

# Integrating AI Tools in Language Learning: A Pathway to English Proficiency for Business, Computer Science, and Accounting Students in Applied Colleges

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**Abstract.** In today's interconnected world, English proficiency has become essential for students in applied disciplines such as Business, Computer Science, and Accounting, where global communication and collaboration are the norm. This study examines how technological innovations can be leveraged in language education to enhance English proficiency among undergraduate students in these fields. A quasi-experimental mixed-methods approach was employed, comparing outcomes between a traditional instruction group and a group using technology-enhanced learning tools—including AI-powered writing assistants, gamified language applications, and speech recognition software. The results indicate that students who engaged with these digital tools showed significantly greater improvements in writing, speaking, and overall confidence in English communication. At the same time, the study highlights challenges related to unequal access to technology, difficulties in integrating new tools into curricula, and resistance to adopting unfamiliar platforms. Practical strategies to overcome these barriers are discussed. Overall, the findings emphasize technology's role as a bridge to stronger language skills and propose recommendations for thoughtfully incorporating digital tools into English language curricula across applied disciplines.

**Keywords.** English proficiency, applied disciplines, Business, Computer Science, Accounting, AI tools, language technology, digital learning

## 1. Introduction

In a globalized academic and professional landscape, English has become the lingua franca of international exchange. Students gain more than just technical expertise in applied fields like Business Administration, Computer Science, and Accounting but require strong English skills as well to thank goodness collaborate in multicultural teams, share ideas internationally and Communist knowledge internationally. The ability to use English is not only an academic requirement in these fields but an important professional asset that opens up career opportunities for students.

Traditional language teaching tends to ignore the specific communication needs of students from applied disciplines. Business students must negotiate strategic communication, persuasive business discourse; computer science students must read technical documentation and collaborate on code together; accounting students must write accurate financial reports and

be knowledgeable in international accounting standards. These varied demands require that we take a discipline-specific approach to language education, rather than a generic one that reminds us how to be good ESL students. As Krashen (1982) points out plentiful comprehensible input, and meaningful practice are essential in learning a new language. This illustrates that traditional classroom contexts, by themselves, may be insufficient in providing the necessary amount of field-specific practice, which creates a demand for new solutions tailored to language processing and education.

This has led to the integration of modern technology in language training, which has proven to be a solution to their challenges. The development of advanced technologies such as artificial intelligence (AI), machine learning, natural language processing (NLP), and educational gamification enables language learning experiences to be increasingly personalized and engaging (Hung et al., 2018; Guan et al., 2021). Innovative types of tools can tailor practice to the learner, which can make practice more engaging and motivating than conventional approaches. However, the introduction of these technologies in educational programs is no easy process—access, affordability, curriculum alignment, and the readiness of instructors continue to pose serious challenges that educators and institutions must contend with.

In this regard, the current research explores the landscape of applied college programs in Business, Computer Science, and Accounting to assess the significance of AI-powered learning tools in English language learning. It aims to assess whether these tools help students improve their language skills, investigate practical challenges with their use, and suggest ways to make the most of these tools for learners and educators alike.

## **2. Research Design & Methodology**

The research employed a mixed-methods design, utilising both quantitative and qualitative techniques to explore the impact of technology on English language proficiency. The incorporation of qualitative feedback along with numeric performance records allowed the study to showcase both definable learning results and the more subtle experience of the learners. Background: A quasi-experimental study design was utilized to compare the outcomes of technology-enhanced instruction and traditional classroom instruction.

The mixed-methods design allowed for triangulating findings, increasing validity by obtaining evidence from various different sources. This design was selected due to the multifactorial nature of language learning — performance, perceptions, and behaviors of the learners all play a role in the success of an instructional approach. Quantitative data offered proof of any statistically significant gains, whereas qualitative insights elaborate the nature of learner engagement, motivations, and attitudes responsible for those gains.

The quasi-experimental aspect of the study was conducted using intact student groups, with no randomization, mimicking typical educational settings in which randomization is not feasible. An experimental class and a control class were observed throughout an academic term, and both groups followed the same curriculum. All participants received both pre-tests and post-tests, which enabled the study to isolate the effect of the technological interventions by comparing learning gains across the two groups.

### **2.1 Participants and Sampling**

Participants were 60 undergraduate students enrolled in the Business Administration, Computer Science, and Accounting programs of an applied college. A purposive sampling

strategy ensured a mix of English proficiency levels and academic backgrounds. The participants were divided evenly into two groups:

- **Experimental group (n = 30):** Received English instruction supplemented with the selected technology tools.
- **Control group (n = 30):** Received the same instruction but without any digital tool support.

**Table 1: Participant Distribution by Discipline**

Discipline	Experimental Group	Control Group
Business	10	10
Computer Science	10	10
Accounting	10	10
Total	30	30

## 2.2 Instruments and Tools

We used several routes to assess the intervention's impact, including both quantitative metrics and qualitative input:

- Quantitative tools:

Standardized pre- and post-tests: tests to measure proficiency in four language skills (Listening, Reading, Writing, and Speaking). They were individually administered to each of the students pre and post the 8-week instructional intervention and were adapted from established English testing frameworks to ensure reliability and validity.

Likert-scale surveys: After the product was implemented, students answered survey statements words assessing measures of students' self reported confidence, motivation, and perception of the tools' effectiveness. Responses were scored from 1 (strongly disagree) to 5 (strongly agree).

- Qualitative tools:

Semi-structured interviews: A small portion of the experimental group was interviewed individually. Through these interviews, rich data was collected on attitudes, experiences and opinions towards the AI-assisted learning tools.

Focus group discussions: Small focus group discussion sessions were held with experimental group students to discuss the use of technology in their learning among peers. These discussions gave students the opportunity to collectively reflect on how the tools affected the way they study and practice language.

Usage analytics: In the experimental group, usage statistics were recorded by the digital platforms themselves (e.g., Grammarly and Duolingo). These logs measured how frequently students accessed the tools, how long they used them, and which features they accessed. The analytics added promises of extra data on pupil engagement and behavior to verify the test and survey results.

## 2.3 Intervention Tools

Several technology resources were integrated into the experimental group's language learning process during intervention to target different skill areas:

- Writing support tools: Grammarly and ChatGPT were utilized to support writing. Grammarly delivered instant grammar and style suggestions on written coursework, while

ChatGPT (an AI chatbot) helped with brainstorming, rewriting sentences, and answering questions about the language.

- Learning platforms with gamification features: Duolingo and Kahoot! were included to make language practice more fun. Duolingo was a gamified language-learning app, which meant that there were game-like exercises and rewards to incentivize daily practice in vocabulary and grammar. Kahoot! was used sporadically to create interactive quizzes, injecting a fun, competitive element into reviewing course material.

- Speech recognition applications used to enhance speaking skills: Google Speech-to-Text, ELSA Speak. Using Google’s speech-to-text engine, students could speak their answers or a short presentation and check whether the software recognized their speech accurately, thus measuring pronunciation clarity indirectly. ELSA Speak (English Language Speech Assistant) gave focused feedback on pronunciation by assessing students’ spoken answers to prompts and pinpointing particular sounds to work on.

### 3. Results

#### 3.1 Quantitative Findings

The quantitative results showed that students who had access to the technology-enhanced learning tools made markedly greater progress in English proficiency than those in the control group. A paired *t*-test confirmed that the experimental group’s post-test scores were significantly higher than their pre-test scores across all four language skills ( $p < 0.05$ ). Furthermore, an independent samples *t*-test comparing the two groups’ post-test performances indicated that the experimental group outperformed the control group by a statistically significant margin ( $p < 0.01$ ).

**Table 2: Average Pre-Test and Post-Test Scores**

Skill	Control Pre	Control Post	Experimental Pre	Experimental Post
Listening	55	60	56	72
Reading	58	62	57	75
Writing	54	59	55	78
Speaking	52	57	53	74

These data illustrate substantially higher gains in the experimental group compared to the control group. Improvements were especially pronounced in the productive skills of writing and speaking, which benefited directly from the use of the AI writing assistants and speech recognition tools. For example, the experimental group’s average writing score increased by 23 points (from 55 to 78), whereas the control group’s writing score rose by only 5 points (from 54 to 59). A similar pattern was observed in speaking, where the experimental group gained 21 points on average, versus a 5-point gain for the control group. While more moderate, the gains in reading and listening for the experimental group still exceeded those of the control group, suggesting that even receptive skills were enhanced through the interactive and multimedia elements of the technology tools.

#### 3.2 Survey Results

Feedback from the post-study surveys indicated a strong positive reception of the technology tools among students in the experimental group. A large majority of these students felt that the integration of AI and digital resources benefited their language learning experience. In particular:

- 83% of students agreed that the technology tools **“improved their language skills.”**
- 76% agreed that using the tools **“increased their confidence in speaking English.”**
- 88% agreed that the tools **“motivated them to engage more with English learning.”**

**Table 3: Student Feedback on Technology Tools**

Survey Statement	% Agreement (Experimental)
Improved my language skills	83%
Increased my confidence in speaking English	76%
Motivated me to engage more with English learning	88%

These responses suggest that most students perceived the technology-enhanced approach to be beneficial for their skill development and motivation. The tools not only helped them improve specific language abilities but also made them more confident and enthusiastic about learning English.

### 3.3 Qualitative Insights

Use of qualitative data from interviews and focus groups offered richer and deeper understanding of the technology-infused learning environment in which students were situated. The experimental group's feedback was overwhelmingly positive, praising functionality including immediate feedback, tailored learning environments, and tool interactivity. Multiple participants said they appreciated feeling more engaged, both because of the gamified elements and because they got instant feedback to their input. One student explained, “I can now see my grammar mistakes and fix them easily which has really improved my writing as a whole,” reflecting the advantage of the real-time corrections offered by the AI writing assistant. As another one of the students said, “My speaking in English is much, much better now because the AI feedback means I see exactly where I make mistakes when I speak.”

As with these benefits, participants encouraged some challenges. Some students commented that the AI sometimes had difficulty processing non-native accents or contextual subtleties, sometimes leading to frustration when corrections were way off. “Sometimes the AI accurately transcribes my accent, and that can be frustrating when I am trying to learn,” one interviewee said. There were also occasional technical issues — application crashes, internet connectivity issues — that interrupted study sessions. Yet most students felt the benefits of the tools were greater than the drawbacks. Most significantly, there was a shared feeling that technology should be used in addition to conventional learning and not as a substitute. A number of participants also argued for a blended approach, noting while they believe AI tools are great for practice and reinforcement they still value expert input from teachers as well as Person-to-Person and human feedback for complex instructions.

### 4. Discussion

These findings supply strong evidence that technology-enhanced language learning can offer a tremendous improvement in English proficiency for students in applied disciplines. The experimental group's significant advances in all language skills, compared with the control group, show the clear enhancement that AI-powered tools can bring to traditional instruction. Such a result aligns with earlier studies that provide evidence for the efficacy of digital platforms in learning a second language (Liu & Lei, 2023; Zhang & Liu, 2020). In surpassing the control group in every single skill area, the students who engaged with AI and other digital

resources through the 10-week program demonstrated precisely what's possible with these tools, accelerating learning on a college campus.

A major reason for the experimental group's success was the immediacy and specificity of feedback provided by Grammarly, ChatGPT, and the like. Equipped with these tools, students would be able to get corrections and suggestions as they wrote or practiced speaking. Instant feedback meant that mistakes were corrected in real-time, allowing learners to internalize feedback and to hone their skills continuously. This instant feedback loop probably allowed students to become more independent and confident in their writing and speaking over the 8 week period, as they did not need to await an instructor's review to learn from mistakes. The other was the motivational effect of gamification. The use of Duolingo, for example, engaged students with game-like features—points, badges, levels, and even daily reminders to practice where they left off in the last session—that prompted them to practice independently outside of class. Indeed, research around gamified learning suggests that this type of engagement strategy can support persistence in language study (Hung et al., 2018).

The use of speech recognition technology to develop speaking skills was another important part of the intervention. Tools like Google Speech-to-Text and ELSA Speak enabled students to practice speech, making them receive immediate feedback on their pronunciation objectively. Seeing their spoken words transcribed (and sometimes mis-transcribed) by the software, they said, helped them pinpoint specific pronunciation issues. Through frequent and repetitive attempts to say the difficult word/sound and receiving immediate feedback or score, students became conscious of their pronunciation habits. This is consistent with other work by Wang and Young (2019), who found that speech recognition software can provide effective support for pronunciation training with English learners. The speech-focused tools were key to improving students' speaking scores, as well as building their confidence in using English orally, our study found.

The advantages of the technology integration were also somewhat discipline-specific. Business and Accounting students in particular within the experimental group appreciated the support for writing professional documents—Grammarly and ChatGPT were very helpful in ensuring that the tone, formality and accuracy of memos, reports, and emails were appropriate. Conversely, Computer Science students found that the tools provided clarity and precision to all technical writing assignments (e.g commenting code or writing documentation) and that the breadth of vocabulary offered when reading technical content was useful. These observations imply that although GPT-4 and other general-purpose language tools are useful across disciplines, it is necessary to create tailored or domain-specific tools to fit the unique formats in which language is used in a discipline. For example, future language learning platforms might be developed as specialized modules or settings for the specific terminology and communication needs of various sectors (for example, business negotiations, technical project discussions, financial reporting).

While the study found encouraging results, it also noted some shortcomings and challenges with adopting AI-based tools. Others, however, ran into problems with the technology itself. As a case in point, speech recognition did not always handle a wide range of different accents well and as a result some errors or misunderstandings would occur. Likewise, one of the AI writing feedback struggled to understand the context and intent of a sentence, which resulted in suggestions that the students considered unhelpful or irrelevant. These limitations underscore the importance of further refinements to language-processing algorithms, especially to enhance their robustness for diverse user populations and complicated linguistic contexts. There were also concerns about data privacy and security in the use of these

AI tools (Zuboff, 2019). While this was not a focus of our study, it is an important consideration—both students and institutions will need to trust that their data (e.g. writing samples or speech recordings) will be responsibly handled by such platforms.

Another major challenge that arose was the digital divide which impacts students' access to technology. Essentially, all students had sufficient access to the needed tools (computer labs, loaned devices when necessary) to fulfill their course requirements, but the quality of personal devices and/or internet connectivity outside of class was variable. Other students were struggling to run advanced applications on older smartphones or slow home internet, which could keep them from using the learning tools seamlessly. This gap mirrors wider evidence of socio-economic variation in access to technology-supported learning opportunities (Warchauer & Matuchniak, 2010). It highlights that institutions need to work on infrastructure and access disparities—for example, by supplying devices or expanding campus internet coverage—to make sure that the advantages of digital learning tools are shared equitably among all students.

The results of this study indicate that the most effective approach is blended learning: one that retains the benefit of structured, teacher-led instruction, while taking advantage of technology for tailored practice and reinforcement. By combining both methods, students can take advantage of the best of both worlds. Conclusion: These findings indicate that future curriculum designs in applied disciplines should harness the affordances of digital tools for independent skill practice (Facilitated by A.I. feeds and gamified incentives), and also for bringing that practice into the class in a format where deeper discussion, clarification and extension can take place. This method would ideally allow the potential of tech and human knowledge to combine in a way that maximized learning outcomes by leveraging both scale and the compassion of a human guide.

Finally, the limitations of the current study should be recognized, as well as future avenues for research should be explored. The study's timeframe (eight weeks) was relatively brief, which might not have been long enough to observe long-term language acquisition or retention of skills. The sample was also confined to two classes (one experimental group and one control group) at a single institution, so the results can be generalized only with caution. Further research involving a longer intervention period and/or multiple institutions, or a greater and more heterogeneous sample of students, should be conducted to confirm and expand upon these findings. It would also be helpful to explore a wider variety of burgeoning educational technologies—like virtual-reality simulations to provide immersive foreign language practice, or blockchain-based tracking of language-learning credentials (Johnson & Witthoft, 2022; Lan et al., 2021; Chen & Xu, 2022)—that might increasingly augment or work in tandem with A.I. writing and speaking tools. Moreover, examining how demographic factors (students' prior technology experience or language background, for instance) condition the effectiveness of AI tools could help educators personalize interventions to better address varying learner needs. Answering these questions may help guide future research building on this study, as well as the development of increasingly more effective technology integration strategies in language education for applied disciplines.

## **5. Conclusion**

The findings of this study suggest the important role that artificial intelligence (AI) and other digital tools can have on improving the English language learning outcomes (ELO) of students in Applied College. Using a strong mixed-methods approach, the results demonstrate that AI-assisted Learning Platforms significantly enhances the students' writing

and speaking performance as well as the students' overall engagement with the language learning relative to the more traditional method of instruction. Through immediate feedback, interactive practice activities, advanced resources, and individualized support, students in the experimental group were able to take more ownership of their learning process. When the tests results had been made known, they not only found out about their test scores but their confidence level in making use of the English also improved, which is important when it comes to their future career plans.

At the same time, the findings highlight that digital tools should be used to supplement, not supplant, human instruction. The best outcomes were seen when AI tools were used in conjunction — in a blended learning model — with the kind of one-on-one attention students can only get in the classroom. The study cites three necessities that must accompany the adoption of such tools in practice — making sure access to the right technology is affordable, identifying adequate infrastructure, and training educators on how to effectively implement the tools. Equity in access and preparedness of teachers must be addressed so that all students have the opportunity to benefit from innovation in language education.

In conclusion, thoughtfully integrating AI-driven and other digital technologies into language learning offers a scalable and adaptive approach that aligns with the needs of modern learners. When used judiciously, these tools can provide personalized support and additional practice opportunities that greatly enrich the learning experience. As colleges and universities continue to evolve in the digital era, leveraging technology in an inclusive and pedagogically sound manner can play a crucial role in preparing students of Business, Computer Science, Accounting, and other applied fields for success in an increasingly globalized and technology-driven workforce

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