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## EXPLORING THE ROLE OF AUTHENTIC MATERIALS IN ESP TEXTBOOKS FOR TERTIARY EDUCATION

**ABSTRACT:** This study investigates the role and impact of authentic materials in English for Specific Purposes (ESP) textbooks, with a focus on students and teachers from the fields of natural sciences (NS) and technical sciences (TS). Although there are previous studies related to this topic, few of them focus on these specific scientific fields. By using qualitative feedback from semi-structured interviews and quantitative data from evaluation scales, the study explores perceptions of textbook authenticity and its alignment with real-world tasks by students and teachers. Findings indicate that while textbooks provide essential domain-specific vocabulary, they lack sufficient integration of authentic materials, such as technical manuals, scientific articles, and real-world case studies. The study highlights the need for textbook developers to include contextually relevant materials and proposes practical recommendations for enhancing authenticity in ESP textbooks to better meet the needs of NS and TS students.

**Keywords:** ESP, tertiary education, authentic materials, evaluation of textbooks, English for specific purposes.

## ULOGA AUTENTIČNIH MATERIJALA U UDŽBENICIMA ZA EJS NA TERCIJARNOM NIVOU OBRAZOVANJA

**APSTRAKT:** Rad istražuje ulogu i uticaj autentičnih materijala u udžbenicima Engleskog kao jezika struke (EJS), sa fokusom na studente i nastavnike iz oblasti prirodno-matematičkih nauka (PM) i tehničko-tehnološkog naučnog polja (TT). Iako su prisutne studije u vezi sa ovom temom, mali broj njih se tiče PM i TT polja. Koristeći kvalitativne povratne informacije iz polustrukturisanih intervjuja i kvantitativne podatke dobijene popunjavanjem skala za evaluaciju, rad istražuje percepciju autentičnosti udžbenika i njegovu usklađenost sa zadacima iz budućih zanimanja studenata. Rezultati pokazuju da udžbenicima, iako oni pružaju suštinsku leksiku specifičnu za polje studiranja, nedostaje dovoljna integracija autentičnih materijala, kao što su tehnički priručnici, naučni članci i studije slučaja iz stvarnih, realističnih okolnosti. Rad naglašava potrebu da autori udžbenika uključe kontekstualno relevantne materijale i predlaže praktične preporuke za povećanje autentičnosti u udžbenicima EJS-a kako bi se bolje zadovoljile potrebe studenata PM i TT polja.

**Ključne reči:** EJS, tercijarno obrazovanje, autentični materijali, evaluacija udžbenika, engleski za posebne namene.

## 1. INTRODUCTION

Authenticity is one of the key concepts in English for Specific Purposes (ESP), as it bridges the gap between classroom learning and input and the professional contexts in which students would eventually use the language they are learning. In the context of ESP, authenticity refers to the inclusion of materials, tasks, and language that reflect real-world professional and academic scenarios (Blagojević 2013; Enesi et al. 2021; Mishan 2005; Tomlinson 2012). This concept is particularly critical for students in the fields of natural sciences (NS) and technical sciences (TS), where effective communication often relies on mastering discipline-specific terminology and practical language applications.

Authentic materials, originally intended for native speakers, are used in language classrooms to recreate contexts similar to those in which they first appeared, sometimes remaining unchanged and other times deliberately manipulated for instructional purposes (Bogdanović 2017). Despite its importance, the integration of authentic materials in most of the textbooks used for teaching English as a second language, ESP textbooks included, remains inconsistent. Many textbooks prioritize linguistic accuracy and vocabulary acquisition over the inclusion of contextually relevant materials, limiting their applicability in professional environments (Dudley-Evans & St. John 1998; Hyland 2006; Vitta 2023). This imbalance often leads teachers to supplement textbooks with additional resources, which can vary widely in quality and relevance. For students, this disparity between textbook content and real-world needs can hinder motivation and engagement (Karimnia & Jafari 2017), having in mind that they do not see the practical aspect of the language they use, and it is not relatable to them, all of which might affect learning outcomes and language acquisition. When students do not perceive the language materials as directly applicable to their future careers, they are less likely to invest effort in learning activities, which in turn can reduce their confidence, hinder the development of practical skills, and negatively affect both language acquisition and long-term learning outcomes.

This study aims to address these issues by examining the perceptions of students and teachers regarding the use of authentic materials in ESP textbooks. By focusing on NS and TS fields, the research seeks to answer the following questions:

1. How do students and teachers perceive the use and role of authentic materials in ESP textbooks?
2. What types of authentic materials are most beneficial for NS and TS students?

By exploring these questions, the study contributes to the ongoing discourse on improving ESP material design. It emphasizes the need for textbooks that not only teach language skills but also prepare students for the communicative demands of their fields and future language exchange with professionals from their area. The findings have practical implications for educators, textbook developers, and policymakers, offering a framework for enhancing the authenticity of ESP materials by supporting the results from previous studies that emphasized the necessity of authentic content in ESL and ESP classes (e.g. Bocanegra-Valle 2021; Enesi et al. 2021; Gilmore 2007; Mishan 2005).

## 2. LITERATURE REVIEW

### 2.1. *Defining authenticity in ESP*

Authenticity in ESP is commonly defined as the use of materials and tasks that reflect the language, practices, and contexts students are likely to encounter in their professional or academic fields (Mishan 2005; Hyland 2006). Such materials typically include technical manuals, research articles, case studies, and real-world scenarios that offer learners relevant, discipline-specific language exposure. While earlier work emphasized written discourse such as reading and listening texts (Hutchinson & Waters 1987; Tomlinson 2012), recent studies have highlighted the growing importance of multimodal and digital resources (Sandoval Perez et al. 2024; Treve 2023).

The concept of authenticity is rooted in the communicative approach to language teaching (CLT), which promotes using real-world language to develop practical communication skills (Richards 2006). In ESP, this means tailoring materials to meet specific learner needs and professional expectations. Recent research suggests that authentic materials can increase engagement and help students develop higher-order thinking skills by exposing them to complex and field-specific content (Anthony 2018; Gu, Bo & Ren 2019).

Although these definitions provide a foundation, the existing literature has not sufficiently addressed how authenticity is perceived and operationalized in ESP materials for natural sciences and technical sciences specifically. This gap underscores the need for more targeted analyses of authenticity in ESP materials used in tertiary education, which this study seeks to address.

## *2.2. Importance of authentic materials in ESP*

For students in NS and TS fields, authentic materials provide a valuable context for developing technical and scientific communication skills, both of which are necessary for their future jobs. Research suggests that authentic tasks, such as analyzing case studies or interpreting research data, can significantly improve students' ability to apply language skills in professional settings (Basturkmen 2010; Enesi, et al. 2021). Authenticity is also connected to the competencies in ESP teaching. ESP focuses on learning specific competencies that are tied to a certain professional orientation (giving presentations, communicating with patients, clients, writing emails, holding meetings, etc.) (Widdowson 1983). Given the centrality of vocabulary in ESP, it is essential that materials reflect the specialized terminology used in each field. For instance, NS students need to navigate complex scientific texts, write abstracts for journal articles, and present findings using precise scientific language. In contrast, TS students often require language skills for writing technical documentation, operating procedures, and participating in project-based discussions or collaborative troubleshooting. This is one of the reasons why it is recommended to use materials and activities that simulate real(istic) situations in the work environment or profession of the students (Todd 2003). Authenticity is the key to ESP (Belcher 2009; Blagojević 2013; Kočović Pajević & Josijević 2022), so when choosing and evaluating ESP materials and textbooks, it is important to assess the extent to which the materials incorporate authentic content, which primarily refers to texts and audio recordings.

Additionally, the advantages of using authentic materials include exposing students to genuine discourse, providing them with an accurate understanding of developments in their area of interest and the language typically employed in that context, and offering a wide range of genres and text types whose linguistic styles more closely reflect the discourse of professional communities (Bogdanović 2017). Moreover, authentic materials have been shown to increase learner motivation and engagement (Guariento & Morley 2001). When students perceive that the content of their textbooks aligns with their academic and professional goals, they are more likely to invest effort in their learning (Gu, Bo & Ren 2019). This alignment is particularly important for ESP learners, who often view language as a tool for achieving specific objectives rather than as a concept necessary for themselves only (Todd 2003).

### *2.3. Challenges in integrating authentic materials*

Despite their benefits, the integration of authentic materials into ESP textbooks is followed by several challenges. One common issue is the difficulty of balancing linguistic simplicity with content relevance. Authentic materials are often complex and may require adaptation to suit the language proficiency levels of students (Karimnia & Jafari 2017). Additionally, the process of sourcing and adapting authentic materials can be time-consuming and resource-intensive for textbook developers and teachers (Hyland 2006). Nowadays, the internet offers valuable sources of authentic materials and it is easier to obtain them. However, the problem is that, even online, authentic materials can rapidly become obsolete, and the teacher will have to spend a lot of time finding new samples of authentic texts for ESP lessons which, in turn, will have a short exploitation period. What is recent and topical today may become obsolete tomorrow, especially in rapidly changing fields. Selecting texts that are irrelevant or overly difficult may demotivate students and create resistance to language learning, while the substantial preparation time needed for teachers to address all possible questions can be particularly challenging at beginner levels, where exhaustive explanations of complex structures are unnecessary (Bogdanović 2017).

Another challenge is the cultural and contextual relevance of materials. Authentic resources must be carefully selected to ensure they are applicable to the specific professional contexts of learners. For example, a technical manual designed for Western audience may not align with the practices and standards of students in other regions (Tomlinson 2012).

### *2.4. Previous studies on authentic materials*

Several studies have consistently shown that authentic materials enhance learner engagement and language development. Guariento & Morley (2001) emphasized their role in fostering critical thinking through exposure to complex, real-world language, while Anthony (2018) highlighted their motivational value in demonstrating the practical relevance of language use.

Authenticity is also a recurring priority in needs analyses. Gu, Bo, and Ren (2019), in a study of 45 Chinese students, found dissatisfaction with textbooks due to outdated topics, lack of authentic texts, and poor alignment with learners' fields. They concluded that teaching materials must be revised to reflect students' professional needs. Li & Fu (2021) likewise observed that Chinese business and engineering students preferred practical, tailored content over generic or overly

technical materials, advocating for textbook adaptation rather than a one-size-fits-all approach.

Research also links authentic materials to the development of all four language skills. Authentic reading materials, such as research papers and manuals, enhance comprehension of complex texts (Grabe & Stoller 2013; Hyland, 2006). Writing tasks based on real-world genres (e.g., reports, proposals) effectively build professional writing competence (Bhatia 2002; Treve 2023). For speaking and listening, role-plays and audio-visual resources like podcasts, TED talks, and webinars simulate professional communication, improving both skills simultaneously (Motteram 2013; Anthony 2018), a benefit also noted by the teachers in this study.

Treve (2023) conducted a study with an experimental and control group, in which the experimental group used authentic materials (real articles, audio, etc.), while the control group used standard textbooks. Results showed that authentic materials greatly improved learning: the experimental group's post-test scores significantly exceeded their pre-test scores, whereas the control group's scores declined. Exposure to authentic texts enhanced students' vocabulary, listening, reading, writing and overall English proficiency. The author concludes that incorporating authentic materials enhances language learning outcomes and contextual understanding of the language.

Another mixed-methods study with 40 learners (Sandoval Perez et al. 2024), in which an interview and diary analyses were used, showed that introducing authentic materials had a positive impact on students' oral skills, listening comprehension, and overall motivation.

More recently, authenticity has been investigated in the field of AI as well. In Saudi Arabia, 278 university English instructors completed surveys about using generative AI (like ChatGPT) in their teaching. The teachers reported moderate engagement with AI tools but very positive attitudes toward AI (Mohd Nazim & Alzubi 2025). Many saw AI as helpful for tasks such as adapting existing authentic ELT materials and developing new authentic resources. However, they also cited constraints such as limited AI skills, concerns about content accuracy, ethical issues, etc.

AI has also been increasingly used by teachers to create or modify authentic materials. In a qualitative study by Xin from 2024 (cited in Sahmaniasl 2025) three Chinese EFL teachers' use of a generative-AI tool (ChatPDF) was explored to create reading lesson materials. The study found that teachers primarily used the AI for text modification, task design, and pedagogical suggestions.

While numerous studies have highlighted the importance of authenticity in ESP (Gilmore 2007; Mishan 2005; Guariento & Morley 2001), few have specifically focused on its application in NS and TS fields. Existing research often generalizes findings across disciplines, overlooking the unique linguistic and professional demands of these fields (Basturkmen 2010; Hyland 2006). Additionally, the role of teacher intervention in supplementing textbooks with authentic materials remains underexplored.

This study seeks to fill these gaps by providing a detailed analysis of students' and teachers' perceptions of authentic materials in ESP textbooks. By focusing on NS and TS fields, it offers targeted insights that can inform the design and implementation of more effective ESP materials.

### 3. METHODOLOGY

#### *3.1. Research design, participants, data collection and analysis*

This study employs a mixed-methods approach, integrating qualitative and quantitative data to provide a comprehensive analysis of textbook authenticity. The research focuses on the perspectives of students and teachers from NS and TS fields, combining their feedback with a detailed evaluation of ESP textbooks.

Participants were students from the University of Kragujevac, from two faculties, the Faculty of Technical Sciences in Čačak and the Faculty of Science, University of Kragujevac. The student sample ( $N=122$ ) consisted of first-year undergraduates with an average B1 level of English proficiency. This group was considered appropriate because first-year students are typically at an early stage of exposure to discipline-specific English, making their perceptions of textbook authenticity particularly relevant for identifying gaps in course materials. The teachers ( $N=3$ ) included in the study were the instructors responsible for delivering the ESP curricula to the participating students during the data collection period. All three teachers had substantial experience in ESP instruction within the NS and TS domains. Including these teachers ensured that insights could be gathered both from the perspective of the learners and from the teachers directly engaged in course planning and delivery. While the sample offers valuable insights into the perceptions of authenticity among first-year ESP learners, there are limitations in terms of representativeness. The student participants were drawn from a single institution and may not fully reflect the experiences of learners in other universities or countries. Similarly, the relatively small number of teachers limits the possibility of generalizing teacher perspectives. The findings should therefore be interpreted with

caution. Despite these limitations, the combination of student and teacher perspectives provides a nuanced understanding of the challenges and expectations related to authentic materials in ESP for NS and TS fields. Future studies could benefit from including a larger and more diverse sample to validate and expand on these findings.

The materials included two textbooks, one for the study program Information technology and another used for natural sciences, which was a combination of different materials compiled by teachers. This imposes another limitation of the study, namely, this is not a textbook *per se*, but it has all the elements of a textbook and because of that it can be compared with the textbook from the TS field. When it comes to the textbook for technical sciences, the IT study program used “Professional English in Use – ICT”. The textbook is organized into 40 modules and each module is divided into two parts, the first part serves to introduce vocabulary through texts, and the second is intended for practice. The material used for natural sciences consists of 12 modules; each module contains reading texts, followed by activities for checking the understanding of new words and conversation activities. Both textbooks include reading sections which were strictly from the fields of study (TS and NS), some of them formal in tone, some of them more oriented towards general audience, but all of them field-specific. Only around half of the texts could be considered authentic, whereas the other half of the reading content was simplified and adapted. The textbooks analyzed were determined by the institutional syllabus for each program. These materials reflect common ESP practices, where textbook choice is defined by availability, perceived relevance, and the curriculum. However, the lack of standardized selection criteria or regular evaluation represents a limitation and underscores the need to investigate perceptions of authenticity and suitability.

### 3.2. Data collection

Two instruments were used, the first being an evaluation scale, where students completed a Likert-scale questionnaire consisting of 7 statements (values from 1: absolutely not present, to 7: absolutely present) assessing the authenticity of their ESP textbooks. The scale included items regarding the relevance of the content (*The topics and materials in the textbook are relevant to my field of study and future profession*), real-world applicability (*The textbook helps me understand how English is used in real-world academic or professional situations*), authentic material integration (*The textbook includes authentic texts (e.g., articles, manuals, emails) that reflect how English is used in my discipline*). In addition to this, the statement

in the evaluation scale included language skills concerning authentic content, namely reading skill (*The reading texts and tasks in the textbook reflect the types of materials I am likely to read in my field*), listening skill (*The listening activities in the textbook simulate realistic situations in academic or workplace settings*), speaking skill (*The textbook provides opportunities to practice speaking in ways that reflect real communication in my future career*) and writing skill (*The writing tasks in the textbook help me develop the kinds of writing skills I will need in my academic or professional life*). The students also had a chance to add their impressions on the textbooks they use at the end of the questionnaire within an open-ended question.

The second instrument was a semi-structured interview focusing on the teachers' perceptions of textbook authenticity and the strategies they used to supplement materials. The interview had three structured questions and additional questions which depended on the answers of the respondents. The questions were as follows:

1. To what extent is authentic content present in the materials you use, and can you give me some examples of authenticity in ESP texts?
2. How important is authentic content for acquiring ESP?
3. Do you adapt the textbook or materials to better meet the needs of your students and how? (Do you prepare the materials yourself?)

### 3.3. Data analysis

Quantitative data from the evaluation scale were analyzed by using SPSS 21, with descriptive statistics summarizing students' perceptions, mean values and t-tests. Qualitative data from interviews were coded thematically, with recurring patterns categorized to identify key insights.

## 4. RESULTS

To address the research objectives systematically, the results are presented in two main sections corresponding to each research question. Quantitative findings from student questionnaires are supplemented by qualitative insights from teacher interviews.

#### 4.1. Results related to RQ 1: How do students and teachers perceive the use of authentic materials in ESP textbooks?

##### 4.1.1. Students' perceptions

Students' perceptions were assessed through a structured questionnaire measuring seven dimensions of textbook authenticity: relevance of content, applicability to real-world scenarios, integration of authentic materials, and support for reading, listening, speaking, and writing skills. Mean scores and t-tests were calculated to identify the differences between students from Natural Sciences (NS) and Technical Sciences (TS).

Overall, students rated the relevance and vocabulary coverage of their textbooks moderately to highly, with mean scores ranging between 3.2 and 4.6. The highest ratings were given to reading skill support, while the lowest scores reflected limited listening practice. Statistically significant differences appeared in most categories, with TS students consistently rating authenticity aspects slightly higher, suggesting stronger alignment between textbooks and their field-specific expectations. In open-ended responses, students emphasized that specialized terminology and reading comprehension were the primary strengths of their textbooks. However, they identified several important limitations, including the lack of authentic listening materials, real-world tasks, and interactive exercises simulating professional environments. This gap between textbook content and real-world language needs was cited as potentially demotivating and insufficient for developing practical communication skills.

Aspect of authenticity	Mean Score (NS)	Mean Score (TS)	T-Test (p-value)
Relevance of textbook content	4.2	4.5	0.04
Applicability to real-world scenarios	4.1	4.3	0.03
Integration of authentic materials	3.8	4.0	0.05
Support for reading skills	4.5	4.6	0.02
Support for listening skills	3.2	3.5	0.03
Support for speaking skills	4.0	4.2	0.01
Support for writing skills	3.7	3.9	0.06

\*Statistically significant at  $p < .05$ , NS: Natural sciences, TS: Technical sciences

Table 1: The comparative perceptions of authenticity in ESP textbooks between NS and TS students

This table summarizes the quantitative results of students' evaluations of authenticity in ESP textbooks. It highlights key differences between perceptions of students in NS and TS fields, particularly in terms of content relevance, real-world applicability, and skill support. T-tests indicate statistical significance for several aspects, emphasizing the need for discipline-specific adaptations in textbook design.

To sum up, the findings suggest that while students appreciate the focus on field-specific vocabulary and reading materials, they are aware of the gap between textbook content and real-world language use. The statistically significant differences across fields also highlight the necessity of discipline-sensitive textbook design, where authenticity is not limited to terminology, but extends to contextual relevance, communicative tasks, and skills integration.

#### *4.1.2. Teacher perceptions*

Semi-structured interviews with three ESP teachers (two from the NS field and one from the TS field) were conducted to gain detailed insight into their perspectives. The interviews revealed convergent views regarding the authenticity of the materials they use and their own roles in enhancing them. All three teachers acknowledged that while the textbooks in use offer a general framework for language instruction, they fall short in providing authentic, field-specific content that aligns with the communicative and professional needs of their students. As one teacher explained, "The textbook gives you a base, but I constantly have to bring in additional materials to make the lessons feel real." Teachers, hence, expressed similar concerns as students, noting that while textbooks provide a solid foundation, they often require supplementation to meet students' needs. Commonly used supplementary materials which add the dimension of authenticity included case studies and technical manuals, as well as online resources, such as TED talks and industry-specific videos. Teachers particularly emphasized the importance of introducing multimodal resources to address gaps in speaking and listening practice. For instance, the teacher from the TS field described integrating interactive lab simulations to complement textbook content. Another teacher from the NS field highlighted the use of scientific articles to encourage critical thinking and contextual application of language skills.

A recurring theme within the interview was the challenge of linguistic and cognitive accessibility. Authentic materials often contain specialized vocabulary and complex syntax, which can pose difficulties for learners with varying levels of English proficiency. All three teachers emphasized the need for scaffolding strategies, such as vocabulary pre-teaching, guided questions, and simplified

summaries, to ensure that all students could benefit from exposure to authentic content.

Another key insight was the demand for the localization of materials. Teachers pointed out that most ESP textbooks are written for global audience and therefore lack contextually relevant content for regional industries and academic fields. When asked whether they adapted the materials themselves, all three instructors confirmed that they regularly modify textbook content and often prepare their own teaching materials.

In summary, teacher perceptions highlighted both the limitations of existing ESP textbooks and the pedagogical value of authentic, multimodal, and localized materials. Their reflections confirmed the view that authenticity is not merely a desirable feature, but a pedagogical necessity for developing meaningful and transferable language competence in ESP learners.

#### *4.2. Results related to RQ 2: What types of authentic materials are most beneficial for NS and TS students?*

Students' preferences highlighted the importance of materials that closely mirror their future professional tasks. In the questionnaires and comments, the resources that were identified as most useful are given in the table below.

Material Type	NS Students & Teachers	TS Students & Teachers
Academic research articles	Highly relevant	Moderately relevant
Case studies	Relevant	Highly relevant
Technical manuals	Moderately relevant	Highly relevant
Annotated bibliographies	Highly relevant	Less relevant
Interactive lab simulations	Somewhat relevant	Highly relevant
Professional videos (TED talks, etc.)	Relevant	Relevant
Project documentation	Less relevant	Highly relevant

Table 2. Preferred authentic materials by field

The table illustrates clear disciplinary differences: the participants from NS valued academic and research-focused materials, while TS participants prioritized applied, industry-oriented resources. Teachers echoed these patterns, reporting that authentic tasks such as analyzing case studies, writing project documentation, and engaging in simulations were particularly effective for skill development and student motivation.

#### *4.3. Comparative Observations*

The study revealed notable differences in how NS and TS students and teachers perceived textbook authenticity. While NS students valued content related to research and academic writing, TS students prioritized materials focusing on technical problem-solving and project-based tasks. Similarly, teachers in NS fields advocated for integrating more academic discourse materials, whereas TS field teachers emphasized the need for industry-oriented scenarios and tools. Overall, both groups expressed a strong preference for materials that mirrored real-world tasks, but their definitions of “authenticity” often varied based on their academic and professional objectives. These findings highlight the necessity of tailoring ESP textbooks to meet the unique demands of each discipline.

Teachers agree that authentic content is represented to a certain extent in the materials they use. They use professional publications, texts from professional journals, TED talk lessons, video clips from YouTube channels (in TS field), and texts taken from textbooks for secondary vocational schools in English-speaking countries (in natural sciences). The authenticity of content is considered very important and was particularly emphasized by the respondents. Authentic materials, as the teachers claim in their responses, allow students to encounter the real language that they will use in their professional environment, improving their language skills in the specific context of the profession. Teachers also emphasize that the use of authentic content contributes to the diversity of teaching and students’ motivation and encourage their use. It was emphasized that the textbooks themselves do not provide sufficient representation of authentic materials and that in this regard it is essential to include additional materials and sources to ensure exposure to authentic content and different varieties of the English language.

These results and insights into perceptions of both students and teachers underscore the multidimensional role of authentic materials in ESP teaching. For students, authentic materials not only serve as a bridge between theoretical language knowledge and practical professional application but also foster motivation by demonstrating the immediate relevance of language learning to their future careers. From students’ perspectives, authenticity enhances engagement, reinforces the practical value of language learning, and builds confidence in applying language skills professionally. Teachers, meanwhile, recognize the motivational and pedagogical benefits of authentic resources, while also noting the considerable time and effort required to adapt, localize, and scaffold them effectively. Overall, these findings confirm that while textbooks provide a foundational framework, the

incorporation of diverse, authentic materials is essential for achieving the depth, relevance, and engagement needed in ESP learning environments.

Additionally, the study highlights that the concept of authenticity, its interpretation and implementation vary substantially across disciplines. For Natural Sciences, authenticity is closely tied to academic discourse and research conventions, whereas in Technical Sciences, it is linked to industry practices and problem-solving.

## 5. DISCUSSION

### *5.1. RQ1: How do students and teachers perceive the use and role of authentic materials in ESP textbooks?*

The findings show that both students and teachers view authentic materials as essential for bridging the gap between textbook content and real-world communication. Students acknowledged the relevance of field-specific vocabulary in their textbooks but noted a lack of materials that reflect real-life tasks, especially in listening and speaking. Teachers similarly confirmed that current textbooks provide a structural base, yet fall short in offering authentic, context-rich content that aligns with professional demands.

This perception aligns with previous research (e.g., Gu, Bo & Ren 2019; Bocanegra-Valle 2021), reinforcing the idea that authenticity plays a motivational and pedagogical role in ESP. Students' statistically significant responses across most evaluated categories indicate a clear expectation that ESP textbooks should be more aligned with the communicative and contextual realities of their disciplines.

There are slight differences in how students from different fields perceived the authenticity of their materials. Students and teachers from the TS field placed a greater emphasis on technical problem-solving tasks, while those from the NS field prioritized academic writing and research interpretation. These differences highlight the need for field-specific customization in textbook design. Every scientific field needs to have textbooks tailored to both the study field's requirements and the anticipated communication methods in English for future professional contexts. Needs analysis becomes a pivotal process in identifying and addressing these requirements and it has been consistently emphasized in the literature as a critical step in designing effective ESP materials (Hutchinson & Waters 1987).

Teachers, on their part, described frequent supplementation of textbooks with real-world materials such as scientific articles, technical manuals, case studies, and multimodal resources. This suggests a shift in the role of the teacher: from a

content deliverer to a content curator, responsible for bridging the gap between the textbook and reality.

### *5.2. RQ2: What types of authentic materials are most beneficial for NS and TS students?*

As previously mentioned, the results indicate distinct disciplinary preferences and these preferences highlight that authenticity in ESP is discipline-sensitive: while the core principle is shared, the types of authentic content required differ according to field-specific communicative practices. This suggests that textbook developers should adopt a modular or customizable approach that accommodates diverse academic and professional contexts. In both fields, students expressed a desire for materials that simulate real-life tasks, reinforcing authenticity not just as an input feature, but as an experiential, skills-integrated component of learning. When it comes to alignment with real-world needs, the findings reveal a moderate alignment between ESP textbooks and the real-world needs of NS and TS students. While textbooks excel in introducing professional vocabulary, their limited focus on practical applications undermines their effectiveness. This imbalance mirrors findings from previous studies (Basturkmen 2010; Anthony 2018). The lack of practical tasks, such as simulations, case analyses, or collaborative projects, highlights a gap that textbook developers need to address. The integration of authentic materials could significantly improve students' preparedness for real-world professional and academic scenarios.

### *5.3. Multimodal and AI-enhanced authentic materials*

Although it was not part of our research questions, it needs to be mentioned that recent research underscores that multimodal authentic materials such as infographics, video-embedded texts, simulations and combined audio-visual-graphic tasks, can significantly boost comprehension, vocabulary acquisition, and learner engagement in both general EFL and ESP contexts (Carcamo & Pino 2025; Alwadei & Mohsen 2023). By layering image, sound and text, these resources simulate professional discourses more faithfully than print alone and help scaffold complex disciplinary content for mixed-level classes.

In parallel, AI applications (e.g. ChatGPT, ChatPDF) are beginning to play a role in authentic-material workflows: teachers use generative models to simplify, adapt or even create context-rich materials, reporting gains in student comprehension and time-saving in lesson preparation (Çelik et al. 2024;

Lytovchenko et al. 2025). Such tools hold promise for dynamically matching text complexity to learner profiles and for rapidly refreshing materials so that they remain current.

Integrating multimodality with AI-mediated adaptation could therefore address two persistent challenges: cognitive overload and resource obsolescence, while preserving the real-world authenticity at the heart of ESP pedagogy.

## 6. CONCLUSION

This study explored how students and teachers from the fields of natural sciences (NS) and technical sciences (TS) perceive the use and role of authentic materials in ESP textbooks, and which types of authentic materials are most relevant to their needs, while highlighting the critical importance of authenticity in ESP textbooks for students in the fields of natural sciences (NS) and technical sciences (TS). While the textbooks currently in use provide a strong foundation in domain-specific vocabulary, they often fall short in addressing the practical and contextual needs essential for students' professional and academic success. Authentic materials, when integrated effectively, can bridge this gap by offering students real-world relevance and enhancing their preparedness for specific workplace or academic challenges.

Findings indicate that while current textbooks offer a solid foundation in professional vocabulary, they often lack contextual, multimodal, and task-based components essential for developing real-world language competence. Both students and teachers emphasized the importance of incorporating more authentic and field-specific materials into the curriculum. One of the key findings of this research is the necessity for field-specific customization in textbook design. NS students, for example, benefit most from materials that focus on academic writing, research interpretation, and critical thinking, while TS students require textbooks with technical problem-solving tasks, simulations, and industry-specific applications. This disparity highlights the need for needs analysis to tailor ESP materials to the unique requirements of each discipline.

To enhance authenticity, textbook developers should consider incorporating a diverse array of authentic materials, while also integrating multimodal i.e. multimedia resources like videos, podcasts, and interactive exercises. These materials not only make learning more engaging but also simulate real-world tasks that students are likely to encounter in their future professions.

The research within this article has certain limitations, though, which can be summarized in sample size and corpus. It would be useful to expand the size of the

sample, by including other scientific fields and incorporate more ESP textbooks, so that the results could be more representative.

Future research should delve deeper into how digital tools and multimedia learning resources can enhance textbook authenticity and engagement. For example, interactive platforms could enable students to practice real-time problem-solving or collaborative tasks, mimicking professional environments. Future work should also examine how multimodal formats (videos with built-in transcripts, interactive infographics, VR simulations) combine with AI-driven content adaptation (e.g. generative simplification, automated task design) to personalize authentic materials for different proficiency levels and disciplines.

This study also emphasizes the collaborative role of teachers in supplementing textbooks with additional resources. Teachers often bridge gaps in textbook content by integrating materials that are more closely aligned with their students' professional needs. By recognizing this, publishers should collaborate with educators to co-develop materials that reflect classroom realities while maintaining high academic and professional standards.

In conclusion, enhancing authenticity in ESP textbooks is not merely an academic exercise but a practical imperative. By aligning materials more closely with the real-world contexts of NS and TS fields, textbook developers and educators can significantly improve learning outcomes and better prepare students for the communicative demands of their academic and professional environments.

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ULOGA AUTENTIČNIH MATERIJALA U UDŽBENICIMA ZA EJS NA TERCIJARNOM  
NIVOU OBRAZOVANJA

*Sažetak*

Ovaj rad istražuje ulogu i uticaj autentičnih materijala u udžbenicima engleskog kao jezika struke (EJS), sa posebnim fokusom na studente i nastavnike iz oblasti prirodnih nauka (PM) i tehničkih nauka (TT). Cilj istraživanja bio je da se ispita percepcija autentičnosti udžbenika i njihova usklađenost sa zadacima iz realnog sveta, koristeći kvalitativne povratne informacije iz polustrukturisanih intervjuja i kvantitativne podatke prikupljene putem skala za evaluaciju Likertovog tipa. Rezultati pokazuju da, iako udžbenici pružaju ključni leksički fond u vidu stručne terminologije specifične za oblast, oni ne integrišu u dovoljnoj meri autentične materijale kao što su tehnički priručnici, naučni članci i studije slučaja iz stvarnog sveta. Taj nedostatak primorava nastavnike da često dopunjaju sadržaj udžbenika dodatnim resursima kako bi se premostio jaz između teorijskog i praktičnog znanja. Konkretno, materijali koji odražavaju kontekst i specifične potrebe lokalnih industrija i profesija značajno bi doprineli većoj autentičnosti udžbenika. Rezultati istraživanja ističu potrebu za izradom udžbenika koji uključuju kontekstualno relevantne sadržaje. Preporuke za izdavače uključuju integraciju autentičnih materijala i inovativnih pristupa, poput digitalnih resursa (QR kodovi, video-snimci, interaktivne vežbe, video-igre), koji bi poboljšali angažovanost studenata i kvalitet učenja. Za nastavnike, istaknuta je važnost prilagođavanja nastavnih materijala kako bi se zadovoljile specifične potrebe studenata iz određenog naučnog polja. Rezultati ovog istraživanja doprinose širem diskursu o razvoju materijala za EJS i nude praktične uvide koji mogu unaprediti ishode učenja i motivaciju studenata. Takođe, pozivaju na buduća istraživanja koja bi se fokusirala na longitudinalne uticaje autentičnih materijala na jezičku kompetenciju i profesionalni uspeh studenata, kao i na implementaciju novih tehnologija u nastavi.

*Ključne reči:* EJS, tercijarno obrazovanje, autentični materijali, evaluacija udžbenika, Engleski kao jezik struke.

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