacher candidates understand that AI can only assist appropriately if they have mastered research-based practices themselves through practice and have a strong understanding of their students. The faculty presentation may be used as a springboard for candidates to use to speak about the limitations of AI tools they experience in developing support for their students.

In AI-enabled environments, increasing interactions between faculty and students, peer-to-peer engagement, and interaction with content in meaningful contexts are feasible. For example, promoting engagement might begin with the faculty posing questions about content. The questions may be geared to require candidates to ask themselves about their perceptions or positionality. A challenge with this type of activity is that candidates may upload the questions and ask AI tools to generate answers and related ideas. There is always the possibility that candidates may use AI to respond to questions without attributing AI use for this purpose. To ameliorate this issue, depth of thinking can be added by asking candidates to relate content to their current placement and requiring specific examples or scenarios. For instance, in a course like *Classroom Management and Student Engagement,* faculty might ask candidates to reflect on how culturally responsive strategies were implemented during a

classroom observation and what they would have done differently, citing moments from a recent lesson. Alternatively, candidates might be asked to create a short podcast or journal documenting a single classroom moment, such as a student's behavioral outburst or a successful group collaboration, and narrate how their identity, bias, or knowledge and skills shaped their interpretation and response. Ultimately, faculty must place trust in the idea that candidates are sincerely committed to becoming effective educators while also making clear that these skills must be practiced and implemented—not just understood—in their field placements, where they will be observed, evaluated, and held accountable. In online teacher credential programs, the experiential component takes on increased importance, as it becomes the primary space where candidates must translate theory into practice and demonstrate their competencies through authentic performance.

To build on these opportunities for interaction and critical engagement during in-person classes, instructors can also incorporate critique-based activities. One effective approach is to present candidates with AI-generated instructional suggestions or materials that contain common mistakes or embedded biases, even if they initially appear aligned with effective practices. Without using AI themselves, individual candidates analyze the effectiveness of the instructional ideas and their implementation for specific children or classroom contexts. For instance, candidates might examine an AI-generated lesson that claims to implement UDL for English learners. Although the lesson may include hands-on tasks, visual aids, and teacher demonstrations, candidates must determine whether the language level is appropriate for the learners' proficiency. They are expected to recognize that without a solid grounding in language acquisition and instructional strategy, they cannot adequately assess, modify, or even request modifications from AI-generated content. This approach, using flawed AI output as a starting point for reflective critique, encourages candidates to view AI as a supportive tool rather than a replacement for professional judgment. When done during class, it is difficult for candidates to upload flawed material into an AI tool and ask for analysis.

To approximate this type of engagement in asynchronous online courses, instructors may provide AI-generated, nonmodel lessons or activities that include detailed annotations highlighting specific shortcomings. They can then offer revised examples that address diverse learners' needs, are informed by course-based theory and practice, align with state standards, and support specific instructional objectives. As a follow-up activity, candidates may be asked to create their own lesson plans using AI, annotate their modifications to explain how and why they tailored the lesson for their specific student(s), and demonstrate how their decisions are grounded in pedagogical knowledge. These types of exercises help candidates internalize the importance of acquiring foundational skills to critically evaluate AI-generated content. Instructors must emphasize in their assignment rationale that, without these evaluative skills, candidates risk adopting inappropriate strategies that may hinder students' linguistic and academic growth, contribute to learner frustration, and increase teacher workload and stress.

A word of caution: although asking students to make multiple connections—to self, to context, and to content—requires more elaborate analysis, this process can be supported using tools like Google NotebookLM. This tool allows students to upload various resources (e.g., class rubrics, checklist criteria, assignments, their own materials) and prompt the system to generate themes and specific connections required by the assignment. Such tools synthesize content from user-provided documents and respond to natural language prompts. Moreover, candidates may also use an AI tool such as the newer ChatGPT Agent by providing a detailed student profile, including language proficiency, to generate insights into the adequacy of the language used in the flawed material. However, faculty need to keep in mind that tools like ChatGPT Agent can scan all relevant resources and analyze materials in complex ways, but the effectiveness and accuracy have not been consistently proven yet.

5. From Coursework to Classroom: Building Authentic Connections

As mentioned earlier, developing tasks and assessments that foster critical and evaluative (i.e., human) thinking and contextual interaction must be an intrinsic part of online teacher preparation coursework. To expand the possibilities for meaningful and effective teacher preparation centered on higher order thinking, it is essential to prioritize connections between theory and real life, between course content and the candidate's own self, and between abstract concepts and their application in field placements. Unfortunately, connections to "self" can be artificially generated by AI tools (yes, a form of plagiarism), but in the context of online teacher education, designing assignments that require candidates to make meaningful links between coursework and their own practicum, school context, or lived experiences—rather than responding to generic or formulaic prompts—can increase the likelihood that they internalize foundational theories and strategies and begin to translate them into effective practice. For example, candidates may be prompted to analyze a real challenge encountered during their practicum involving a neurodivergent student and propose a responsive solution grounded in the course's readings; presentations; discussion board interactions; and, where allowed, AI-generated suggestions. As with earlier examples presented of asynchronous tasks, there is always the potential for candidates to rely on AI for quick solutions; however, ideally, tasks will also require in-person engagement. For instance, teacher candidates may interview their mentor teacher and document-suggested approaches based on firsthand knowledge of the student or previously implemented strategies observed in the classroom,

subsequently connecting to practices learned in the course. Requiring candidates to gather and synthesize information from multiple sources to support their reasoning by combining coursework, field-based observations, and human dialogue promotes a deeper level of analysis and helps ensure that learning is both authentic and professionally grounded.

Building on this model of integrating lived experience and contextualized analysis, project-based learning offers a viable, powerful structure for deepening teacher candidates' engagement with course content in authentic and practical ways. One particularly meaningful example is guiding candidates to write a grant proposal to address an equity-related challenge in their practicum classroom or school site. This type of project not only requires candidates to identify a real and pressing need, such as unequal access to instructional materials, lack of inclusive technology, or the absence of culturally responsive practices, but also to engage in research, data collection, and collaboration with school personnel to develop a sustainable solution. Writing a grant is an authentic professional task that involves persuasive writing, strategic planning, and a deep understanding of both student needs and institutional structures, all of which demand higher order thinking and cannot be completed through AI-generated shortcuts.

Instructors can scaffold the grant-writing process through checkpoints that require candidates to analyze school demographics and achievement data, interview stakeholders (e.g., mentor teachers, administrators, families), align the proposal with relevant educational theories and standards, and justify how the proposed intervention will address the identified inequity. Candidates must also cite course readings and frameworks, demonstrating how theory informs action. This type of project promotes synthesis across multiple domains: it bridges coursework with fieldwork, theory with practice, and candidate learning with school community impact. More importantly, this project type positions teacher candidates not as passive recipients of knowledge but as emerging changemakers capable of envisioning educational equity in their local contexts. In this kind of assignment, AI tools may help organize and analyze the information gathered and help write and edit different sections to ensure they address the grant requirements and criteria.

6. Interactive Scenarios and Simulations for Authentic Practice and Reflective Learning

Building on this emphasis on authentic, grounded learning, interactive scenarios and simulations offer another powerful way to immerse candidates in realistic teaching situations that require the application of knowledge, judgment, and interpersonal skills. For preparing candidates for real classroom teaching, faculty can use scenarios and simulations as an effective tool. For example, to help candidates develop confidence and professionalism in addressing families' concerns about early learning development in kindergarten (in the United States), faculty may first provide sample case transcripts or video clips that illustrate both effective and ineffective parent–teacher exchanges along with the instructor's comments in written or audio form. These models highlight key elements (e.g., tone, clarity, responsiveness to parent concerns). Faculty can then use AI tools, such as ChatGPT's Custom GPT builder, to create a parent persona like "Mr. Carter, whose daughter Maya has just started kindergarten with no prior exposure to letters, numbers, or structured classroom routines." After feeding in the student profile and detailed persona instructions, such as "expresses concern but feels unsure how to support learning at home," candidates engage in a simulated parent–teacher conference. ChatGPT cannot provide voice mode yet, so conversations must be in written form. Candidates practice explaining assessment results for Maya in accessible language; suggesting simple home-based strategies; and communicating in a supportive, strengths-based tone as they did during practice with the instructor for sample cases. In this type of exercise, candidates are expected to reassure the parent that their child is not behind due to any fault of the family and that with consistent support at school and home, Maya will catch up. The candidate learns to use affirming language that emphasizes partnership, avoids blame, and makes parents feel at ease rather than guilty. The conversation is transcribed automatically, and candidates review the exchange, reflecting on their use of language, empathy, provision of concrete suggestions for home, and their ability to foster a collaborative relationship with the parent. The faculty member provides recorded or written feedback and assesses the interaction using a rubric focused on communication effectiveness, developmental appropriateness, and family engagement practices. As part of the asynchronous follow up, candidates respond to the instructor's feedback and revise their approach, promoting growth in their ability to navigate real-world conversations with care and professionalism.

Simulated decision-making tools can further deepen candidates' reflective practices by allowing them to rehearse real-world interactions in guided, low-risk environments. One powerful option for scenario engagement involves an instructor who designs a scenario set in a virtual kindergarten classroom or parent–teacher meeting room to address the family's concerns (e.g., "Maya doesn't recognize any letters or numbers yet, and I'm worried she's already behind"). Canva can be used to develop short, animated video clips that simulate parent–teacher interactions in a controlled and accessible format. The platform enables the combination of backgrounds, animated characters, voice narration, and captions to design communication scenarios that reflect common challenges in family engagement. For instance, an animated character representing a caregiver may express concern that a child has entered kindergarten without prior exposure to letters or numbers and inquire about ways to provide support at home. Once created in Canva and exported as an MP4 file, the video can be uploaded into interactive tools such as ThingLink or Edpuzzle. These platforms allow instructors to embed questions; create branching pathways; and prompt candidates to pause,

reflect, and practice their responses based on content learned in the course. The integration of animation with interactivity provides a low-cost alternative to live role play while supporting consistent, culturally responsive practice in parent–teacher communication. At the end of the simulation, candidates may be directed to use an AI tool to generate additional suggestions for supporting Maya's literacy and numeracy at home and be asked to explain which suggestions they would recommend to the parent and why. Faculty must consider that, as with other activities suggested in this paper, candidates may turn to AI to find responses, but the structure of the task requires them to think critically about their behavior, tone, and message, especially when they must justify their choices in asynchronous faculty feedback discussions.

7. Rethinking Plagiarism in the Age of AI-Powered Preparation

With students openly admitting to using AI for their academic work, the challenge forces academics to look closely at the basic flaws in our current education system. Simply trying to ban AI or create tools to detect its use might be missing the main issue. It is like trying to stop individual athletes from doping without looking at why they feel pressured to do so in the first place. When enough students gain an advantage by using AI, others might feel they have no choice but to do the same to keep up, making traditional ideas of academic honesty feel outdated. Attempts to put invisible "watermarks" on AI-generated text or use "AI detectors" by faculty often fail, are easily tricked, and can even wrongly accuse students. This focus on detection draws attention away from a bigger truth: if AI can easily complete assignments, then perhaps those assignments, and the way teacher educators are teaching skills to future teachers, are not as valuable as we thought in their current form.

The real problem often rests in how the education system can value the "product" (e.g., final assignments, good grades, a diploma) more than the actual "journey" and processes of learning. Learning truly happens when one works through challenges and overcomes difficulties. When AI is used as a shortcut, it can take away these valuable opportunities, much like someone using an electric bike instead of a regular bike to improve their fitness. This illusion of learning risks weakening academic integrity, which is essential for trusting professionals in fields like teaching. Moreover, if we do not adapt our teaching methods significantly, it could worsen existing inequalities, so that only expensive, in-person schools might be seen as offering truly credible degrees because they can better limit or monitor AI use during in-class learning. The discussion needs to move beyond simply stopping AI cheating and instead focus on a fundamental rethinking of what learning means. Rather than seeing AI only as an evil to be defeated, we must consider that it can also be a savior that helps and improves genuine learning, if we guide its use correctly. This AI cheating situation demands a complete change in how we design lessons and assessments. We need to move past focusing on just the final products and instead encourage the development of students' minds and characters through active engagement with their community or context, and learn how to overcome challenges. Higher education, including teacher education, urgently needs a similar body to define what constitutes cheating in these times and to rebuild academic integrity from the ground up, acknowledging that AI is not just a tool, but an ever-present collaborator and, potentially, a coach for human growth.

Regrettably, it is challenging to take full advantage of these benefits in online education and addressing the integration of AI in coursework, particularly in the context of redesigning learning to emphasize the process over the final product, poses problems for asynchronous models. The structure of online learning, especially asynchronous courses, creates unique vulnerabilities. Although some educators have been exploring solutions in the context of synchronous online learning to verify that assessments genuinely reflect student knowledge rather than AI-generated content, finding equivalent solutions for completely online settings is much harder. When teacher candidates complete assignments at home without direct oversight, it becomes exceedingly difficult for instructors to confirm the authenticity of the work and determine if it is "AI latent." This challenge weakens traditional methods of upholding academic integrity, such as tracking edits or relying on honor codes, making them less effective. Many have praised the flexibility of online asynchronous college programs, yet if these challenges are not addressed creatively through approaches such as Project Based Learning, place based assignments and activities, and explicit interaction between mentor teachers, placement supervisors, and students, there is a risk that only in-person programs will be perceived as offering credible degrees, and potentially exacerbating educational inequities. To counter this issue, candidates in online asynchronous settings must also be supported in cultivating a reflective awareness of their own progress that it is independent of AI, allowing their development to be grounded in authentic professional practice.

8. The Importance of Virtual Coaching for Teacher Candidates' Practical Experiences

The future of credible online teacher education may depend in part on the use of virtual coaching to help develop reflective teacher candidates who will be able to implement pedagogy effectively by providing scalable, high-quality feedback and support. For example, platforms like Edthena (n.d.), through their Video Coaching for Teachers and AI Coach platforms, use a blended approach to coaching. These tools enable human supervisors to provide targeted, time-stamped feedback on videos while the AI Coach uses AI to guide teachers through private, asynchronous self-reflection. This process involves AI asking probing questions to help teacher candidates analyze a video of their own classroom instruction, set a goal, and create an action

plan. This on-demand and private self-reflection, in addition to their coaches' feedback, is a valuable tool for all teachers, but especially for those instructors in online programs who may not have frequent in-person contact with their supervisors.

It is important to keep in mind that tools like AI Coach work in conjunction with human supervision, not as a replacement. AI may handle the initial stages of the coaching cycle, freeing up the human supervisor to engage in more nuanced and meaningful discussions. After a student teacher has used AI to reflect on their practice and identify a goal, the human supervisor can step in to provide deeper, more relational coaching. This model increases the program's capacity to support a larger number of students in diverse geographic locations while still ensuring they receive high-quality, personalized feedback. It elevates the supervisor's role to one of strategic guidance and emotional support, as the AI handles the more foundational, data-gathering aspects of the process.

9. Conclusion: Is Effective Online Synchronous Teacher Education Possible in the Age of AI?

For asynchronous online education to thrive and be effective, educators must reconsider traditional definitions of plagiarism and ethical behavior and capitalize on the benefits of AI tools. Given that students are unlikely to stop using AI to complete coursework, faculty must rethink the concept of cheating. Some educators are in despair about the future of teacher education, and worry about programs, particularly online ones, turning into degree mills. Other are reluctant to accept that this new technology could impair the preparation of capable, well-equipped teachers. It remains the faculty's duty to emphasize that the AI tools candidates carry cannot substitute for appropriate management or instructional decisions, especially those that demand immediate, ethical, and context-sensitive responses, and that such decisions must always consider the whole child, including both emotional and cognitive needs. Policy should shift from policing plagiarism to exploring how students can use these tools intentionally to enhance learning and professional growth. Faculty must collaborate to design creative assignments that illustrate the value of acquiring core competencies essential for daily teaching, from interview preparation to thoughtfully crafted lesson plans and assessments aligned to students' needs. Moreover, this moment offers an opportunity to question if it will be possible to reinvent online education, rather than simply adapting existing models. Perhaps part of the process will involve institutions moving from surveillance-based integrity systems to process-oriented integrity, where transparency, reflection, and responsible AI use become an intrinsic part of pedagogy.

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