

QUALITATIVE CASE STUDY OF MIT APP INVENTOR IMPLEMENTATION IN CONSECUTIVE INTERPRETING LEARNING

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ABSTRACT

Consecutive interpreting places considerable cognitive demands on undergraduate English education students, who must simultaneously manage complex notation systems and render spoken messages across languages under constrained time conditions. However, conventional instructional approaches to interpreter training typically offer limited technological support, creating a substantive gap between the cognitive requirements of the task and the availability of adequate learning tools. To bridge this gap, a peer-developed mobile application was constructed using the MIT App Inventor platform as a direct response to the identified learning needs of student practitioners. This qualitative case study systematically examined the extent to which the application addressed students' specific learning requirements within consecutive interpreting practice contexts. Twenty seventh-semester undergraduate students enrolled in the English Education programme at Institut Pendidikan Indonesia Garut contributed as research participants. Reflective journal data were subjected to thematic analysis following the procedural framework established by Braun and Clarke. Three principal themes emerged from the analysis: productivity enhancement through greater operational efficiency, translation quality improvement via systematic processing, and strengthened learner confidence during practice activities. All twenty participants affirmed that the mobile application meaningfully contributed to their professional competence development. The investigation concluded that digital instruments provided substantive support for interpreter training while directly resolving recognized pedagogical difficulties inherent in conventional interpretive instruction.

Keywords: Consecutive interpreting, English education, Interpreter training, Mobile application, Qualitative case study

A. INTRODUCTION

The incorporation of digital technology into language education has substantially reshaped instructional approaches across a wide range of educational contexts and institutional environments (Al-Ali, 2025; Subbarao et al., 2025). Scholars have progressively

documented how technology-enriched learning environments offer expanded opportunities for students to engage with complex linguistic tasks in more dynamic and responsive ways. Within higher education specifically, institutional adoption of digital tools has accelerated, driven by growing recognition that technology can serve as both a pedagogical resource and a motivational scaffold for learners navigating demanding academic programmes. These broader educational shifts have prompted language educators to reconsider traditional instructional models and to explore how technology can be meaningfully embedded into discipline-specific curricula, including those designed to develop advanced professional language competencies (Moratto & Yang, 2024; Ünlü & Doğan, 2024).

Consecutive interpreting demands that practitioners process sustained source-language discourse before constructing complete target-language output, a requirement that places considerable strain on working memory, auditory comprehension, and linguistic production simultaneously (Hatiarová, 2025; Šveda & Poláček, 2025). This complex cognitive task compels practitioners to listen attentively, retain meaning across extended discourse segments, analyse linguistic and pragmatic content, and deliver accurate renditions in the target language, often within constrained time conditions. A particularly prominent challenge involves the use of notation systems, through which interpreters encode essential information rapidly during source speech delivery to support subsequent production. However, research has consistently shown that novice interpreters encounter significant difficulty managing divided attention between source-text processing and notation production, frequently resulting in incomplete records and degraded output quality (Raj JR & Baisel, 2024; Yen et al., 2023; Zhang & Jing, 2025). These challenges are compounded by the high intrinsic cognitive load inherent in interpreting tasks, which leaves limited working memory capacity available for managing simultaneous mechanical demands such as writing (Wang et al., 2024).

Technological advances in speech recognition and text-to-speech synthesis have opened new avenues for supporting interpreter training, particularly through mobile applications capable of automatically transcribing spoken input and generating audible output (Ünlü & Doğan, 2024). These capabilities offer potential relief from the mechanical burdens of manual notation by allowing learners to verify spoken content through automatically generated transcripts rather than handwritten records. From a theoretical standpoint, Cognitive Load Theory (CLT) provides a foundational framework for understanding these benefits, as the theory posits that learning is most effective when extraneous cognitive load is minimised, thereby preserving working memory capacity for deeper meaning construction (Dong et al., 2024; Sweller, 2023). Complementarily, the principles of Constructionism and learner agency suggest that students who participate actively in the creation or customisation of learning tools develop stronger ownership of their learning processes (Kim & Michel, 2023; R. Yuan et al., 2025). The Technology Acceptance Model (TAM) further contributes by explaining how learners' perceptions of usefulness and ease of use shape their willingness to adopt and sustain engagement with new technological tools (Barrett et al., 2023; Rosli & Saleh, 2023). Together, these frameworks inform an understanding of how mobile applications may transform the consecutive interpreting learning experience.

A growing body of scholarship has examined the intersection of mobile technology and language learning at the tertiary level. Researchers have documented widespread uptake of mobile-assisted language learning (MALL) applications across higher education disciplines, demonstrating measurable gains in student engagement and reductions in cognitive strain

during language practice activities (Chengli et al., 2025; Kim & Michel, 2023; Papasarantou et al., 2023; R. Yuan et al., 2025). In the domain of interpreter training specifically, prior investigations have explored note-taking behaviours, cognitive workload, and performance outcomes among both expert and novice practitioners, identifying systematic differences in how experienced interpreters manage attentional resources during complex interpreting tasks (Andrew et al., 2025; Dong et al., 2024; Hua et al., 2023; Kuang & Zheng, 2023, 2024; Liang et al., 2023; Okatan, 2023; Xue & Liu, 2025). Additionally, scholars have examined how commercial technology platforms and computer-assisted interpreting (CAI) tools contribute to skill development, with findings generally supporting the utility of structured technological intervention in training contexts (Gao & Fan, 2024; Shafiei, 2024). However, the majority of these investigations have prioritised commercially developed or instructor-designed systems over tools created by students themselves, limiting insight into learner-driven technological innovation within interpreter education (Huang et al., 2024; Tri et al., 2025).

Despite this accumulation of evidence, a substantive gap persists in the scholarly literature. Existing studies have seldom examined undergraduate learners' subjective perceptions of student-developed applications specifically designed for consecutive interpreting practice, particularly those integrating automated speech transcription and text-to-speech technologies (Barrett et al., 2023; Rosli & Saleh, 2023). Moreover, prior methodological approaches have largely neglected the qualitative dimensions of learner experience within technology-mediated interpreter training contexts, favouring quantitative performance metrics over rich accounts of student engagement and cognitive experience (Byrne, 2022; Chua et al., 2025). The present study therefore addresses these identified gaps by providing an empirically grounded examination of how undergraduate learners perceived and evaluated a peer-developed consecutive interpreting application, thereby contributing novel qualitative evidence to an underexplored area within computer-assisted interpreter training research.

Guided by the gaps identified above, this study pursued two central research objectives. First, the investigation sought to determine what perceptions undergraduate students held regarding the effectiveness of the MIT App Inventor-developed application for consecutive interpreting practice. Second, the study examined how students experienced the integration of speech recognition and text-to-speech technologies within their skill development processes. These questions were explored through a qualitative case study conducted with seventh-semester English Education students at Institut Pendidikan Indonesia Garut (IPI Garut), with the aim of generating contextually grounded insights into learner-driven technological applications in interpreter education.

B. METHOD

This empirical investigation employed a formal qualitative methodology to explore undergraduate students' diverse perceptions of the academic effectiveness of a student-developed consecutive interpreting application. The current authors collected detailed participant insights into their individual practice experiences to ensure a comprehensive analytical understanding without using numerical datasets (Creswell & Guetterman, 2019; Giustini, 2024; Lichtman, 2023). This chosen qualitative paradigm prioritized authentic educational meanings and student interpretations over restrictive statistical measures (Pandey, 2025; Pöchhacker & Liu, 2024a). The primary research team successfully captured

the unique voices of twenty student participants to fully understand the technology's pedagogical impact inside actual classroom environments.

This investigation adopted a case study design within a qualitative research framework to analyze contemporary phenomena in context (Gallagher, 2024; Shen & Chong, 2023). This methodological choice enabled researchers to examine students' authentic experiences and evaluations of an interpreting application over two consecutive classroom sessions (Adeyiga & Mpungose, 2025; Deep et al., 2025). Investigators utilized an instrumental case study framework to explore learners' explicit perspectives on the pedagogical value of this technological tool (Rahman et al., 2023). This empirical study evaluated whether the application enhanced consecutive interpreting competence and alleviated the heavy cognitive load associated with traditional manual practice methods (Van Horn, 2024).

The study was conducted at IPI Garut, West Java, over a period of 14 days. Participants comprised 20 seventh-semester undergraduate students enrolled in the Interpreting course within the English Education programme, consisting of 4 male and 16 female students. Participants demonstrated basic to intermediate English proficiency and possessed foundational competencies in interpreting practice. Purposive sampling was employed to recruit individuals who had direct engagement with the peer-developed consecutive interpreting application (Lester, 2026). Prior to data collection, informed consent was obtained from all participants, who were clearly informed of their right to withdraw from the study at any time without consequence. Participation in this investigation was entirely voluntary, and no academic penalty was associated with non-participation. All data were managed confidentially, with participant identities protected through the use of coded identifiers (e.g., Student P1, Student P2) throughout the analysis and reporting process. The study received institutional approval from IPI Garut, and all procedures were conducted in accordance with ethical standards applicable to educational research involving human participants.

The research team utilized reflective journals as the primary data collection instrument, employing Thiel's Theory of Reflection as the organizing framework (Thiel, 1999). Participants documented their thoughts, feelings, and evolving insights regarding the consecutive interpreting application during designated sessions (Korol, 2024; Kristanto & Sudirman, 2025; Sudirman et al., 2021; Touil & Benameur, 2023; Yao & Li, 2025). Thiel's reflective framework operates through four progressively deepening analytical stages that guided participants in systematically interrogating their own learning experiences. In the initial stage of self-observation, learners were directed to identify and isolate a noteworthy event, challenge, or turning point encountered during their consecutive interpreting task, thereby anchoring subsequent reflection in a concrete and personally meaningful experience rather than generalized impressions. This was followed by the descriptive stage, in which participants elaborated upon the specific contextual circumstances surrounding the identified event, including the particular application features they engaged with and the situational conditions under which the interpreting task unfolded. Moving beyond surface-level description, the third stage of self-awareness required learners to engage in deeper analytical introspection, examining the underlying cognitive processes, emotional responses, and attitudinal dispositions that shaped their reaction to the event and contributed to the challenges or successes they encountered. Finally, the self-evaluative stage invited participants to synthesize their reflective insights into forward-looking strategic considerations, articulating how their documented experiences would inform and refine their

approach to future consecutive interpreting performance. Together, these four interconnected stages constituted a structured yet personally responsive reflective cycle, enabling each participant to move systematically from experiential observation toward evidence-grounded professional self-development.

Reflective journal entries were systematically examined through the application of Braun and Clarke's reflexive thematic analysis framework, which provided a rigorous and transparent procedural structure for identifying, organising, and interpreting meaningful patterns distributed across the qualitative dataset (Braun & Clarke, 2023). The analytical process unfolded across six sequential phases, each serving a methodologically distinct and purposeful function in transforming raw reflective data into theoretically grounded interpretive insights. During the initial data familiarisation phase, the research team immersed themselves comprehensively in the complete corpus of twenty reflective journals through repeated and attentive reading, systematically documenting preliminary observations, recurring ideas, and areas warranting deeper analytical scrutiny. This foundational engagement ensured that subsequent coding decisions were grounded in thorough familiarity with the full breadth of participant accounts. The process then advanced to initial code generation, wherein team members individually assigned descriptive labels to meaningful data segments, identifying phrases, sentences, and extended passages that reflected students' perceptions of the application's effectiveness, usability experiences, encountered challenges, and perceived learning impacts (Braun et al., 2022).

Following code generation, the theme identification phase involved grouping semantically related codes into overarching thematic categories, with particular attention to patterns addressing application benefits, implementation challenges, and observable shifts in participants' interpreting practice orientations. These candidate themes subsequently underwent critical theme refinement, during which the research team reviewed whether the accumulated coded data adequately substantiated each proposed theme, recalibrated thematic boundaries to minimise conceptual overlap, and verified logical coherence among all constituent theme components (Kushnir, 2025). Precise and analytically distinct theme definitions were then constructed for each confirmed theme, supported by carefully selected representative participant quotations that most effectively illustrated the thematic content and documented the interpretive relationship between evidence and meaning. Finally, the reporting phase synthesised all confirmed themes into a comprehensive and cohesive narrative account of students' perceptions regarding the application's consecutive interpreting effectiveness, integrating direct participant quotations alongside systematic analytical interpretation to accommodate both convergent experiential patterns and individually diverse student perspectives (Yao et al., 2024).

C. FINDINGS AND DISCUSSION

Students' evaluations of the application's overall effectiveness were uniformly affirmative and consistently manifested across two closely interwoven dimensions. The first dimension pertained to operational efficiency, as participants indicated that automated transcription considerably alleviated the mechanical demands associated with manual note production during practice sessions. The second dimension concerned translation quality, whereby learners articulated how the application's structured processing capabilities facilitated more precise and reflective self-assessment of their interpreting output. These two dimensions are elaborated through the sub-themes presented below.

1. Consecutive Interpreting Practice Enhanced Productivity Through Greater Operational Efficiency

Participants documented substantial gains in learning productivity that they directly attributed to the application's capacity to automate the notation process. Prior to engaging with the tool, learners recounted considerable difficulty in simultaneously managing the competing cognitive demands of auditory comprehension, manual note production, and target-language formulation a challenge well-documented in the consecutive interpreting literature as a central developmental obstacle for novice practitioners (Raj JR & Baisel, 2024; Zhang & Jing, 2025). The application's real-time transcription functionality effectively transferred the mechanical burden of recording spoken content to the digital system, thereby enabling participants to redirect their attentional and cognitive resources toward meaning construction and interpretive precision.

The most illustrative account of this transformation was offered by Student P1, who reflected:

"Before using this application, I often struggled to write down notes while trying to listen and think about translations at the same time. My hands would tire, and I would miss crucial details. Now that you can speak into the app, it captures everything flawlessly. This gives me the freedom to reflect deeply and express my thoughts with clarity."

This testimony encapsulates a fundamental shift in the learner's cognitive engagement from effortful mechanical transcription toward deliberate meaning-oriented interpretation. Similarly, Student P8 noted that the technology *"significantly enhanced productivity by allowing me to focus on understanding the speaker and preparing my interpretation, rather than spending time on note-taking,"* a perspective that was echoed across multiple reflective journal entries in which participants described the reallocation of cognitive effort as a decisive factor in elevating both the quality and fluency of their interpreting output. Several additional participants, whose accounts were consistent with those presented above, summarised the same experience in terms of feeling liberated from the physical constraints of handwriting, enabling them to devote their full attentional capacity to the interpretive task itself (Dong et al., 2024; Huang et al., 2024; Sweller, 2023). These empirical observations align substantively with the explanatory framework offered by Cognitive Load Theory (CLT), which posits that instructional effectiveness is significantly determined by the extent to which extraneous cognitive demands are minimised during task performance, thereby preserving working memory capacity for deeper learning processes (Sweller, 2023). Within this theoretical frame, the application functioned as a cognitive offloading mechanism redistributing the burden of real-time notation away from the learner and consequently liberating attentional resources for the higher-order linguistic and interpretive operations that constitute the core of consecutive interpreting competence (Dong et al., 2024; Liang et al., 2023).

This finding resonates with a well-established body of empirical scholarship demonstrating that divided attention between *source-text* processing and manual note production represents a primary developmental barrier for novice interpreters, whose constrained *working memory* capacity is frequently overwhelmed by the simultaneous mechanical and cognitive requirements of the task (Raj JR & Baisel, 2024; Zhang & Jing, 2025). Crucially, the present investigation extends this body of work by establishing that a student-developed application

rather than a commercially produced or institutionally designed platform is capable of effectively addressing this cognitive bottleneck within authentic classroom conditions, thereby broadening the conceptual parameters of technology-assisted interpreter training beyond commercially or institutionally mediated interventions (Wang et al., 2024).

2. Consecutive Interpreting Practice Improved Translation Quality Through Systematic Processing

A second theme that emerged from participants' reflective accounts concerned their recognition of tangible qualitative improvements in translation output, which they attributed to the application's structured and transparent processing workflow. In contrast to conventional practice methods that depend heavily on memory-based or impressionistic self-evaluation, the application enabled learners to review automatically generated English transcripts in conjunction with corresponding audio recordings, thereby facilitating direct and objective comparison between their intended communicative meaning and their actual delivered output. This systematic approach to performance review was consistently perceived by participants as substantially more reliable and analytically productive than traditional subjective evaluation practices. Student P2 articulated this distinction with particular clarity:

"When I translate manually, I sometimes doubt whether my translation is correct. But with this application, I can review the English text that the system generates from my speech recording. This application captures exactly what I say, and I can compare it with my original intent. The system organizes and presents information in a clear, systematic way."

This account captures the epistemological shift that the application facilitated from uncertain, memory-dependent judgement toward evidence-based, documentable self-assessment. Student P11 reinforced this observation by noting that the application *"empowers me with objective feedback on my interpretation quality,"* emphasising that the systematic cycle of recording, processing, and generating written output established a transparent evaluative standard that enabled learners to assess their performance with measurable accuracy. While the remaining participants expressed comparable experiences, their observations converged on a shared recognition that the application's structured workflow transformed what had previously been an opaque and anxiety-inducing self-evaluation process into a transparent, data-supported developmental practice (Barrett et al., 2020; Chengli, 2025; Cirocki et al., 2024; Rosli, 2023).

The structured feedback mechanism embedded within the application operationalised a form of evidence-based self-assessment that conventional instructional arrangements rarely afford. Rather than depending on instructor-mediated evaluation or subjective impressionistic judgement, participants maintained continuous access to objectively generated performance records against which their interpreting output could be systematically reviewed and progressively refined (Cirocki et al., 2024; Sudirman, 2021). This orientation toward self-directed, data-grounded evaluation reflects the constructionist principle of learner agency, wherein students who engage actively with tools they have participated in developing demonstrate enhanced ownership of their learning trajectories and greater capacity for autonomous skill refinement (Kim & Michel, 2023; H. Yuan & Yu, 2020).

The *Technology Acceptance Model (TAM)* provides a productive complementary lens through which to interpret these outcomes, as the consistently elevated levels of *perceived usefulness (PU)* and *perceived ease of use (PEOU)* reported by participants were demonstrably associated with sustained engagement and constructive evaluative orientations toward the application across all instructional activities (Barrett et al., 2020; Rosli, 2023). Taken collectively, these findings position student-created technological instruments as primary rather than supplementary resources in interpreter training, contributing novel qualitative evidence to a research domain that has been predominantly shaped by investigations into commercial and instructor-designed systems (Huang et al., 2024; Papasarantou et al., 2023).

3. Consecutive Interpreting Practice Strengthened Learner Confidence During Practice

As a direct and documentable consequence of sustained engagement with the application's speech recognition and text-to-speech functionalities, participants reported a progressive and meaningful strengthening of their self-confidence throughout consecutive interpreting practice activities. This psychological transformation, while secondary to the cognitive outcomes identified in the preceding themes, represented a pedagogically significant dimension of the technology integration experience one attributable to the objectivity, reliability, and reviewability that automated transcription and audio playback afforded learners across the duration of their practice engagement. Student P3 articulated the affective transformation most vividly:

"Practicing consecutive interpreting without technology often left me feeling anxious. I constantly feared I would lose crucial information or make mistakes. However, with this application, I gain confidence because I trust it will accurately capture everything. This application allows me to practice more freely, reducing my stress and enhancing my skills."

This testimony reflects a fundamental reorientation of the learner's relationship with both the task and with potential error from a state of performance anxiety toward a disposition of confident experimentation. Student P7 similarly described how the application *"instills confidence by offering support throughout the task, alleviating the feeling of isolation,"* noting that technological assistance enabled engagement with challenging material with greater assurance. The accounts of the remaining participants, while not reproduced here in full, consistently conveyed a shared pattern of diminishing anxiety and expanding willingness to attempt cognitively demanding interpreting tasks a convergence that underscores the psychological significance of technological support in high-pressure language performance contexts (Chengli, 2025).

Participants articulated how access to objective and reviewable performance documentation reduced their apprehension regarding undetected errors and alleviated the psychological pressure inherent in real-time interpreting tasks. The availability of integrated recording and playback features meaningfully increased learners' willingness to experiment with alternative interpretive strategies and to engage with academically demanding material, consistent with established principles of constructivist learning and learner agency. This finding aligns with Mobile-Assisted Language Learning (MALL) scholarship demonstrating that well-integrated technology supports learner autonomy and intrinsic motivation by

enabling independent progress monitoring and reducing dependence on external evaluative feedback (Chengli, 2025).

The psychological benefits documented by participants can be situated within a broader theoretical understanding of how reflective practice, when anchored in concrete performance evidence, fundamentally transforms learners' relationship with their own developmental limitations and professional growth trajectories. Thiel's Model of Reflective Practice specifically foregrounds the progression from self-observation to self-evaluation as a mechanism for grounding strategic revision in documented experiential evidence rather than subjective recall (Cirocki et al., 2024; H. Yuan & Yu, 2020). The availability of replayable audio recordings and automatically generated transcripts operationalised this reflective cycle by providing learners with stable, revisable performance artefacts a capability that conventional consecutive interpreting instruction, which relies predominantly on real-time memory and verbal corrective feedback, does not routinely supply (Rosli, 2023; Sudirman, 2021). These findings are further consistent with MALL scholarship demonstrating that the integration of technology into cognitively demanding language tasks cultivates learner autonomy and intrinsic motivation by affording learners the capacity to regulate their own practice frequency, independently monitor their developmental trajectories, and approach complex high-stakes performances with strengthened self-efficacy (Chengli, 2025). Taken together, these outcomes establish that the confidence gains observed throughout this investigation were not incidental byproducts of novelty effects but were structurally enabled by the specific technological affordances of speech recognition and text-to-speech functionality embedded within the peer-developed application (Liang et al., 2023; Pöchhacker & Liu, 2024b).

D. CONCLUSION

This investigation set out to examine undergraduate students' perceptions and experiences of a peer-developed mobile application for consecutive interpreting practice at Institut Pendidikan Indonesia Garut. Thematic analysis of twenty reflective journals yielded three principal findings: the application substantially reduced extraneous cognitive load by automating the notation process, enabling learners to redirect attentional resources toward higher-order interpretive tasks; it facilitated evidence-based self-assessment through systematic transcript and audio review, meaningfully elevating translation output quality; and sustained engagement with its speech recognition and text-to-speech functionalities progressively strengthened learner confidence and reduced performance-related anxiety. These findings carry meaningful pedagogical implications, affirming that student-developed digital tools constitute viable and empowering instruments within interpreter training curricula. Institutions are encouraged to formally integrate such applications with adequate technical infrastructure and sustained developmental support. Nevertheless, the study's confinement to a single cohort across two sessions and its exclusive reliance on reflective journals represent notable limitations. Future investigations should employ longitudinal, mixed-methods designs across diverse institutional contexts to assess sustained competence development and broader transferability.

However, several limitations of this study should be acknowledged. First, the investigation was conducted within a limited timeframe involving only two consecutive interpreting practice sessions, which restricts the examination of long-term changes in learners' interpreting competence, technology adoption, and sustained engagement. Additionally, the exclusive use of reflective journals as the primary data source may not fully capture

measurable improvements in interpreting performance or other learning outcomes. Second, the study involved participants from a single institutional cohort at Institut Pendidikan Indonesia Garut, which may limit the transferability of the findings to other educational contexts with different learner characteristics and technological conditions. Based on these limitations, future research is recommended to employ longitudinal and mixed-methods designs by incorporating reflective data with objective measures of interpreting performance to provide a more comprehensive understanding of the impact of student-developed mobile applications on interpreting skill development. Furthermore, future studies should involve participants from multiple institutions and diverse learning contexts to examine the broader applicability and contextual factors influencing the implementation of learner-driven digital tools in interpreter education.

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