Article

Transforming Language Teacher Education in the Global South: Assessing Artificial Intelligence Readiness in CELTA Programs

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ABSTRACT

Generative artificial intelligence is reshaping language education, yet teacher training in many Global South countries remains uneven, and evidence on CELTA teacher readiness remains limited. This study examined the readiness of CELTA-certified English language educators in Saudi Arabia, Turkey, Pakistan, and Uzbekistan to use generative AI via a convergent mixed-method design. Data were collected from 120 teachers through task-based performance assessments guided by the artificial intelligence assessment scale, semi structured interviews, and digital teaching logs. The results show strong functional AI literacy and pedagogical adaptability, alongside weaker ethical awareness related to data privacy, algorithmic bias, and responsible use. Differences across countries were more strongly associated with institutional support, infrastructure, and policy alignment than with teaching experience. The findings support the embedding of

AI literacy and ethics into CELTA-oriented preparation to promote equitable, context-responsive teacher education.

INTRODUCTION

The contributions of artificial intelligence to education are closely intertwined with changes in how teachers prepare lesson plans, provide support, and assess student writing. There is considerable educational and business interest in the intersection of generative AI and language learning (MarketsandMarkets, 2024; Mordor Intelligence, 2025). While educational AI systems assist teachers in lesson preparation, they also provide students with personalized feedback (Cukurova et al., 2024). These systems are particularly relevant to international education, given that international students are non-Visa-holding learners abroad (UNESCO, 2024). Some 6.3 million students were reported to have crossed borders to study in 2024, with 40 percent of students traveling from the Global South (OECD, 2025a). As generative AI becomes more common in learning environments, teachers are increasingly expected to guide responsible use while maintaining student engagement.

Although AI resources are increasingly prominent in educational systems in the Global South, integrating generative AI into teaching remains challenging. Within this context, the Cambridge CELTA certification, one of the most recognized credentials for English language teachers in this region, has not yet incorporated generative AI skills into its core training.

The COVID-19 pandemic led the CELTA program to move more of its teaching online and use more digital teaching methods. Nevertheless, the program has not yet created clear support for teaching with artificial intelligence or for encouraging creativity with AI tools (Cambridge English Assessment, 2024). Because of this, CELTA-certified teachers often work with limited curriculum options and inconsistent access to technology (Nugraha, 2025; Taheri et al., 2025). This is especially important since CELTA teachers in countries such as Pakistan, Saudi Arabia, Turkey, and Uzbekistan are expected to meet international standards for a wide range of students.

Given these realities, few empirical studies have investigated CELTA teachers' readiness for generative AI technologies. Most existing research focuses on teachers' perceptions rather than their actual use of AI in authentic teaching contexts (Purnama et al., 2025; Granström & Oppi, 2025). In CELTA contexts, AI, teaching adaptability, ethics, writing, feedback, and academic integrity for mobile learners are important but underexamined. This suggests a need for a task-

oriented framework that measures readiness in a way that better reflects professional teaching practices than attitudes do.

To address this gap, this research focuses on assessing CELTA-certified English language trainers in Pakistan, Saudi Arabia, Turkey, and Uzbekistan and on their generative AI readiness via the AI assessment scale (AIAS; Perkins et al., 2024). The AIAS considers aspects of AI literacy, pedagogical integration, and ethical concerns. These aspects coincide with CELTA's focus on lesson design, teaching, and reflective practice. Whereas more general technology frameworks, TPACK and DigCompEdu, focus on technology integration, AIAS focuses on the readiness of technology integration through generative AI and, therefore, is more appropriate in the context of CELTA-aligned teaching work. The purpose of the current study is to provide an AIAS pedagogical profile for integrating AI literacy and ethics via a convergent mixed-methods framework. The study examines teachers' AI-instructional practice ethics, pedagogical choices, and technical competencies through task-based assessments, semistructured interviews, focus group discussions, and digital reflective practice logs.

The following research questions guide the focus of this study:

1. To what extent do CELTA-certified teachers in Pakistan, Saudi Arabia, Turkey, and Uzbekistan demonstrate AI literacy, pedagogical integration, and ethical awareness in task-based teaching scenarios?
2. Which institutional and infrastructural factors are associated with variation in CELTA teachers' AI readiness across these contexts?
3. What curriculum and policy adjustments are most strongly indicated by the findings to strengthen AI preparation within CELTA and comparable teacher certification pathways?

This study is important for both practical and theoretical reasons. In practice, it provides cross-border evidence that can help Cambridge English, CELTA trainers, and institutional leaders with professional development, assessment, and ethical issues related to the use of artificial intelligence in language teaching. It also supports fair access for students who move between countries by showing where teachers need better infrastructure, more training, and clearer policies (Phan, 2023). This study adds to research on AI readiness in teacher education by examining what teachers do in task-based situations rather than just what they think and defines readiness as the ability to act. This study provides a starting point for examining how technology changes and teacher certification intersect in Global South countries, especially for international students, and addresses the issues of fairness in education.

LITERATURE REVIEW

Teacher development programs in many Global South are increasingly encountering the effects of AI in the classroom. Teacher training must be rethought, as AI makes courses more customized, adaptive, and automated. Academics increasingly prioritize instructional flexibility, ethical judgment, and technical skill in professional preparation (Cukurova et al., 2024). Digitally

mediated classrooms require adaptive, critical, and ethical international educators (Wiese et al., 2025). This requires frameworks to evaluate instructors' use of AI tools while prioritizing students. This theoretical research links classroom performance to AI literacy, ethics, and pedagogical integration. Examine the Global South's AI education responses to adopt such frameworks. However, existing studies broadly describe national initiatives in isolation, offering a limited cross-contextual synthesis of how pedagogical capacity, infrastructure, and ethical readiness interact in Global South teacher education systems.

How do Teacher Education Systems in the Global South Respond to AI?

Pakistan, Saudi Arabia, Turkey, and Uzbekistan have introduced AI-based reforms in teacher education. Four Global South countries with distinct linguistic, cultural, and policy backgrounds are digitally upgrading English teacher education. International AI preparedness certifications, such as CELTA, are used worldwide. All four have invested significantly in national digitization goals, but infrastructure and pedagogical obstacles prevent instructors from using AI in their classes.

Saudi Arabia's Vision 2030, led by the Ministry of Education, encourages digital transformation through collaborative professional development, but there is still limited support for artificial intelligence education (Alghamdi, 2022). In Pakistan, national education policy focuses on building teacher skills and modernizing the system, although ongoing infrastructure and institutional challenges slow progress (Pakistan Institute of Education, 2024). Turkey's higher education reforms have introduced blended learning and automated feedback, but these changes are not consistent across all institutions. In Uzbekistan, artificial intelligence is used to help evaluate and provide feedback to educators as part of national digital education efforts (Kırkgöz & Turhan, 2021). Pineda and Mishra (2023) noted that fragmented policies, weak implementation, and limited local capacity still hinder higher education development in the Global South. Overall, these examples show both the promise and the difficulties of using AI in teacher education. They suggest that policy goals alone are insufficient; genuine AI readiness depends on robust institutional support, reliable infrastructure, and opportunities for teachers to experiment with new teaching methods.

The AI Assessment Scale (AIAS) as a Theoretical Lens

AIAS, as described by Perkins et al. (2024), conceptualizes AI preparation as the integration of ethics, literacy, and pedagogy. Across the board, CELTA-style performance-based teacher education is used for evaluation tasks. AI-infused teaching practice evaluations add ethical and instructional reasoning to digital competency frameworks (Hazzan-Bishara et al., 2025). Individual talent and structural opportunities affect instructors' AI training, according to Ayanwale et al. (2025). Demography and institutions do too. AIAS investigations began at Western STEM universities (Perkins et al., 2024) and have had limited but beneficial non-Western trials, including a case in Vietnam that showed adaptation

issues with culturally skewed AI tools, such as Western-biased grammar test results. AI grammar checkers' preference for English idioms over local subtleties in Global South countries such as Uzbekistan necessitates a cultural revolution to defend identity and equity (Umarova & Roziqova, 2025; Migdadi et al., 2024)

In practical terms, AIAS emphasizes task-based, observable teaching practices, whereas frameworks such as TPACK and DigCompEdu primarily conceptualize technological knowledge and integration at a declarative rather than a performance level. This emphasis fits CELTA's evidence-based philosophy. To assess AI readiness, the AIAS assesses educators' usage, appraisal, and ethical integration of AI resources. The framework effectively blends digital competency theory with CELTA's practical curriculum, as stated next. The AIAS's AI literacy, ethical awareness, and pedagogical integration are compared with CELTA's language awareness, reflective practice, and lesson planning and teaching practice in Table 1. Feedback loops that support teachers' improvement through practice, reflection, and ethical evaluation affect their AI preparedness, as do infrastructure, institutional support, and national legislation. The alignment shows that CELTA's evidence-based approach uses AI. AI may not be fully incorporated into specific domains.

Table 1: Alignment between AIAS Dimensions and CELTA Competencies

AIAS Dimension	CELTA Core Competency	Illustrative Classroom Task
AI Literacy	Language Awareness	Identify and evaluate AI-based vocabulary resources
Ethical Awareness	Reflective Practice	Examine bias in AI-generated lesson material.
Pedagogical Integration	Planning and Teaching Practice	Design communicative tasks supported by digital or AI-driven inputs

Note. AIAS = Artificial Intelligence Assessment Scale

Is CELTA Prepared for the AI Era?

CELTA (Certificate in English Language Teaching to Adults) is a well-known qualification for English language teachers that focuses on communicative teaching, lesson planning, and reflective classroom practice (Cambridge English Assessment, 2024). The program now often uses online and digital formats. The key elements include lesson planning, teaching practices, language awareness, professional growth through reflection, and the ability to meet learners' needs. However, the CELTA framework still lacks clear learning outcomes concerning artificial intelligence, data ethics, and algorithmic awareness (Granström & Oppi, 2025).

Each component of CELTA is designed to support a practice-oriented approach to teacher development. Trainees design and deliver observed lessons,

analyze grammar and pronunciation, provide reflective commentary on their teaching, and adapt instruction to diverse learner needs. Nevertheless, recent pilot initiatives suggest that CELTA-related practices are beginning to evolve. For example, the International House Lima and Celtic English Academy have experimented with AI-assisted course design and have developed institutional policies to guide the ethical use of AI technologies (Lima, 2024; Celtic English, 2025). Findings from these pilots indicate moderately positive associations between AI-supported tools and teacher performance. Among Saudi-based Grammarly users, the strongest gains were observed ($r = 0.52$, $p < .01$), whereas Uzbek teachers using QuillBot demonstrated significant adaptation benefits ($r = 0.38$, $p < .05$).

Even with these local changes, CELTA's main framework still does not offer structured training in AI use or ethical choices. This gap highlights the need to determine whether CELTA is ready to include tools such as the artificial intelligence assessment scale (AIAS) in teacher training. Filling this gap matters because CELTA has a wide global impact.

Critical Synthesis and Rationale for the Present Study

The present study is grounded in the gaps and concerns identified across the literature, despite growing interest in artificial intelligence within teacher education. Existing research is largely dominated by perception-based surveys, offering limited insight into how teachers enact AI pedagogically and ethically in assessed classroom practices. Such studies reveal persistent biases, including overconfidence that obscures ethical blind spots and persuasive AI-generated language that fosters illusory trust and inflated perceptions of effectiveness (Gidiotis & Hrastinski, 2024). Cross-cultural research further demonstrates that generative AI intensifies academic integrity challenges for international students in higher education, underscoring the need for context-sensitive policies in Global South TESOL programs (Bannister et al., 2024). Recent evidence also suggests that blended analytical approaches can improve predictions of instructional preparedness by up to 20% (Shi, Liu, & Hu, 2025).

Socioeconomic factors and local regulations in the Global South affect how teachers use and access educational technology, yet most research continues to focus on the Global North. This gap is significant because CELTA-certified teachers work worldwide, yet their readiness for AI has not been well studied. Additionally, as AI is increasingly used to manage international student movements, there are concerns about fairness. Automated systems could make existing barriers worse for Global South students in TESOL programs (Brunner & Tao, 2023).

Recent research in international education emphasizes that teachers require both technological skills and intercultural understanding to support students who move between countries (Phan, T. N. L., 2023). This aligns with the study's goal of assessing how prepared CELTA-certified teachers in the Global South are to use AI in the classroom. This study uses the artificial intelligence assessment scale (AIAS) with teachers in Pakistan, Saudi Arabia, Turkey, and Uzbekistan to

measure their AI readiness in teaching, ethics, and context. By linking digital literacy theory with teacher certification, this research offers data to help improve AI-based curricula, policies, and teacher training.

Recent articles in the *Journal of International Students* show that generative AI impacts international students, especially in terms of fairness, student choice, and school responsibility. Studies find that AI systems can make student mobility less fair if ethical and local factors are ignored (Brunner & Tao, 2023). Other research shows that how international students use generative AI depends on their perceived usefulness and their own attitudes, indicating that schools need to create fair and supportive environments (Ittefaq et al., 2025). These results highlight the importance of examining teachers' preparedness to use AI, particularly among CELTA-certified teachers working with students from diverse backgrounds.

This review sets the stage for the subsequent research design, which employs a task-based approach to examine national AI readiness among CELTA-certified teachers.

METHOD

Research Design and Philosophical Paradigm

This research uses a critical realist, convergent mixed-methods design (Creswell & Plano Clark, 2018). To understand AI readiness in teacher education, this study looks at both observable practices and the underlying conditions that shape them. By combining quantitative and qualitative methods (Bhaskar, 2008; Fletcher, 2017), this research examines teaching skills, institutional settings, AI literacy, the use of AI in teaching, ethical awareness, and curriculum development. Quantitative data come from structured, task-based activities, whereas qualitative data provide insight into context, institutional support, and professional reasoning. The convergent design allows for the collection and analysis of both types of data simultaneously, and then bringing them together to understand what educators do with AI and why these practices occur in certain settings. Short surveys after group discussions helped confirm where the participants agreed. These combined data sources show how effective AI-ready teacher education systems are developed by aligning measurable actions with context (Prilop et al., 2025).

Research Context and Country Rationale

This research investigates CELTA-certified educators from Pakistan, Saudi Arabia, Turkey, and Uzbekistan. It targets fast-growing English-language teacher training in the Global South. Economic variety, which impacts AI availability and teacher development, CELTA institutions, and the value of English's geopolitical modernization, determines selection. Saudi Arabia promotes digital transformation through Vision 2030, but instructors are not fully trained in AI. Pakistan has ambitious policy goals, but its infrastructure is deteriorating. Turkey pioneered hybrid models that combine digital learning, whereas Uzbekistan has started using AI to improve training. These examples show how national agendas

and resources affect the use of AI in English teacher training. Pakistan has various CELTA schools in Lahore and Karachi. Saudi Arabia deploys them in modernizing areas. Many incidents in Istanbul, Turkey, demonstrate how changes affect the EU. In Tashkent, a building demonstrates how Uzbekistan's language evolved after the Soviet Union fell (Cambridge English Assessment, 2024). This equal mix of language, institutional, and economic variation deepens cross-country interpretations.

Sampling and Participants

The use of stratified purposive sampling ensures that all four nations are fairly represented, with a range of institutional contexts, levels of expertise, and technological capabilities. According to the center logs and alum data, more than 1,000 teachers in these nations have earned CELTA certification. A response rate of 82.7% was achieved, with 120 legitimate answers out of 145 invitations. The last sample comprises 40 people from Pakistan, 30 from Saudi Arabia, 30 from Turkey, and 20 from Uzbekistan. This scale provides substantial statistical power and qualitative depth. Compliance with CELTA, basic computer literacy, and permission for task-based and reflective components are all requirements for inclusion under the 2021–2024 regulations. Full compliers are included for analysis, whereas incomplete or duplicate entries are removed. Links to institutions, professional organizations, and CELTA alums, as well as institutional ties and professional bodies, facilitate recruitment and encompass private centers, universities, and international schools.

To measure diversity and its connections to SDG 4 equity, a quick demographic survey captures gender, age, and location (UNESCO, 2024). The group's average age was 40 years (SD = 6.4), and 59% of the members were female. Of that percentage, 69% live in urban areas. Pakistan has 55% females with an average age of 37; Saudi Arabia has 58% females and an average age of 43; Turkey has 61% females and an average age of 40; and Uzbekistan has 64% females and an average age of 39. There appears to be an urban bias in these profiles, which might affect the results of AI literacy tests (OECD, 2025b; World Bank, 2025b), and they align with the CELTA demographics. To strengthen triangulation and validation, interviews and focus groups are attended by nine CELTA trainers, six coordinators, and instructors. This adds institutional viewpoints.

Participants were recruited through CELTA centers, alum networks, and professional teaching associations in each country. While stratified purposive sampling ensured national representation, participation was voluntary, and urban-based teachers were more likely to respond because of access to infrastructure. This potential urban bias is acknowledged and addressed through triangulation with interviews with the trainer and coordinator.

Instruments and Data Collection

The data-gathering procedure is facilitated by a variety of aids and two primary instruments. The quantitative and qualitative core of the examination comprises task-based performance assessments. These suggestions encourage participants to integrate AI technologies into authentic CELTA scenarios, such as conducting bias audits of generated content or developing vocabulary fueled by chatbots. The artificial intelligence assessment scale (AIAS) is a set of questions used to test how well AI is used in training, how well people understand AI, and how ethically they use AI. A value of $\pm = .87$ indicates that the raters can trust each other. Uzbeks need review tools that are unique to their society and language and can be used in multiple languages. We examined the problems that people have with AI, the rules that institutions follow, and the moral problems that emerge in semistructured conversations. Trainers and managers discuss program problems and propose policy changes in focus groups. Ten random CELTA teachers took part in a pilot study to test the tool's readability and scoring. This proves that it can be used in more than one language. Data collection will take place from April to July 2025. Video connections are used for interviews and focus groups, and people perform their work online via tools provided by the school.

To ensure cultural and contextual appropriateness across countries, the AIAS tasks were reviewed by local CELTA trainers and piloted with multilingual participants. Back-translation procedures were applied to Uzbek and Turkish responses as needed, and culturally specific examples were permitted during task completion. These steps enhance construct validity while preserving the core dimensions of the AIAS framework.

Logistical Plan and Implementation

Data collection was conducted across four sites via a standardized implementation protocol. Local coordinators in each country were responsible for participant recruitment, scheduling, and monitoring submission procedures. Data collection activities, including interviews, task-based assessments, and grading, were conducted weekly over a four-month period. The participants completed three AI-integrated asynchronous instructional tasks via Google Workspace–supported platforms. Minor operational issues were addressed locally to ensure continuity. In Pakistan, unstable internet connectivity often causes intermittent disconnections during sessions when signal strength is insufficient. In Saudi Arabia, access restrictions caused by institutional firewalls were addressed through approved proxy solutions that complied with institutional guidelines. In Turkey, scheduling flexibility was necessary to accommodate overlapping academic commitments, whereas in Uzbekistan, unlicensed AI tools were replaced with vetted open-source alternatives adapted to local requirements. Each rater evaluated 180 scripts, yielding a total of 720 ratings across the sample. Interrater reliability remained above 0.80 throughout the process, supported by calibration sessions conducted prior to data collection and at midpoints. Data

integrity and procedural consistency across sites were maintained through weekly coordination meetings and centralized data management, with all materials securely backed up on an open-source NextCloud system to mitigate disruptions caused by limited network connectivity.

Data analysis

The research team measured instructor effectiveness in the three AIAS domains via descriptive and correlational statistics. They used analysis of variance (ANOVA) to compare mean differences across domains and countries and then applied Tukey HSD post hoc tests to find significant contrasts and identify the lowest-scoring domain. The team set key comparisons in advance to limit analytic flexibility and make their findings more transparent. A power analysis with G*Power revealed that a sample size of 120 was sufficient to detect small-to-medium effects at $\alpha = 0.05$ (Cohen, 1988).

The quantitative analyses were performed in SPSS and included cross-tabulations and association tests for country, gender, teaching experience, institutional type, and digital access. Interrater reliability for task-based scoring remained above 0.80 throughout. The team excluded incomplete cases before analysis on the basis of set criteria.

The team analyzed qualitative data from interviews, focus groups, and digital reflective logs via NVivo and ATLAS.ti. They started with open coding based on the AIAS domains and then used axial coding to identify institutional and contextual factors that influenced classroom practice. Two researchers coded the data independently, and if they disagreed, they discussed the issue or asked a third coder to decide. The team brought the findings together at the interpretation stage by comparing the quantitative results with the qualitative insights. This approach allowed them to answer Research Questions 1 and 2 within each method and to address Research Question 3 through combined analysis.

Mixed-Methods Integration Strategy

In accordance with the convergent mixed-methods design, quantitative and qualitative data were collected and analyzed in parallel, with integration occurring at the interpretation stage. Integration was achieved through joint displays and narrative weaving, whereby AIAS task scores were systematically compared with interview, focus group, and digital reflective log data for each research question. Quantitative analyses revealed patterns of AI literacy, pedagogical integration, and ethical awareness, whereas qualitative findings revealed the institutional, infrastructural, and cultural conditions shaping these patterns. This integrative strategy ensured methodological convergence rather than simple juxtaposition of results and supported robust interpretation across national contexts.

Although more advanced multivariate techniques, such as multivariate analysis of variance (MANOVA) or multilevel modeling, were considered, the selected analytic approach was judged to be most appropriate given the exploratory nature of the study, the task-based scoring structure, and unequal

national subsample sizes. This decision reduced the risk of model overparameterization and Type I error inflation while maintaining analytical rigor.

Trustworthiness and Rigor

Triangulation, standardization, and verification were used to maintain methodological rigor in the study. To ensure qualitative trustworthiness, we applied dual coding and peer debriefing. For quantitative dependability, we used raster synchronization and calibration. Consistent protocols, shared rubrics, and clear assessment criteria helped us work together across different sites. These steps improved credibility, reliability, and transferability by combining quantitative data with reflective self-study and institutional perspectives.

Ethical Considerations

The study received approval from the author's institution's review board (IRB/25/044, March 27, 2025), which is valid for 18 months. The board confirmed that the study followed ethical guidelines, including the Declaration of Helsinki (World Medical Association, 2024), and that there were no risks to participants. The participants were told that their involvement was voluntary and that they would need to sign a consent form before any data were collected. To make the process accessible, the consent form was translated into Turkish and Uzbek. The main language of the study was English for CELTA purposes, but Turkish and Uzbek were also used to help participants understand. Anonymity was ensured by using removable ID codes, and the data were stored on a secure, encrypted server accessible only to authorized research team members. The participants were also informed of their rights, including the option to withdraw from the study at any time.

AI Tool Usage and Author Responsibility.

Generative AI tools were used only for language clarity and format checks (e.g., ChatGPT, Grammarly). No AI tools created, transformed, or analyzed research data, and no content was generated that would qualify for authorship. The authors accept full responsibility for the integrity and accuracy of the manuscript in accordance with the policies of COPE and the Journal of International Students.

Limitations

This cross-national study has several limitations. Differences in institutional infrastructure and policy may limit how widely the findings apply, even with standardized rubrics for consistency. Unequal access to digital resources across regions may have affected the levels of AI readiness we observed. The focus on CELTA-certified teacher education also means that the results may not apply to other teacher training programs. Because AI is advancing quickly, these findings

mostly reflect the situation for the 2025 cohort. Future research should use long-term and comparative studies in more Asian and Global South settings to better track changes in AI readiness.

RESULTS

This section shares findings from both quantitative and qualitative analyses via a convergent mixed-methods approach. First, the quantitative results highlight overall patterns. The qualitative evidence adds detail and context to these trends. Presenting the results in this way aligns with the study's design and facilitates clear interpretation.

RQ1: Levels of AI Literacy, Pedagogical Integration, and Ethical Awareness

The study included 120 CELTA-certified English language teachers: 40 from Pakistan, 30 from Saudi Arabia, 30 from Turkey, and 20 from Uzbekistan. Among them, 59 percent were women and 41 percent were men, with an average age of 40 years (SD = 6.4). Most teachers (69 percent) worked in urban areas, whereas 31 percent were based in rural or semiurban locations. Teachers in urban institutions had better access to digital resources and performed better on AI-related language tasks.

The participants had an average of 6.8 years of teaching experience (SD = 2.9), ranging from 1-15 years. Those with more than five years of experience showed a 46 percent improvement in academic AI integration, whereas those with less experience showed a 36 percent improvement. These demographic and professional details help explain the differences in the AIAS dataset.Table 2 shows the descriptive and inferential statistics for the three AIAS areas.

**Table 2: Descriptive and Inferential Statistics for AIAS Dimensions (N = 120)**

AIAS Dimension (Task Type)	Corresponding CELTA Competency	Mean	SD	Min	Max
AI Literacy (Language Analysis)	Language Awareness	3.71	0.68	2.4	4.8
Pedagogical Integration (Lesson Planning)	Lesson Planning and Practice	3.96	0.57	2.8	4.9
Ethical Awareness (Reflective Practice)	Professional Development and Reflection	3.32	0.61	2.1	4.6

Note. AIAS = artificial intelligence assessment scale. SD = standard deviation.

Task-based AIAS assessments indicated that baseline levels of preparedness were basic across all three areas. Pedagogical integration improved the most, whereas ethical awareness improved the least. This means that teachers were

confident in using AI tools for teaching but were less ready to handle ethical issues such as data privacy, bias, and social impacts.

A one-way ANOVA revealed that Saudis scored higher on pedagogical integration than other nations did ($F(3, 116) = 5.21$, $p < .01$, $\eta^2 = .12$, 95% CI [0.05, 0.19]). Comparisons revealed that ethical awareness was considerably lower than AI literacy ($t(118) = 4.12$, $p < .001$, $d = 0.56$, 95% CI [0.32, 0.80]) and pedagogical integration ($t(118) = 5.89$, $p < .001$, $d = 0.80$, 95% CI [0.50, 1.10]). Cronbach's alpha (.87) indicated strong internal consistency for the AIAS instrument. Figure 1 compares country average scores. Saudi Arabia, Turkey, and Uzbekistan comprehend AI well. Low but stable Uzbekistan numbers indicate poor infrastructure.
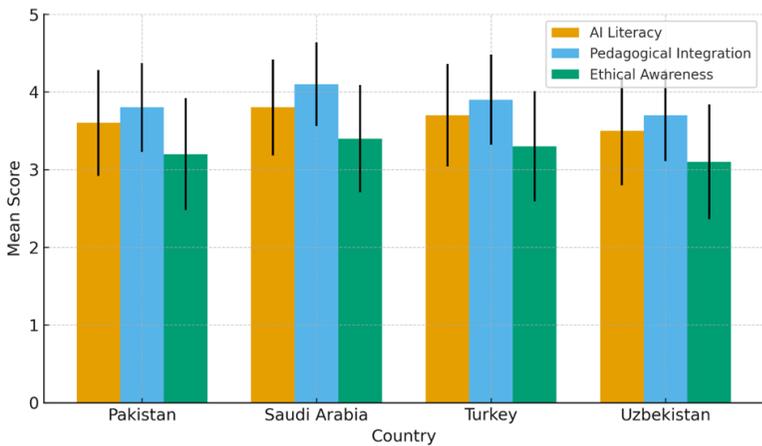
Figure 1: Average AIAS Dimension Scores by Country (N = 120)

Note. Scores are based on the artificial intelligence assessment scale (AIAS).

Digital use records verified these figures. The participants spent 150 minutes a week using AI to prepare lessons and reflect on their learning. Saudis favored Grammarly for writing and feedback, whereas Pakistanis and Turks utilized ChatGPT for lesson preparations. Because more advanced software was unavailable, Uzbek lecturers generally used QuillBot to update and compress materials. Teacher opinions supported these findings.

The Saudi instructor said, "AI facilitates the rapid preparation of grammar explanations; however, I have concerns regarding data storage."

A Turkish respondent said, "ChatGPT provides useful examples, but I adapt them to align with our culture."

A Pakistani coordinator said, "We experiment with AI; however, we lack full access, necessitating that most teachers depend on free tools."

An Uzbek teacher said, "I utilize AI for translation and examples; however, I meticulously verify the meanings, as they can vary significantly in local contexts." These short movies show teachers using AI smartly.

RQ2: Institutional and Infrastructure Factors

The interviews and focus groups revealed five essential aspects influencing AI readiness: institutional support, infrastructure reliability, ethical policy, curricular flexibility, and administrative obstacles. Table 3 presents the topics, their definitions, frequencies, and example quotations.

Table 3: Institutional and Infrastructural Factors Influencing AI Readiness (N = 10)

Thematic Category	Definition	Frequency	Representative Quote
Institutional Support	Access to AI-related training and workshops	28	"Our center encourages technology use but provides no AI-specific training." (Trainer)
Infrastructure	Availability and reliability of tools and internet connectivity	25	"Connectivity drops often disrupt my AI-based lessons." (Teacher)
Ethical Policy	Institutional rules on data privacy and bias mitigation	19	"We have no clear ethical guidelines for AI use." (Coordinator)
Curriculum Flexibility	Adaptability of CELTA materials for AI integration	15	"CELTA materials are too fixed to include new tools." (Teacher)
Administrative Barriers	Bureaucratic approval delays for new platforms	12	"Requests to use AI applications take months of clearance." (Trainer)

The participants identified insufficient facilities and unclear government policies as the main problems. One Pakistani teacher said, "We are motivated to generate innovative ideas; however, there is no clear policy regarding the data we are permitted to disclose." A Saudi program coordinator also noted that "institutional firewalls obstruct access to approximately fifty percent of the resources essential for effective teaching." The quantitative analysis revealed a

moderate positive correlation between the strength of ethical regulatory enforcement and infrastructure quality across different countries ($r = .48$, $p < .05$). This means that better technological infrastructure often goes hand in hand with stronger ethical practices. Instead of being based only on individual teacher awareness, the ethical use of AI seems to depend on structural factors. This finding supports the AIAS view that ethical practice relies on institutional resources and regulatory support.

RQ3: Curriculum Enhancement for AI Integration

Interviews with nine CELTA-certified teachers and six program coordinators revealed a strong need for curriculum changes to better support AI integration. The participants suggested adding specific AI coursework, updating student assessments, improving teacher training, and focusing more on ethics. CELTA trainers said that AI literacy should be part of the program's reflective practice, not just an extra topic. Trainers in Turkey felt that AI awareness should be central to CELTA training and not just covered in brief workshops. A program leader from Saudi Arabia said that assessment rubrics should measure both how trainees use AI tools and how responsibly they use them. Teachers in Pakistan called for refresher courses to help them feel more confident in using AI in the classroom. Coordinators in Uzbekistan highlighted the need to adapt ethical guidelines to local cultures, ensuring they are fair and relevant.

The focus group results supported these findings. Approximately 70% of the participants wanted a dedicated AI module, 80% supported changes to assessment rubrics, and 67% were interested in professional development focused on AI. Most saw these changes as necessary, not optional. As one participant said, "AI is transforming the methods we use in education." Overall, the responses revealed excitement about new ideas but also some uncertainty about how to integrate AI into practice in teacher education programs in the Global South.

Integrated Findings

Combining the quantitative and qualitative results led to three main conclusions. First, teachers have started using AI in classrooms faster than ethical and regulatory rules have kept up. While teachers felt confident using AI in teaching, they remained concerned about cultural sensitivity, data privacy, and algorithmic bias. Second, a school's place in the national education system had a greater impact on AI integration than individual teacher skills did. Differences in infrastructure, resources, and policy support affect how well teachers can use AI. Third, changes at the curriculum level—such as updating assessment rubrics, improving reflective practice, and offering targeted professional development— were key to building both AI literacy and ethical awareness. These steps can help CELTA programs better match today's technology.

Overall, the findings show that using AI in teacher education supports global goals for inclusive and fair education, such as those in Sustainable Development Goal 4. At the same time, they highlight the need for the responsible and ethical use of AI. One trainer summarized the situation as follows: "We are ready for AI,

but CELTA is not." This quote highlights the gap between teachers' readiness to use AI and institutions' lack of full preparedness. This shows why it is urgent to rethink teacher education to be ethical, fit the local context, and meet the needs of education systems in the Global South.

DISCUSSION

As with Bond et al. (2024) and Zawacki-Richter et al. (2019), generative AI remains underexplored in teacher education, and the use of digital technologies is only tentatively embraced in English-language teacher education. During CELTA training, course participants noted that the course, which purportedly offered tools, lacked AI, highlighting a significant gap between the certification course and the 'real' classroom environment. Reflecting global trends in data use, Pakistan and Uzbekistan exhibited the slowest progress in the domains of Infrastructure and Strategic Ethical Thinking. This aligns with the international critique of the use of data (and its biases) in Bender et al. (2021).

The findings show that teachers can work well with task-based evidence instead of just relying on their perceptions. The results also suggest that institutional structures and national cultures have a greater impact on AI readiness than does economic wealth. For example, Saudi Arabia and Turkey, although wealthier, had lower digital skills than Uzbekistan did. In Pakistan, limited infrastructure did not prevent teachers from being adaptable in their teaching. These trends support Zhao et al.'s (2025) impact theory, which combines the diffusion of innovations with the Technology Acceptance Model (TAM), by showing that AI adoption depends on the specific context rather than on simple measures of development. Overall, these results highlight that AI readiness and adoption depend on context.

Implications for CELTA Reform

The CELTA framework focuses on performance-based evaluation and is well suited to support the use of AI in teaching. However, it does not yet address ethical issues or AI-specific skills. Even though there are no formal assessment criteria, many participants said that they used AI tools when planning lessons and reflecting on their teaching. Adding structured ethical reflection journals to AI-supported teaching activities could help teachers use these tools more thoughtfully while maintaining CELTA's core training approach. More generally, including AI in the curriculum and focusing on equity in global education are important steps in preparing teachers for classrooms that use AI. Without these changes, CELTA graduates may not be ready to handle the ethical, teaching, and practical challenges of working with AI in education.

Country observations

A cross-national study argues that educators in Saudi Arabia and Turkey showed greater confidence in technology, driven by high levels of government

spending on educational technology. Teachers in Pakistan and Uzbekistan were less heard and poorly supported by school administrations. These were regarded as more difficult, so the students attending them were less creative than those attending private or international schools were. These variations indicate that a global approach to practice is less effective than a local approach.

Use of AI Tools and Readiness by Experience

There is evidence that more experienced professionals use basic, readily available tools, whereas newer professionals lack access to ethics training. Preparation or being 'career ready' depends on the level of access, institutional sustenance available, and the nature of professional growth, regardless of years of teaching.

Cross-National Qualitative Analysis

The interviews and focus groups illustrated some macrolevel patterns. Pakistani instructors excelled under pressure, whereas Saudi professors were enthusiastic but failed to scrutinize AI-generated facts. Turkish professors use AI without regard for its ethical implications. In contrast, Uzbek people were prudent and prioritized humans. All the professors advocated for the absence of structured courses, context-bound standardization, and the sensitivity of AI ethics and application.

Pedagogical and ethical implications.

The data gathered show that CELTA's communicative approach to teaching is, to some extent, behind the current understanding of AI's role in education. Tools under the CELTA framework do not recognize digital or ethical proficiency, regardless of whether the teacher uses AI. AIAS may enhance the reflection cycle in CELTA by connecting it with ethical AI. Several instructors have not understood its privacy and prejudice implications, arguing that AI, if not considered, contributes to inequality (Bender et al., 2021). Adding ethical components to the reflective practice of CELTA would help foster cultural sensitivity and digital citizenship.

Policy-level implications

AI adoption is limited by structural issues, including poor connectivity, strict institutional policies, and a lack of funding, especially in public and rural institutions. These results align with problems affecting whole systems in the Global South (Nugraha, 2025; Taheri et al., 2025). The government must prioritize investment in digital infrastructure to guarantee universal access; moreover, CELTA centers and Cambridge English should partner to create AI modules, revise rubrics, and certify educators in AI pedagogy. A more equal and sustainable teacher-training system may be achieved by aligning global certification with local competencies.

Intercultural competence

These findings matter for how language teachers develop intercultural competence. On the basis of Deardorff's (2006) model, participants showed that they were good at using teaching knowledge and adjusting their methods to fit classroom needs. However, they struggled more with cultural sensitivity, recognized bias, and used artificial intelligence in an ethical way. O'Dowd's (2007) focus on reflection and critical intercultural awareness was also only partly seen in practice, since most participants said that they used AI tools mainly to work more efficiently, not to encourage intercultural dialog or understanding.

CELTA-certified teachers use AI more often for everyday classroom tasks, but they do not have many chances to reflect on ethical issues or to think deeply about cultural differences when teaching with AI. To help with this, CELTA programs should include regular training on AI ethics and intercultural reflection. This would encourage more responsible use of AI and help teachers communicate better across cultures, building intercultural competence in diverse classrooms.

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