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Volodymyr TATARIN,
orcid.org/0009-0004-8812-4389
Postgraduate student at the Department of Pedagogy
Berdyansk State Pedagogical University
(Zaporizhzhia, Ukraine) tatarinvolodymyr99@gmail.com

DIGITAL TOOLS FOR TEACHING ENGLISH TO NON-LANGUAGE MAJORS: OVERCOMING COMMUNICATIVE BARRIERS

The article examines the teaching of English to university students of non-language majors through the lens of overcoming communicative barriers that hinder oral and written performance in digitally mediated learning. The relevance of the study is driven by the expansion of English-mediated professional interaction across fields, the rapid digitalization of higher education, and the need to align technology use with communicative outcomes rather than merely increasing task volume. Drawing on contemporary research in blended learning, mobile-assisted language learning, informal digital learning of English, automated writing assessment, and conversational artificial intelligence systems, the article outlines recurrent barriers faced by non-language-major students: limited time for systematic practice, fragmented interaction, reduced persistence in asynchronous work, insufficient lexical accessibility for professional discourse, constrained access to timely feedback, and heightened speaking anxiety in high-stakes communication contexts.

A theoretical analysis and synthesis of scholarly literature was conducted to relate key categories of digital tools to evidence-based pedagogical design conditions under which they reduce these barriers and support sustained communication. The article highlights principles that increase the density of communicative events through authentic tasks, obligatory interaction, and feedback-and-revision cycles: blended learning aligned with discipline-specific genres; mobile vocabulary practice coupled with immediate production; structured integration of informal language contact with curricular communicative outcomes; diagnostic integration of automated feedback through guided revision and justification of edits; and chatbot-based rehearsal that transfers into interaction with peers and instructors.

Based on the synthesis, the article proposes a concise set of methodological recommendations on selecting and sequencing digital tools to strengthen engagement, confidence, and the communicative quality of English for professional purposes among non-language-major university students.

Key words: *professional and business communication, oral and written communicative skills, instructional design principles, methods of teaching English in higher education, learning barriers, students' interaction, feedback literacy.*

Володимир ТАТАРІН,
orcid.org/0009-0004-8812-4389
аспірант кафедри педагогіки
Бердянського державного педагогічного університету
(Запоріжжя, Україна) tatarinvolodymyr99@gmail.com

ЦИФРОВІ ІНСТРУМЕНТИ У ВИКЛАДАННІ АНГЛІЙСЬКОЇ МОВИ СТУДЕНТАМ НЕМОВНИХ СПЕЦІАЛЬНОСТЕЙ: ПОДОЛАННЯ КОМУНІКАТИВНИХ БАР'ЄРІВ

Стаття розглядає викладання англійської мови студентам немовних спеціальностей крізь призму подолання комунікативних бар'єрів, що перешкоджають усному й писемному мовленню в умовах навчання опосередкованого цифровими технологіями. Актуальність дослідження зумовлена розширенням англомовної професійної взаємодії в різних галузях, швидкою цифровізацією вищої освіти та потребою узгоджувати використання технологій із комунікативними результатами, а не лише зі збільшенням обсягу завдань. Спираючись на сучасні дослідження змішаного навчання, мобільно підтримуваного вивчення мови, неформального цифрового вивчення англійської, автоматизованого оцінювання письма та діалогових систем штучного інтелекту, у статті окреслено типові бар'єри студентів нелінгвістичних спеціальностей: обмежений час для систематичної практики, фрагментованість взаємодії, зниження наполегливості в асинхронній роботі, недостатня лексична доступність для професійного дискурсу, обмежений доступ до своєчасного зворотного зв'язку та підвищена тривожність мовлення в ситуаціях високої відповідальності.

Здійснено теоретичний аналіз і синтез наукової літератури з метою співвіднести ключові категорії цифрових інструментів з доказово обґрунтованими умовами їх педагогічного проєктування, за яких вони зменшують зазначені бар'єри й підтримують сталу комунікацію. У статті акцентовано принципи, що підвищують щільність комунікативних подій через автентичні завдання, обов'язкову взаємодію та цикли зворотного зв'язку й доопрацювання: змішане навчання, узгоджене з фаховими жанрами; мобільну лексичну практику, поєднану з негайним продукуванням; структуроване поєднання неформального контакту з мовою та навчальних комунікативних результатів;

діагностичну інтеграцію автоматизованого зворотного зв'язку через керований огляд та обґрунтування правок; а також тренування з чатботами, що переноситься у взаємодію з одногрупниками й викладачем.

На підставі синтезу запропоновано стислий комплекс методичних рекомендацій щодо добору й послідовності використання цифрових інструментів для посилення залученості, упевненості та комунікативної якості англомовного фахового спілкування студентів немовних спеціальностей.

Ключові слова: *професійна та ділова комунікація, усні й письмові комунікативні навички, принципи інструкційного дизайну, методика навчання англійської мови у вищій школі, навчальні бар'єри, взаємодія студентів, грамотність роботи зі зворотним зв'язком.*

General statement of the problem. Digitalization has shifted higher education from a classroom-only model to a hybrid system. Today, instruction, practice, and assessment happen across both institutional platforms and open online spaces. For university students majoring in subjects other than languages, English learning is often blended, combining face-to-face interaction with online tasks, asynchronous discussions, and data-driven feedback. Systematic reviews argue that technology in university-level English instruction is no longer just a supplementary tool. Instead, it requires a coordinated pedagogical design that aligns digital capabilities with communication goals and learner self-regulation (Klimova et al., 2023).

However, shifting to blended instruction creates communicative barriers that are especially salient for non-language majors: limited time for sustained practice, fragmented interaction, reduced persistence in asynchronous work, and heightened anxiety about performance in discipline-relevant communication (Glazkova et al., 2025). Research indicates that while flexibility is a benefit, it can weaken a student's pace and persistence, and interaction can become discontinuous without deliberate pedagogical support (Boelens et al., 2017). Therefore, discussions on digital tools must move beyond simple descriptions and focus on evidence-based principles for selecting and sequencing tools that reduce barriers to sustained oral and written communication rather than merely increasing task volume (Castro, 2019).

A final point is the rapid rise of Artificial Intelligence in education. While automated writing evaluation systems and chatbots are expanding, research highlights inconsistent quality and a frequent mismatch between what a tool measures and what the course aims to teach, which may reproduce rather than reduce communicative barriers (Shi & Aryadoust, 2024). Consequently, a structured synthesis is needed to clarify how digital tools mitigate communicative barriers for non-language majors and under what design conditions they improve discipline-relevant oral and written communication.

Analysis of recent research and publications. Recent research converges on the idea that technology reduces communicative barriers primarily when it is embedded in sound instructional design: Boelens et al. (2017) show that successful blended learning designs explicitly manage flexibility, interaction, learner support, and the affective climate, which are closely tied to persistence and participation; Farmati et al. (2023) argue that blended English for specific purposes is most effective when it integrates discipline-relevant genres and collaborative tasks, addressing the barrier of low transfer to professional communication; Sung et al. (2015) report a positive overall impact of mobile devices on language learning when activities are instructionally anchored, which helps counter irregular practice; Yu and Trainin (2022) find that technology-assisted vocabulary learning supports retention when designs include retrieval practice and spaced exposure, addressing lexical access barriers in speaking and writing; Zhai and Ma (2023) show gains from automated writing evaluation when feedback is integrated into guided revision cycles, supporting barrier reduction related to limited teacher feedback capacity; Shi and Aryadoust (2024) caution that automated feedback raises validity and alignment concerns, which may create new barriers if tools do not match targeted competencies; and Du and Daniel (2024) conclude that artificial intelligence-powered chatbots can support speaking fluency and confidence, but only under structured prompting and ethical safeguards that prevent superficial practice and misuse.

The purpose of the article. This review synthesizes evidence on digital tools used to teach English to university students of non-language majors with a focus on overcoming communicative barriers. It identifies the most recurrent barriers reported in blended and digitally mediated instruction and maps tool categories to the design conditions under which they mitigate these barriers and support sustained communication.

Presentation of the main material. ***Blended learning environments.*** For university students of non-language majors, blended learning can mitigate the barrier of limited contact hours. However, its benefits depend on deliberate course design rather than the mere addition of online tasks. Blended formats should be treated as a design problem that manages flexibility, interaction, learner support, and the affective climate, because excessive flexibility may weaken persistence and participation in asynchronous work (Boelens et al., 2017). Therefore, online

components should be structured around scheduled interactional tasks and observable communicative outputs rather than assumed to emerge spontaneously. Evidence from English for specific purposes suggests that blended instruction is most effective when it integrates discipline-relevant genres, collaborative work, and feedback loops aligned with professional communication goals, rather than functioning as an isolated platform-based add-on (Farmati et al., 2023).

Activity example: Flipped classroom.

1. Individual phase: students watch a short video and draft a two-hundred-word problem statement in a course forum.

2. Peer interaction phase: each student provides two structured comments on peers' drafts following agreed netiquette and feedback prompts.

3. Synthesis phase: the instructor identifies recurring issues in clarity, structure, and language use, and students revise in small groups to produce a joint version.

4. Rationale: the design converts online time into compulsory interaction and reserves face-to-face time for high-value collaborative editing and negotiated meaning.

Mobile and technology-assisted learning. For non-language majors, a frequent communicative barrier is limited lexical accessibility in discipline-specific speaking and writing. Mobile-supported learning can reduce this barrier when integrated into instruction through repeated exposure and retrieval practice, which is associated with improved achievement in language learning (Sung et al., 2015). Technology-assisted vocabulary learning tends to be more effective than non-technology approaches when tasks require active use of vocabulary rather than passive recognition, particularly under designs that include spaced practice and retrieval-based activities (Yu & Trainin, 2022). Accordingly, vocabulary activities should be directly linked to short communicative performances to prevent practice from becoming detached from authentic communication demands.

Activity example: Vocabulary in context task.

1. Task: students photograph an object or process related to their discipline (for example, a laboratory instrument, a mechanical component, or a marketing artifact).

2. Mobile action: students label the image with three target terms and record a brief explanation describing function or purpose using the target vocabulary.

3. Output: images and recordings are uploaded to a shared class repository for peer viewing and instructor sampling.

4. Rationale: the task shifts vocabulary learning from recognition to situated production and strengthens the link between terminology and communicative use.

Informal digital learning of English. A major barrier for non-language majors is insufficient exposure to English beyond classroom time, which limits automatisation and confidence in communication. Informal engagement with English through digital media can extend input and interaction opportunities, yet the pedagogical challenge is converting passive exposure into transferable competence (Yurieva et al., 2021). Research indicates that informal digital learning relates to learners' communicative orientations and professional language identity, which is relevant for non-language majors who often perceive English as instrumental rather than central to their studies (Lee & Lee, 2019). Therefore, instructors should employ structured "bridging" practices that guide students to document out-of-class encounters with English, notice language patterns, and transfer them into course-based speaking and writing tasks.

Activity example: Digital field note.

1. Input: students select one discipline-relevant English-language resource outside class (for example, an expert video, a professional post, or a forum discussion).

2. Noticing: students extract one useful sentence pattern or lexical bundle and provide a brief note on context and function.

3. Transfer: in the next lesson, students apply the extracted pattern in a sentence or mini-response related to the current topic.

4. Rationale: the task legitimises informal learning while training systematic noticing and controlled transfer into curricular communication.

Automated writing evaluation and artificial intelligence-based feedback. In academic and professional writing, a central barrier is the limited availability of timely, iterative feedback in large classes, which restricts revision cycles. Automated writing evaluation can support writing quality when feedback is embedded in guided revision rather than used primarily for scoring (Zhai & Ma, 2023). At the same time, automated feedback may overemphasize surface-level language features and may not align with intended writing constructs unless integrated with clear genre expectations and teacher mediation (Shi & Aryadoust, 2024). Consequently, students require feedback literacy to treat automated suggestions as diagnostic input rather than authoritative correction.

Integration may include:

1. Framing: genre-specific rubrics and success criteria.

2. Diagnosis: interpreting feedback as hypotheses to evaluate.

3. Human focus: teacher support for argumentation, coherence, stance, and discipline conventions.

4. Justification: learner explanations of accepted and rejected changes.

Activity example: Feedback justification protocol.

1. Drafting: students write a first draft of a professional email or an abstract and obtain automated feedback using a writing assistant.

2. Analysis: students complete a short decision log recording suggestion, decision (accept or reject), and justification tied to genre and disciplinary conventions.

3. Submission: assessment prioritises the quality of justification and revision strategy, not only the final product.

4. Rationale: the protocol prevents uncritical acceptance and strengthens students' ability to evaluate the appropriateness of automated feedback.

Conversational artificial intelligence and chatbots. For non-language majors, a frequent barrier is speaking anxiety and limited opportunities for repeated low-stakes oral practice. Reviews suggest that chatbots can support speaking fluency and confidence, but effects depend on structured prompts, error management, and ethical safeguards (Du & Daniel, 2024). For this population, chatbot tasks should simulate discipline-relevant scenarios and function as a rehearsal stage that prepares students for subsequent human interaction, rather than replacing peer communication.

A minimal implementation model includes:

1. Structured prompting: defined roles, goals, and constraints.

2. Reflection: transcript review to identify recurrent errors and successful moves.

3. Transfer: subsequent performance with peers using the same scenario.

4. Safeguards: clear privacy and academic integrity guidance.

Activity example: Professional scenario rehearsal.

1. Prompting: students receive a discipline-specific scenario prompt (for example, responding to a dissatisfied client or explaining a delayed deliverable).

2. Rehearsal: students complete a short interaction with a chatbot focusing on clarity, politeness strategies, and terminology.

3. Reflection: students highlight one successful response and one problematic response and revise both.

4. Transfer: students perform the scenario with a peer partner in class and receive brief feedback.

5. Rationale: rehearsal reduces anxiety through repeated practice and supports transfer to authentic interpersonal communication.

Table 1 summarizes the synthesis of the reviewed literature by translating broad evidence on technology-enhanced English instruction into a practical mapping between major digital tool categories and the core design principles that most consistently reduce communicative barriers for non-language-major university students.

Practical recommendations

1. Define barrier-linked outcomes. Use observable indicators (revision cycles, discipline-specific vocabulary use, participation quality, interactional moves) because tool impact depends on design-assessment alignment.

2. Increase communicative event density in blended courses. Plan weekly speaking and writing outputs with feedback and revision; blended formats work best when tied to authentic genres and guided feedback loops.

3. Connect vocabulary practice to immediate production. Make each digital vocabulary task end in a short spoken or written performance, consistent with evidence for mobile-supported learning and technology-assisted vocabulary gains.

4. Treat automated writing feedback as diagnostic. Embed it in guided revision with decision-making and justification to address misalignment and validity risks.

5. Use chatbots as structured rehearsal for discipline speaking. Provide prompts, require reflection, and transfer practice to peer interaction to avoid decontextualized use.

Table 1

Digital Tool Categories and Key Design Principles for Reducing Communicative Barriers

Tool Category	Key Design Principle
Blended Learning Environments	Treat blended instruction as a design problem, not just delivery. Schedule specific interactional tasks and align online work with disciplinary genres rather than using it as an isolated add-on.
Mobile & Vocabulary Apps	Vocabulary practice must not remain isolated; it should systematically feed into observable speaking and writing tasks (e.g., short explanations, summaries).
Informal Digital Learning	Guide learners to document and reflect on out-of-class exposure (social media, entertainment), then transfer noticed language patterns into formal course tasks.
Automated Writing Evaluation	Use automated feedback as diagnostic input to trigger multiple revision cycles. Teacher guidance is essential to prevent score-driven corrections that ignore meaning.
Conversational AI / Chatbots	Use chatbots as a low-stakes "rehearsal layer" for professional scenarios (e.g., explaining procedures) before transferring those skills to human interaction.

Compiled by the author

Conclusions. Overall, the evidence suggests that digital tools reduce communicative barriers for non-language-major university students only when they are embedded in coherent instructional design rather than added as isolated technologies. Across tool categories, the most consistent mechanism is not "more online work," but a deliberate increase in the frequency and quality of discipline-relevant speaking and writing events, supported by clear task sequencing, interactional obligations, and feedback-and-revision cycles.

Within this logic, mobile-supported and technology-assisted vocabulary work is most useful when it strengthens rapid lexical access for communication and is immediately coupled with short oral or written production, so that practice translates into observable performance rather than remaining recognition-based. Automated writing evaluation and automated feedback can meaningfully address the barrier of limited teacher time for iterative feedback, but only if students are guided to interpret suggestions diagnostically and justify revisions, because misalignment between tool outputs and targeted competencies can otherwise reproduce new barriers to accurate academic communication. Similarly, conversational systems and chatbots can lower anxiety and expand low-stakes speaking practice, yet they are most defensible when used as structured rehearsal that transfers into peer or instructor interaction rather than replacing it.

Building on these conclusions, future research should prioritize semester-long interventions with delayed measurement to test durability and transfer into discipline genres, focus more directly on non-language majors in authentic English for specific purposes and English for general academic purposes tasks, and adopt stronger outcome measures that capture discourse quality and interactional competence rather than only surface accuracy.

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