

Exploring AI-Powered Speaking Applications on Learning Styles Accommodation Among Indonesian Senior High School Students

Abstract

This study investigates how students with different learning styles Visual, Auditory, Read/Write, and Kinesthetic engage with Practica AI, an AI-based speaking practice platform, within the Indonesian socio-cultural context. Although all participants used the same technology, their learning experiences and outcomes varied, indicating that individual learning preferences played a significant role in shaping how the platform was utilized. The study was conducted over a three-month period at SMA Sukma Bangsa Lhokseumawe and involved six purposively selected tenth-grade students. Data were collected using a qualitative approach through interviews, classroom observations, reflective journals, and document analysis. The documents analyzed included VARK learning style questionnaires and usage logs generated by the Practica AI application. The findings reveal that learning styles are not fixed categories but function as flexible strategies that learners adapt according to their needs. Students adjusted their use of Practica AI's features to align with their preferred learning approaches. However, the study also identified a gap between the features offered by the platform and their accessibility for different learners. Features that supported learning for some students were less effective or more challenging for others, depending on their cognitive preferences. In addition, although Practica AI is designed primarily for individual practice, students frequently transformed its use into a collaborative activity by sharing strategies and discussing learning experiences. This practice reflects the local cultural value of gotong royong or mutual assistance. Overall, the study suggests that the effectiveness of AI in language learning is shaped by the interaction between learners' cognitive preferences, technological design, and socio-cultural context, highlighting the importance of metacognitive awareness and culturally responsive, multimodal instruction.

Keywords: AI-powered speaking applications, learning styles, VARK model, affordance-accessibility gap, speaking skill development.

Article History:

Introduction

Developing English speaking skills has long been a challenge for students learning English as a foreign language in Indonesia, particularly at the secondary school level. In many classrooms, students are still hesitant to speak and tend to rely on short, memorized expressions rather than engaging in spontaneous communication. Previous studies indicate that a considerable number of Indonesian learners remain at a minimal or survival level of speaking proficiency, with little progress observed over recent years (Rongcai et al., n.d.). This situation is often linked to classroom conditions that are overcrowded and heavily teacher-centered, where students have limited opportunities to practice speaking in meaningful and supportive contexts (Wu & Li, 2024).

In response to these limitations, AI-based language learning applications have increasingly been introduced into English classrooms. One such platform, Practica AI, provides features such as simulated conversations, automated feedback, and flexible self-paced practice that are intended to support speaking development (Zawacki-Richter et al., 2019). In theory, these tools offer a promising alternative to traditional instruction by allowing learners to practice more frequently and

independently. However, classroom experiences suggest that the presence of technology alone does not automatically lead to effective learning. Even when students use the same AI application, their levels of engagement and learning outcomes can differ markedly (Hwang et al., 2020).

Preliminary observations in the research setting further revealed that some students benefited greatly from Practica AI, while others struggled to use its features effectively. These differences point to the influence of individual learner characteristics, particularly learning styles, rather than to the technology itself (Johnson et al., 2024). Within this context, the VARK learning style framework Visual, Auditory, Read/Write, and Kinesthetic offers a useful way to understand how students prefer to receive and process information (Fleming, 2020). While studies in Technology-Enhanced Language Learning have largely focused on evaluating the overall effectiveness of AI tools (Chen et al., 2023), fewer have examined how learners with different cognitive preferences actually interact with specific features during speaking practice.

This gap becomes more significant when the Indonesian context is taken into account. Indonesian students often demonstrate strong visual and kinesthetic learning tendencies (Pratama & Putri, 2022), and their learning practices are shaped by a collectivist culture that emphasizes *gotong royong*, or mutual cooperation (Sari & Wijaya, 2023). In practice, students frequently learn by sharing ideas, helping peers, and working together patterns that may not align neatly with the individual-oriented design of many AI applications. When learning styles and socio-cultural values are overlooked, AI-supported instruction risks being less inclusive and less effective, particularly for learners whose preferences differ from those assumed by the technology.

Although the use of AI in education continues to expand worldwide, there remains a lack of context-sensitive research that captures how students with different cognitive styles actually experience AI-based speaking tools, especially in non-Western and collectivist settings (Chiu et al., 2023). Addressing this gap, the present study explores the experiences of tenth-grade students with different VARK learning styles as they use Practica AI for English speaking practice in an Indonesian senior high school. The study focuses on how students interpret, adapt, and make use of the platform's features, as well as on the similarities and differences in their learning experiences. By foregrounding learners' lived experiences and meaning-making processes, this research seeks to contribute insights for the development of AI-enhanced language learning that is more learner-centered, equitable, and culturally responsive.

Method

This study employed a qualitative approach using an instrumental case study design, guided by a phenomenological perspective. This approach was chosen to enable an in-depth exploration of how students experienced and made sense of learning to speak English through an AI-based application within their everyday classroom environment. Rather than seeking generalizable outcomes, the focus of the study was on understanding learners' personal meanings and interpretations as they interacted with technology in a real educational setting.

The case centered on tenth-grade students at SMA Sukma Bangsa Lhokseumawe, Aceh, who used Practica AI as part of their English speaking practice. This school was selected intentionally because it represents a context in which high expectations for English proficiency coexist with strong local socio-cultural values. Such conditions provided a meaningful setting for examining how technological innovation intersects with students' learning preferences and cultural practices. Consistent with a phenomenological orientation, the study aimed to capture students' lived experiences and subjective perspectives rather than to measure outcomes or test predetermined hypotheses (Van Manen, 2016).

Six tenth-grade students four females and two males aged between 15 and 16 participated in the study. Participants were selected purposively to reflect a range of learning style preferences based on the

VARK framework (Fleming, 2020). This selection was intended to capture diverse ways of engaging with the same AI-powered tool. The participants' learning profiles, summarized in Table 1, indicate varied preferences across auditory, visual, read/write, kinesthetic, and multimodal styles. These profiles were supported by students' own reflections on how they believed they learned most effectively, gathered during the initial stage of the study.

Table 1. Participant Profiles and Learning Style Characteristics

Participants	Dominant Learning Style (VARK)	VAR K Profile Description	Characteristic Excerpt from Preliminary Data
I1-Female	Aural	Strong auditory preference	"I learn best through active discussion and by immersing myself in the sound of the language."
I2-Male	Read/Write	Strong read/write preference, with secondary auditory inclination	"I need to read the text and write notes first to understand and prepare for speaking."
I3-Female	Multimodal	Balanced visual, aural, read/write, and kinesthetic inclinations	"I get bored with one method. I like to mix listening, reading notes, and doing role-plays."
I4-Female	Visual	Strong visual preference	"I understand better when I see charts, the avatar's lip movements, and highlighted text."
I5-Male	Kinesthetic	Strong kinesthetic preference	"Just listening or reading is hard. I remember things when I move or act them out."
I6-Female	Kinesthetic	Strong kinesthetic preference	"For me, learning has to involve doing something physical, not just sitting."

Data were collected over a three-month period using multiple qualitative methods to ensure depth and credibility. Semi-structured interviews were conducted twice with each participant, resulting in twelve interviews that allowed changes in perceptions and learning strategies to be traced over time. In addition, twelve naturalistic observations of speaking practice sessions were carried out to document patterns of interaction, physical engagement, and peer communication. Participants also completed weekly reflective journals in which they recorded their thoughts, feelings, and challenges during the learning process. These data were complemented by document analysis, including VARK questionnaire results and anonymized usage logs generated by the Practica AI application. All interviews were conducted in Bahasa Indonesia, audio-recorded, and transcribed verbatim to maintain the authenticity of participants' voices.

Data analysis was conducted following Braun and Clarke's (2006) six-phase thematic analysis, in line with the phenomenological orientation of the study. The analysis began with repeated reading of interview transcripts, observation notes, and reflective journals to achieve thorough familiarization with the data. Initial codes were then generated systematically and organized into tentative themes. These themes were reviewed and refined through an iterative process that involved revisiting the original data to ensure that interpretations accurately reflected participants' experiences. The final stage involved constructing an analytic narrative supported by rich excerpts from participants' accounts. To enhance the trustworthiness of the findings (Lincoln & Guba, 1985), methodological triangulation, member checking, and ongoing researcher reflexivity through reflective journaling were incorporated throughout the research process.

Results and Discussion

This section presents and interprets the findings derived from a thematic analysis of data collected from six students over a three-month period. The analysis resulted in three interrelated themes that explain how students' learning styles, their use of Practica AI, and the surrounding cultural context interacted during the learning process. Each theme is discussed through supporting sub-themes and is grounded in participants' reflections, interview excerpts, and observational data collected during classroom and independent practice sessions.

Theme 1: Learning Styles as Dynamic Strategic Identities in AI-Mediated Practice

The first theme challenges the assumption that learning styles operate as fixed or stable learner traits. Instead, the findings indicate that students' VARK learning styles functioned as dynamic and strategic identities that were continuously negotiated as students interacted with Practica AI. Two related sub-themes emerged within this theme: selective engagement with application features based on cognitive preferences, and the gradual development of learning strategies marked by increasing metacognitive awareness.

1.1 Selective Feature Engagement Based on Cognitive Preferences

Participants' dominant learning styles acted as internal reference points that guided how they engaged with specific features of Practica AI. Rather than using all available features equally, students made deliberate choices, prioritizing features that aligned with how they processed information most effectively while minimizing the use of others. This selective engagement reflected an intentional effort to adapt the technology to individual cognitive needs rather than passively following the application's default structure.

Table 2 presents an overview of how different VARK learning styles were manifested in students' engagement with Practica AI features. The table is positioned here to summarize the patterns of feature use described in this subsection and to provide a comparative overview across learning styles before the detailed narrative discussion that follows.

Table 2. Manifestation of Learning Styles in Practica AI Feature Engagement

Learning Style (VARK)	Preferred Practical AI Features	Characteristics of Strategic Engagement
Visual	AI avatars with lip-sync, visual feedback highlights, progress graphs, color-coded transcripts.	Reliance on graphical cues; systematic cycle of observe→perform→evaluate visually.
Auditory	Real-time conversational AI, varied voice accents and tones, audio repetition function.	Deep auditory immersion; frequent repetition of model audio; mimicking intonation and rhythm.
Read/Write	Interactive transcripts, vocabulary notes, written session summaries.	Use of text as an analytical scaffold; methodical note-taking; pre- and post-task analysis of written materials.
Kinesthetic	Contextual role-play scenarios (e.g., restaurant, interview), free-talk mode on active topics.	Embodied and contextual engagement; use of gestures and posture changes; preference for scenarios simulating real-world action.
Multimodal	Strategic combination of all above features based on goal.	Agentic curation of learning pathways; high metacognitive awareness; flexible sequencing of different feature types.

Visual learners were consistently drawn to features such as lip-synced avatars, highlighted feedback, progress graphs, and color-coded transcripts. Their engagement followed a recurring visual cycle of observing, performing, and visually evaluating their output. Auditory learners, in contrast, focused primarily on spoken interaction, frequently replaying model responses and attending closely to rhythm, intonation, and pronunciation. Read/write learners relied heavily on transcripts and written summaries as analytical tools, often engaging in systematic note-taking before and after speaking tasks.

Kinesthetic learners preferred role-play scenarios and free-talk modes that allowed physical expression and contextualized action. These learners frequently reported using gestures, posture changes, or imagined movement while speaking. Multimodal learners demonstrated the highest degree of agency, strategically combining multiple features depending on their immediate learning goals rather than adhering to a single dominant mode.

These patterns were reinforced by participants' reflections. For example, a visual learner (Participant I4) explained that seeing the avatar's lip movements and immediate textual feedback helped her notice pronunciation and spelling errors more clearly. In contrast, an auditory learner (Participant I1) described intentionally hiding the transcript to avoid becoming dependent on reading, emphasizing that listening and spontaneous response were more beneficial for his learning. These contrasting accounts illustrate how the same feature could function as a support or a barrier depending on learners' cognitive preferences.

1.2 Evolution of Strategies and Metacognitive Development

Participants' learning strategies evolved noticeably over the course of the study. Early reflective journals revealed exploratory and sometimes unsystematic use of Practica AI's features. By the third month, however, most students demonstrated more deliberate planning and sequencing in their practice routines. This shift suggests growing awareness of how different features contributed to specific aspects of speaking development.

A multimodal learner (Participant I3), for instance, described developing a weekly routine that balanced exposure to new scenarios, repeated practice for fluency, and written reflection for accuracy. Similarly, a kinesthetic learner (Participant I5) reported transferring skills practiced in Practica AI into classroom role-play activities, noting reduced anxiety and increased confidence when speaking in front of peers. These accounts suggest that learning styles operated not as constraints but as flexible resources that students refined over time.

Theme 2: The Affordance-Accessibility Gap and its Contribution to Speaking Skill Development

The second theme introduces the concept of an affordance–accessibility gap, referring to the mismatch between a feature's intended pedagogical potential and a learner's ability to benefit from it due to cognitive misalignment. This gap helps explain why features that supported learning for some students created challenges for others, and how speaking development occurred through indirect rather than immediate pathways.

2.1 Divergent Perceptions of Core Features

Students' perceptions of core Practica AI features varied considerably across learning styles. Interactive transcripts were viewed as essential supports by visual and read/write learners but were often described as distracting by auditory learners. Scenario-based conversations were praised by auditory and kinesthetic learners for encouraging fluency and creativity, while some read/write learners found them cognitively demanding without written prompts.

AI-generated feedback was generally appreciated for its patience and non-judgmental tone, which contributed to reduced speaking anxiety. At the same time, several students demonstrated critical awareness of its limitations. A multimodal learner (Participant I3), for example, noted that the AI's consistently neutral responses did not fully reflect the unpredictability of real human conversation, such as hesitation or misunderstanding.

2.2 The Mediated Pathway to Speaking Skill Improvement

Speaking development did not occur as an immediate or direct result of technology use. Instead, improvement emerged through three mediated pathways when AI features aligned with learners' cognitive preferences. First, alignment reduced anxiety and increased students' willingness to communicate by providing a safe space for repeated practice. Second, the platform functioned as a metacognitive mirror, enabling learners to identify weaknesses and engage in targeted self-correction. Third, Practica AI became a reliable practice companion, supporting sustained engagement and habit formation.

2.3 Implications for Design and Pedagogy

The affordance–accessibility gap highlights the importance of evaluating educational technology from a learner-centered perspective. For developers, this suggests the need for flexible feature design. For teachers, it underscores the value of guiding students to use AI tools strategically in ways that align with their learning preferences and instructional goals.

Theme 3: Cultural Mediation: Socializing the Individualistic Interface

The third theme illustrates how students transformed an AI tool designed for individual use into a collaborative learning resource, reflecting the collectivist value of *gotong royong*.

3.1 Forms of Collaborative Practice

Students organized informal collaborative practices, including sharing strategies, comparing AI responses, and engaging in friendly competitions. These activities extended learning beyond the application itself.

3.2 Cultural Significance and Pedagogical Value

By socializing the interface, students addressed limitations in the AI's social responsiveness and enhanced motivation and accountability. These findings challenge assumptions that AI-based personalization must be individualistic.

Synthesis and Theoretical Implications

The three themes together paint a complex picture of AI-assisted language learning. Theme 1 shows that learners are *active strategic agents*, not passive recipients. Theme 2 reveals that tool effectiveness and its contribution to skill development are *relationally co-constructed* between user and design, occurring through mediated pathways of affective safety, metacognitive growth, and habitual practice. Theme 3 demonstrates that this relationship is *culturally mediated* and can be enhanced through collective appropriation.

These findings advance theoretical discourse by proposing a *triple alignment model* for effective AI integration in language learning: (1) *cognitive alignment* (between learner style and feature accessibility), (2) *pedagogical alignment* (between task design and learning objectives, recognizing the indirect pathways to skill gain), and (3) *socio-cultural alignment* (between tool use and local values). Taken together, the three themes present a nuanced picture of AI-supported language learning. Learners emerged as active agents who strategically shaped their engagement with technology. The effectiveness of Practica AI was shown to be relational and mediated, relying on affective safety, metacognitive growth, and sustained practice. Importantly, these processes were culturally situated and enhanced through collective use.

Building on these insights, the study proposes a model of effective AI integration based on three forms of alignment: cognitive alignment between learner preferences and feature accessibility, pedagogical alignment between task design and learning goals, and socio-cultural alignment between technology use and local learning values. For contexts such as Indonesia, meaningful and equitable AI integration requires attention to all three dimensions in order to move beyond one-size-fits-all solutions and support genuinely personalized language development.

Conclusion

This qualitative case study shows that AI-based speaking practice in Indonesian EFL classrooms is shaped by learner agency, cognitive diversity, and cultural context. Learning styles functioned as flexible strategies rather than fixed categories, and technological features supported speaking development only when aligned with learners' cognitive preferences. The study underscores the need for reflective, culturally responsive, and cognitively inclusive approaches to AI integration in language learning.

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