UDC 37.01.09
DOI 10.24195/2414-4665-2026-1-20

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THE DIGITAL TRANSFORMATION OF ESP LEARNING: CHALLENGES AND PERSPECTIVES

This article examines current challenges and perspectives associated with the digital transformation of English for Specific Purposes (ESP) learning, with a particular focus on the shift from traditional printed dictionaries to modern digital platforms. The rapid development of innovative language-learning tools, such as Skell and YouGlish, has transformed the process of acquiring specialized vocabulary in fields such as engineering, medicine, business, law, and technology. While the digital era has made lexical access faster, more dynamic, and more context-sensitive, it has also introduced new difficulties related to digital literacy, information overload, and uneven access to technological resources. Given the insufficient systematization of methodological approaches to using modern digital tools in ESP instruction, this research aims to provide a comprehensive overview of the advantages and drawbacks of contemporary lexical resources. Special attention is devoted to the role of authentic examples, multimodal input, continuous updates, and the improvement of pronunciation skills. The article highlights the strategic importance of integrating digital platforms into ESP curricula and offers insights into how new technologies can enhance motivation, learner autonomy, and professional communication skills. The findings will be particularly useful for ESP teachers searching for effective ways to address the challenges arising from the ongoing digitalization of ESP learning.

Key words: *ESP, digital tools, Skell, YouGlish, specialized vocabulary, digital learning, linguistic resources.*

Introduction and the current state of the research problem. Technological innovation continues to reshape educational processes worldwide, and the field of ESP is undergoing one of the most intensive transformations. The rapid evolution of digital tools has dramatically altered traditional methods of acquiring specialized vocabulary. For decades, printed dictionaries were considered indispensable resources for students of engineering, business, law, medicine, and other professional domains. However, contemporary learners operate in an educational environment that demands not only knowledge but also immediacy, interactivity, and authenticity.

In a world characterized by increasing digitalization, traditional resources often fail to meet the needs of learners who require fast, precise, and context-rich examples of terminology relevant to their professional sphere. At the same time, the constant emergence of new terminology in specialized fields highlights the inadequacy of static lexical materials. Thus, the transition to digital platforms is not simply a matter of convenience – it is a necessity.

Despite the exponential growth of digital tools for language learning, systematic academic research on the pedagogical use of platforms such as Skell and YouGlish remains limited. It is necessary to highlight that most existing studies focus on the general potential of online dictionaries or digital corpora, while their application in ESP contexts is still largely explored through individual initiatives or empirical classroom observations. As new terminology in specialized fields emerges almost daily, the need for updated linguistic resources becomes critical.

Aims and tasks. The aim of this article is to explore the challenges and opportunities associated with the integration of modern digital lexical tools into ESP instruction. Specifically, the research examines how tools such as Skell and YouGlish can be leveraged to enhance the acquisition of specialized vocabulary and improve professional communication skills in fields like engineering and business.

This study aims to address key pedagogical considerations related to the effective use of digital platforms, exploring best practices for incorporating these resources into ESP classroom. It will also evaluate how these tools can foster learner autonomy by providing continuous updates, multimodal input, and diverse pronunciation models.

Ultimately, the article will provide insights and recommendations for ESP teachers, focusing on how digital tools can be strategically incorporated into teaching practices to maximize learning outcomes without overwhelming or distracting students.

Research methods. Researchers increasingly acknowledge that printed and early electronic dictionaries are insufficient for today's learners, who require flexible and rapidly updated tools. As one study suggests, "Online dictionaries Available Anytime, Anyplace; An Online dictionary is a fantastic tool for someone who does not have the time to

search for words in a printed version as they have numerous words and definitions connected to their web connection." (Polhaupessy, 2025). Moreover, printed dictionaries are inherently static and cannot be updated to accommodate new vocabulary or shifting definitions. Recent publications emphasize that digital platforms offering real-life usage examples, authentic professional contexts, and multimodal input represent a significant advancement over traditional dictionary formats (Ferret & Dollinger, 2021). However, it goes without saying that there is a need for methodological frameworks guiding ESP teachers on how to incorporate these digital tools into ESP courses effectively.

To begin with, it is important to acknowledge that traditional printed dictionaries, which once served as the foundation of ESP vocabulary learning, now demonstrate considerable limitations. For many years, their thoroughness and authority made them indispensable educational tools. However, despite their reliability, printed dictionaries increasingly fail to meet the demands of modern learners. The search process is often slow and inconvenient, especially when students encounter highly technical or unfamiliar terminology. Moreover, because printed editions cannot be updated frequently, they quickly become outdated, particularly in rapidly developing fields such as IT, biotechnology, and engineering. Their physical format also poses challenges: heavy volumes, dense text, and small fonts reduce usability. Most importantly, their static definitions do not provide context, leaving learners without examples of how terms are used in real professional communication. Therefore, we come to conclusion that while printed dictionaries played a significant role for earlier generations, they no longer correspond to the dynamic expectations of contemporary ESP learners.

As technology advanced, electronic dictionaries emerged as a transitional solution, offering a noticeable improvement over printed materials. Tools such as ABBYY provided faster lexical searches, convenient storage on mobile devices, and often included basic pronunciation features. On the other hand, despite these advantages, electronic dictionaries did not resolve several fundamental methodological issues. They were still limited by infrequent updates, which slowed the integration of new terminology into their databases. Their pronunciation models lacked accent diversity, presenting learners with only one standardized version of spoken English. Furthermore, similar to their printed predecessors, electronic dictionaries typically focused on definitions rather than contextualized usage, offering little insight into how terms function within specialized discourse. Consequently, while electronic dictionaries represented an important step forward, they ultimately served as an intermediate stage rather than a comprehensive solution.

With the rise of advanced online tools, the digital era introduced modern lexical platforms such as Skell and YouGlish, which, in my humble opinion, have transformed ESP teaching and learning. Unlike earlier resources, these tools provide instant access to linguistic data supported by authentic examples drawn from real communication. Moreover, they are continuously updated, ensuring that newly emerging terminology appears in the system almost immediately. Skell, for instance, allows learners to explore how a word or phrase is used in genuine contexts, not simply how it is defined. This contextual foundation is particularly valuable in ESP settings, where learners must understand not only what a term means but also how it functions within professional discourse. As Topal (2025) highlights, "Designed as a user-friendly alternative to traditional corpus tools, SkELL bridges the gap between complex linguistic analysis and practical language learning" (Topal, 2025).

YouGlish, in contrast, focuses primarily on pronunciation and offers exposure to accents from a variety of English-speaking regions. As a result, learners gain a more accurate understanding of how terms sound in global communication, which is essential for maintaining phonetic clarity in international professional settings (McCarthy, 2018).

Building on these developments, modern digital platforms offer several clear advantages over traditional resources. They provide unmatched speed and accessibility, enabling learners to obtain definitions, examples, and pronunciations instantly from any device. Furthermore, their capacity for real-time updates ensures that the vocabulary that students encounter reflects current industry standards rather than outdated terminology. Digital tools also introduce multimodal learning by integrating video, audio, and interactive elements, which deepens comprehension and supports different learning styles. In addition, they promote learner autonomy by encouraging independent exploration, and they often reduce financial barriers, since many platforms are either free or low-cost. Consequently, digital resources significantly enrich the learning experience and help ESP students acquire discipline-specific language more effectively.

To provide a practical illustration of how digital tools such as Skell and YouGlish can be integrated into ESP curricula, a series of classroom case studies were conducted across different fields of study, including engineering and business. In these studies, students were tasked with using Skell to explore contextual examples of specialized terms in real-world professional settings, while YouGlish was utilized to improve pronunciation and expose learners to varied accents (Kartal & Korucu-Kis, 2020).

Research results. Preliminary results from these case studies indicate that students who engaged with these tools demonstrated increased engagement and a better understanding of how terminology is used in authentic professional contexts. For instance, engineering students using Skell were able to identify technical terms in scientific articles, papers, and reports, allowing them to see how these terms are used across different contexts, such as design meetings and technical manuals. Similarly, business students found YouGlish's varied pronunciation examples helpful for mastering terms that have multiple regional pronunciations, enhancing both their comprehension and verbal fluency. It is necessary to note that there was a significant improvement in learners' ability to apply vocabulary in context, as well as an increase in learner autonomy, with many students independently seeking additional examples outside classroom hours. These find-

ings highlight the significant potential of integrating digital tools into ESP learning, offering real-time, contextualized resources that foster more interactive, engaging, and effective vocabulary acquisition.

It should be emphasized that in addition to the qualitative observations, the case study yielded measurable quantitative outcomes that further confirm the effectiveness of integrating digital tools into ESP instruction. According to our observations approximately 75–80% of participants reported higher confidence in using specialized vocabulary in professional contexts compared to the beginning of the experiment. Vocabulary assessment tasks demonstrated an average improvement of 20–25% in students' ability to accurately select and apply discipline-specific terms in context-based exercises. Furthermore, usage analytics surveys also revealed a notable increase in learner autonomy: more than two thirds of the students claimed that they accessed Skell and YouGlish outside scheduled classroom activities, with many engaging in independent vocabulary exploration at least once a week. Thus, these quantitative findings complement the qualitative results and provide empirical evidence that digital lexical tools contribute not only to increased engagement but also to measurable gains in ESP vocabulary acquisition competence. While these results demonstrate consistent positive dynamics, it should be noted that the research was conducted using a mixed-methods approach that combined both quantitative and qualitative data collection. The study involved 64 ESP students at the intermediate (B1–B2) level and was implemented over an eight-week instructional period. To measure progress, participants completed pre– and post-intervention assessments evaluating discipline-specific vocabulary knowledge, contextual application skills, and pronunciation accuracy. The findings of the experiment suggest that, although the relatively short duration of the study does not permit definitive conclusions regarding long-term vocabulary retention and part of the quantitative data was derived from self-reported surveys that may introduce a degree of subjectivity, the consistent positive outcomes indicate that the integration of digital lexical tools represents a highly promising methodological approach in ESP instruction.

Discussion. Nevertheless, the digital transformation of ESP instruction also presents several challenges that ESP teacher must take into consideration. It is necessary to say that the integration of digital tools into English for Specific Purposes (ESP) instruction can significantly enhance learning outcomes, but only when applied strategically. While these tools provide valuable resources for vocabulary acquisition, pronunciation practice, and exposure to authentic professional contexts, their effective use requires careful planning. If not handled thoughtfully, digital tools can overwhelm students and distract from the core learning objectives. According to our observations one major issue is information overload: with unlimited access to materials, students may struggle to distinguish relevant information from unnecessary data. Moreover, digital learning environments magnify inequalities in technological access, particularly in regions with unstable internet connectivity or limited device availability.

In the context of the ongoing war in Ukraine, these challenges are significantly intensified. Repeated attacks on energy infrastructure have led to widespread electricity outages, making consistent access to digital resources unreliable or impossible for many learners. Even when devices are available, the lack of stable power supply and internet connectivity disrupts participation in online classes and limits the effective use of digital learning tools. As a result, reliance on digital education can further deepen existing educational inequalities in conflict-affected regions. Teachers also face difficulties, as many require additional methodological training to integrate digital platforms effectively into their curriculum. At the same time, learners' digital literacy varies widely, affecting their ability to navigate online resources confidently. Finally, the online environment introduces distractions, increasing the risk that students will multitask instead of engaging with the material. Thus, we come to the conclusion that although digital tools offer tremendous benefits, their successful implementation depends on careful guidance and thoughtful pedagogical planning to ensure that technology enhances rather than hinders ESP learning.

A key observation from our study was the importance of gradual integration of digital tools. Introducing new technology too quickly or too frequently can create cognitive overload for students. In our experiment, we found that when tools like Skell and YouGlish were introduced one at a time, with clear and manageable tasks associated with each, students were able to build their confidence in using these resources effectively. By starting with a familiar tool like Skell, for example, students were able to explore vocabulary in real-world contexts without feeling rushed to learn multiple new platforms at once. Once they were comfortable with one tool, we introduced the next, ensuring that each was integrated gradually, allowing students to gain familiarity and mastery before moving on.

Additionally, we found that aligning digital tools with clear learning objectives was essential for their successful use in ESP instruction. Each tool we used in our experiment was selected for its relevance to the specific goals of the course. Skell, for instance, was used to explore how professional terms are used in context, aligning perfectly with the course's goal of improving specialized vocabulary. YouGlish was incorporated later to focus on pronunciation, ensuring that students could not only understand the terms but also use them with the correct phonetic clarity in professional settings.

Another key finding was the importance of teacher guidance and context. While digital tools like Skell and YouGlish are powerful resources, they can easily lead students astray if used without proper context. In our study, we found that when teachers provided clear instructions on how to use the tools and framed tasks within the context of the professional communication students would encounter in their fields, the learning experience was more focused and productive. For instance, after having students explore technical terms in Skell, we structured activities that encouraged them to use those terms in realistic professional settings, such as mock business meetings or technical brief-

ings. This approach ensured that the tools were used with a clear pedagogical purpose, making them an integral part of the learning process rather than an additional distraction.

Finally, our observations emphasized the need to foster learner autonomy. One of the most significant advantages of digital tools is their ability to promote independent learning. In our study, we encouraged students to use Skell and YouGlish outside the classroom, exploring examples of technical terms and practicing pronunciation on their own. This autonomy not only reinforced what was learned in class but also allowed students to take ownership of their learning. Many students reported that they found the flexibility of digital tools particularly helpful, as it allowed them to continue learning at their own pace, revisiting content and exploring new terms as needed. By incorporating these tools into their regular study routines, students were able to deepen their understanding of specialized vocabulary and improve their professional communication skills.

In this context, our study showed that YouGlish and Skell proved to be particularly valuable resources for independent vocabulary revision at home. They enable students to review and consolidate vocabulary that has already been learned in the ESP classroom by exposing them to authentic examples of use. These tools are especially effective for helping students refresh their memory and reinforce lexical knowledge in a self-directed and meaningful way.

Conclusions. The evolution of ESP learning resources – from printed dictionaries to electronic tools and finally to advanced digital platforms – reflects the broader digital transformation taking place in modern education. Tools such as Skell and YouGlish provide unparalleled opportunities for acquiring specialized vocabulary efficiently and authentically. Their ability to offer immediate access to updated terminology, real-life usage examples, multimodal input, and diverse pronunciation models makes them indispensable components of contemporary ESP instruction.

However, the successful integration of these tools requires a balanced methodological approach. ESP teachers must consider issues such as digital literacy, cognitive overload, and appropriate pedagogical strategies to ensure that technological advantages translate into meaningful learning outcomes. With the right guidance, digital resources can significantly enrich ESP instruction, promote learner autonomy, and support the development of professional communication skills.

As technology continues to advance, the future of ESP undoubtedly lies in the further development of interactive, adaptive, and context-sensitive digital platforms that will continue to shape the way specialized languages are taught and learned.

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ЦИФРОВА ТРАНСФОРМАЦІЯ НАВЧАННЯ АНГЛІЙСЬКОЇ МОВИ ПРОФЕСІЙНОГО СПРЯМУВАННЯ: ВИКЛИКИ ТА ПЕРСПЕКТИВИ

Статтю присвячено дослідженню викликів та перспектив, пов'язаних із цифровою трансформацією вивчення англійської мови професійного спрямування, зокрема переходом від друкованих словників до сучасних онлайн-платформ. Стрімкий розвиток цифрових інструментів, як-от Skell та YouGlish, суттєво змінив процес опанування спеціалізованої лексики в галузях інженерії, медицини, бізнесу, права та технологій. Незважаючи на численні переваги цифрової епохи, зокрема швидкість доступу до інформації та можливість практичного застосування лексичних одиниць у контексті, цифрові перетворення супроводжуються новими труднощами, серед яких інформаційне перенавантаження, нерівний доступ до технологій та недостатній рівень цифрової грамотності студентів. З огляду на недостатню розробленість методичних підходів до ефективного використання сучасних онлайн-ресурсів у процесі навчання англійської мови професійного спрямування, у статті здійснено комплексний огляд переваг та недоліків різних типів лексичних ресурсів. Особливу увагу приділено ролі аутентичних прикладів, мультимодального навчального контенту, регулярного оновлення даних і можливостей удосконалення вимови. Ця стаття націлена на викладачів англійської мови професійного спрямування, які прагнуть оптимізувати освітній процес в умовах цифрової трансформації.

Ключові слова: *англійська мова професійного спрямування, цифрові інструменти, Skell, YouGlish, спеціалізована лексика, цифрове навчання.*

Дата першого надходження статті до видання: 28.01.2026
Дата прийняття статті до друку після рецензування: 18.02.2026
Дата публікації (оприлюднення) статті: 15.04.2026