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Constructivism and AI Technology Approach to Learning Speaking Skills at University

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Abstract:
The rapid digital transformation in higher education offers new opportunities for Arabic-speaking instruction, yet many classrooms remain teacher-centered and text-dominated, with limited integration of constructivist pedagogy and AI tools. This fragmented approach fails to leverage technology for active, collaborative learning. This study aims to describe how a constructivism-based approach, integrated with AI technology, is implemented to enhance Arabic-speaking skills at UNIKHAMS Jember. A descriptive qualitative method was employed, using classroom observations, interviews with lecturers and students, and documentation of lesson plans, tasks, and speaking videos. Data were analyzed using the Miles and Huberman model, with triangulation of sources and techniques. The findings reveal a five-stage, interconnected model: activating prior knowledge, guided discovery, collaborative drafting, rehearsal and performance, and formative feedback. AI tools—such as Automatic Speech Recognition, chatbots, Text-to-Speech, and adaptive platforms—supported pronunciation practice, dialogue simulation, personalized feedback, and student engagement. The study concludes that integrating constructivism and AI strengthens communicative competence by positioning students as active meaning-makers and lecturers as facilitators. Future research should employ quantitative or mixed-methods designs to measure the model's broader impact across diverse educational contexts.

Kata Kunci: *konstruktivisme, kecerdasan buatan, keterampilan berbicara.*

Abstrak:
Transformasi digital dalam pendidikan tinggi membuka peluang baru bagi pembelajaran berbicara bahasa Arab, namun praktik di kelas masih cenderung pasif, berpusat pada dosen, dan didominasi teks, dengan integrasi pedagogi konstruktivisme dan kecerdasan buatan (AI) yang masih terfragmentasi. Penelitian ini bertujuan mendeskripsikan implementasi pendekatan konstruktivisme terintegrasi AI dalam pembelajaran keterampilan berbicara bahasa Arab di UNIKHAMS Jember. Metode kualitatif deskriptif digunakan melalui observasi kelas, wawancara dengan dosen dan mahasiswa, serta dokumentasi RPS, tugas, dan video performa berbicara. Analisis data mengikuti model Miles dan Huberman dengan triangulasi sumber dan teknik. Hasil penelitian menunjukkan model pembelajaran lima tahap yang saling terhubung: aktivasi pengetahuan awal, penemuan terbimbing, penyusunan kolaboratif, latihan dan penampilan, serta umpan balik formatif. Perangkat AI—seperti Automatic Speech Recognition, chatbot, Text-to-Speech, dan platform adaptif—mendukung latihan pelafalan, simulasi dialog, umpan balik personal, dan keterlibatan mahasiswa. Penelitian menyimpulkan bahwa integrasi konstruktivisme dan AI memperkuat kompetensi komunikatif bahasa Arab dengan

menjadikan mahasiswa sebagai pembangun makna aktif dan dosen sebagai fasilitator. Penelitian lanjutan disarankan menggunakan desain kuantitatif atau metode campuran untuk mengukur dampak model ini pada berbagai konteks pendidikan.

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Introduction

In the higher education ecosystem of the Society 5.0 era, Arabic-speaking skills have become an essential indicator of students' communicative competence. Speaking is not merely a supplementary language skill but a fundamental component that determines the success of foreign language learning because it reflects students' ability to use language in direct interaction (Humaira, 2023). However, Arabic-speaking instruction in many educational institutions still faces persistent challenges, including limited multimodal teaching materials, classroom management that has not fully supported authentic interaction, and evaluation practices that have not comprehensively measured students' oral performance (Basatha et al., 2025; Sopian et al., 2025). These problems show that speaking classes require a pedagogical design that moves beyond passive knowledge transmission and gives students more space to construct meaning through collaboration, dialogue, and performance. In this context, artificial intelligence can support a more personalized and interactive learning experience, while constructivism provides the pedagogical foundation for positioning students as active subjects in the learning process (Imran et al., 2024).

The existing literature indicates that constructivist learning can foster critical thinking, learner independence, and deeper understanding when students actively build knowledge through experience and social interaction (Wati et al., 2023). Previous studies on Arabic learning from a constructivist perspective have examined communicative teaching modules, pesantren-based speaking innovations, and classroom practices that use grouping, thematic materials, and feedback cycles (Almelhes & Alsaiari, 2024; Kartini et al., 2026; Rababah, 2021; Tayyara, 2022). Meanwhile, studies on AI-supported Arabic learning have shown that digital tools such as chatbots may contribute to Arabic learning innovation, although their use often remains limited to particular tools or specific learning activities (Shalihah et al., 2025). This indicates a research gap: previous studies have not sufficiently explained how constructivist principles and AI technology can be integrated into a coherent classroom model for Arabic speaking skills at the university level. Therefore, the novelty of this study lies in describing an integrated constructivist-AI learning model that connects classroom management, learning stages, collaborative practice, multimodal resources, and formative feedback within a single operational speaking-learning process.

Given this gap, this study aims to describe the implementation of a constructivist approach integrated with artificial intelligence technology for teaching Arabic speaking skills at UNIKHAMS Jember. Specifically, this study addresses two research questions. First, how is classroom management for speaking skills organized from a constructivist perspective? Second, how is the learning process for Arabic speaking skills implemented through the integration of

constructivist principles and AI technology? These questions guide the analysis of lecturer facilitation, student grouping, classroom interaction, learning media, AI-supported practice, and feedback mechanisms. By focusing on the natural setting of classroom learning, this study seeks to explain not only the presence of technology in speaking instruction but also the pedagogical process through which students develop Arabic communicative competence through experience, collaboration, and reflection.

This study offers theoretical, methodological, and practical contributions to Arabic language education in higher education. Theoretically, it advances the discussion of constructivism in Arabic-speaking instruction by demonstrating how AI-based learning tools can support the activation of prior knowledge, guided discovery, collaborative drafting, rehearsal and performance, and formative feedback. Methodologically, this study provides a qualitative account of classroom-based practice through observation, interviews, and documentation, using the Miles and Huberman model as the analytical framework. Practically, the findings offer guidance for Arabic lecturers in designing speaking classes that are more interactive, collaborative, adaptive, and communicative. For higher education institutions, this study also offers implications for improving lecturer competence, developing digital learning infrastructure, and preparing ethical guidelines for the responsible use of AI in Arabic learning.

Method

This study uses a qualitative, descriptive design (Sugiyono, 2014) that focuses on the natural setting for learning speaking skills. The research is conducted in the Arabic Language Education Study Program (PBA) among fourth-semester students, with research subjects including lecturers teaching courses and students involved in the learning process.

Data were collected using three techniques, namely observation, interviews, and documentation.Observations were conducted to identify the characteristics of constructivist application, interaction patterns, and the form of assigned tasks. Interviews were conducted with lecturers and students to explore in-depth information about the setting, process, and learning outcomes. Meanwhile, documentation included a review of the Semester Learning Plan (RPS), assignment sheets, and video recordings of conversations.

Data analysis was conducted using the Miles and Huberman model (Sugiyono, 2014), which includes the stages of data collection, simplification, presentation, and conclusion drawing. Data validity was maintained through triangulation of sources, involving lecturers, students, and documents, as well as triangulation of techniques by comparing the results of observations, interviews, and documentation.

Results and Discussion

Result

The Application of Speaking Skill Class Management from a Constructivism Perspective

Observation data showed that Arabic-speaking skills classes at UNIKHAMS Jember were managed through small-group instruction, with three to four students per group. This grouping not only served as a practical way to divide students but also created a pedagogical space where students built confidence, shared ideas, formulated expressions, and negotiated meaning before speaking. In practice, lecturers did not dominate the class with long lectures. Instead, they organized the flow of activities, assigned roles, provided initial direction, offered learning resources, and supported students when they had difficulty composing or reciting

speeches. The classroom interaction, which had originally relied on one-way question-and-answer exchanges, shifted to collaborative dialogue among students and across groups. Interview findings also showed that students felt more willing to speak up when activities were carried out in groups because the burden of performance was not borne individually. One student reported that group work made him more confident in trying a new structure in speaking. Despite technical constraints, such as limited space and sound interference during recording, student participation remained active in discussions, exercises, and oral performance.

The findings confirm that constructivism-based classroom management in speaking skill learning cannot be reduced to seating arrangements or group divisions. More than that, classroom management is a strategy for building an interaction ecosystem that provides space for students to practice, experiment, make mistakes, receive corrections, and gradually improve their speaking performance. Speaking skills, as affirmed by Ismail et al. (2023), are a fundamental component of successful foreign language learning because they are directly related to the ability to use language in real interactions. In this context, classes managed collaboratively can reduce lecturer dominance and expand students' opportunities to actively use Arabic. These findings are also in line with constructivism, which places learners as active subjects in building knowledge through experience, social interaction, and direct involvement in learning tasks (Mihai & Classen, 2023; Wang, 2020; Wati et al., 2023).

Descriptively, the classroom management observed in this study exhibits three main characteristics. First, classes are managed as social spaces that encourage interaction, not merely spaces for delivering material. Lecturers direct students to work in small groups, brainstorm ideas, share vocabulary, and practice dialogue in turn. Second, the learning resources used are multimodal, including conversation videos, greeting cards, thematic texts, idea boards, and digital kanbans. These resources help students connect prior knowledge to new communication situations. Third, lecturers serve as facilitators and curators of learning. This role is important because the challenges of learning Arabic across various institutions remain tied to limitations in multimodal teaching materials, weak management of authentic interactions, and inadequate evaluation of oral performance (Jiang et al., 2020; Kovelman et al., 2015; Liu, 2022; Rajendram et al., 2022). Thus, collaborative classroom management grounded in constructivism can be seen as a pedagogical response to language classes that are too lecturer-centered and do not provide space for the production of student speech.

These findings also show that constructivist classroom management has a direct relationship with students' courage and participation in speaking. When students sit in configurations that allow for face-to-face work, work in small groups, and are given the opportunity to compose speech together, they not only learn the structure of the language but also build a sense of security in communicating. Sulindra et al. (2024) explain that a technology-based constructivist learning environment can support academic achievement and aligns with students' learning preferences compared to the traditional passive model. In this study, technology support and classroom governance complement each other: technology provides instructional media, while classroom management ensures that it is used in meaningful social interactions. This corroborates the findings of Szabó and Csépes (2023) that constructivist practices in language learning require grouping learners, using thematic materials, and maintaining a structured feedback cycle. In other words, the success of speaking learning depends not only on the material but also on how the classroom is managed as a collaborative

space.

In addition, the classroom management practice in this study shows a shift in pedagogical authority. Lecturers still hold academic control, but this control is not exercised through the dominance of explanations. Lecturers build learning situations that allow students to find, compose, try, and improve speech. This shift is relevant to the development of constructivism-based communicative modules and approaches that emphasize the active involvement of learners in the language learning process (Islamiy & Fahyuni, 2024). These findings also expand Rahmawati's study (2023) on the innovation of speaking skills learning within a constructivist theory review, as the context of this research not only highlights speaking practice but also connects it to classroom management, AI technology, and formative feedback in college. Thus, a constructivist speaking class is not enough to simply place students in groups; it must manage the relationships among space, assignments, media, interactions, and feedback in an integrated manner.

Implementing the Learning Process of Speaking Skills from a Constructivist Perspective

Observation, interview, and documentation data indicate that the Arabic language learning process at UNIKHAMS Jember proceeds through five main stages, namely initial knowledge activation, guided discovery, collaborative preparation, practice and performance, and formative feedback. At the initial knowledge activation stage, lecturers begin by showing short videos, presenting examples of communication situations, and asking triggering questions related to students' experiences. This stage helps students connect prior language experiences with the new material to be learned. Learning then moves to the guided discovery stage, using phrase cards, thematic topics, and dialogue examples. Students are directed to observe, compare, and identify expression patterns appropriate to the context of communication. In the collaborative preparation stage, students work in groups to draft dialogues, improve sentence structure, choose vocabulary, and adapt expressions to the context of the conversation. Some groups initially still relied on written texts, but lecturers later used shadowing and chunking strategies to reduce that dependence. In the practice and performance stages, students repeatedly practice dialogues, record their performance, and conduct communication simulations. This process is strengthened by the use of AI technologies, such as Automatic Speech Recognition for pronunciation feedback, chatbots for dialogue exercises, Text-to-Speech as a pronunciation model, and adaptive platforms that adjust the difficulty level of the exercises. In the final stage, the lecturer provides formative feedback gradually on aspects of vocabulary, structure, pronunciation, intonation, pause, fluency, and speech accuracy.

The findings confirm that, from a constructivist perspective, the process of learning to speak does not proceed linearly, as in the delivery of material, exercises, and then assessments. Instead, it resembles a learning experience cycle that enables students to build understanding from prior knowledge, find meaning through guidance, compose speech through collaboration, practice performance in communicative situations, and improve through feedback. The initial knowledge activation stage aligns with the view that foreign language learning needs to connect old experiences with new structures so that students do not receive material in isolation from context (Wati et al., 2023). The guided discovery stage also supports active learning because students not only receive language patterns from lecturers but also find and test them through directed assignments. This aligns with Aldizeeriet al. (2023), who show that guided discovery can help students identify elements of learning more actively and meaningfully. Thus, speaking learning in this study builds relationships among experience, guidance, interaction, and

performance.

Descriptively, the collaborative preparation stage is an important point in learning because students begin to move conceptual understanding into speech production. At this stage, students not only copy dialogue but also discuss vocabulary choices, compare sentence structures, adapt expressions to context, and give each other corrections. This practice shows that speaking skills develop through social work, not just through individual memorization. These findings reinforce the constructivist notion that knowledge is built through meaningful interaction and learning experiences (Özturan & Gürdal, 2022; Zakarneh et al., 2021). In the context of learning Arabic, this pattern is also relevant to the findings of Zainuri and Wahyudi (2023), which show that the use of conversational vocabulary texts can help improve maharah kalam when linked to communication practices. However, this study shows that conversational texts will be more meaningful if they do not stop as memorization material but are processed through discussion, negotiation of meaning, performative exercises, and gradual feedback.

The integration of AI technology in the learning process strengthens the constructivist cycle. AI is not positioned as a substitute for lecturers but as a support tool that enriches practice, expands access to feedback, and helps students practice more personally. Automatic Speech Recognition helps students identify pronunciation problems; Text-to-Speech provides a model of sound that can be replicated; chatbots provide space for dialogue simulations; and the adaptive platform helps adjust the difficulty level of the material. Imran et al. (2024) affirmed that artificial intelligence in higher education can enrich learning systems and change educational paradigms when used to strengthen learning experiences. Jeldu et al. (2024) also shows that problem-based learning can increase student engagement when students are faced with tasks that demand active participation. In this study, AI is part of a learning ecosystem that helps students test speech, improve performance, and gain more varied training experiences. This finding is also related to Shalihah et al. (2025), which shows the contribution of chatbots in Arabic language learning, but this study expands it by integrating chatbots with ASR, TTS, adaptive platforms, and constructivist learning cycles.

The practice and performance stages show that students need a safe space to turn dialogue designs into oral performances. At this stage, some students still tend to read texts, hesitate when reciting certain structures, or stop when they run out of vocabulary. However, repetitive exercises, shadowing, chunking, and dialogue simulations help students reduce their reliance on scripts. Lecturers give students the opportunity to try again after receiving input from peers and lecturers. This pattern suggests that speaking performance does not appear suddenly but develops gradually through practice, correction, reflection, and courage. Compared with traditional learning, which tends to position students as recipients of material, this process is closer to a constructivist learning environment that provides space for students to actively build skills through hands-on practice (Wati et al., 2023). Thus, learning to speak becomes a social-performative process, not just a cognitive process of remembering vocabulary and rules.

Formative feedback is the final stage that determines the quality of learning. Interview data showed that lecturers provided input gradually, ranging from segmental aspects such as vocabulary and sentence structure to suprasegmental aspects such as intonation, pause, pressure, and fluency. Students assessed that the feedback helped them understand their performance weaknesses and identify the steps that needed to be taken. This practice aligns with Hosna et al. (2023), which emphasizes that formative assessment helps learners understand

learning objectives, their current ability levels, and strategies to achieve better outcomes. In this study, feedback not only serves as a corrective tool but also as a pedagogical mechanism that links performance, reflection, and competency improvement. Therefore, documenting student performance videos is important because it allows lecturers and students to see the development of speaking more concretely. The use of this documentation is also in line with a descriptive qualitative approach that places observation, interviews, and documentation as the main data sources to understand the learning process naturally.

Overall, the results of the study show that implementing Arabic-speaking skills based on constructivism and AI at UNIKHAMS Jember creates a collaborative, gradual, and reflective learning model. Classroom management provides a social foundation that encourages students to speak, while the learning cycle provides a pedagogical flow that helps students progress from initial understanding to communicative performance. AI integration strengthens that process through pronunciation exercises, dialogue simulations, personalized learning, and faster feedback. Thus, this study not only confirms the importance of constructivism in Arabic language learning but also shows that AI technology can expand the usefulness of constructivism when used in targeted learning design. These findings also address the problem identified in the introduction, namely the need for a speech skills learning model that is not only active and collaborative but also adaptive to the development of higher education technology.

Discussion

The findings of this study show that learning Arabic speaking skills based on constructivism and AI technology at UNIKHAMS Jember occurs through two main dimensions, namely collaborative classroom management and a gradual learning process. In the classroom management dimension, lecturers organize students into small groups, create interaction spaces, provide multimodal learning resources, and position themselves as facilitators. In the learning process dimension, activities proceed through five stages, namely initial knowledge activation, guided discovery, collaborative preparation, exercises and performances, and formative feedback. These findings reinforce the view that constructivist classroom management in speaking learning needs to build a learner-centered, collaborative, and context-rich environment, so that students can construct meaning through discussions, communicative assignments, and authentic speaking practices (Chen, 2021; Jumaah, 2024; Mujiono et al., 2023; Shalaby & Badr, 2024; Sulindra et al., 2024). Thus, learning to speak no longer stops at memorizing texts or mechanistic exercises, but moves toward communicative processes that involve experience, collaboration, reflection, and real performance.

Socially, these findings are important because Arabic-speaking skills in college are not only related to academic achievement but also to students' readiness to participate in scientific, religious, professional, and digital communication spaces. In many language classes, students often understand vocabulary and rules but are not yet confident enough to use them in direct interaction. This creates a gap between mastery of language knowledge and communicative skills. Therefore, collaborative classroom management has an important social-pedagogical impact: students learn to speak in a safe atmosphere, support each other, and are less afraid to make mistakes. This aligns with the views of Ismail et al. (2023), who argue that speaking skills are a fundamental component of success in foreign language learning. At the same time, sociocultural theory places social interaction, dialogic collaboration, negotiation of meaning, and scaffolding within the Zone of Proximal Development as important mechanisms in

developing foreign language speaking skills (Hayasaki et al., 2023; Lantolf & Poehner, 2023; Soozandehfar & Souzandehfar, 2022; Zhang & Haratyan, 2023). In the context of higher education in the Society 5.0 era, AI integration is increasingly relevant as students need a more personalized, interactive, and adaptive learning experience (Imran et al., 2024).

Theoretically, the results of this study strengthen the case for constructivism as a relevant approach to developing speaking skills. Constructivism positions students as active builders of meaning through experience, interaction, and reflection, rather than as passive recipients of the lecturer's explanations (Wati et al., 2023). Findings on group work, guided discovery, dialogue drafting, performative exercises, and step-by-step feedback suggest that speaking competence develops through structured social processes. In the constructivist learning framework, the learning process can be understood as a gradual progression from engagement with authentic communicative problems, through exploration and collaborative meaning-making, explanation and form-focused refinement, extension to new contexts, to evaluation and reflection (Lekule, 2023; Prado-Yépez et al., 2021; Zulkifli & Azman, 2021). In this study, these stages appear as initial knowledge activation, guided discovery, collaborative drafting, rehearsal and performance, and formative feedback. At the same time, AI serves as a pedagogical tool that expands the possibilities of constructivist practice. Technology does not replace the role of the lecturer, but it helps provide pronunciation models, simulation spaces, initial feedback, and personalized practice. Thus, constructivism provides a pedagogical direction, while AI enriches the media, rhythm, and variety of learning experiences.

The central insight emerging from this study is that technological innovations in language learning cannot stand alone without a clear pedagogical design. AI will only be a technical tool if used simply to replace conventional exercises, but it can be part of a meaningful learning ecosystem when placed within a constructivist framework. In constructivist approaches to learning, technology is meant to serve as an enabler of discourse, not a substitute for social interaction; technology needs to expand opportunities for practice, reflection, collaboration, and feedback, not merely distribute materials (Hsu & Liu, 2023; Mekheimer, 2024; Sulindra et al., 2024). The findings of this study show similar things, namely that students need more than just digital applications; they need guidance, interaction, opportunities for trial and revision, and humane feedback. Lecturers still have a central role as facilitators, curators of learning resources, directors of reflection, and guardians of the quality of interaction. From a constructivist perspective, lecturers play the role of learning mediators, task designers, scaffolding providers, and reflection directors, not just conveyors of information (Smith et al., 2022; Sulaiman et al., 2022; Wyatt, 2023).

Compared with previous studies, this study adopts a more integrative position. Syafei (2025) suggests that Arabic learning from a constructivist perspective can be strengthened through student grouping, thematic materials, and feedback cycles. Rahmawati (2023) affirms the importance of innovation in teaching speaking skills within a constructivist review, while Islamiy and Fahyuni (2024) demonstrate the relevance of constructivism-based Arabic teaching modules with a communicative approach. Zainuri and Wahyudi (2023) present the use of conversational vocabulary texts as a means of improving maharah kalam. On the other hand, Shalihah et al. (2025) discuss the contribution of chatbots to Arabic language learning. The findings in this study are also in line with studies that affirm that constructivism-based speaking learning becomes stronger when managed through authentic tasks, collaborative discourse, structured group roles, peer feedback, performance-based assessment, and technology that

supports interaction (Butarbutar & Karnine, 2024; Chen, 2021; Jeldu et al., 2024; Khan et al., 2024; Shalaby & Badr, 2024). Compared with these studies, this study not only highlights one aspect, such as modules, conversation texts, chatbots, or class groupings, but also connects classroom management, learning stages, multimodal learning resources, AI, and formative feedback in a single operational model of Arabic-speaking learning in college.

The implications of this study call for a more systematic, communicative, and performance-based design for learning speech skills. Arabic teachers need to design small-group speaking classes, authentic assignments, multimodal media, performative exercises, and assessment rubrics that include vocabulary, structure, pronunciation, fluency, intonation, and communication accuracy. In line with this, performance-based rubrics, self-assessment, peer assessment, and feedback loops should be used to support learning autonomy and the sustainable development of speech performance (Gül & Kasten, 2021). Higher education institutions also need to provide lecturers with training in the pedagogical use of AI, not just technical training, so that devices such as ASR, chatbots, TTS, and adaptive platforms truly support learning goals. In this context, AI can act as an adaptive scaffold, dialogic interlocutor, and feedback facilitator, as long as it remains within the pedagogical control of lecturers and does not replace human interaction (Díaz & Delgado, 2024; Grubaugh et al., 2023; Kohler, 2024; Yin & Hanif, 2024). Therefore, the use of AI needs to be accompanied by ethical guidelines, data protection, equal access, and continuous evaluation so that digital innovation does not create new gaps in learning. Further research is recommended using quantitative design or mixed methods to measure the influence of the constructivism-AI model on improving students' speaking competence more broadly, as well as to test its effectiveness in the context of different institutions, levels, and student characteristics.

Conclusion

This study concludes that integrating constructivism and AI technology into Arabic-speaking skill learning at UNIKHAMS Jember yields a collaborative, gradual, and reflective learning model. The most important finding is that classroom management based on small-group collaboration creates a safe space for interaction where students can build confidence, negotiate meaning, and practice oral communication more actively. The learning process also unfolds through five interconnected stages: activating prior knowledge, guided discovery, collaborative drafting, rehearsal and performance, and formative feedback. Through this cycle, students do not merely memorize dialogue texts or mechanically repeat linguistic forms, but gradually construct communicative competence through experience, peer interaction, lecturer facilitation, AI-supported practice, and continuous feedback.

Theoretically, this study contributes to the development of constructivist Arabic language learning by showing that speaking competence develops through social interaction, authentic tasks, reflective practice, and scaffolded feedback. AI technology strengthens this constructivist process when positioned as pedagogical support rather than as a replacement for lecturers or human interaction. Tools such as Automatic Speech Recognition, chatbots, Text-to-Speech, and adaptive platforms can enrich pronunciation practice, dialogue simulation, personalized learning, and formative assessment when integrated into a clear instructional design. Methodologically, this study offers a qualitative account of classroom-based best practice by combining observation, interviews, and documentation to explain how constructivist-AI learning operates in a natural higher education setting.

This study is limited to a single institutional context, the Arabic Language Education Study Program at UNIKHAMS Jember, and focuses on qualitative descriptions of classroom management and learning processes. Therefore, the findings cannot yet be generalized to all higher education contexts or to different levels of Arabic language learning. Further research is recommended to include broader institutions, more diverse student populations, and comparative learning settings. Quantitative or mixed-methods studies are also needed to measure the effectiveness of constructivist-AI learning on specific aspects of Arabic speaking competence, such as fluency, pronunciation accuracy, vocabulary use, interactional competence, and students' confidence in oral communication.

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