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Application of integrated contextual learning for developing students` terminological competence

Aigul Yessengeldinova[1+]
Madina Anafinova[2]
Gulden Tussupova[3]
Aiman Aubakirova[4]
Luminita-Cristina Alil[5]

[1,3,4]*L.N. Gumilyov Eurasian National University, Astana, Kazakhstan.*
[1]*Email: eat.0785@gmail.com*
[3]*Email: 850708400696@enu.kz*
[4]*Email: a.alien.a@mail.ru*
[2]*Astana International University, Astana, Kazakhstan.*
[2]*Email: eat.0785@mail.ru*
[5]*Military Technical Academy "Ferdinand I", Bucharest, Romania.*
[5]*Email: cristina.alil@mta.ro*


(+ Corresponding author)

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ABSTRACT

The growing contemporary global economic and cultural integration demands the training of highly skilled professionals with extensive proficiency in a subject-specific foreign language across various specialized fields. The significant transformation of the Kazakhstani education system within the context of multilingualism and digitalization revealed the insufficient effectiveness of teaching non-language subjects in English, a lack of a general unified system of teaching foreign language terminology, a shortage of quality textbooks, and a deficit in the quality of specialist training. The issue of developing a specialized foreign subject-content terminological competence as a secondary linguistic identity has become particularly significant. This study proposes a comprehensive integrated contextual learning approach that incorporates all essential dimensions of efficient terminology instruction, including structural coherence, innovative methods, and relevance to authentic contexts. The study explored the usage and effectiveness of integrated contextual learning in terminology teaching to enhance students' trilingual professional terminological competence in English, Kazakh, and Russian. Literature review relies on a conceptual framework and terminological analysis within language acquisition training and its approaches. Employing a mixed-methods design, the research combines a quantitative survey and qualitative interviews to investigate learners' experiences at different educational stages. Results confirm that contextualized, logically structured tasks supported by digital tools and interactive strategies, such as role-playing and group projects, significantly enhance the acquisition of interdisciplinary terminology in English. This approach, with cross-linguistic implementation, is suggested for a wide range of international learning settings beyond the Kazakhstani educational system.

Contribution/Originality: This study contributes to multilingual education by introducing an integrated contextual instruction as an innovative methodology in terminology teaching. It is one of the few studies that have investigated terminology learning in digital contexts. The paper's primary contribution is finding that this approach enhances students' subject-specific foreign language competence.

1. INTRODUCTION

The current international economic and cultural integration entails the training of highly skilled specialists across various professional domains. This training requires extensive knowledge in a subject-specific foreign

language, which determines the specialist's global competitiveness. Kazakhstan currently represents a state on the path of achieving political and economic stability, playing an essential role in the global community. The evolving economic, political, and social conditions in Kazakhstan require significant changes in the education system, including professional training. The significant transformation of the Kazakhstani education system is occurring in the context of globalization and international integration. In recent decades, Kazakhstan has made positive changes by implementing national and international educational programs and legal reforms to educate competitive professionals (Duman, 2024). The content of the education system in Kazakhstan is administered within a multilingual policy, which aims to form a multilingual personality. In this light, the presented paper is methodological and linguistic research focused on improving the effectiveness of trilingual English, Kazakh, and Russian lexical-professional competency of specialists. The current education system recognizes the importance of specialized foreign language, particularly terminological literacy in professional settings, highlighting the necessity of developing professional subject-specific terminological competence as a secondary linguistic identity for future professionals. This highlights the significance of developing subject-content terminological competence among learners.

According to the results of annual monitoring in the national educational sphere based on the Concept of Language Policy Development in the Republic of Kazakhstan for 2023-2029 (2023), there are actual problems in the development of the state (Kazakh) and foreign (English) languages, which also resonate and relate to the study of foreign language terminology, as well as insufficient effectiveness of teaching non-linguistic subjects taught in English. For example, a lack of a general unified system of teaching foreign language specialized terminology, a shortage of quality textbooks, and a deficit in the quality of specialist training. There is a need for comprehensive general linguistic work, teacher training, and curriculum design, improvement of terminology learning materials in textbooks, increasing clarity of lexical units through precise definitions, visual materials, and teacher support, which contribute to better assimilation of teaching strategies in the training of specialists for the qualitative development of a harmonious language policy of Kazakhstan. Furthermore, Nurgaliyeva et al. (2025) recently examined student satisfaction with the subject content terminology used in Kazakhstani school textbooks for non-linguistic disciplines. Based on the findings, most students found studying subject terminology challenging, which proved the need for accurate interpretations and usage of terms and textbook design improvement to support efficient lexical learning.

All the above-mentioned factors lead to the research of a wide range of issues related to the foreign language teaching of professionally oriented content in subjects taught in a foreign language (English) under the conditions of modern trends in polylingualism and digitalization. Therefore, this study proposes a comprehensive integrated contextual learning approach that incorporates all essential dimensions of efficient subject-content foreign terminology instruction, including structural coherence, integration of innovative methods and educational levels, and relevance to authentic contexts. This approach, with cross-linguistic implementation, is suggested for a wide range of international learning settings beyond the Kazakhstani educational system.

Consequently, the following research questions were formulated:

1. What are the learning requirements of students at different educational levels in improving their subject-specific foreign terminology acquisition?
2. How efficient is the proposed integrated contextual learning approach in meeting students' needs?

Following the research questions, two objectives were stated:

1. To identify the learning needs of students in improving subject-specific foreign terminology acquisition at different educational levels within comprehensive subjects taught in English.
2. To analyze the effectiveness of the proposed integrated contextual learning approach in meeting these needs at the postgraduate level.

This paper aims to reveal how a comprehensive, integrated, and contextual learning approach can be used as a productive scaffolding tool in terminology teaching within a subject-specific foreign language context. The primary purpose is to explore the implementation of this approach as a classroom management strategy, its aspects, and

strategies for teaching subject-specific vocabulary in the target language (English) for pre-professional and professional education.

2. LITERATURE REVIEW

An initial literature review relies on a conceptual framework and terminological analysis within language acquisition training and its approaches. One of the tasks of modern professional secondary and higher education is the mastery of professional language, which is fundamentally based on acquiring the respective terminology. Proficiency in terminology knowledge in a particular subject area is traditionally an indicator of the quality of subject comprehension in the learning process. Its active application is an indicator of students' terminological competence. Terminological competence is defined as a model of translation proficiency, encompassing the memory-based representation of professional knowledge, fluency in activating terminology, a creative approach to term development, and the translator's problem-solving skills during the translation process, which closely affect the integration of concepts and their linguistic expressions (Faber, 2003). Any definitions of terminological competence are based on the commonly accepted definitions of terminology as a science. For instance, Sager (1990) conceptualized terminology as the compilation, definition, processing, and visualization of terms, i.e., specialized lexemes in more than one language. Terminology is a scholarly study of terms and concepts utilized in sector-specific linguistic systems and their structuring in specialized knowledge representation systems (Silva & Albuquerque, 2016). Language learning is always associated with vocabulary development. Vocabulary learning is not limited to memorizing individual words but also involves understanding words in a real and meaningful context. The reason for using contextualization as a vocabulary learning strategy is that it helps to create a real atmosphere when words are used (Minalla, 2024).

This research study hypothesizes that the effective development of students' terminological competence can be successfully achieved through a systematic, contextually integrated approach that combines context-based tasks, digital tools, and interactive strategies, such as role-playing and group projects. The proposed comprehensive, integrated, contextual learning approach may facilitate the formation of students' lexical (terminological) professional competency within Language for Specific Purposes (LSP) based on such didactic approaches as Content and Language Integrated Learning (CLIL), Terminology-oriented approach (TerminoCLIL), Pluriliteracies Teaching for Learning (PTL), and Contextual Teaching and Learning (CTL) approaches. This integrated, contextual, methodological approach can be defined as a research or problem-solving strategy that emphasizes combining multiple methodologies to analyze a subject comprehensively, considering both the specific context and broader influences. Strategies and tasks tailored to the students' interests, combined with the use of a variety of approaches, have a positive impact on the students (Groothuijsen, Bronkhorst, Prins, & Kuiper, 2023). Additionally, scholars highlight the significance of a contextual approach in facilitating learners' ability to retain lexical items and use them meaningfully in academic settings (Nation, 2013).

2.1. Language for Specific Purposes (LSP) and English for Specific Purposes (ESP)

LSP is a means of communication within a specific, professional-oriented environment that has a separate functional subsystem of language and serves as a language of global professional communication. LSP, as a subject to be learned, was explored by Hutchinson and Waters (1987); Trim (1982); Strevens (1977); Iver (2005); Wells (1982); Halliday, McIntosh, and Strevens (1964) and Khomutova (2005). As stated by Trim (1982) LSP can be considered as a discourse that adds specific (professionally oriented) vocabulary to the language layer that forms the common base and remains constant despite the social (or professional) role of the speaker. As stated by Hutchinson and Waters (1987) ESP is a learner-oriented approach where all determinations about subject matter and methods are grounded on the students' reasons for learning. LSP courses are classes in which the methodology, curriculum content, learning objectives, educational resources, teaching methods, and assessment techniques are based on the deliberate use of the specialized language (Trace, Hudson, & Brown, 2015).

ESP constitutes a distinct language that has its own terminology and linguistic characteristics. It also focuses on domain-specific grammatical patterns. The focus is not on syntactic correctness but on the priority of contextual appropriateness. ESP is a standard formulation used to describe the approach taken by English language teachers that incorporates particular content for any specific instructional goals. Furthermore, Tenieshvili (2024) revealed that professional culture and ESP significantly develop future specialists' professional competence on the international level. She considered implementing "professional culture" elements in syllabi of various ESP courses. ESP teaching is aimed at achieving certain objectives that are required by the learner. The content or topic of the course should be related to a specific discipline or profession. ESP uses a particular pedagogical strategy that is tailored to meet the learner's requirements of the chosen field of knowledge. The course is required to be adapted to accommodate terminology, language, and grammatical constructions (Ibrahim & Alani, 2022). In other words, ESP is an area of EL teaching that enhances the ability and application of the words learned to be used confidently in their interested subject domain. In this regard, ESP is defined as responding to the learning needs of students and utilizing appropriate and effective methodologies and activities that support their future professional work (Laadem & Mallahi, 2019). Thus, LSP (or ESP) includes linguistic and disciplinary knowledge related to learners' needs that is specific to a particular context (Trace et al., 2015).

2.2. Content and Language Integrated Learning (CLIL) and Terminology CLIL

The subject curriculum taught in a foreign (English) language is an interdisciplinary methodology. Interdisciplinary language and subject content integration has been widely applied in teaching foreign languages methodology, representing the CLIL approach. However, the focus is often on teaching subjects using a foreign language while evaluating subject-specific learning outcomes. CLIL is a student-centered approach. The CLIL approach enables the effective instruction of non-verbal subjects in English through the integration of subject (cognitive) and language components in the selection of teaching materials, aiming for metacognitive learning outcomes. CLIL practice in various educational settings has shown that integrating content and language instruction facilitates the development of students' linguistic, academic, and professional competencies. In this approach, language is used as a means to learn the required subject. Consequently, CLIL is generally defined by scholars as a hybrid and interdisciplinary instructional approach to learn and teaching both content and language. CLIL encourages the implementation of interactive and hands-on learning environments that enhance self-directed learning and critical thinking skills. Besides, it ensures greater emphasis on a contextualized learning experience that uses the generation of background knowledge to help learners comprehend content. The implementation of authentic communicative tasks is also encouraged. Accordingly, language is learned in a "natural" teaching strategy and serves to facilitate communication (Castellano-Risco, 2018).

Termino CLIL, known as the terminology-centered framework to CLIL, strengthens the mutually supportive discourse between CLIL and terminology by linking two essential dimensions: (1) concepts as subject knowledge and skills as competencies, and (2) discursive practices as language. These interrelated aspects may lead to a clearer and more concise delivery of professional content by emphasizing that the terms (language) and competence (knowledge) are inseparable. As a result, one of the purposes of terminology is to organize, structure, and classify both from a linguistic perspective (discourse) and a subject-content knowledge perspective (expert). Regarding the extra-linguistic nature of knowledge, knowledge and its representations are frequently accessed through discourse. Knowledge is systematically transferred by a text in verbal or non-verbal form. As noted by researchers Silva and Albuquerque (2016) CLIL may stem from LSP practices, but it goes beyond them. It is the awareness that language varies depending on the context in which it is applied. It has specialized communication purposes and employs professional language. Terminology is the bridge between the two CLIL aspects: knowledge (concepts) and skills (know-how) and language (knowledge discourse). Nevertheless, it is crucial to note that CLIL and TerminoCLIL in

LSP education still demand further research, particularly in developing students' professionally oriented terminological competency and language skills.

2.3. Pluriliteracies Teaching for Learning (PTL)

Plurilingual learning can be one of the approaches used to explore the efficiency of integrated learning methodology in the setting of "subject literacy" through language. PTL is a new learning approach, introduced by the European Centre for Modern Languages (ECML), that aims to develop multilingual literacy among students. This pedagogical model is rooted in the works of leading CLIL scholars, including Meyer, Coyle, Halbach, Schuck, and Ting (2015). PTL refers to subject-specific literacy in multiple languages. Scholars believe that proficiency in subject literacy in more than one language is an essential educational component for enhancing transferable competencies, including critical thinking, communication, and problem-solving skills in domain-specific areas (Meyer et al., 2015). Students with critical thinking skills should be able to create properly organized arguments, i.e., cogent, reasoned arguments without contradiction that begin with cogent premises and end with valid conclusions (D'Northwood & Rattray, 2025). Generally, PTL is an alternative to the well-established CLIL. PTL emphasizes the importance of language competence, and more specifically, plurilingual competency.

2.4. Contextual Teaching and Learning (CTL)

The CTL approach in educational interpretation is the conceptual basis for the application of the competency-oriented approach. This methodological approach enables learners to associate the content of scholarly disciplines with the immediate authenticity of real-life cases in practice. CTL is a holistic system. CTL instruction is a pedagogical process aimed at improving students' subject knowledge by relating academic materials to their daily experiences in the context of their personal, social, and cultural settings. The approach comprises eight fundamental elements: creating meaningful connections, performing purposeful activity, autonomous learning, teamwork, critical and innovative thinking, individual growth, striving for high academic achievements, and utilizing authentic forms of assessment. There are seven elements of contextual teaching: constructivism, inquiry, questioning, learning community, modeling, reflection, and assessment, evaluating learning outcomes (Johnson, 2002). Professor E.B. Johnson (2002) also emphasizes three principal concepts within CTL: interdependence, differentiation, and self-organization.

Contextual learning strategies enable learners to master their conceptual knowledge and enhance their learning abilities, problem-solving skills, and scientific skills (Suryawati & Osman, 2018). The benefits of contextualized learning can be further enhanced by technological advances. Accordingly, a VLE (Virtual Learning Environment) that covers 'tutorials', 'online quizzes', 'virtual discussions', and 'online videos' is proposed to support contextual learning. Online videos can serve as visualizations of the learning material. Tutorials, assignments, virtual quizzes, and discussions enable learners to apply their knowledge in practice (Raub, Shukor, Arshad, & Rosli, 2015). Recent studies, notably those by Langelaan, Gaikhorst, Smets, and Oostdam (2024); Pratiwi, Situmorang, and Iriani (2024) and Solijanov (2021) have emphasized the benefits of instructing learners in contextual, subject-specific terminological practices at all educational levels to enhance their academic performance and the importance of adapting teaching methods to meet the individual needs of students.

However, there is limited research on how learners perceive the integration of theory and contextual practice in terminology learning. Consequently, to bridge this practical gap, the present study conducted surveys to analyze these perspectives and contribute to instructional design. Implementing a high-quality terminological learning process is not merely the assimilation of a lexical unit but the development of the learner's ability to apply the acquired knowledge, particularly specialized lexemes, in practice. Therefore, applying all the reviewed approaches is essential, as they can be used holistically as a foundation for a comprehensive, integrated, context-based methodology.

3. METHODOLOGY

3.1. Design

This research employed a mixed-methods approach, combining quantitative needs analysis surveys and qualitative interview analysis. This approach allowed a holistic investigation relevant to the research questions and objectives. The methodology was designed to be applicable for cross-linguistic implementation in a broad range of multilingual and international learning settings.

3.2. Participants

The experimental study was conducted within the Terminology Studies Master's program and the IT Security Bachelor's degree program at L.N. Gumilyov Eurasian National University in Astana, as well as in IT (Informatics) classes at two secondary schools in Astana. All participants were selected through purposive sampling based on their field perspectives and experiences in applying specialized foreign terminology in their learning practices. The inclusion of participants from secondary and tertiary education levels aimed to enhance the understanding of how learners engage with the terminology teaching and learning process across multiple academic settings, thereby supporting adaptive instructional terminological design for various learner backgrounds.

The application of comprehensive, integrated contextual learning was proposed as a research experiment in the Terminology Studies Master's degree course. The research data were influenced by practical considerations, such as the short duration of the experiment, which was conducted twice a week for two academic hours within PhD teaching practice at L.N. Gumilyov Eurasian National University. The research study focused on a group of 10 master's students, who were selected to experiment with effective terminology teaching within PhD teaching practice. The content of the teaching and learning material was based on the course syllabus of the Terminology Studies discipline. The experimental group was taught by following the university schedule. Consequently, the results were obtained through a qualitative analysis of voluntary and anonymous interviews of the participating master's students.

This study was conducted as part of the doctoral PhD pedagogical practice within the curriculum of an accredited university. The study did not require formal ethical approval, as it was carried out in accordance with PhD pedagogical and research practicum policies under institutional guidelines and national academic standards. It did not involve any medical or invasive procedures or the collection of sensitive personal data. Participation in the research was limited to educational activities, including classroom observations, teaching practices, surveys, and interviews. Participants were informed about the scope and purpose of the study, and all students voluntarily and anonymously agreed to participate. The academic faculty supervising the doctoral program and PhD teaching and research practicum confirmed that the study meets ethical standards and complies with institutional regulations.

3.3. Instruments

The research instruments employed in this study are based on a review of existing relevant literature related to terminology learning. Discussions with experienced department members and PhD supervisors contributed to refining the questions for better clarity and relevance. Their feedback and iterative consultations enhanced the instruments' validity and reliability in terms of content adequacy, applicability, methodological coherence, and alignment with the research objectives. This collaborative process ensured sufficient validation of the instruments without formal expert assessment. In this research study, the key factor was the application of a comprehensive, integrated, and contextual approach to terminology teaching. The study examined students' learning priorities and their evaluations of the approach's effectiveness.

The surveys (via Google Forms and paper-based) were conducted with IT Security Bachelor's degree course and secondary school pre-profile level students to analyze the needs of learners in applying an integrated contextual approach. This analysis focused on identifying effective strategies and activities for teaching content-specific foreign language terms, specifically targeting terminological vocabulary skills. Integrated contextualized tasks were

developed based on comparative needs analysis surveys. The tasks developed for the experiment comprised vocabulary exercises based on specialized contexts, contextual term application strategies, and an online test designed to measure learners' understanding of terminological units within subject-specific professional texts. Moreover, vocabulary instruction is a process that involves attending to, listening to, evaluating, and responding to the speaker's oral speech, as well as identifying the weaknesses of the learner's abilities, especially concerning vocabulary skills. However, vocabulary issues must be explored (Al-Homoud, 2024). Consequently, during the lessons' observation, we analyzed how the teaching process is conducted to clarify the efficient acquisition of subject-specific trilingual (English, Kazakh, and Russian) cognitive-communicative abilities within vocabulary development by students from the Kazakh and Russian groups of instruction. Observing whole lessons and using different methods as the unit of analysis in lessons avoids the fragmentation characteristic of other observational studies (Kingma, Smits, Jaarsma, & Voogt, 2024).

Quantitative data from the surveys were analyzed using descriptive and frequency statistics to clarify common patterns in learners' responses. The questionnaire consists of 10 closed-ended (multiple-choice) and open-ended questions and is designed to be completed in approximately 10-15 minutes. It ensured efficient data collection while respecting students' time constraints. Qualitative data from the interviews were examined to provide students' general opinions on experimental instruction and valuable learning experiences. Participants were interviewed informally through detailed note-taking during the instructional sessions to facilitate a more authentic and comfortable instructional environment (Merriam & Tisdell, 2015). Notes were reviewed using content analysis after each session to ensure the accurate application of the proposed teaching approach.

4. RESULTS AND DISCUSSION

4.1. Survey Analysis

Needs evaluation is a crucial aspect of language curriculum design. It serves as the foundation for teaching materials, program curricula, assessment techniques, and instructional design (Widodo, 2017). Recognizing learners' needs by incorporating needs analysis techniques (interviews or surveys) enhances effective instructional strategies through identifying preferred learning formats among learners at diverse educational levels (Basturkmen, 2010; Long, 2018). Both online and paper-based voluntary and anonymous surveys were administered among bachelor's and secondary school students as part of the comparative analysis. We collected our research queries through a voluntary online survey via Google Forms with 12 IT Security Bachelor's degree course students and a paper-based survey with 26 pre-profile level secondary school students. Students were asked to answer questions related to lexical instruction and acquisition and to suggest ways to improve this instruction, specifically in enhancing subject-specific terminology acquisition. The questionnaire comprised 10 questions concerning the process of acquiring new specialized terms in subjects taught in English in the classroom: the importance of understanding new vocabulary in subject-specific content; common strategies and techniques used by students to study and memorize new target terms; the effectiveness of vocabulary tasks (in textbooks/lessons) in acquiring new terms; types of tasks teachers use for explaining and reinforcing new terms; the usage of resources and digital technologies during lessons; the application of real-life practical tasks (projects/case studies/contextual tasks, role-plays, problem-based scenarios) in lessons and their effectiveness for memorization of new vocabulary; types of assignments for deeper understanding of new terms by students; challenges faced when trying to learn and reinforce new terms; efficient assignments and teaching strategies for learning and retaining new terms; and the necessity of additional focus on mastering vocabulary learning. The analysis of survey results is reflected below in Figure 1.

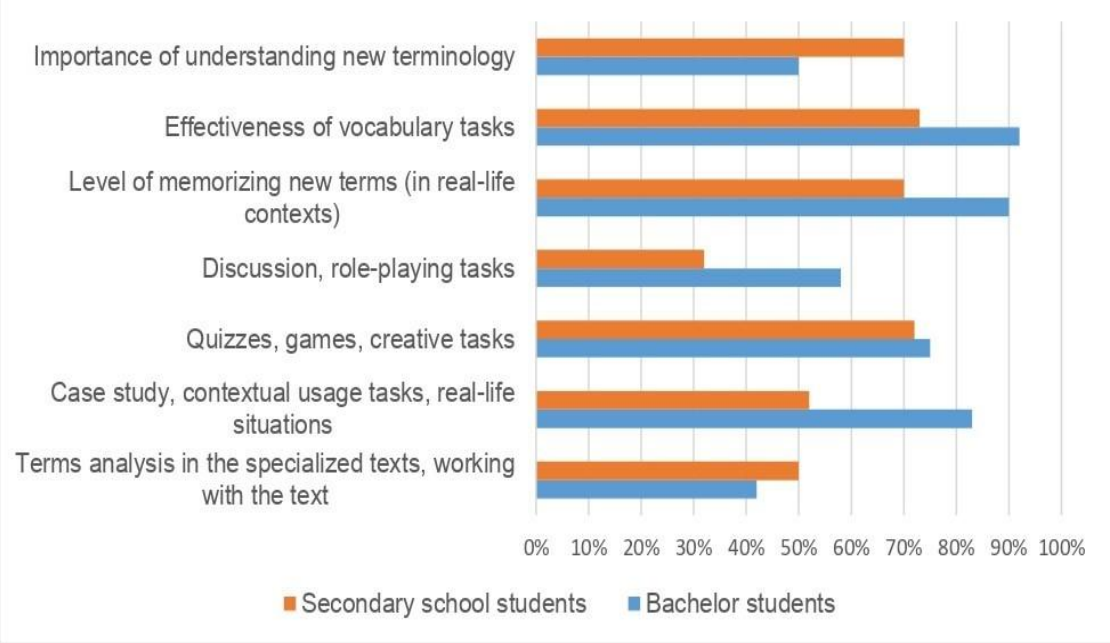


Figure 1. Acquisition of new terminology in non-linguistic subjects.

Figure 1 summarizes essential elements used to evaluate the efficiency of subject-specific terminology activities, including various tasks concerning the influence of the contextual teaching approach on terminology acquisition, following the research questions.

The chart in Figure 1 compares the activities used by bachelor's and secondary school students for learning new terminology in non-language subjects. It measures the effectiveness of various learning activities across both student groups. This suggests that bachelor students find discussions and role-playing more engaging or effective for terminology acquisition, possibly because of more developed critical thinking and communication skills. Both groups find quizzes, creative, practical tasks, and activities highly effective. This shows that interactive and playful activities are equally beneficial for both levels, supporting engagement and learning of new lexemes. Activities on case studies and analysis in real-life situations reveal the highest effectiveness for bachelor students compared to secondary school students. Bachelor students are likely better at applying theoretical knowledge to real-world contexts, reflecting their more advanced analytical skills. Furthermore, secondary school students rely more on traditional text-based learning and term analysis in texts, perhaps due to a greater emphasis on basic learning approaches in previous instructional strategies. Both levels of participants have clear differences in preferences and effectiveness of learning activities, with bachelor students favoring more complex, real-life-based activities. In contrast, secondary school students rely more on structured, text-based learning. According to learners' suggestions, preferred ways for learning and memorizing new subject-specific terms in non-language subjects include writing definitions, using visual aids, working with terms in reading tasks, matching terms, and gamification processes. Regarding the challenges students face when learning and memorizing new terms in non-language subjects, the greatest difficulties are understanding the meaning of the terms and the high level of language, followed by issues related to task inconsistency. For this reason, it is evident that the application of additional digital resources and logically structured task differentiation are essential to support students in learning new specialized terminology in non-language subjects.

After scrutinizing all the data received from the surveys, we concluded and suggested that students prefer and find interactive activities, such as real-life activities, creative tasks, quizzes, role-playing, and text-based discussions, to be effective for engagement and learning subject-specific terminology. Moreover, visual aids, digital resources, and task differentiation with a logically structured sequence are suggested as efficient techniques for enhancing students' subject-content terminological competency.

4.2. Procedures of the Research

We developed and applied seven vocabulary-based contextual activities structured on three logically sequenced stages. These activities were designed with clear objectives by considering different aspects of vocabulary acquisition:

1. The Presentation Stage introduces learners to new vocabulary, including its phonetic and visual forms, and establishes interrelations between the new lexical item and its meaning and interpretations. The first two activities, Video Discussion and Terminology Mind Map, were designed to achieve this purpose.
2. The Practice Stage involves developing and enhancing the skills to use these new lexical units by forming strong links between the vocabulary and its interpretation through integration into various phrases and, subsequently, into specialized sentences. This instruction considerably improves the students' vocabulary and subject-language connections through subject-content knowledge. The following two activities were applied for this purpose: LSP Text analysis for identifying and contextualizing terms, and the Jigsaw Group Puzzle strategy for the practical application of the required terminology.
3. The Production Stage aims at using newly integrated terms in specified cognitive-communicative specialized contexts. The last three activities (*Contextual Usage Task*, *Role-Playing Task*, and *Online Game Quiz*) were designed to simulate real-life professional situations. At this stage, learners should demonstrate their acquired subject knowledge and skills in using foreign-language specialized terms to efficiently apply in professional oral or written communicative tasks. This stage focuses on the specifics of specialized terminology and on performing practical communicative tasks in a professional foreign language.

Digital tools can be effective across various phases of integrated contextual terminological instruction. However, it is worth mentioning that all these activities should be logically integrated with the newly presented subject-content terminological vocabulary.

Consequently, the following detailed description of the activities explains the algorithm of their application:

Introductory task. Group discussion.

The purpose of the group discussion task was to clarify the students' comprehension of the subject matter. Students were given the task of answering questions about LSP in general. They shared their insights on the role of LSP (Language for Specific Purposes) in their future professional careers. They also discussed personal experiences using specialized language and the challenges that may arise from improper application of LSP.

Task 1. Video Discussion

The Video Discussion task aimed to help students explore the practical application of subject content language in various fields, deepen their comprehension of LSP, and familiarize them with key terms and concepts relevant to the appropriate professional areas. Statistically, the application of contextual learning combined with animated videos in teaching vocabulary has been demonstrated to be effective and has increased the overall level of students' knowledge. The application of contextualized animated videos in lessons taught in a foreign (English) language, especially in learning subject vocabulary, significantly increases students' language comprehension and potential to participate in learning activities (Minalla, 2024).

All 10 students were randomly divided into two groups of five by choosing colored sheets: red and blue. The task provided a video overview of different sector-specific fields where LSP is applied. Following this, five brief videos, each ranging from 1 to 4 minutes in length, were presented. These videos were chosen and sourced from educational YouTube channels to deliver authentic and comprehensible content. The topics provided in the videos included:

1. IT terminology: Information Technology in 4 minutes https://www.youtube.com/watch?v=XZrckLYqdys,
2. Finance: Supply and Demand https://www.youtube.com/watch?v=8-yWKgZv9JY,
3. Medicine: What causes cancer or Central Principles of Molecular Biology https://www.youtube.com/watch?v=S2hD2ESf3Ho,
4. Economics: What is Economics https://www.youtube.com/watch?v=2YULdjmg3o0,
5. Legal terms: Alternative Dispute Resolution https://www.youtube.com/watch?v=TSGcTqmdSZc.

Subsequently, students were required to identify the sectors of activity where LSP is used in each video and then extract and outline specific terms with their contextual meanings. Thus, students presented their findings in groups to reinforce the thematic material and terminological vocabulary. Thereby, students shared their comprehension of each video during the discussion. Their responses revealed that students of both groups demonstrated the highest comprehension for Video 1 (IT terminology) due to its familiar language and examples. The most challenging for students was Video 3 (Medicine), which required more scaffolding and knowledge of more specific terminological sources. Overall, students confirmed that their understanding of LSP had improved as a result of watching and discussing the video. They found this task to be very engaging and beneficial for improving their subject vocabulary.

Task 2. Terminology Mind Map

The Terminology Mind Map task is designed to identify specific terminological units according to relevant professional fields and to work with them as individual linguistic units. Students were provided with visual lexical materials (pre-made Mind Maps). They were asked to indicate relevant terminological units from a general word list and to determine which specialized domain the terms refer to by analyzing their connections. The given words and terms were generated from the previous video task by the Word-It-Out Word Cloud Generator Platform on the https://worditout.com/ website. Two videos, particularly Video 4, "What is Economics," and Video 5, "Alternative Dispute Resolution," were chosen for this assignment and further terminological work. The word lists were randomly distributed to two groups of students by choosing printed word lists on two different colored papers. For instance, green-colored text was about Video 4, and brown was about Video 5. Consequently, pre-made Mind Maps served as an efficient visualizing tool to support students in highlighting key terms and analyzing text by emphasizing the main meaningful concepts. As a result, all students found this task helpful for collaborative discussions. Most students successfully identified all relevant terms and their professional domains. However, 20% of students (2 out of 10) struggled to identify terms correctly, but they clarified their understanding during group discussions.

Task 3. LSP Text Analysis

The purpose of the LSP Text Analysis task was to examine LSP as a specialized text. Students were required to analyze professional texts taken from the videos (see Video discussion task) and then use these texts simultaneously for the Mind Map task. Consequently, students worked with the same texts but with task differentiation. All students engaged in the following activities:

1. Filling in the missing terminological units in the given text using a pre-made Mind Map (individual work).
2. Matching terms from the text with their definitions (Individual work).
3. Comprising a glossary of terms related to the specialized text, including a list of key terms and their interpretations for the chosen specialized field (individual/pair/group work).

The correct answers for Activities 1 and 2 were presented visually on the interactive board screen. Students exchanged individually completed Activities 1 and 2 with one another by evaluating each other's work. Furthermore, completed terminological glossaries were shared and discussed in two random groups of five students, and then demonstrated as posters from both groups. The students' results of the LSP Text Analysis task are reflected in the pie chart presented below (See Figure 2).

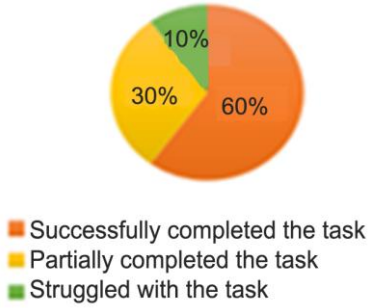


Figure 2. The LSP Text Analysis task completion results.

The reviewed data analysis revealed the following results:

- 60% of students (6 out of 10) completed the task by accurately filling in the missing terms, correctly matching terms to their definitions, and compiling comprehensive glossaries.
- 30% of students (3 out of 10) partially completed the task with a few mistakes in matching term definitions and term glossary interpretations. However, they demonstrated a satisfactory overall understanding of the specialized material after additional clarification and discussions.
- 10% of students (1 out of 10) struggled with difficulties in matching the terms and composing the required glossary, highlighting the necessity for further support and peer-group discussions after each task.

Task 4. "Jigsaw" Group Puzzle

The goal of the "*Jigsaw*" group puzzle task was to promote students' active and cooperative learning, collaboration, and critical thinking. The Jigsaw strategy was selected as a type of cooperative and collaborative learning. Cooperative learning encourages discovery and collaboration among students, allowing one student to share new information with their partner, leading to a mutual learning experience (Chairinkam & Yawiloeng, 2024).

The jigsaw strategy involved dividing a text into smaller and meaningful parts for each student in the group, responsible for one segment. Students share their knowledge and develop a deeper understanding of the specific text by working together to logically group the given text segments into one text. This assignment was accomplished in groups and aimed at analyzing the content of a specific video through the following differentiated assignments:

1. Write down the terms from the first viewing of the video (Video 1 "Information Technology in 4 Minutes") and identify which group can acquire more terms.
2. Expand the complete list with additional terms related to the topic of the video.
3. Carefully study the assigned video text parts and group the related fragments.
4. Assemble the puzzle from the text fragments by arranging the video text in a logical flow on how the video content was structured (Introduction, main part, conclusion, etc.).

The *"Jigsaw" Group Puzzle* was designed and proposed to encourage each student to be actively engaged with specialized terminology from the video, understand its meaning, and collaborate with other students to reconstruct the video content. As a result, all ten students from both groups demonstrated a clear understanding of the term usage in the text, active engagement, and successfully reconstructed the video content. Most students responded that this task provided helpful peer discussion and collaboration within the group.

Task 5. Contextual Usage task

The *Contextual Usage task* sought to develop students' subject-specific cognitive-communicative abilities. This experimental task was designed to encourage students to critically engage with key contextual factors: who is saying or using the term, what is being conveyed or explained, why the term is being said or used, and where and when it is being used exactly. Two random groups of students completed this assignment using acquired terminological vocabulary: *Group 1* and *Group 2*.

There are some examples from both groups as follows:

1) The IT term: *Cybersecurity*

Who: an IT manager in cybersecurity.

What: He/She explains how Cybersecurity is used in performing tasks requiring human intelligence.

Why: to emphasize the security and transparency benefits of Cybersecurity in financial systems.

Where/ When: At a fintech conference held in Silicon Valley a year ago.

2) The IT term: *Web Development*

Who: A Web developer at a conference workshop.

What: Explaining how Web Development technology functions on multiple computers.

Why: to demonstrate opportunities and capabilities provided by Web Development and its application.

Where/When: at an annual scientific-practical workshop in the company's office.

The results of the Contextual Usage task indicated the following:

Group 1. Students demonstrated a clear understanding of the "who" and "what" aspects by identifying the proper terminological interpretations and the purpose of their usage. However, they struggled to put terms in situational "where/when" and contextual "why" aspects.

Group 2. Students provided detailed contextual "what" descriptions and accurate usage of terms, focusing precisely on a user's "who" and "why" aspects of term usage. However, they slightly struggled with the specific place "where/when" terms application in professional contexts.

Overall, we can confirm that students of both groups improved their contextual analysis and critical thinking skills, and further cross-group collaboration supports the general understanding of the contextual meaning and interpretations of required terminology usage.

Task 6. Role-playing task

Through the *Role-playing* task, the intention was to reinforce and deepen students' cognitive and communicative skills, improving both subject-specific language and the ability to apply it efficiently in practical contexts. It can be an alternative to the problem-based learning (PBL) approach. This assignment can develop learners' critical thinking, collaborative, and leadership abilities, which assist them in their future careers (Klaharn, Chaleoykitti, & Chakchaichon, 2025). The task followed the *Contextual Usage* task as it provided practical settings where students could demonstrate their comprehension of the required term by applying it in real scenarios after analyzing its key contextual factors: who, what, why, where, and when (see Task 5). Two random groups were allowed to create specific scenarios and roles based on previously studied professional topics and terminology. Students simulated a real-life situation within the lesson by assigning roles as IT managers, web developers, and participants in an IT seminar and conference, applying related LSP terminology. Students demonstrated effective use of IT terms within the self-designed subject-specific contexts. However, they faced challenges with time management and role distribution. Both groups showed progress in applying specific terms in practice.

Task 7. Online Game Quiz

The *Online Game Quiz* is a concluding task designed to revise and consolidate acquired lexical knowledge through various testing platforms, such as Kahoot, Quizlet, WordWall, and Memrise. Such authoring of digital and AI platforms is used to create quizzes and comprehension questions based on input text, saving instructors time and offering a greater variety of assignment formats. This approach also increases students' interest through gamification (Boeru, 2024). Consequently, Digital Game-based Language Learning (DGBLL) has recently been recognized as a useful instructional technique for improving vocabulary acquisition (Alfuhaid, 2023). Applying more vocabulary tests shows a substantial positive result, but it does not reflect the receptive vocabulary of learners (Chow, Hui, Li, & Dong, 2021). The most prevalent game-based learning and testing platform, Kahoot, was selected for our experimental study, utilizing a true/false quiz format. Perceptions related to the implementation of the Kahoot game in language classes are unequivocally very favorable in the four parameters: *Fun*, *Engagement*, *Motivation*, and *Utility for Learning*. *Fun* and *Engagement* are the most valued, followed by *Motivation* and *Utility for Learning* (Cárdenas-Moncada, Véliz-Campos, & Véliz, 2024). All 10 students were required to answer 10 subject-related questions individually, according to the contextual usage of the studied professional terminology and a general understanding of LSP (See Figure 3).

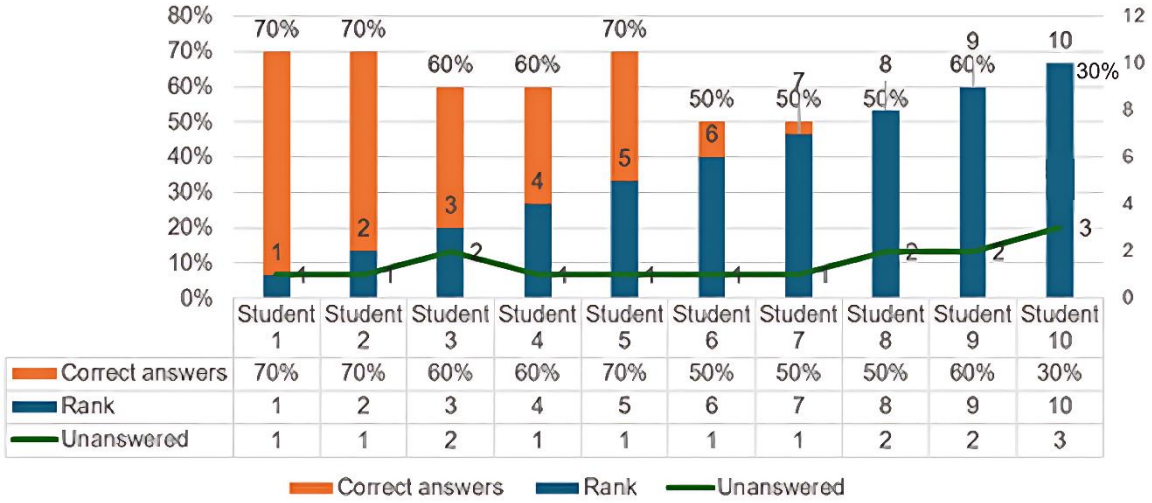
LSP Terminology system: True/False	
Played on	6 Nov 2023
Hosted by	Yessengeldinova
Played with	10 players
Played	10 of 10

Overall Performance	
Total correct answers (%)	57.00%
Total incorrect answers (%)	43.00%

Figure 3. Students' Report Results on the Kahoot Platform website.

The quiz had a competitive element. It was used to identify the participants with a high number of correct answers. Kahoot allowed students to engage easily and fully on their mobile devices with ready-to-play assignments, each consisting of 10 questions for one minute. This tool provided an interactive way to evaluate students' comprehension of key LSP concepts and subject-specific terms. Students completed all 10 questions in 8 minutes.

However, students struggled with one question out of 10, which was either left unanswered or answered incorrectly by all participants. Consequently, the following diagrams (See Figure 4 and Figure 5) demonstrate the results of master students' LSP acquisition, particularly their subject-content terminological competency development.



	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Student 7	Student 8	Student 9	Student 10
Correct answers	70%	70%	60%	60%	70%	50%	50%	50%	60%	30%
Rank	1	2	3	4	5	6	7	8	9	10
Unanswered	1	1	2	1	1	1	1	2	2	3

Figure 4. Students' performance analysis.

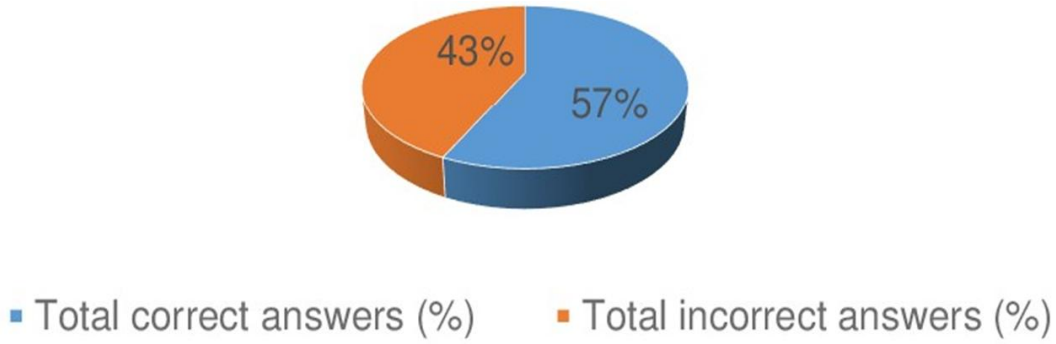


Figure 5. Students' overall performance.

According to the analysis of students' performance on the integrated contextual learning based on quiz data reflected in the diagram (Figure 3), it was revealed that the highest test score was 70%, achieved by three students. The lowest score was 30%, received by one student. Four students indicated a satisfactory level of understanding, with 50% and 60% of the assessed results. Students with the highest results left only one question unanswered, suggesting their full engagement and understanding of the subject content. Students with scores between 30% and 60% and 1-3 unanswered questions require additional support and improvement in focusing skills and subject comprehension. These results highlighted potential issues with students' time management and insufficient acquired knowledge.

Therefore, the analysis of students' overall performance indicated that 57% of students' responses were correct and 43% were incorrect, confirming a moderate understanding of the subject-content terminological materials and that the applied integrated contextual methodology was effective in subject-content terminology acquisition. Following the results, clear feedback was delivered to the students by reviewing LSP and terminological concepts

and answering their challenging questions to ensure further understanding and refine the required vocabulary skills. These findings are significant as they support the research objectives of the study – to evaluate the effectiveness of the proposed integrated contextual learning approach in meeting learners' needs in understanding and using specialized terminology.

4.3. Students' Perceptions

The main issue arose as to the level to which the experimental approach is effectively implemented in Terminology Studies training. The main contextual technologies, such as discussions, problem-based tasks, role-playing, and online games, were used. The effectiveness of the experiment was evaluated by conducting interviews with master's students. This interview aimed to identify the research results, namely, related to teaching professionally oriented terms through contextual tasks. Students were interviewed with four specific questions to determine the effectiveness of retaining subject-specific terminological vocabulary through a systematic contextual teaching approach. The questions aimed to gather their insights and challenges while learning with integrated contextual activities, and to solicit suggestions for further improvements in the proposed integrated contextual learning of subject-specific terms. Table 1 illustrates the detailed note-taking during the teaching sessions as interview results.

Table 1. Students' interview results.

Student answer	Research questions and student answers			
	1	2	3	4
	Do you think that integrated contextual activities help you in retaining subject-specific terminological vocabulary?	Which integrated contextual activities were the most effective for learning specialized terminological vocabulary?	What challenges did you face while trying to memorize subject-specific terms through integrated contextual activities?	How can contextual activities be improved to enhance your learning of specialized terminology?
Student 1	Yes	LSP text analysis, Contextual usage task, Role-playing	-	More real-life scenarios
Student 2	Yes	Contextual usage task, Role-playing	Initial understanding of certain terms	Additional visual aids
Student 3	Yes	Video discussion, Jigsaw puzzle, Contextual usage task	-	Peer feedback
Student 4	Yes	LSP text analysis, Jigsaw puzzle	Initial understanding of certain terms	More written practice
Student 5	Yes	Video discussion, Contextual usage task, Role-playing	-	More real-life scenarios, digital games, and quizzes
Student 6	Yes	Contextual usage task, Role-playing	-	More Real-life situations and cases
Student 7	Yes	Jigsaw puzzle, Contextual usage task	-	Peer feedback
Student 8	Yes	LSP text analysis, Jigsaw puzzle	Initial understanding of certain terms	More Real-life scenarios
Student 9	Yes	Video discussion, Role-playing, Jigsaw puzzle	-	More written practice
Student 10	Yes	Contextual usage task, LSP text analysis, Role-playing	-	More real-life scenarios, digital games, and quizzes

The interview data were examined thematically based on the four eliciting questions. All students reported that integrated contextual activities help them retain subject-content terminological vocabulary by emphasizing the benefits of the applied instruction. One student noted,

"The contextual tasks made the learning process more interactive and practice-oriented for me".

Another student indicated,

"I felt more confident in applying specialized terms in class discussions and practical tasks.

One more student stated,

"Subject terms became more practical for me by understanding their meaning and relevance".

The majority of respondents mentioned LSP text analysis, contextual usage tasks, role-playing, jigsaw puzzles, and video discussion tasks as the most productive for learning specialized terminological units.

However, three out of ten students faced a few challenges, for instance, one student's response is:

"I had difficulty understanding new terms while performing the first task, but after the video discussion in groups, it became easier to understand."

Another student noted:

It was difficult to understand completely new terms initially, but I understood them after practicing them in different examples during the training process.

One more struggling student answered:

"It was initially challenging to understand and memorize new terms in English, but they became more understandable in practice".

Furthermore, the majority of students agreed that expanding real-life scenarios with visual aids, peer feedback, quizzes, games, and written practice improved the proposed contextual methodological framework.

Based on our experimental study results, we propose that the most effective integrated contextual learning strategy is the role-playing task. It is the most efficient due to its dynamic practical application, active engagement, participation of each student, and enhancement of learners' cognitive-communicative abilities, leading to the development of their professional terminological competency. Hence, it is worth noting that this task would not be efficient without comprehensive practice facilitated by the previous assignments (Video discussion, Terminology Mind Map, LSP Text Analysis, Contextual usage task, and Jigsaw Group Puzzle). Consequently, we propose integrated contextual learning, which includes complex logical application of these tasks as effective terminological learning strategies for the development of students' subject-content terminological competency by fostering comprehensive and practical usage of LSP terminology.

Therefore, this confirms that effective development of students' terminological professional competency is carried out effectively by designing and suggesting a comprehensive, integrated, contextual learning approach for subject-specific interdisciplinary lexical teaching, including specialized text and video libraries with their specific foreign language professional culture, along with integrative tasks such as role-playing, jigsaw group puzzle, text analysis, and contextual usage tasks as a project. As a result, the overall feedback was positive, despite some challenges, such as the initial understanding of certain terms. Students struggled with the video discussion task at their initial stage of learning because of the initial introduction of new terms and the professional domains in which they are used. However, due to the subsequent logically structured tasks and frequent use of required terms, these terms became more familiar and effectively applied in practical contexts. Furthermore, it is essential to increase students' awareness of lexical acquisition and support their capacity to perform related activities (Teng & Zhang, 2021). Teachers need to be versatile to keep up with the rapid technological advances taking place in today's world. Technology has brought many changes to the field of education, transforming traditional teaching and learning processes into dynamic and interactive experiences (Abareta & Prudente, 2025). These changes should be utilized effectively and systematically in the learning process.

5. CONCLUSION

The contemporary education system in Kazakhstan recognizes the importance of specialized foreign languages, particularly professional terminological proficiency, emphasizing the development of students' subject-content

terminological competence for their future global competitiveness. Based on the results of national educational monitoring, several issues have been identified, including the limited effectiveness of teaching non-linguistic subjects in English, specifically regarding foreign subject-specific terminology. It is essential to improve the terminological learning materials, which will contribute to more effective vocabulary instruction.

This research study explored the learning requirements of students in subject-specific terminology acquisition at pre-professional and postgraduate levels and analyzed the effectiveness of the proposed comprehensive integrated contextual learning approach in meeting these needs. Using a mixed-methods design supports a more complete understanding of the efficiency of the integrated contextual instruction. Data were collected using quantitative needs analysis surveys to design adaptive instructional tasks related to various learner levels and qualitative interviews to investigate learners' perceptions of terminology learning. The research confirmed the hypothesis that the development of students' subject-specific terminological competence can be successfully achieved through a logically structured, contextually integrated approach. This approach suggests combining context-based and interactive strategies such as discussion, terminology mind map, LSP text analysis, contextual usage tasks, role-play, and jigsaw group puzzle. Additionally, the proposed systematic approach in teaching and learning can be used in the form of online quizzes and virtual or video discussions as digital supportive tools. The efficacy of this process was demonstrated through the analysis of the experimental instruction and students' interviews. This comprehensive, integrated, contextual learning approach acknowledges that complex issues or systems cannot always be fully understood using a single methodology, so it integrates diverse methods to produce a more holistic understanding. The proposed comprehensive, integrated, contextual learning approach is an innovative methodology in specialized terminology teaching.

6. RECOMMENDATIONS AND FURTHER IMPLICATIONS

The research study presents a systematic approach to teaching foreign LSP, suggesting that a well-structured contextual teaching and learning strategy could motivate learners to learn a professional foreign language by enhancing their professional language skills and subject-content terminological competency. Hence, according to the research study on teaching terminology through integrated contextual tasks, it was obvious that new terminological units should be presented as separate lexis, and then in isolated word phrases and separate sentences within subject-specific meaningful contexts. Thus, at the productive lesson stage, students should manage a communicative-cognitive task: working with the professional text content in the target language or collaboratively generating a text during the assigned task performance in pairs or groups. It is recommended to apply interactive and cooperative strategies and techniques. For instance, video-based tasks for vocabulary prediction, visual tools, Jigsaw reading and matching for contextual interpretations of terms, and task-based role-plays for authentic projects. Moreover, integrating digital tools (online games or quizzes) should support subject comprehension, terminological literacy, and self-assessment of students.

The next step should be to adapt this complex learning model in subject-content terminology teaching for bachelor's and secondary school students at professional and pre-professional levels, considering and improving all the received data. A crucial aspect of developing subject-content terminological competency is the knowledge acquired by learners through the analysis, synthesis, systematization, and organization of information during cognitive activities in lessons. The process of lexical competency development begins with expanding the learners' vocabulary of specialized terms. The next stage involves improving lexical knowledge, which is integrated through actions developed during the learner's speech activities. This process of forming subject-content terminological units should be conducted in stages, as detailed in our research paper, starting with mastering the visual (phonetic and semantic) forms of lexical items, combining them with other lexical items in sentences, integrating them into specialized texts, and performing speech tasks in diverse specialized contexts. This logically sequenced method for acquiring a specific terminological vocabulary is grounded in an integrated contextual approach. The research

assumes that the proposed methodological approach is adaptable to different language backgrounds. This study emphasizes the value of a comprehensively integrated methodology in improving specialized vocabulary development at various educational stages.

Overall, by addressing these recommendations, teachers, students, and curriculum and textbook designers can enhance proficiency in a subject-specific foreign language and explore the benefits offered by the integrated contextual approach in terminology teaching and learning practices at different educational stages.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
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REFERENCES

Abareta, J. O., & Prudente, M. S. (2025). Digital technology tools (DTT) in science teaching: Teachers' perceptions of usage and effectiveness. *International Journal of Learning, Teaching and Educational Research, 24*(1), 443-463. https://doi.org/10.26803/ijlter.24.1.22

Al-Homoud, F. (2024). The impact of vocabulary clustering on facilitating vocabulary development among Saudi EFL learners. *Theory & Practice in Language Studies, 14*(11), 3623-3629. https://doi.org/10.17507/tpls.1411.32

Alfuhaid, S. R. (2023). A quantitative study in using digital games to enhance the vocabulary level of Saudi male secondary school students. *English Language Teaching, 16*(3), 16-22. https://doi.org/10.5539/elt.v16n3p16

Basturkmen, H. (2010). Analysing needs. In Developing courses in English for specific purposes. In (pp. 17-35). London: Palgrave Macmillan.

Boeru, M. (2024). Exploring the use of AI tools in teaching English for specific purposes (ESP). *Scientific Bulletin'Mircea cel Batran'Naval Academy, 27*(1), 91-96.

Cárdenas-Moncada, C., Véliz-Campos, M., & Véliz, L. (2024). Game-based student response systems. The impact of Kahoot in a Chilean vocational higher education EFL classroom. *Computer-Assisted Language Learning Electronic Journal, 21*(1), 64–78.

Castellano-Risco, I. (2018). Receptive vocabulary and learning strategies in secondary school CLIL and non-CLIL learners. *Onomázein*(40), 28-48. https://doi.org/10.7764/onomazein.40.02

Chairinkam, J., & Yawiloeng, R. (2024). The use of scaffolding strategies to enhance the writing development of EFL students. *Theory and Practice in Language Studies, 14*(9), 2996-3007. https://doi.org/10.17507/tpls.1409.35

Chow, B. W.-Y., Hui, A. N.-N., Li, Z., & Dong, Y. (2021). Dialogic teaching in English-as-a-second-language classroom: Its effects on first graders with different levels of vocabulary knowledge. *Language Teaching Research, 27*(6), 1408-1430. https://doi.org/10.1177/1362168820981399

D'Northwood, G., & Rattray, J. (2025). What is this thing called critical thinking? Perspectives from business school academics. *Innovations in Education and Teaching International, 62*(4), 1363-1376. https://doi.org/10.1080/14703297.2024.2422310

Duman, S. (2024). *Education reforms in Kazakhstan: International Integration and Nationalization Efforts. In Akgün, B., Alpaydın, Y. (Eds.), Global Agendas and Education Reforms. Maarif Global Education Series*. Singapore: Palgrave Macmillan.

Faber, P. (2003). Terminological competence and enhanced knowledge acquisition. *Research in Language, 1*(1), 95–117.

Groothuijsen, S. E. A., Bronkhorst, L. H., Prins, G. T., & Kuiper, W. (2023). Designing for impact? Identifying characteristics of teacher-researchers' practice-oriented educational research studies with impact. *International Journal of Educational Research Open, 4*, 100224. https://doi.org/10.1016/j.ijedro.2022.100224

Halliday, M. A. K., McIntosh, A., & Strevens, P. (1964). *The linguistic sciences and language teaching*. London, UK: Longman.

Hutchinson, T., & Waters, A. (1987). *English for specific purposes: A learning-centred approach*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511733031

Ibrahim, M. O., & Alani, N. N. (2022). English for specific purposes: An overview: Definitions, characteristics and development. *English Language Teaching*, *15*(12), 28-36. https://doi.org/10.5539/elt.v15n12p28

Iver, J. (2005). *English for specific purposes: Theory and practice*. London: Routledge.

Johnson, E. B. (2002). *Contextual teaching and learning: What it is and why it is here to stay*. Thousand Oaks, CA: Corwin Press.

Khomutova, T. N. (2005). *English for specific purposes*. Moscow: Higher School of Economics Publishing House.

Kingma, T., Smits, A., Jaarsma, D., & Voogt, J. (2024). What need-supportive and need-thwarting teaching behaviors do university teachers use in their honors classes? An observational study. *International Journal of Educational Research Open*, *6*, 100331. https://doi.org/10.1016/j.ijedro.2024.100331

Klaharn, R., Chaleoykitti, S., & Chakchaichon, C. (2025). Developing an active learning model using problem-based learning to enhance the 21st century skills. *Humanities and Social Sciences Letters*, *13*(1), 187-199. https://doi.org/10.18488/73.v13i1.4046

Laadem, M., & Mallahi, H. (2019). Multimodal pedagogies in teaching English for specific purposes in higher education: Perceptions, challenges and strategies. *International Journal on Studies in Education*, *1*(1), 33-38.

Langelaan, B. N., Gaikhorst, L., Smets, W., & Oostdam, R. J. (2024). Differentiating instruction: Understanding the key elements for successful teacher preparation and development. *Teaching and Teacher Education*, *140*, 104464. https://doi.org/10.1016/j.tate.2023.104464

Long, M. H. (2018). Needs analysis. In C. A. Chapelle (Ed.), The encyclopedia of applied linguistics. In (pp. 1–8). Hoboken, NJ: Wiley-Blackwell. https://doi.org/10.1002/9781405198431.wbeal0860.pub2

Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation* (4th ed.). San Francisco, CA: Jossey-Bass.

Meyer, O., Coyle, D., Halbach, A., Schuck, K., & Ting, T. (2015). A pluriliteracies approach to content and language integrated learning–mapping learner progressions in knowledge construction and meaning-making. *Language, Culture and Curriculum*, *28*(1), 41-57. https://doi.org/10.1080/07908318.2014.1000924

Minalla, A. A. (2024). Enhancing young EFL learners' vocabulary learning through contextualizing animated videos. *Theory and Practice in Language Studies*, *14*(2), 578–586. https://doi.org/10.17507/tpls.1402.31

Nation, I. S. P. (2013). *Learning words from context. In Learning Vocabulary in Another Language* (pp. 348–388). Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139858656.010

Nurgaliyeva, S., Zhumabayeva, A., Kulgildinova, T., Abildina, S., Kurbonova, B., Umirbekova, A., & Bolatov, A. (2025). Evaluating student satisfaction of terminological apparatus with natural and mathematical textbooks in Kazakhstani schools. *Cogent Education*, *12*(1), 2468563. https://doi.org/10.1080/2331186X.2025.2468563

Pratiwi, K. H., Situmorang, R., & Iriani, T. (2024). The potential of interactive multimedia with contextual teaching and learning approaches in mathematics learning: A systematic literature review. *Jurnal EDUCATIO: Jurnal Pendidikan Indonesia*, *10*(2), 69-77. https://doi.org/10.29210/1202424526

Raub, L. A., Shukor, N. A., Arshad, M. Y., & Rosli, M. S. (2015). An integrated model to implement contextual learning with virtual learning environment for promoting higher order thinking skills in Malaysian secondary schools. *International Education Studies*, *8*(13), 41-46. https://doi.org/10.5539/ies.v8n13p41

Sager, J. (1990). *A practical course in terminology processing*. Amsterdam, Netherlands: John Benjamins Publishing Company.

Silva, M. M., & Albuquerque, A. (2016). TerminoCLIL: A terminology-based approach to CLIL. *Lingue Culture Mediazioni - Languages Cultures Mediation (LCM)*, *3*(1), 177-189.

Solijanov, S. (2021). Teaching and learning terminology in secondary education through language. *European Journal of Research Development and Sustainability*, *2*(3), 51–52.

Strevens, P. (1977). *New orientations in the teaching of English*. Oxford, UK: Oxford University Press.

Suryawati, E., & Osman, K. (2018). Contextual learning: Innovative approach towards the development of students' scientific attitude and natural science performance. *Eurasia Journal of Mathematics, Science and Technology Education, 14*(1), 61-76. https://doi.org/10.12973/ejmste/79329

Teng, M. F., & Zhang, D. (2021). Task-induced involvement load, vocabulary learning in a foreign language, and their association with metacognition. *Language Teaching Research, 28*(2), 531-555. https://doi.org/10.1177/13621688211008798

Tenieshvili, A. (2024). The role of culture and ESP in professional development of specialists. *Journal of Teaching English for Specific and Academic Purposes, 12*(3), 661-676. https://doi.org/10.22190/JTESAP240917050T

Trace, J., Hudson, T., & Brown, J. D. (2015). An overview of language for specific purposes. In N. Sonda & A. Krause (Eds.), Developing courses in languages for specific purposes. In (pp. 1–23). Honolulu, HI: National Foreign Language Resource Center, University of Hawai'i at Mānoa.

Trim, J. L. M. (1982). Considerations in the formation of a language policy: A European perspective. *Australian Review of Applied Linguistics, 5*(2), 1-12. https://doi.org/10.1075/aral.5.2.01tri

Wells, J. C. (1982). *Accents of English.* Cambridge: Cambridge University Press.

Widodo, H. P. (2017). Approaches to needs analysis in ESP curriculum development. *The European Journal of Applied Linguistics and TEFL, 6*(1), 127-146.