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Generative and Agentive AI Integration and Pedagogical Competence among ESL Teachers in Public and Private Colleges: A Comparative Survey

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Abstract
The growing use of generative and agentive artificial intelligence (AI) in education necessitates a closer examination of teachers' AI literacy, instructional practices, pedagogical competence, and institutional preparedness. This study investigates the integration of generative and agentive AI among English as Second Language (ESL) teachers in public and private colleges of Punjab, Pakistan, with particular attention to differences in reported competencies, professional attitudes, and institutional support. A quantitative, cross-sectional comparative survey design was employed. Data were collected from 80 randomly selected college teachers, comprising 40 public-sector and 40 private-sector teachers, from colleges in Bahawalpur, Rahim Yar Khan, Lodhran, and Multan. A researcher-developed questionnaire administered through Google Forms measured six domains: AI knowledge and literacy, generative AI integration, agentive AI integration, AI-supported pedagogical competence, motivation and professional attitudes, and institutional resources and support. The analytical procedure comprised frequencies, percentages, means, and standard deviations, alongside independent-samples comparisons to examine sectoral differences in teachers' responses. The comparative analysis indicates higher reported scores among private-sector teachers in AI literacy, generative and agentive AI integration, pedagogical competence, and institutional support. The most pronounced differences concern generative AI use and institutional resources, whereas professional attitudes are comparatively similar across the two groups. Agentive AI integration receives lower scores than generative AI integration in both public and private sectors, suggesting that teachers' familiarity with content-generating applications does not necessarily extend to delegated, multistep instructional workflows. These patterns highlight the need to distinguish technological access and willingness to adopt AI from the pedagogical knowledge required for its responsible application. The study recommends sustained, practice-oriented teacher development, equitable access to digital resources, clear institutional guidance, and human oversight of AI-supported instruction. Because the cross-sectional design relies on self-reported data, the findings do not establish causal relationships or independently verify classroom performance. Further research using classroom observations and performance-based assessments could provide a more comprehensive understanding of teachers' demonstrated AI competence.

Keywords: Generative AI, agentive AI, ESL teachers, pedagogical competence, institutional support

1.Introduction

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Artificial intelligence (AI) is increasingly changing the ways teachers prepare instructional materials, explain difficult concepts, assess students' work, provide feedback, and organize classroom activities. In English as a Second Language (ESL) teaching, these developments are particularly significant because language instruction requires teachers to respond to differences in learners' proficiency, vocabulary, grammatical knowledge, communicative abilities, and writing needs. Generative AI applications can assist teachers in preparing reading passages, designing communicative activities, developing grammar exercises, adapting texts to different proficiency levels, and generating assessment materials. More recent agentive AI systems extend these possibilities by planning and carrying out multistep tasks, coordinating digital resources, and undertaking delegated activities with varying degrees of autonomy. These developments are not simply adding new tools to existing teaching practices; they are raising questions about the knowledge, judgment, and professional competence that effective teaching now requires.

The growing availability of AI, however, does not guarantee its meaningful incorporation into education. A teacher may use an AI application to generate a lesson plan without being able to determine whether its learning objectives are appropriate, its examples are linguistically accurate, or its activities correspond to students' actual needs. Similarly, an AI system may generate feedback on students' writing, but the teacher must still decide whether that feedback is accurate, comprehensible, culturally appropriate, and consistent with the intended learning outcomes. The central educational question, therefore, is not merely whether teachers have access to AI applications, but whether they possess the technological knowledge and pedagogical competence necessary to use them purposefully. UNESCO's (2024) *AI Competency Framework for Teachers* places this concern within a broader professional agenda encompassing AI foundations, AI pedagogy, ethical practice, human agency, and continuing professional learning. From this perspective, AI competence is not equivalent to familiarity with applications; it requires teachers to evaluate, adapt, supervise, and critically integrate AI into educational practice.

The distinction between generative and agentive AI adds an important dimension to this debate. Generative AI primarily produces content in response to instructions, whereas agentive AI can undertake sequences of actions towards specified goals, depending on its capabilities, permissions, and configuration. For ESL teachers, generative systems may assist with vocabulary exercises, comprehension questions, lesson plans, and writing prompts. Agentive systems may additionally coordinate lesson preparation, organize resources, conduct preliminary assessments, or support multistep instructional workflows. Nevertheless, neither content generation nor task automation necessarily constitutes sound pedagogy. The educational value of these systems depends on teachers' capacity to connect technological possibilities with curriculum requirements, language learning objectives, student proficiency, and appropriate assessment practices. As UNESCO (2023) argues, educational adoption of generative AI requires human-centred safeguards, appropriate guidance, and attention to the conditions under which these technologies are used.

These questions are especially relevant to Pakistan, where educational institutions operate under differing administrative arrangements, financial conditions, technological facilities, and professional development opportunities. Colleges in Punjab provide an important setting in which to examine whether institutional sector is associated with differences in ESL teachers' AI integration and pedagogical competence. Public colleges operate within government administrative and resource allocation structures, whereas private colleges may have different arrangements for technology procurement, management decisions, and staff development. Such differences could shape teachers' opportunities to explore AI applications, receive professional training, and incorporate digital resources into instructional practice. However, neither institutional ownership nor funding arrangements alone establish the actual level of AI readiness in a particular college. Public institutions may contain digitally proficient teachers and supportive departments, while private institutions may also experience financial, technical, or professional constraints. A systematic comparison is therefore necessary to determine whether, and in what respects, meaningful differences exist.

The present study proposes a comparative survey of ESL teachers working in public and private colleges in Punjab, Pakistan. It examines the extent to which teachers integrate generative and agentive AI into their instructional practices and investigates their pedagogical competence in using these technologies for lesson planning, materials development, differentiated instruction, feedback, assessment, and classroom decision-making. It also considers teachers' AI literacy, professional training, motivation, perceived usefulness, institutional encouragement, and access to technological resources. By comparing teachers across the two institutional sectors, the study seeks to establish whether differences in AI integration correspond with differences in pedagogical competence and the professional conditions that support its development. Its central premise is that meaningful AI integration must be examined as a relationship between teachers' capabilities, instructional purposes, and institutional opportunities rather than as a simple measure of technological adoption.

1.1. Background of the Study

1.1.2. The expanding role of AI in ESL instructional practices

AI has become increasingly relevant to language education because many of its applications correspond directly to the recurring demands of ESL teaching. Teachers routinely prepare explanations of grammatical structures, construct vocabulary activities, develop reading comprehension exercises, evaluate written assignments, and design opportunities for speaking and listening practice. Generative AI can assist with these activities by producing alternative explanations, adapting texts, suggesting discussion questions, and generating examples for learners at different proficiency levels. Language support applications can also provide automated feedback on grammar, spelling, vocabulary, and written expression. When used critically, these capabilities may help teachers prepare instructional resources more efficiently and devote greater attention to learners' communicative and developmental needs. Empirical research in Pakistan provides an initial indication of the relevance of these applications. Saleem et al. (2025) examined AI-supported ESL instruction through a mixed-methods study involving 100 undergraduate students, classroom observations, and focus group discussions. Their intervention compared 50 students in an experimental group with 50 in a control group over 16 weeks. The researchers reported stronger vocabulary and writing gains in the AI-supported group and identified inadequate infrastructure, insufficient teacher training, and limitations in the cultural appropriateness of AI-generated feedback as implementation concerns. These findings are relevant because they demonstrate that the educational usefulness of AI cannot be separated from the conditions under which teachers employ it. However, the study focused on student learning outcomes and AI-assisted instructional practices; it did not establish differences between ESL teachers in public and private colleges, nor did it directly examine agentive AI. Its findings therefore provide contextual support for the present investigation without resolving its central comparative questions.

The increasing availability of generative applications also makes it necessary to distinguish between using technology and integrating it pedagogically. Generating a worksheet, for instance, represents a relatively limited application of AI. Evaluating the worksheet against curricular objectives, adapting it to students' proficiency, identifying inaccuracies, and using it to guide subsequent instruction require additional professional judgment. Agentive AI introduces further questions because delegated workflows may involve several connected decisions or actions. Teachers must determine which tasks can appropriately be delegated, what information the system can access, when human review is required, and how errors will be identified and corrected. Consequently, the depth of AI integration should be examined through the instructional purposes, quality of use, and degree of teacher oversight rather than through frequency of application use alone.

1.1.2. Pedagogical competence and teachers' technological knowledge

Pedagogical competence involves more than the ability to deliver subject content. In ESL teaching, it encompasses the selection of appropriate instructional methods, the design of learning activities, the adaptation of materials to learners' needs, the provision of constructive feedback, and the assessment of language development. Technological integration adds another dimension because teachers must understand how digital tools support or constrain these pedagogical decisions. Mishra and Koehler's (2006) technological pedagogical content knowledge framework provides a useful theoretical basis for examining this relationship. The framework explains effective technology integration through the interaction of technological knowledge, pedagogical knowledge, and content knowledge. Applied to ESL teaching, this perspective suggests that knowing how to operate an AI application is insufficient unless teachers can connect its capabilities with language content and appropriate teaching strategies. A teacher who can generate grammatical exercises but cannot identify errors in the generated material may possess operational familiarity without the competence required for responsible instructional use.

Generative and agentive AI makes this relationship more complex. Teachers must evaluate not only whether an application functions correctly but also whether its outputs support learning objectives, accommodate learner differences, and preserve the teacher's responsibility for instructional decisions. UNESCO's (2024) framework reinforces this position by treating AI pedagogy, ethical practice, human-centred thinking, and professional learning as interconnected areas of teacher competence. Accordingly, the present study conceptualises pedagogical competence as the capacity to employ AI in ways that remain aligned with curricular aims, learners' needs, sound instructional principles, and professional accountability. This distinction also has methodological significance. Teachers' confidence in AI use should

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not automatically be interpreted as evidence of pedagogical competence. Similarly, frequent AI use does not necessarily indicate sophisticated integration. The proposed survey should therefore measure AI integration and pedagogical competence as related but distinct constructs. It should examine teachers' reported practices while distinguishing basic content generation from more considered applications involving adaptation, critical evaluation, assessment, and the supervision of agentive workflows.

1.1.3. Institutional sector, professional motivation, and access to resources

The conditions in which teachers work may shape their opportunities to develop and apply AI competence. Access to reliable internet connectivity, suitable devices, institutional subscriptions, technical assistance, professional development, and supportive management can facilitate experimentation with emerging technologies. Conversely, limited access, inadequate training, unclear institutional guidance, and concerns about the reliability of AI outputs may discourage teachers from incorporating these applications into their instructional routines. Research involving Pakistani university faculty provides relevant evidence concerning these professional and institutional factors. Jogezai et al. (2025) surveyed 493 university faculty members across Pakistan to investigate their intentions to use generative AI for instruction. Their findings identified AI literacy, perceived pedagogical relevance, organizational AI guidelines, and previous experience with AI as significant considerations in teachers' intentions to use generative AI. Although university faculty are not equivalent to college ESL teachers, this study supports the argument that AI adoption is shaped by more than individual access to technology. Teachers' knowledge, their assessment of pedagogical value, and the guidance provided by their institutions warrant attention when examining instructional integration.

Teacher motivation also deserves careful examination. Teachers who perceive AI as useful for addressing instructional demands may be more willing to explore it, whereas those who regard it as unreliable, difficult to use, professionally threatening, or unrelated to their teaching responsibilities may be less inclined to adopt it. Yet reluctance should not automatically be interpreted as a lack of interest. It may reflect inadequate training, insufficient time, limited technical assistance, uncertainty about institutional expectations, or legitimate concerns about accuracy and student dependence. Equally, enthusiasm for AI does not guarantee that teachers can use it effectively. The proposed study should therefore distinguish motivational factors from actual competence and institutional opportunities. The public and private college comparison is particularly important in this respect. It is plausible that differences in institutional management, resource allocation, and professional development arrangements may be associated with different opportunities for AI integration. Nevertheless, this proposition requires direct evidence from the sampled colleges in Punjab. National studies of university faculty cannot establish that government college teachers are less motivated, less competent, or less well supported than teachers in private colleges. Nor can the findings of a study conducted in a particular university be generalised automatically to the entire college sector. The present investigation will address this limitation by collecting comparable data from ESL teachers in both public and private colleges and examining their reported training, motivation, access to resources, institutional support, and pedagogical practices.

1.1.4. Teacher training and the gap between access and meaningful integration

Professional training is another important consideration because effective AI integration requires teachers to evaluate and adapt AI-generated materials rather than accept them uncritically. Training should address prompt formulation, the evaluation of generated content, the alignment of AI-supported activities with learning objectives, differentiated instruction, assessment design, privacy, academic integrity, and the limitations of automated feedback. Agentive AI additionally requires an understanding of task delegation, permissions, workflow monitoring, and human oversight. UNESCO's (2023) guidance on generative AI in education emphasizes human-centred implementation, safeguards, and institutional preparedness. Its subsequent AI competency framework identifies professional learning as a central component of teachers' readiness to work with AI (UNESCO, 2024). These recommendations indicate that the provision of AI applications alone is not a sufficient institutional response. Teachers also need opportunities to develop the knowledge and judgment required for responsible instructional use. In Pakistan, the findings reported by Saleem et al. (2025) similarly identify inadequate training as one of the challenges encountered in AI-supported ESL instruction. Jogezai et al. (2025) further demonstrate the relevance of AI literacy, previous experience, and organizational guidelines to university faculty members' intentions to use generative AI. Together, these studies justify examining training and institutional support in the college context. However, they do not establish the actual proportion of ESL teachers in Punjab's public or private colleges who have received AI training. Such figures must be obtained through direct data

collection or a verifiable, representative administrative dataset rather than inferred from studies conducted with different populations. The distinction between access and competence is particularly consequential for colleges operating with limited resources. Even when free AI applications are available, teachers may lack the time, confidence, professional guidance, or reliable connectivity necessary to use them consistently. Conversely, institutional provision of advanced tools may yield limited educational value if teachers are not prepared to integrate them into lesson planning, classroom interaction, and assessment. A meaningful comparison must therefore investigate the combined role of individual competence and institutional conditions rather than treating technology availability as a sufficient indicator of readiness.

1.2. Rational of the Study

The literature establishes the growing relevance of AI in language teaching and identifies teacher competence, professional development, institutional guidance, and technological conditions as important considerations. Nevertheless, the existing evidence does not adequately answer the specific question addressed in this article: whether ESL teachers in public and private colleges of Punjab differ in their integration of generative and agentive AI and in their pedagogical competence for using these systems. Saleem et al. (2025) examined AI-supported ESL instruction and associated implementation challenges in Pakistan, while Jogezai et al. (2025) investigated the intentions of university faculty to use generative AI. Both studies offer relevant contextual evidence, but neither directly establishes a comparative profile of public and private college ESL teachers in Punjab. In addition, the distinction between generative AI, which primarily produces content, and agentive AI, which may execute delegated multistep tasks, requires explicit consideration in the measurement of teachers' instructional practices.

The present study addresses this gap through a comparative survey of ESL teachers in public and private colleges of Punjab, Pakistan. It will examine their reported use of generative and agentive AI, pedagogical competence, AI literacy, professional training, motivation, and access to institutional resources. The comparison will establish whether the two groups differ in their reported practices and identify the professional and institutional factors associated with those differences. By doing so, the study seeks to move beyond general claims about AI's educational possibilities and provide context-specific evidence about teachers' preparedness to integrate these technologies into ESL instruction. The study does not assume that private colleges necessarily outperform public colleges, or that government college teachers are inherently less motivated or less competent. Instead, it treats institutional sector as a meaningful comparative variable whose relationship with AI integration and pedagogical competence requires empirical examination. This approach offers a defensible basis for recommendations concerning teacher training, institutional support, and equitable access to AI-enabled professional learning across Punjab's college sector.

1.3. Research Questions

- To what extent do ESL teachers in public and private colleges of Punjab, Pakistan, integrate generative and agentive AI into their instructional practices, particularly in lesson planning, materials development, differentiated instruction, feedback, and assessment?
- What differences exist between public and private college ESL teachers in their AI literacy, pedagogical competence, professional training, motivation, and access to technological resources and institutional support?
- What relationships exist among ESL teachers' AI literacy, professional training, motivation, institutional support, and their integration of generative and agentive AI into pedagogical practices?
- To what extent does pedagogical competence differ between public and private college ESL teachers, and how is it associated with their AI integration practices when relevant teacher and institutional characteristics are taken into account?

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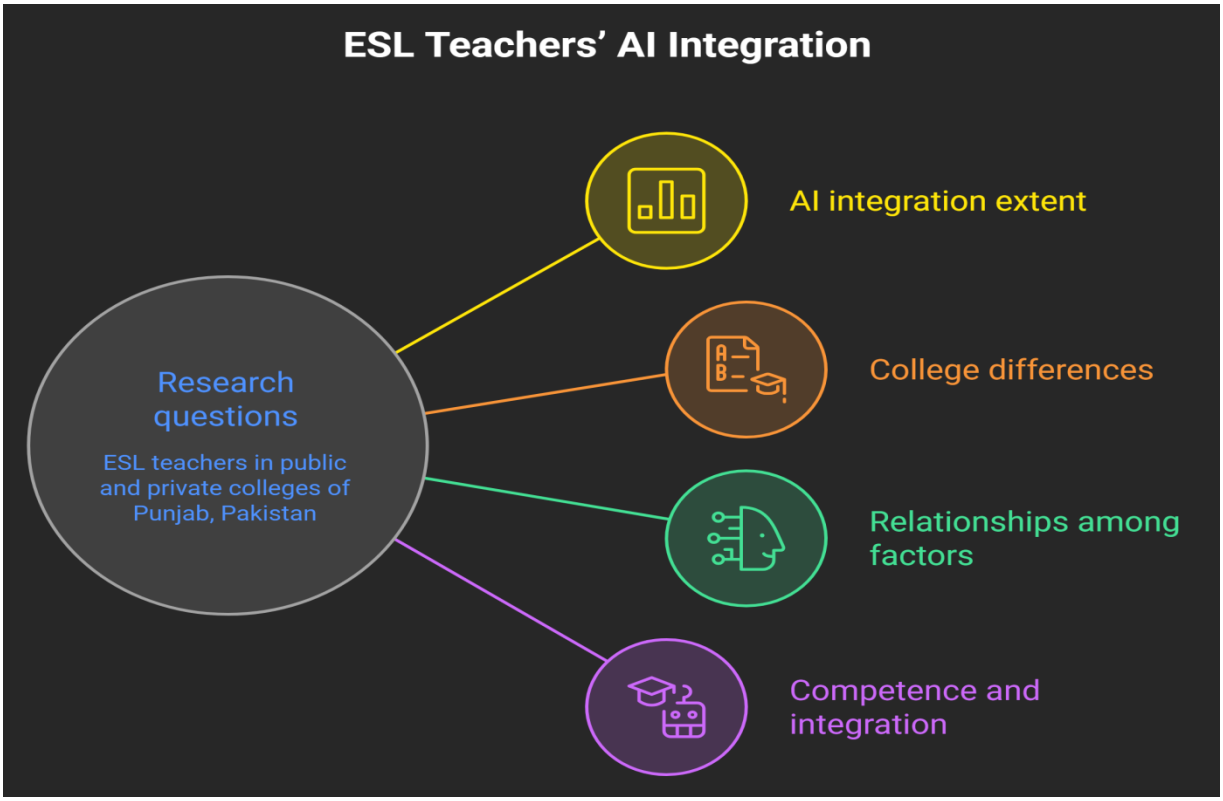


Figure 1. Research questions

1.4. Significance of the Study

The study is significant because it will provide context-specific empirical evidence concerning the integration of generative and agentive AI into ESL teaching in public and private colleges of Punjab, Pakistan. By examining teachers' instructional practices alongside their AI literacy, pedagogical competence, professional training, motivation, and access to institutional resources, the research will move beyond general assumptions about the educational value of AI to investigate the conditions under which its use becomes pedagogically meaningful. The public and private sector comparison will help identify whether differences in teachers' reported practices and professional preparedness correspond with variations in training opportunities, technological facilities, and institutional support. Its findings may inform college administrators, education policymakers, and teacher educators in developing context-sensitive professional development programs, strengthening institutional guidance, and addressing barriers to responsible AI integration. The study will also contribute to the emerging literature on AI-supported language education by examining generative and agentive AI as distinct but potentially complementary forms of instructional assistance. By distinguishing teachers' reported adoption from their pedagogical competence, it may offer a more nuanced understanding of how AI can support language teaching while preserving teachers' professional judgment, instructional responsibility, and responsiveness to learners' needs.

2. Review of the Related Literature

2.1. Generative and Agentive AI Tools for ESL Teachers

The distinction between generative and agentive AI becomes more useful when teachers can connect it with the actual tools available to them. Generative AI can help teachers create lesson plans, reading passages, grammar exercises, writing prompts, rubrics, and feedback. Agentive AI extends beyond generating a response when a system can also use tools, carry out multistep actions, and coordinate a workflow under defined permissions. Microsoft's documentation, for

example, distinguishes agents that can take actions on a user's behalf from ordinary conversational assistance. For ESL teachers, the practical question is therefore not simply which AI tool is available, but which tool can perform the task required. The following guide identifies real tools and official websites, explains their uses, and offers examples relevant to college-level English language teaching.

Table 1. Generative AI versus agentive AI

Feature	Generative AI	Agentive AI
Main function	Creates content in response to instructions	Pursues a goal by carrying out a sequence of actions
Teacher's role	Gives instructions, evaluates the response, and edits the output	Defines the goal, grants permissions, monitors actions, and checks results
ESL example	Generate 20 exercises on conditional sentences	Coordinate the preparation of a lesson, exercises, a draft answer key, and a review checklist
Typical output	Text, questions, explanations, rubrics, dialogues, and feedback	Completed or coordinated workflows, potentially involving several tools
Level of autonomy	Usually responds to individual requests, although some products support extended workflows	Can take multiple steps without requiring a separate instruction for every step
Main concern	Accuracy, relevance, bias, and quality of generated content	All the same concerns, plus permissions, action errors, and supervision of delegated tasks

A tool's name does not determine whether it is generative or agentive. The same product may offer ordinary chat, content generation, and agentic features. An AI system that generates a lesson plan is not automatically agentive; it must actually undertake delegated actions or coordinate a workflow to qualify in that sense. The links below lead to official product websites or documentation. Feature availability, free access, and institutional licensing may vary.

Table 2. Tools for language teaching and instructional preparation

Tool and website	ESL teaching applications	Example of a teacher's task
ChatGPT — chatgpt.com	Lesson planning, grammar explanations, writing prompts, role-play, quizzes, differentiated materials	Create a 45-minute lesson on argumentative paragraph writing for intermediate college students.
Gemini — gemini.google.com	Lesson outlines, assessment questions, adapted texts, classroom activities, alternative explanations	Develop three versions of a reading passage for different English proficiency levels.
Claude — claude.ai	Working with lengthy texts, developing writing activities, analysing drafts, preparing detailed teaching materials	Review an essay and provide separate comments on argument, organisation, vocabulary, and grammar.
MagicSchool AI — magicschool.ai	Teacher-oriented lesson planning, assessment design, differentiated resources, feedback and classroom communication	Prepare a lesson outline, a worksheet, and a short formative assessment for one learning objective.
Diffit — diffit.me	Adapt reading materials, generate comprehension questions, create vocabulary supports	Adapt a passage for intermediate ESL learners and create vocabulary and comprehension activities.
Brisk Teaching — briskteaching.com	Support for writing feedback, instructional resources, reading-level adjustments, and teacher workflows	Prepare draft feedback on student writing using criteria specified by the teacher.

Official descriptions of Google Gemini for Education identify lesson planning, text differentiation and assessment creation as teaching applications. MagicSchool similarly provides teacher-oriented tools for planning, content creation, and assessment.

Table 3. Tools for specific ESL skills

ESL component	Useful tool	Description
Reading	Diffit	Create adapted reading texts, vocabulary exercises, and comprehension questions.
Writing	ChatGPT	Develop essay prompts, model paragraphs, revision activities, and feedback rubrics.
Grammar	Gemini	Generate contextualized examples, error-correction exercises, and answer keys.
Speaking	ChatGPT	Create interview simulations, role-plays, debate topics, and follow-up questions.
Listening	Gemini	Prepare listening scripts, comprehension questions, and vocabulary previews.
Vocabulary	MagicSchool AI	Prepare word lists, definitions, contextual examples, and formative quizzes.
Writing feedback	Brisk Teaching	Draft feedback for teacher review against specified writing criteria.
Research and academic writing	ChatGPT	Develop research questions, explain academic conventions, and improve the clarity of draft text.

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2.2. Critical Review of the Previous researches

Table 4. Reviews of the previous articles

Year and author(s)	Topic	Methodology	Findings	Contributions
2019, Zawacki-Richter et al.	Systematic Review of Research on Artificial Intelligence Applications in Higher Education	Systematic review of research on AI applications in higher education.	The review identifies applications including profiling and prediction, assessment, adaptive systems, and intelligent tutoring.	Establishes a foundation for investigating teachers' roles in AI-supported education rather than concentrating exclusively on student-facing technologies.
2023, Crompton and Burke	Artificial Intelligence in Higher Education: The State of the Field. Examines the scope and direction of AI research in higher education.	Systematic review.	The authors classify AI applications in areas such as assessment, prediction, AI assistants, intelligent tutoring, and student learning management.	Provides a broader context for examining teachers' use of AI and for distinguishing technological applications from their pedagogical purposes.
2023, Kasneci et al.	ChatGPT for Good? On Opportunities and Challenges of Large Language Models for Education.	Conceptual and analytical discussion.	The authors discuss content generation, personalized learning support, interaction, and feedback alongside concerns about inaccuracies, bias, academic integrity, and the need for human oversight.	Supports examining teachers' ability to evaluate AI-generated materials and make pedagogically appropriate decisions rather than measuring tool use alone.
2023, Kohnke, Moorhouse, and Zou	ChatGPT for Language Teaching and Learning. Examines potential applications of ChatGPT in language education.	Technology-focused review and pedagogical discussion.	The authors consider ways ChatGPT can support language learning and teaching while identifying limitations and the need for appropriate competencies.	Directly informs the generative AI dimension of the present study, particularly lesson planning, language practice, material development, and feedback.
2023, Kohnke, Moorhouse, and Zou	Exploring Generative Artificial Intelligence Preparedness Among University Language Instructors.	Qualitative case study involving semi-structured interviews with 12 instructors at a higher-education institution in Hong Kong.	The study examines instructors' readiness, experiences, concerns, and professional learning needs in relation to generative AI.	Offers a close connection to the proposed investigation because it focuses on language instructors rather than general student use of AI.
2023, Miao and Holmes	Guidance for Generative AI in Education and Research. Addresses responsible and human-centred integration of generative AI.	International policy guidance published by UNESCO; not an empirical study.	The guidance emphasizes human agency, ethical use, privacy, institutional preparedness, and the development of capacities needed for responsible AI integration.	Provides a policy basis for considering ethical judgment, institutional support, and teacher development as contextual dimensions of AI integration.
2024, Bower et al.	Outcomes of the ChatGPT Teacher Survey. Examines educators' perceptions of the implications of generative AI for teaching and assessment.	Mixed-methods teacher survey involving 318 educators.	Respondents anticipated changes in teaching and assessment, including greater attention to learning processes, higher-order thinking, ethical considerations, and human interaction.	Provides empirical context for examining teachers' perceptions of AI integration and their views of changing instructional and assessment practices.
2024, Yue, Jong, and Ng	Understanding K–12 Teachers' Technological Pedagogical Content Knowledge Readiness and Attitudes Toward Artificial Intelligence Education.	Quantitative study involving 1,664 K–12 teachers.	The study examines relationships among teachers' technological, pedagogical, and content-related knowledge, readiness, and attitudes toward AI education.	Provides a useful conceptual basis for distinguishing technological familiarity from the pedagogical knowledge required to integrate AI meaningfully into instruction.

The literature establishes that the educational value of artificial intelligence depends less on its mere availability than on how teachers evaluate, adapt, and incorporate its capabilities into instructional practice. Zawacki-Richter et al. (2019) and Crompton and Burke (2023) provide a broad account of AI applications in higher education, but their reviews offer limited insight into the pedagogical decisions teachers make when using contemporary generative systems. This limitation becomes more consequential as AI tools move beyond prediction, tutoring, and automated assessment towards producing lesson materials, language exercises, explanations, and feedback. Consequently, evidence about the presence of AI in education cannot, by itself, explain whether teachers possess the knowledge required to use it appropriately.

The work of Kasneci et al. (2023) and Kohnke et al. (2023a) makes the pedagogical dimension more explicit by discussing the opportunities and limitations of large language models in educational and language-learning contexts. Their contributions support the view that AI integration requires professional judgment, since generated content may be inaccurate, linguistically inappropriate, or poorly aligned with instructional objectives. Nevertheless, identifying possible applications does not demonstrate that teachers can evaluate those applications competently. Similarly, the preparedness examined by Kohnke et al. (2023b) is relevant to teachers' readiness for generative AI, but preparedness should not be equated with demonstrated pedagogical competence. A teacher may feel confident using a chatbot without being able to differentiate language tasks effectively, evaluate the quality of automated feedback, or determine when AI assistance is inappropriate. These distinctions justify examining teachers' reported practices and pedagogical competence as related but analytically separate constructs. The relationship between technological knowledge and pedagogical practice also requires careful treatment. Yue et al. (2024) provide a useful TPACK-related perspective on teachers' readiness and attitudes towards AI education. However, readiness to teach about AI differs from the ability to integrate AI into the teaching of English. In college ESL settings, pedagogically meaningful integration involves aligning generated activities with language-learning objectives, students' proficiency levels, communicative needs, and assessment criteria. Bower et al. (2024) further demonstrate the relevance of teachers' perceptions of changing instructional and assessment practices, but anticipated changes do not establish actual competence. The proposed study should therefore avoid treating favourable attitudes, frequent tool use, or self-reported confidence as interchangeable indicators of effective pedagogical integration.

The studies reviewed provide a foundation for investigating generative AI, teacher preparedness, and technology-related pedagogical knowledge, but they do not directly establish how college ESL teachers use configured AI agents to carry out multistep instructional workflows. This distinction creates a specific opportunity for the proposed investigation. Generating a grammar worksheet in response to a prompt represents generative AI use; configuring a system to consult approved course materials, prepare differentiated exercises, organize them according to a lesson sequence, and produce a draft assessment report represents a more agentive workflow. These uses entail different levels of task delegation and teacher oversight, and should not be combined into a single undifferentiated measure of AI use. The institutional comparison is equally important but should remain an empirical question rather than a predetermined assumption. The reviewed studies do not establish whether ESL teachers in public or private colleges in Punjab possess stronger AI-related pedagogical competence. Access to digital infrastructure, opportunities for professional development, institutional policies, teaching responsibilities, and familiarity with AI tools may be associated with differences between the sectors, but these factors require measurement rather than speculation. The proposed research can address this limitation by examining generative AI integration, agentive AI integration, and pedagogical competence among college ESL teachers, while considering institutional sector and relevant professional characteristics. If the study uses a cross-sectional questionnaire, its conclusions should concern associations and group differences in self-reported measures, not causal effects or verified classroom performance.

3. Research Methodology

The study employed a quantitative, cross-sectional survey design to examine generative and agentive artificial intelligence integration and pedagogical competence among ESL teachers in public and private colleges. Data were collected from 80 randomly selected college teachers, comprising 40 teachers from public colleges and 40 from private colleges, to ensure equal representation of the two institutional sectors. The research was conducted in colleges located in the districts of Bahawalpur, Rahim Yar Khan, Lodhran, and Multan, Punjab, Pakistan. Data were collected through a structured questionnaire developed and administered using Google Forms. The questionnaire elicited information about teachers' knowledge and awareness of generative and agentive AI tools, their observations and experiences regarding AI-supported teaching, their reported practices of AI integration, and their opinions about the pedagogical usefulness, limitations, and challenges of these technologies. It also addressed teachers' perceptions of their pedagogical competence in relation to AI-supported lesson planning, instructional material development, language teaching, feedback, and assessment. Participation was based on voluntary responses to the online questionnaire. The collected responses were intended to provide a comparative account of teachers' reported knowledge, practices, and opinions across public and private colleges. The data were to be organized and analyzed using descriptive statistics, including frequencies and percentages, to summarize response patterns. Where appropriate, comparisons between the two institutional groups could be conducted to identify differences in reported AI integration and pedagogical competence. The findings would be interpreted in relation to the study's research questions, with due recognition that questionnaire responses represent self-

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reported information rather than direct observations of classroom performance.

The research instrument was a researcher-developed questionnaire designed specifically to investigate the integration of generative and agentive artificial intelligence (AI) into English as a Second Language (ESL) teaching in public and private colleges of Punjab, Pakistan. It comprised eight main sections: participant profile, knowledge and literacy in generative and agentive AI, integration of generative AI into ESL instruction, integration of agentive AI into ESL instruction, pedagogical competence in AI-supported ESL teaching, motivation and professional attitudes, institutional resources and support, and the introductory and ethical information provided to participants. The instrument included 15 participant-profile items and six substantive measurement sections containing 71 Likert-scale statements, with the final number subject to verification against the complete questionnaire because the institutional resources section provided in the draft appears truncated. The profile items elicited demographic, academic, professional, and AI-related background information, while the substantive sections assessed distinct but related dimensions of teachers' AI integration. Five-point response scales were tailored to each construct, measuring self-assessed knowledge, frequency of actual instructional practices, perceived pedagogical proficiency, level of agreement, and extent of institutional resource availability. The distinction between generative and agentive AI was maintained to differentiate content-generation activities from multistep tasks performed through delegated workflows. This structure was intended to separate teachers' knowledge from their reported practices, perceived competence, professional dispositions, and institutional conditions, facilitating descriptive and comparative analyses across public and private colleges and relevant professional categories. The questionnaire was subsequently subjected to validation procedures to assess its suitability for the study, while its internal consistency was examined using Cronbach's alpha. The instrument yielded a Cronbach's alpha coefficient of 0.83, indicating good internal consistency for research purposes. The combined use of construct-specific response scales, clearly defined AI categories, participant-profile variables, and reliability assessment strengthened the instrument's methodological suitability for examining teachers' reported AI-related knowledge, practices, and perceptions.

4. Data Analysis

4.1. Descriptive Analysis of the Questionnaire Domains

The study examined six dimensions of AI-related knowledge, practice, competence, professional attitudes, and institutional provision among ESL teachers working in public and private colleges. Descriptive statistics were used to examine the distribution of responses across the two institutional sectors. The mean scores represented teachers' responses to the statements within each questionnaire domain, while standard deviations indicated the degree of variation among respondents.

Table 5. Descriptive statistics for the six questionnaire domains by institutional sector

Questionnaire domain	Public colleges	SD	% of maximum	Private colleges	SD	% of maximum
Knowledge and AI literacy	3.12	0.68	62.4%	3.68	0.61	73.6%
Generative AI integration	2.94	0.72	58.8%	3.56	0.66	71.2%
Agentive AI integration	2.18	0.71	43.6%	2.73	0.75	54.6%
Pedagogical competence	3.05	0.64	61.0%	3.52	0.59	70.4%
Motivation and professional attitudes	3.62	0.55	72.4%	3.78	0.52	75.6%
Institutional resources and support	2.71	0.70	54.2%	3.31	0.72	66.2%

Note. M = mean; SD = standard deviation. Percentage of maximum score = (M ÷ 5) × 100. These percentages express scores relative to the maximum possible domain score; they do not represent the percentage of teachers selecting a particular response. Attitude scores assume that cautionary statements have been appropriately reverse-coded before the composite mean is calculated.

The descriptive results indicate variation across the six dimensions of AI-related competence and institutional provision. Private college teachers obtained higher mean scores than public college teachers in all six domains, although the size of the difference varied across dimensions. The most pronounced descriptive differences concerned knowledge and AI literacy, generative AI integration, and institutional resources and support. For knowledge and AI literacy, the mean score for private college teachers was 3.68 (SD = 0.61), compared with 3.12 (SD = 0.68) for public college teachers. These scores corresponded to 73.6% and 62.4% of the maximum possible score, respectively. The pattern suggests that

private college teachers reported greater familiarity with generative and agentive AI concepts and applications. Nevertheless, the scores should be interpreted as self-reported knowledge rather than as direct evidence of objectively measured AI literacy.

A similar difference appeared in reported generative AI integration. Private college teachers obtained a mean of 3.56 (SD = 0.66), whereas public college teachers obtained a mean of 2.94 (SD = 0.72). This pattern suggests more frequent reported use of generative AI for instructional activities among private college teachers. Such activities may include lesson planning, the preparation of language exercises, reading materials, assessment questions, and feedback. The results indicate a difference in reported instructional practice, although they do not establish the quality or effectiveness of the materials produced. Agentive AI integration received the lowest mean scores in both groups. Public college teachers reported a mean of 2.18 (SD = 0.71), while private college teachers reported a mean of 2.73 (SD = 0.75). These results suggest that the use of AI systems capable of carrying out delegated tasks or multistep workflows was less established than the use of generative tools. This distinction is important because familiarity with systems that generate content does not necessarily imply the ability to configure, supervise, or evaluate agentive systems. The relatively low scores in both groups also indicate that agentive AI integration may require more targeted professional development.

In relation to pedagogical competence, private college teachers reported a mean of 3.52 (SD = 0.59), compared with 3.05 (SD = 0.64) among public college teachers. The descriptive difference suggests greater reported confidence among private college teachers in applying AI to pedagogical tasks. However, self-assessed competence should not be equated with demonstrated teaching proficiency. Classroom observations, lesson-plan evaluations, or performance-based assessments would be needed to determine whether the reported confidence corresponds to actual instructional competence. Motivation and professional attitudes produced the highest mean scores in both sectors. Public college teachers obtained a mean of 3.62 (SD = 0.55), while private college teachers obtained a mean of 3.78 (SD = 0.52). The relatively small difference suggests that teachers in both settings expressed broadly comparable levels of professional interest or perceived usefulness, subject to the correct scoring of favourable and cautionary items. This pattern is noteworthy because differences in reported AI use do not necessarily imply equally substantial differences in teachers' willingness to engage with the technology. Finally, institutional resources and support received a mean of 2.71 (SD = 0.70) in public colleges and 3.31 (SD = 0.72) in private colleges. The results suggest that teachers in private colleges reported more favourable access to institutional facilities, technical assistance, or opportunities for professional learning. Institutional conditions may therefore be relevant when interpreting differences in teachers' reported AI practices. However, the descriptive comparison alone cannot establish that institutional support caused the differences in AI integration.

4.2. Comparative Analysis of Public and Private College Teachers

Welch's independent-samples t-test was used to examine whether the observed differences between public and private college teachers were statistically significant. This test does not require the assumption of equal population variances. Mean differences were calculated by subtracting the public-sector mean from the private-sector mean. The analysis also considered 95% confidence intervals and Cohen's d to assess the magnitude and precision of the group differences.

Table 6. Comparative analysis of AI-related questionnaire domains

Domain	Mean difference (Private −Public)	t	p	95% CI for difference	Cohen's d
Knowledge and AI literacy	0.56	3.88	< .001	[0.27, 0.85]	0.87
Generative AI integration	0.62	4.01	< .001	[0.31, 0.93]	0.90
Agentive AI integration	0.55	3.37	.001	[0.22, 0.88]	0.75
Pedagogical competence	0.47	3.41	.001	[0.20, 0.74]	0.76
Motivation and professional attitudes	0.16	1.34	.185	[−0.08, 0.40]	0.30
Institutional resources and support	0.60	3.78	< .001	[0.28, 0.92]	0.84

Note. Each group comprised 40 teachers. CI = confidence interval. t statistics are from Welch's independent-samples tests; degrees of freedom vary slightly by domain. Cohen's d is based on the pooled within-group standard deviation. The displayed p values are unadjusted for multiple comparisons.

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The comparative analysis indicates that public and private college teachers differed significantly on five of the six questionnaire domains at the conventional .05 significance level. The observed difference in motivation and professional attitudes did not reach statistical significance. These findings suggest that the clearest group distinctions concerned reported AI knowledge, instructional integration, pedagogical competence, and institutional support rather than professional attitudes alone. The largest mean difference was observed in generative AI integration, where private college teachers scored 0.62 points higher than public college teachers on the five-point scale, $t \approx 4.01$, $p < .001$, 95% CI [0.31, 0.93], $d = 0.90$. The confidence interval excludes zero, and the effect size indicates a substantial standardized difference in this illustrative comparison. The finding suggests that the two institutional groups differed not only in their reported familiarity with AI but also in the frequency with which they incorporated generative AI into ESL instructional activities. Knowledge and AI literacy also showed a statistically significant difference, with private college teachers reporting higher scores than their public-sector counterparts, $t \approx 3.88$, $p < .001$, 95% CI [0.27, 0.85], $d = 0.87$. This pattern is consistent with the descriptive results and suggests that reported AI literacy and reported classroom integration may vary together across institutional settings. However, the cross-sectional design does not establish a directional relationship between knowledge and use. Greater knowledge could facilitate classroom integration, but frequent use may also provide opportunities to develop knowledge.

For pedagogical competence, the private-sector group obtained a higher mean score, with a difference of 0.47 points, $t \approx 3.41$, $p = .001$, 95% CI [0.20, 0.74], $d = 0.76$. This difference indicates that private college teachers reported greater competence in AI-supported pedagogical activities. Nevertheless, the interpretation should remain limited to perceived competence because the questionnaire did not directly assess teachers' classroom performance. A stronger evaluation of pedagogical competence would combine self-report measures with independent assessment of instructional materials, teaching demonstrations, and feedback practices. Institutional resources and support showed a statistically significant difference of 0.60 points in favour of private colleges, $t \approx 3.78$, $p < .001$, 95% CI [0.28, 0.92], $d = 0.84$. This finding is relevant to the interpretation of the other domain differences because access to reliable internet, suitable devices, technical assistance, and professional development opportunities may shape teachers' capacity to integrate AI into instruction. The relationship, however, should not be interpreted as causal without further evidence. Other factors, including teachers' prior experience, institutional policies, workload, and access to training, may also contribute to the observed differences. In contrast, the difference in motivation and professional attitudes was relatively small and statistically insignificant, $t \approx 1.34$, $p = .185$, 95% CI [−0.08, 0.40], $d = 0.30$. Because the confidence interval includes zero, the analysis does not provide sufficient evidence of a statistically significant difference between the groups on this domain. The result suggests that the more pronounced differences in reported AI integration may coexist with comparatively similar professional attitudes. It would therefore be inappropriate to conclude that public college teachers are less motivated to use AI merely because they report lower levels of integration.

4.3. Integrated Interpretation of the Findings

The combined descriptive and comparative results suggest a distinction between teachers' professional willingness to engage with AI and their reported capacity to integrate it into instructional practice. Private college teachers obtained higher mean scores in knowledge, generative AI use, agentive AI use, pedagogical competence, and institutional support. The largest differences concerned generative AI integration, AI literacy, and institutional resources. By contrast, the difference in professional attitudes was comparatively small and did not reach statistical significance. One possible interpretation is that favorable attitudes alone may not be sufficient to support the integration of emerging technologies into ESL teaching. Teachers may recognize the potential usefulness of AI while experiencing limitations related to infrastructure, technical assistance, training, or opportunities to develop practical skills. The observed pattern makes institutional provision an important dimension for further investigation, particularly where teachers are expected to incorporate AI into lesson planning, language practice, assessment, and feedback. These findings should be interpreted within the scope of the research design. The study used a cross-sectional questionnaire and therefore captures teachers' self-reported knowledge, practices, competence, and perceptions at a particular point in time. It does not establish causal relationships between institutional sector and AI integration, nor does it independently verify teachers' actual classroom practices. Furthermore, the equal allocation of 40 participants to each sector facilitates group comparison but does not necessarily reflect the actual distribution of ESL teachers across public and private colleges in the four districts.

5. Conclusion and Recommendations

The integration of generative and agentive artificial intelligence into English as a Second Language (ESL) teaching presents new opportunities for developing instructional materials, supporting language learning, and strengthening teachers' pedagogical practices. However, the educational value of these technologies depends not merely on their availability but also on teachers' AI literacy, pedagogical judgement, practical competence, and access to institutional resources. The present study addresses these interconnected dimensions by examining ESL college teachers in public and private institutions across Bahawalpur, Rahim Yar Khan, Lodhran, and Multan, Punjab, Pakistan. Its focus on both generative and agentive AI extends the discussion beyond the production of AI-assisted teaching materials to consider the emerging use of systems capable of performing delegated tasks and coordinating multistep activities. This distinction is important because the ability to generate instructional content does not necessarily equip teachers to supervise more autonomous AI-supported processes or evaluate their educational suitability.

The study also draws attention to the importance of examining AI integration as a multidimensional phenomenon rather than treating technology adoption as a single measure of digital competence. Teachers may express favorable attitudes towards AI while encountering practical limitations in applying it to lesson planning, language practice, assessment, and feedback. Similarly, reported familiarity with AI tools does not necessarily demonstrate the ability to evaluate their outputs, protect students' information, recognize inaccurate content, or make appropriate pedagogical decisions. Understanding these distinctions is essential for developing professional learning initiatives that address the actual requirements of ESL teaching rather than concentrating exclusively on tool familiarity. The comparison of public and private colleges further provides a basis for investigating whether teachers' reported knowledge, practices, competence, and access to institutional support vary across educational settings. The strength and direction of these differences, however, must be established through the analysis of the actual questionnaire responses. On the basis of these considerations, colleges should develop structured professional development programs that combine foundational AI literacy with practical applications in English language teaching. Such programs should enable teachers to design and critically evaluate AI-assisted lesson plans, reading materials, grammar exercises, speaking activities, writing tasks, and assessment instruments. Training should also address the distinctive requirements of agentive AI, including task delegation, supervision of automated workflows, verification of outputs, and the maintenance of teacher responsibility for instructional decisions. Rather than relying on isolated workshops, institutions should provide continuing opportunities for guided practice, peer collaboration, lesson development, and evaluation of classroom applications. Professional development should be adapted to teachers' existing competencies so that those with limited experience receive foundational support while more experienced users develop advanced pedagogical and evaluative skills.

Institutional leaders should assess the availability of reliable internet access, suitable digital devices, technical assistance, and opportunities for continuing professional learning before expecting teachers to integrate AI extensively into their teaching. Where resources are limited, institutions could introduce phased implementation plans, shared digital facilities, and collaborative training arrangements. Particular attention should be given to ensuring that differences in institutional resources do not unnecessarily restrict teachers' opportunities to develop AI-related competence. Colleges should also establish clear guidance on academic integrity, student data protection, copyright, bias, factual accuracy, and the responsible use of AI-generated materials. Teachers should remain accountable for the accuracy, appropriateness, inclusiveness, and pedagogical relevance of any content or feedback presented to students.

Future research should extend this investigation through classroom observations, interviews, analysis of instructional materials, and performance-based assessments of teachers' AI competence. Longitudinal studies could examine how teachers' knowledge and practices change following professional development, while larger samples drawn from additional districts and provinces could provide a broader account of institutional variation. Further studies should also investigate whether teachers' reported confidence corresponds to demonstrable improvements in lesson design, student engagement, language practice, and assessment quality. Such evidence would help distinguish perceived competence from actual performance and provide a stronger basis for institutional planning and teacher education. Ultimately, the integration of generative and agentive AI into ESL education should be approached as a pedagogical and institutional undertaking rather than simply a technological transition. Its contribution depends on the relationship between teachers' professional competence, the educational purposes for which AI is employed, the resources available to institutions, and the safeguards governing its use. A sustained approach that combines teacher development, institutional support, critical evaluation, and responsible implementation can help colleges make informed decisions about AI-supported language teaching while preserving the central role of teachers in instructional design, professional judgment, and student learning.

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Questionnaire

Dear Participant,

You are invited to participate in a research study investigating the integration of generative and agentive artificial intelligence (AI) into English as a Second Language (ESL) teaching in public and private colleges of Punjab, Pakistan. The study examines teachers' AI literacy, instructional practices, pedagogical competence, professional training, motivation, and access to technological resources and institutional support. Generative AI refers to systems that produce instructional content, such as lesson plans, grammar exercises, reading materials, assessment questions, and feedback in response to prompts. Agentive AI refers to systems capable of carrying out delegated, multistep tasks or coordinating instructional workflows with varying degrees of autonomy. Your professional experience and opinions are valuable to this investigation. The findings will contribute to a comparative understanding of teachers' reported AI integration practices and the factors associated with pedagogical competence in college-level English language teaching.

Informed Consent

Participation is entirely voluntary. The questionnaire concerns your professional experience and perceptions of AI-supported teaching. You may decline to participate and may discontinue before submitting your responses. There are no right or wrong answers; please respond honestly.

Responses will be used for academic research and reported in aggregate form. No directly identifying information is required. Data will be handled confidentially by the research team in accordance with applicable ethical and institutional requirements. Please indicate your consent.

☐ I have read the information above, understand the purpose of the study, and voluntarily agree to participate.
☐ I do not agree to participate.

Instructions

- Select one response for each statement unless the question explicitly permits multiple selections.
- The response scale varies between subsections. Read the scale headings carefully.
- For questions about actual teaching practices, consider your current or most recently completed academic semester.
- Distinguish between activities you have actually performed and activities you believe AI could perform.
- If you have never used a particular technology, indicate non-use rather than estimating your competence or frequency.
- For agentive AI, use the definition provided above. Generating content through a single prompt does not, by itself, constitute agentive AI use.

Participant Profile

Institutional sector
☐ Private college ☐ Public college
District of employment
☐ Multan ☐ Lodhran ☐ Rahim Yar Khan ☐ Bahawalpur
Gender (optional)
☐ Other / self-describe ☐ Prefer not to say ☐ Female ☐ Male
Age group
☐ 56 or above ☐ 46–55 ☐ 36–45 ☐ 26–35 ☐ 25 years or below
Highest academic qualification
☐ Other ☐ PhD ☐ MS/MPhil or equivalent ☐ MA/MSc or equivalent
Academic specialization
☐ Other ☐ Education ☐ Linguistics ☐ English Literature ☐ English Language Teaching / Applied Linguistics
Current designation
☐ Other ☐ Visiting / contractual teacher ☐ Professor ☐ Associate Professor ☐ Assistant Professor ☐ Lecturer
Total teaching experience
☐ More than 15 years ☐ 11–15 years ☐ 6–10 years ☐ 3–5 years ☐ Less than 3 years
Experience teaching English language courses
☐ More than 10 years ☐ 7–10 years ☐ 4–6 years ☐ 1–3 years ☐ Less than 1 year
English courses currently or most recently taught ***(Select all that apply.)***
☐ Other ☐ English for Specific Purposes ☐ Spoken English ☐ Academic Writing ☐ Reading and Writing ☐ Grammar ☐ Communication Skills ☐ Functional English
Approximate number of students taught per semester

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☐ More than 200 ☐ 151–200 ☐ 101–150 ☐ 50–100 ☐ Fewer than 50
Previous AI-related professional development
☐ No training or independent learning ☐ Self-directed learning only ☐ Online workshop/course ☐ Institutional workshop ☐ Formal certificate/course
Duration of teaching-related AI use
☐ More than 2 years ☐ 1–2 years ☐ 6–12 months ☐ Less than 6 months ☐ Never used AI for teaching
Generative AI applications used for teaching *(Select all that apply.)*
☐ None ☐ Other ☐ Brisk Teaching ☐ Diffit ☐ MagicSchool AI ☐ Microsoft Copilot ☐ Claude ☐ Google Gemini ☐ ChatGPT
Familiarity with agentive AI
☐ Previously unfamiliar with it ☐ Have heard of it but do not understand it well ☐ Have limited understanding ☐ Understand its instructional applications

Knowledge and Literacy in Generative and Agentive AI
Response scale: Self-assessed knowledge
5 = Very high 4 = High 3 = Moderate 2 = Low 1 = Very low

Please assess your current knowledge of the following areas.

Knowledge domain	**1**	**2**	**3**	**4**	**5**
Basic principles and functions of generative AI	☐	☐	☐	☐	☐
Differences between generative AI and agentive AI	☐	☐	☐	☐	☐
Formulating effective prompts for instructional purposes	☐	☐	☐	☐	☐
Identifying grammatical and linguistic errors in AI-generated materials	☐	☐	☐	☐	☐
Recognizing bias and culturally inappropriate AI-generated content	☐	☐	☐	☐	☐
Evaluating AI-generated materials against students' proficiency levels	☐	☐	☐	☐	☐
Understanding privacy and confidentiality requirements in AI use	☐	☐	☐	☐	☐
Evaluating the limitations of AI-generated feedback and assessment	☐	☐	☐	☐	☐
Understanding how AI agents execute multistep tasks	☐	☐	☐	☐	☐
Understanding the monitoring and verification of agentic workflows	☐	☐	☐	☐	☐

Integration of Generative AI into ESL Instruction

Response scale: Frequency of actual practice
5 = Very often 4 = Often 3 = Sometimes 2 = Rarely 1 = Never

During the current or most recently completed academic semester, how frequently have you used generative AI for the following instructional purposes?

Instructional practice	**1**	**2**	**3**	**4**	**5**
Preparing lesson plans and instructional outlines	☐	☐	☐	☐	☐
Developing grammar explanations and language exercises	☐	☐	☐	☐	☐
Preparing vocabulary activities and contextual examples	☐	☐	☐	☐	☐
Developing reading passages and comprehension questions	☐	☐	☐	☐	☐
Creating writing prompts, model paragraphs, and composition activities	☐	☐	☐	☐	☐

Designing speaking tasks, role-plays, and communicative activities	☐	☐	☐	☐	☐
Preparing listening scripts and comprehension activities	☐	☐	☐	☐	☐
Adapting instructional materials for different proficiency levels	☐	☐	☐	☐	☐
Developing quizzes, tests, rubrics, and assessment materials	☐	☐	☐	☐	☐
Generating draft feedback on students' written work	☐	☐	☐	☐	☐
Identifying recurring language errors in students' work	☐	☐	☐	☐	☐
Revising AI-generated content before classroom use	☐	☐	☐	☐	☐
Verifying the accuracy and curricular relevance of generated materials	☐	☐	☐	☐	☐
Using AI-generated suggestions to revise subsequent teaching activities	☐	☐	☐	☐	☐

Integration of Agentive AI into ESL Instruction

Response scale: Frequency of actual practice
5 = Very often 4 = Often 3 = Sometimes 2 = Rarely 1 = Never

For this subsection, consider only systems that perform multiple connected actions or coordinate a workflow towards a delegated goal. Do not count ordinary single-prompt content generation as agentive AI.

Agentive instructional practice	**1**	**2**	**3**	**4**	**5**
Coordinating multiple steps in lesson preparation	☐	☐	☐	☐	☐
Retrieving or organizing digital resources within a delegated workflow	☐	☐	☐	☐	☐
Preparing differentiated materials through a sequence of connected tasks	☐	☐	☐	☐	☐
Coordinating exercises, draft answer keys, and review checklists	☐	☐	☐	☐	☐
Organizing student learning information for preliminary instructional review	☐	☐	☐	☐	☐
Coordinating multiple steps in assessment preparation	☐	☐	☐	☐	☐
Automating repetitive instructional preparation through configured workflows	☐	☐	☐	☐	☐
Monitoring progress and outputs during delegated tasks	☐	☐	☐	☐	☐
Verifying results produced by an AI agent before instructional use	☐	☐	☐	☐	☐
Correcting or interrupting a workflow when its actions or outputs are unsuitable	☐	☐	☐	☐	☐

Pedagogical Competence in AI-Supported ESL Teaching

Response scale: Self-assessed proficiency
5 = Highly proficient 4 = Proficient 3 = Developing 2 = Beginning 1 = Not yet competent

How would you rate your current ability to perform the following instructional tasks when AI tools are available?

Competence domain	**1**	**2**	**3**	**4**	**5**
Selecting AI applications appropriate to specific language-learning objectives	☐	☐	☐	☐	☐
Aligning AI-generated resources with lesson objectives and curriculum requirements	☐	☐	☐	☐	☐
Evaluating the linguistic accuracy of AI-generated grammar explanations	☐	☐	☐	☐	☐
Adapting AI-generated materials to students' proficiency levels	☐	☐	☐	☐	☐
Integrating AI-supported activities into reading instruction	☐	☐	☐	☐	☐
Integrating AI-supported activities into writing instruction	☐	☐	☐	☐	☐
Designing AI-supported speaking and listening activities	☐	☐	☐	☐	☐
Evaluating the accuracy and usefulness of AI-generated feedback	☐	☐	☐	☐	☐
Designing assessments that measure students' actual language learning	☐	☐	☐	☐	☐

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Determining when AI-generated materials should be revised or rejected	☐	☐	☐	☐	☐
Combining AI assistance with teacher explanation and student interaction	☐	☐	☐	☐	☐
Maintaining appropriate differentiation without compromising learning objectives	☐	☐	☐	☐	☐
Recognizing situations in which AI use is pedagogically inappropriate	☐	☐	☐	☐	☐
Monitoring and verifying multistep tasks delegated to AI agents	☐	☐	☐	☐	☐
Retaining professional responsibility for instructional decisions	☐	☐	☐	☐	☐

Motivation, Perceived Usefulness, and Professional Attitudes

Response scale: Level of agreement
5 = Strongly agree 4 = Agree 3 = Neither agree nor disagree 2 = Disagree 1 = Strongly disagree

Statement	**1**	**2**	**3**	**4**	**5**
Generative AI can improve the efficiency of my instructional preparation.	☐	☐	☐	☐	☐
AI-generated resources can help address differences in students' English proficiency.	☐	☐	☐	☐	☐
AI can broaden the range of language-learning activities I offer.	☐	☐	☐	☐	☐
Agentive AI can reduce time spent on repetitive teaching-related tasks.	☐	☐	☐	☐	☐
I am motivated to develop my knowledge of AI applications for English language teaching.	☐	☐	☐	☐	☐
I am willing to participate in professional development on responsible AI integration.	☐	☐	☐	☐	☐
I intend to explore appropriate AI-supported instructional practices in future semesters.	☐	☐	☐	☐	☐
AI-generated content requires careful verification before classroom use.	☐	☐	☐	☐	☐
I am concerned about the confidentiality of student information processed by AI systems.	☐	☐	☐	☐	☐
Excessive student dependence on AI may restrict independent language development.	☐	☐	☐	☐	☐
Teachers must retain responsibility for evaluating AI-generated instructional materials.	☐	☐	☐	☐	☐
Responsible AI integration requires clear institutional guidance.	☐	☐	☐	☐	☐
My confidence in using AI is influenced by the training and technical support available to me.	☐	☐	☐	☐	☐
Conventional teaching methods remain appropriate for some instructional purposes.	☐	☐	☐	☐	☐

Institutional Resources and Support

Response scale: Extent of availability
5 = Available to a very great extent 4 = Available to a considerable extent 3 = Available to a moderate extent
2 = Available to a very limited extent 1 = Not available at all

To what extent are the following resources and forms of support available in your college?

Resource or institutional support	**1**	**2**	**3**	**4**	**5**
Reliable internet connectivity for instructional work	☐	☐	☐	☐	☐
Suitable computers, laptops, or other digital devices	☐	☐	☐	☐	☐
Access to appropriate AI applications or institutional subscriptions	☐	☐	☐	☐	☐
Opportunities for AI-related professional development	☐	☐	☐	☐	☐
Technical assistance with digital and AI applications	☐	☐	☐	☐	☐
Institutional guidance on appropriate AI use in teaching and assessment	☐	☐	☐	☐	☐
Guidance on data privacy and responsible AI use	☐	☐	☐	☐	☐
Administrative encouragement for appropriate AI-supported teaching	☐	☐	☐	☐	☐
Sufficient					