

INTEGRATING DIGITAL TOOLS TO TEACH ENGLISH FOR SPECIFIC PURPOSES IN LAND ADMINISTRATION

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Abstract : *This experimental study investigates the impact of integrating digital tools on the English for Specific Purposes (ESP) learning outcomes of undergraduate students majoring in Land Administration. Using a mixed-methods approach, the study explores how digital resources such as interactive e-learning modules, GIS-integrated vocabulary platforms, and AI-based feedback tools enhance students' comprehension and application of English in land administration contexts. The findings suggest significant improvement in vocabulary acquisition, reading comprehension, and communication skills when digital tools are implemented effectively. Furthermore, digital learning environments encouraged collaborative learning and increased learner autonomy, fostering deeper cognitive engagement. Implications for curriculum development and teacher training are also discussed.*

Keywords: *ESP, digital tools, land administration, GIS vocabulary, English instruction, experimental study*

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I. INTRODUCTION

English for Specific Purposes (ESP) is fundamental to professional education, equipping learners with the precise language required for specific technical domains. In fields like Land Administration, success depends on the mastery of specialized terminology and complex documentation (Dudley-Evans & St. John, 1998). Yet, conventional instructional methods frequently prove inadequate for delivering the contextualized, dynamic training these specialized disciplines demand (Basturkmen, 2010). The integration of educational technology presents a significant opportunity to address this pedagogical gap, offering innovative pathways to enhance engagement and efficacy in ESP learning (Godwin-Jones, 2018).

The central aim of this research is to critically assess the impact of digital tool integration on ESP instruction for Land Administration students. To this end, the study is guided by the following research questions: (1) To what extent do digitally-enhanced methods improve the acquisition of domain-specific technical vocabulary compared to traditional instruction? (2) How do learners perceive the utility, engagement, and challenges of using these digital tools within their specialized ESP context? By investigating these questions, this research seeks to bridge the identified gap between the generalized benefits of technology in language

learning and the specific, under-researched communicative needs of land-related professions. The findings are intended to provide evidence-based insights for developing more effective, relevant, and responsive ESP curricula in technical higher education.

II. RESEARCH CONTENT

2.1. English for Specific Purposes (ESP) in Technical Fields

ESP focuses on teaching language in specific domains such as engineering, business, or law. It requires a needs-based curriculum tailored to real-world applications. In the field of Land Administration, ESP encompasses legal documentation, geospatial terminology, surveying reports, and public communication. Research by Dudley-Evans and St. John (1998) highlights the importance of genre-specific texts in ESP classrooms. Moreover, Basturkmen (2010) emphasized the role of discourse and communicative competence in ESP, arguing that instruction must address the rhetorical and pragmatic aspects of specialized genres. In land-related fields, the ability to navigate cadastral documentation and technical English reports is essential for both academic success and professional communication. Thus, integrating domain-specific content and authentic tasks in ESP instruction is critical (Hyland, 2007).

2.2. Digital Tools in Language Learning

The integration of digital tools into language learning is widely recognised for enhancing learner

engagement, delivering immediate feedback, and accommodating diverse cognitive styles (Warschauer & Healey, 1998). Instruments such as comprehensive e-learning platforms, interactive vocabulary applications, and responsive AI chatbots have proven particularly effective in facilitating language acquisition. These technologies promote immersive, learner-centred environments that extend opportunities for practice beyond traditional classroom constraints. Within the sphere of ESP, the potential of these tools is magnified when they are tailored to specific professional domains (Godwin-Jones, 2018). For instance, GIS-integrated learning modules can transform abstract land administration terminology into tangible, visual concepts, thereby creating a direct and contextualised link between language and its real-world application.

2.3. Prior Studies on ESP and Technology Integration

Academic research has consistently affirmed the value of technology-enhanced learning in ESP. Studies have demonstrated the utility of digital corpora for teaching specialised lexicon (Boulton, 2016), allowing learners to analyse authentic language patterns within their field. Concurrently, the advent of mobile learning has been emphasised for supporting the on-demand, flexible needs of professionals (Anthony, 2018). However, a critical review of the literature reveals a significant gap: while technology's benefits for general ESP are well-documented, there is a notable scarcity of targeted research focusing on the Land Administration sector. This deficiency underscores a pressing need for the development and evaluation of customised digital interventions (Basturkmen, 2010). Such tools must move beyond generic applications to address the unique discursive and communicative demands of this highly technical and legally precise discipline, thereby bridging a crucial gap between theoretical potential and specialised pedagogical practice.

2.4. Methodology

This study employed a structured methodological framework to evaluate the efficacy of digital tools in enhancing domain-specific English proficiency for Land Administration students

2.4.1. Research Design

To robustly assess learning outcomes, a quasi-

experimental pretest-posttest design with parallel control and experimental groups was implemented. This design allows for the comparison of progress between two distinct instructional conditions. A convergent mixed-methods approach was adopted to provide a comprehensive analysis, triangulating data from three primary sources. Quantitative data, derived from standardized test scores, supplied measurable evidence of linguistic gains. This was enriched by qualitative data from post-intervention student surveys and structured teacher observations, which captured nuanced insights into learner engagement, perceived utility, and practical challenges encountered during the instructional period.

2.4.2. Participants

The participant pool consisted of 60 second-year undergraduate students enrolled in a Land Administration programme at a leading Vietnamese university. Participants were systematically divided into two cohorts: an experimental group (n=30) and a control group (n=30). To ensure baseline equivalence and mitigate the confounding variable of disparate starting proficiency, both groups were carefully matched based on their scores from a standardized English placement test administered prior to the intervention. This matching process was crucial for attributing any subsequent divergence in posttest performance more confidently to the differential instructional treatment.

2.4.3. Instructional Tools and Procedures

The pedagogical intervention for the experimental group was built upon a curated suite of three digital tools, each targeting a core language skill within the professional context. First, a GIS-based vocabulary platform (ArcGIS StoryMaps) was used to visually contextualize technical terminology (e.g., “parcel,” “easement,” “zoning”) within interactive maps and case studies, linking lexemes directly to their spatial and administrative referents. Second, an AI-powered writing assistant (Grammarly) provided immediate, form-focused feedback on drafting exercises such as survey report descriptions or planning consent letters, promoting grammatical accuracy and stylistic clarity. Third, a structured Moodle course hosted specialized reading materials, multimedia resources, and integrated auto-graded quizzes to consolidate comprehension and facilitate self-paced study.

Conversely, the control group received instruction via a traditional, textbook-centric methodology, utilizing the same core thematic content but without the integrated digital toolkit. Both groups followed an identical six-week syllabus covering essential Land Administration genres, including land use planning documents, topographic surveying reports, and cadastral map interpretation, ensuring that content coverage was consistent and that differences in outcomes could be reasonably linked to the mode of instruction rather than the subject matter itself.

2.4.4. Data Collection Instruments and data Analysis

Data analysis employed a rigorous, bifurcated approach corresponding to the mixed-methods design.

Quantitative data from the pre- and post-tests were processed using SPSS software. The primary analytical focus was on measuring gains in vocabulary acquisition and reading comprehension. Initially, descriptive statistics, including means and standard deviations, were calculated to summarize performance. The assumptions for parametric testing, namely data normality and homogeneity of variance, were verified. To determine the statistical significance of learning gains within each group, paired-sample t-tests were conducted on the pre- and post-test scores. To compare the relative improvement between the experimental and control groups, independent-sample t-tests were performed on the gain scores. Furthermore, the practical significance of the intervention was established by calculating effect sizes (Cohen's d^*), which quantify the magnitude of the treatment effect. The internal consistency reliability of the assessment instruments was confirmed via Cronbach's alpha coefficients for both test sections.

Qualitative data from open-ended survey responses and structured teacher observation logs were analyzed thematically to elucidate the learner experience. This process involved a systematic coding cycle using NVivo software to manage the data. Initial codes were generated from the raw text, which were subsequently grouped into broader categories and, finally, synthesized into overarching themes. This analysis sought to identify recurring patterns in student perceptions, attitudes, and reported challenges regarding the digital tools. Thematic insights provided crucial

context to the quantitative results, offering deeper explanations for performance outcomes and practical recommendations for pedagogical refinement. This integration of quantitative and qualitative findings facilitated a comprehensive evaluation of the intervention's effectiveness and implementation.

2.5. Results

The analysis of the collected data revealed substantial differences in learning outcomes and experiences between the experimental and control groups, strongly indicating the positive impact of the integrated digital tools.

2.5.1. Vocabulary Acquisition

Quantitative analysis of vocabulary test scores demonstrated a pronounced advantage for the experimental group. This group achieved a mean gain of 18.5 points from pre-test to post-test, substantially exceeding the control group's mean gain of 9.2 points. Statistical analysis using an independent samples t-test confirmed that this difference in improvement was statistically significant ($p^* < 0.01$). Furthermore, the calculated effect size (Cohen's d^*) was large, underscoring not just a statistically reliable but also an educationally meaningful impact. This robust quantitative evidence strongly supports the conclusion that the suite of digital tools—particularly the GIS-based visual platform—significantly enhanced the acquisition and retention of specialized land administration terminology compared to traditional textbook methods.

2.5.2. Reading Comprehension

Performance on reading comprehension tasks involving authentic technical texts, such as land use policies and surveying reports, mirrored the vocabulary findings. Students in the experimental group outperformed their peers in the control group by an average of 22%. Qualitative feedback from surveys illuminated the mechanisms behind this improvement. Students frequently highlighted the utility of embedded, contextual tools such as interactive glossaries and clickable definitions within the digital modules. These features allowed for on-demand clarification of unfamiliar terms without disrupting the reading flow, thereby supporting deeper text engagement and comprehension of complex, domain-specific material.

2.5.3. Student Perceptions

Survey data from the experimental group revealed overwhelmingly positive perceptions

of the digital intervention. A significant majority, 86.7%, agreed or strongly agreed that the digital tools made the learning process more engaging and motivating. Furthermore, 76.3% reported a marked increase in their confidence when encountering and using technical English terminology. Thematically, the most frequently praised aspects were the interactivity of the GIS maps, the visual and contextual presentation of vocabulary, and the immediate, personalized feedback provided by the AI writing assistant. This feedback suggests the tools successfully addressed key affective filters, fostering a more positive and confident learning attitude.

2.5.4. Teacher Observations

Instructor observations provided corroborating qualitative evidence for the quantitative and self-reported data. Teachers consistently noted higher levels of active participation and peer collaboration within the experimental group classroom. More specifically, they reported that students asked more incisive, context-specific questions during sessions and demonstrated superior recall and accurate application of specialized terms in both written exercises and oral discussions. These observations indicate that the digital tools did not merely improve passive recognition but actively supported the development of more proficient and confident language use in professional scenarios.

In synthesis, the results from all data streams converge to form a coherent picture. The digital intervention facilitated statistically superior gains in core language skills, was perceived as highly engaging and useful by learners, and fostered a more dynamic and participatory classroom environment, as observed by instructors.

2.5.5. Discussion

The findings of this study substantiate the initial hypothesis, demonstrating that the strategic integration of digital tools can significantly enhance English for Specific Purposes (ESP) learning outcomes within the specialized field of Land Administration. Interactive GIS content, AI-assisted writing, and multimodal materials actively facilitated deeper cognitive engagement with complex technical texts, leading to measurable gains in vocabulary and comprehension.

Beyond test scores, a key impact was the cultivation of learner autonomy and motivation. The digital environment empowered students to direct their own learning pace through self-guided modules and receive immediate, personalized feedback via AI tools. This shift aligns with learner-centered pedagogical principles, fostering greater investment and confidence in acquiring domain-specific language skills.

For educational practice, these results carry clear practical implications. ESP instructors should consider adopting a blended model that thoughtfully combines traditional instruction with targeted digital resources. The use of GIS platforms to contextualize terminology is particularly recommended for making abstract or technical language concrete and relevant. However, successful implementation is contingent upon adequate professional development for teachers and consistent institutional support for technology integration.

Acknowledging the study's limitations, including its six-week duration and single-institution participant pool s essential. Future research should pursue longitudinal designs to evaluate the long-term retention of skills and their transfer to professional settings. Furthermore, investigating next-generation technologies, such as Virtual Reality (VR) simulations of land administration scenarios, presents a promising avenue for creating even more immersive and authentic ESP learning experiences. This study thus confirms the value of digital integration while charting a course for its continued evolution in specialized language education.

III. CONCLUSION

This study provides clear evidence that the strategic integration of digital tools can substantially enhance English for Specific Purposes (ESP) instruction in specialized disciplines such as Land Administration. The intervention led to measurable improvements in technical vocabulary acquisition and reading comprehension, outperforming traditional textbook-based methods. Furthermore, the use of platforms like GIS for contextual learning and AI for immediate feedback resulted in significantly higher student engagement and self-reported confidence.

The successful model, combining domain-specific visualization tools, interactive modules, and intelligent writing assistants, establishes a replicable framework for technical English education in other specialized fields. To maximize this impact and ensure sustainable implementation, institutional commitment is crucial. This necessitates investment in both technological

infrastructure and comprehensive teacher training programs. Such support will empower educators to effectively blend digital and traditional pedagogies, ultimately creating more dynamic, relevant, and learner-centered ESP curricula that meet the precise communicative demands of the global professional workplace.

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