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DEVELOPING PROFESSIONAL TERMINOLOGY THROUGH DIGITAL GLOSSARY PROJECTS: A CASE OF KAZAKH-SPEAKING STUDENTS LEARNING RUSSIAN AND ENGLISH

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Abstract. The article discusses the pedagogical potential of digital terminology glossaries in multilingual education, with a focus on Kazakh-speaking students studying Russian and English as foreign languages. The purpose of this study is to identify the effectiveness of using digital terminological glossaries in the process of forming professional lexical competence among Kazakh-speaking students studying Russian and English as non-native languages in the framework of trilingual education. The theoretical basis was provided by works in the field of multilingual education, digital didactics, lexicography, and project-based learning. The empirical part was implemented on the basis of Aktobe Regional University named after K. Zhubanov, where 87 1st-year students in six specialties participated: «Choreography», «Art Education», «Physics», «Computer Engineering», «Chemistry» and «Ecology». Combined methods were used: diagnostic testing, questionnaires, and content analysis of digital glossaries created as part of project assignments. The novelty of the research lies in the substantiation of the digital glossary as a multifunctional tool that promotes the integration of language, professional and digital training of students. The results are of interest to teachers and curriculum developers in a multilingual higher education environment.

Key words: digital glossary, terminological competence, higher multilingual education, project-based learning, digital didactics.

Introduction

Modern educational systems are strongly influenced by the processes of global digitalization, which are not only transforming the forms of presenting educational material, but also changing the principles of knowledge acquisition, especially in a multilingual environment. In this context, particular attention is paid to teaching professional foreign terminology, for example, Russian and English for students with a different native language (in particular, Kazakh), which is especially relevant for countries with an official policy of trilingualism, such as the Republic of Kazakhstan [1].

The formation of a trilingual educational model in Kazakhstan largely has its roots in the Soviet period, when the widespread use of Russian as a language of interethnic communication became an important state priority. The Russian language gained the status of the dominant one in education, science and the administrative sphere, which laid the foundation for sustainable institutional bilingualism in the post-Soviet republics. The legacy of Soviet language policy has created conditions for the development of functional bilingualism, but it has also created challenges related to language competition, unequal access to high-quality language education, and assimilation pressures against native languages [2]. In the context of Kazakhstan's independence and the introduction of a trilingualism policy, these historical and political prerequisites are gaining new importance, influencing students' perception and motivation to learn Russian and English.

In the context of the transformation of the Republic of Kazakhstan's educational policy, which is focused on implementing a trilingual education model, the issue of effectively developing professional language competence in students whose language of instruction is Kazakh has become particularly important. The modern sociolinguistic context requires university graduates to be fluent

in Kazakh, Russian, and English, which is reflected both in regulatory documents and in the structure of working curricula at higher education institutions, in particular, the discipline «Russian Language» (for students studying in Kazakh) and «English» as a compulsory foreign language are included in the invariant part of educational programs, which emphasizes their basic role in the training of specialists in any professional field. Theoretical understanding of these processes allows us to consider digital tools, including the creation of multilingual terminology glossaries, as a promising means of integrating language and professional training within a trilingual educational model.

Trilingualism in Kazakhstan is fixed at the legislative level. According to the Constitution of the Republic of Kazakhstan, «the Kazakh language is the state language» with the According to the Constitution of the Republic of Kazakhstan, «the Kazakh language is the state language» with the compulsory official use of Russian along with Kazakh [3]. An important regulatory reinforcement was the initiative «Cultural Project» «Trinity of Languages», officially launched in 2007 with the aim of ensuring a high level of proficiency in Kazakh (state language), Russian (interethnic language) and English (language of global integration). As we can see, state regulation is aimed at developing citizens who are capable of working effectively in a trilingual educational and professional environment. (State Program for the Development of Education and Science of the Republic of Kazakhstan for 2020–2025).

Within the framework of state standards for higher education, the subjects «Russian Language» (for students whose language of training is Kazakh) and «English Language» (as a compulsory foreign language) are included in the invariant part of the curriculum. This means that they are compulsory for all specialties, regardless of the profile of training. This approach ensures the systematic development of language skills and professional terminology competence:

- Russian language: develops the ability to read professional texts, write academic papers, and communicate in a bilingual environment.

- English language: provides access to international resources, scientific articles, and the global professional environment. (State Compulsory Educational Standard of Higher Education of the Republic of Kazakhstan) [4, 318].

Integrating two non-native languages requires methods that take into account students' multilingual identities. According to research, it is important to use discourse- and context-oriented methods (e.g., terminology projects) for sustainable vocabulary acquisition; to take into account limitations such as students' different linguistic backgrounds and digital literacy; and to use digital technologies as a tool for activating learning and motivation [5]. The pedagogical integration of Russian and English into the educational process improves the quality of professional terminology formation and develops multimodal thinking skills [6].

Taking into account the educational policy environment of Kazakhstan and the approved structure of curricula, the use of digital glossaries becomes justified. They promote meaningful memorization of terms through creation, translation and contextual presentation; enhance multilingual (Kazakh–Russian–English) transcoding of information, which corresponds to the tasks of trilingual education, and are an invariant tool that allows for systematic and consistent integration of digital content into mandatory disciplines [7].

The terminological glossary is not just a dictionary of special concepts, but also the most important tool for the formation of professional linguistic and cognitive competence of students in a multilingual educational environment. As noted by A.V. Kuzmina, in a technical university, foreign language proficiency should combine both communication skills and the ability to comprehend professional information in the language being studied [8]. Compiling glossaries allows students to analyze and structure terminological vocabulary, learn it in context, and develop metacognitive strategies for working with language material. Terminological work based on a synthesis of cognitive and communicative approaches contributes not only to memorizing vocabulary, but also to its active use in speech, including when solving professionally oriented tasks.

In the context of the digital transformation of education, the importance of terminology glossaries is growing significantly, especially when they are created in an interactive form using

electronic platforms [9]. Such digital glossaries are becoming an integral part of individual and group learning products developed as part of thematic projects, case studies, and practice-oriented assignments. Students not only learn vocabulary, but also construct content that can be used in educational or professional environments: they visualize terms, create hyperlinks, and apply multimodal formats for presenting information. This enhances student engagement, develops project and research skills, and shapes students' responsibility for results as part of the digital academic culture [10].

Thus, the theoretical foundations discussed confirm the relevance of integrating terminology glossaries into the educational process as an effective means of developing professional lexical and communicative competence in a trilingual educational environment. The use of glossaries in digital format is particularly valuable, as it meets modern requirements for the digitization of education and encourages students to independently master professional language material. Taking into account the methodological and pedagogical aspects outlined above, we conducted an empirical study aimed at assessing the effectiveness of project activities for creating digital terminology glossaries among Kazakh-speaking students studying Russian and English as foreign languages. The following section presents the materials, methods, and results of this study [11]. The subject of active scientific discussion is the development of terminological competence as part of the professional language training of students studying «non-linguistic» specialties [12]. According to a number of studies, mastering professional vocabulary requires not only knowledge of lexical units, but also a deep understanding of their context, logical and semantic connections, and pragmatic functions in the professional sphere [13].

Most existing approaches focus on traditional methods-taking notes, reading texts, memorizing terms -, which, as empirical data has shown, are not always effective in bilingual or trilingual environments [14]. At the same time, the issue of actively involving students in the independent formation of terminology using digital tools is increasingly being raised [15]. However, a critical analysis of the literature shows that:

- there is no systematic methodology for creating digital glossaries within the framework of professional language training;
- the specifics of Kazakh-speaking students' acquisition of terms in the context of two non-native languages (Russian and English) have not been studied;
- insufficient attention is paid to project activities as a method of developing both language and digital competence simultaneously.

As we can see, there is a methodological and empirical gap in scientific knowledge regarding the use of digital glossaries as a tool for developing terminological competence in students whose native language is Kazakh. It is fundamentally important to study not only the effectiveness of such practice, but also the students' own perception of the process of compiling and using glossaries as a means of meaningful and contextualized terminology acquisition.

In this regard, the following research questions are raised in the framework of this study:

How effective is the method of creating a digital glossary for the development of professional terminology among Kazakh-speaking students?

What difficulties do students have in mastering terminology when learning non-native languages?

What is the role of project and digital activities in increasing motivation and independence in learning professional vocabulary?

The answers to these questions will help fill the existing theoretical and methodological gap and suggest a practical model for teaching professional terminology based on a digital glossary.

In this paper, we present the results of a pedagogical study on the use of a digital glossary alone in the formation of specialized foreign terminology among students studying non-linguistic subjects.

Purpose and objectives of the study**.** This study was conducted as an action research project aimed at determining the effectiveness of digital glossaries created by students as a means of developing professional terminology based on the study of non-native and foreign languages

(Russian and English) among students studying in Kazakh.

The aim of the study is to experimentally substantiate the effectiveness of project activities aimed at creating digital glossaries as a means of developing professional terminological competence among Kazakh-speaking students studying Russian and English.

The objectives are to study the impact of project activities aimed at creating digital glossaries on the acquisition of professional vocabulary in Russian and English; to assess student engagement, comprehension, and retention of terms; to identify the difficulties students encounter when learning terminology in two non-native languages; to develop methodological recommendations for integrating glossary work into multilingual educational programs.

Materials and methods of research

The study is based on the concepts of multilingual education and foreign language teaching in the context of the digitalization of higher education.

The empirical part of the study was conducted at the K. Zhubanov Aktobe Regional University (Republic of Kazakhstan) during the 2024–2025 academic years. First-year students from the following educational programs participated in the study:

a) in the discipline «Russian as a Foreign Language»:

- Choreography;
- Art education;
- Physics;
- Computer engineering;

b) in the discipline «English language»:

- Chemistry;
- Ecology.

The total number of participants was 87: 47 students studied Russian as a foreign language, and 40 studied English.

The study used a mixed method (quantitative + qualitative), combining qualitative and quantitative approaches in order to obtain a comprehensive picture of the pedagogical effectiveness of the implemented method.

Qualitative methods included observing students' classroom work during the glossary compilation process; semi-structured interviews with participants (n = 12) to identify subjective experiences, difficulties, and motivation; content analysis of terminology cards created by students, assessing the completeness, accuracy, and consistency of definitions.

Quantitative methods included pre- and post-experiment testing to determine the level of term acquisition; a Likert scale questionnaire (5-point scale) to assess motivation, engagement, and perception of the digital form of work; descriptive and comparative statistics (t-test for related samples, frequency analysis) using SPSS 26.0.

The toolkit was pre-tested by experts and piloted in a pilot group. All quantitative data were analyzed with a significance level of $p < 0.05$.

The main form of pedagogical intervention was the inclusion of a project to create a digital glossary in the course. Students completed the following steps:

1. Selection of 20–30 key terms on the topic;
2. Search for definitions and bilingual translation (Kazakh-Russian / Kazakh-English);
3. Compiling definitions and (optionally) visual design;
4. Discussion and mutual expert evaluation in small groups;
5. Final presentation of the glossary and reflection.

Digital tools such as Google Sheets, Quizlet, Notion, and Canva were used for the work. The main pedagogical task was to develop autonomous mastery of terminology, semantic analysis skills, and digital literacy.

The following limitations should be noted: the study was conducted within a single university, which limits the possibility of generalizing the results; the short-term nature of the project (one academic year) does not allow for an assessment of the long-term effect; and the varying levels of digital literacy among students may have affected the quality and depth of the assignments.

Despite these limitations, the comprehensive combination of quantitative and qualitative methods made it possible to obtain reliable data and identify the potential for using digital glossaries in multilingual education.

Results and its discussion

The use of a digital glossary in teaching foreign languages - Russian and English - is justified by the need to develop a solid and meaningful terminological base for students, capable of ensuring not only linguistic but also professional and communicative competence. In a trilingual educational environment, where Russian and English are used as academic and professional means of communication, it is essential to master the terminology applicable to the context of one's future profession.

For Russian as a non-native language, the digital glossary acts as an intermediary between basic language proficiency and specialized speech activity. Kazakh-speaking students learning Russian as a language of professional communication need to rely on structured and visually accessible vocabulary formats. The digital glossary allows them to systematize vocabulary by linking it to context, definitions, synonyms, antonyms, and thematic blocks. Moreover, the ability to integrate multimodal resources (images, audio, and hyperlinks) promotes multichannel perception and reinforcement of terms. Thus, the glossary serves not only as a memory aid, but also as a tool for semantic analysis and the construction of a conceptual system in Russian.

For English as a foreign language, a digital glossary is especially important in conditions of limited time to master the language and the need for a quick transition to professionally oriented texts. Mastering English terminology requires students not only to know the equivalents, but also to understand the context, grammatical structures, collocations, and genre features of English-language professional discourse. The use of digital glossaries supplemented with the function of contextualization (for example, through collocations, right and left extensions, thematic corpus), allows you to bring learning closer to the conditions of real language use. This is especially relevant in the context of the active digitalization of educational processes, when English is considered not only as an academic subject, but also as a channel for obtaining scientific information, participating in international projects and communicating in a global professional environment.

Common to both languages is that the digital glossary forms students' skills of autonomous learning, develops digital and language literacy, and serves as a platform for project and research activities. It contributes to the formation of metasubject skills: critical thinking, analysis and selection of information, its systematization and presentation in educational and scientific form. Therefore, a digital glossary is justified not only from the point of view of lexical preparation, but also as a means of implementing modern pedagogical principles: interdisciplinarity, digitalization, contextuality, and an activity-based approach to learning.

Table 1. Structure of the digital glossary

The term (in the language being studied)	The basic concept in Russian or English.
Translation into native language (Kazakh)	Provides interlingual communication and removes semantic ambiguity.
Definition (in the language being studied)	A short academic explanation of the term, adapted to the level of students
Contextual example	A sentence or fragment of a professional text demonstrating the use of
Collocations / typical combinations	The most frequent word combinations with this term
Visualization	An image, diagram, screenshot, or video clip illustrating the concept
Additional connections	Synonyms, antonyms, or related terms (hyperlinks within the glossary)
Student comment	A brief explanation or interpretation in your own words (element of reflection)

Let us look at two examples that demonstrate the effective use of a digital glossary in practical work with students.

Example 1. As part of the course «Russian language» (as a foreign language), conducted for 1st-year students of the specialties «Physics» and «Choreography» of Aktobe Regional University

named after K. Zhubanov, a task was implemented to create a digital thematic glossary in Google Tables. Each pair of students had to compile a mini-glossary of 20 terms related to their specialty (for example: amplitude, acceleration, gravity — for physicists; pirouette, plastic, choreographic combination — for students of creative fields). Students found a definition in Russian, a translation from Kazakh, selected a synonym, made up a sentence, and attached an illustration or video fragment from YouTube to visually reinforce the term. Such work provided meaningful memorization, activation of vocabulary in the context, and increased motivation due to the personalization of content. The teacher evaluated the accuracy, completeness, originality and digital design of the glossary, which turned the assignment into a full-fledged educational product suitable for reuse.

Example 2. Within the framework of the «English Language» discipline, 1st year students of the «Ecology» specialty had a similar task performed on the Quizlet platform, where students compiled term cards using the following structure: an English concept (for example, biodiversity, carbon footprint, pollution), a definition in English, a translation into Kazakh, and an example of usage. The teacher required the use of authentic sources (articles from BBC Earth, National Geographic, and UNEP environmental reports), which made it possible to link the vocabulary being studied with real scientific and applied texts. In the next stage, the cards were used to prepare for mini-presentations and oral debates, which gave students the opportunity to practice the terms in productive speech activities.

Both practices have shown that a digital glossary promotes autonomous learning and shifts the focus from passive perception of terms to their productive use; develops skills in searching for, selecting, critically evaluating, and visualizing information; strengthens the connection between the content of the professional discipline and the language component; allows the teacher to track individual progress, correct mistakes, and create a unified educational digital space for the group.

In accordance with the stated objective and research questions, the following results were obtained during the pedagogical experiment, reflecting the impact of project activities aimed at creating digital glossaries on the development of professional terminology among Kazakh-speaking students studying Russian and English.

A comparative analysis of the initial and final tests showed positive dynamics in the level of mastery of professional terminology:

Table 2. Comparative analysis of initial and final testing

Discipline	Number of students	Average score before (%)	Average score after (%)	The difference	p-value
Russian as a foreign language	47	52.3%	78.6%	+26.3%	$p < 0.01$
English	40	48.7%	75.2%	+26.5%	$p < 0.01$

A comparative analysis of the entrance and final tests indicates not only a quantitative increase in results, but also qualitative changes in the nature of terminology assimilation. The increase was 26.3 percentage points in Russian and 26.5 percentage points in English, which, with a statistical significance of $p < 0.01$, confirms the sustained effect of pedagogical intervention. The initial indicators were at the level of functional understanding (about 50%), corresponding to receptive knowledge of terms, while the final values (75-80%) reflect the transition to productive mastery - the ability to apply vocabulary in a professional context. The almost identical dynamics in the two languages, despite their different communicative status, indicates the determining role of the type of educational activity: students did not memorize the terms, but constructed their meaning through translation, contextualization and visualization. This ensured the transition from declarative knowledge to operational use. A more pronounced effect in the English segment, where the starting level was lower, confirms that the method is particularly effective with a high cognitive complexity of the material. Thus, the digital glossary was not an auxiliary tool, but a mechanism for the

transformation of educational activities and the formation of terminological competence as an integral cognitive system.

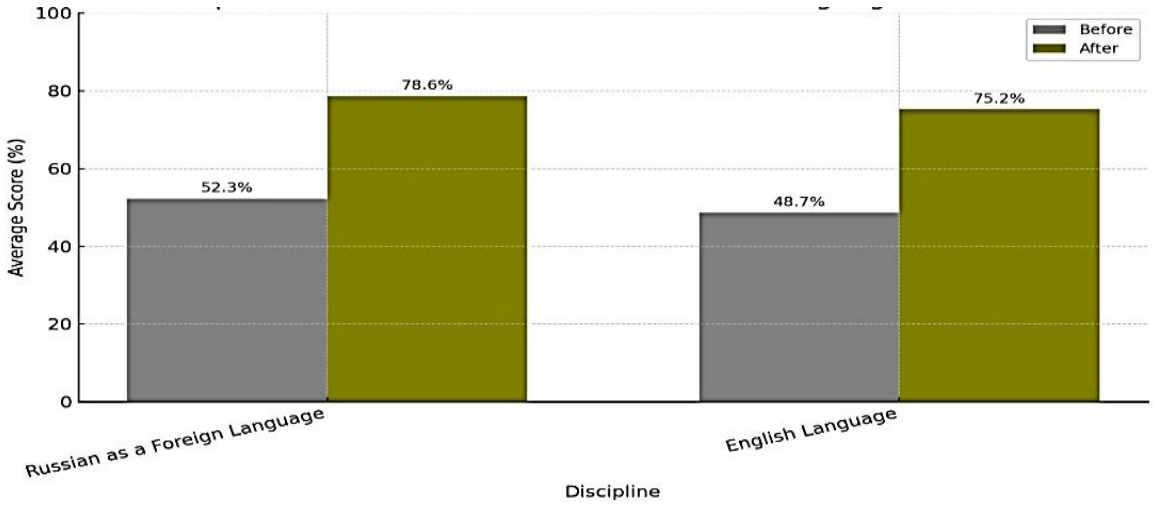

Figure 1. Comparison of Performance Before and After Using Digital Glossaries

Figure 1 illustrates the distribution of indicators after the introduction of digital glossaries and confirms the steady positive dynamics of learning outcomes. There is a marked shift from the basic level of mastering terms to productive mastery: most of the meanings are concentrated in the upper range, which reflects an increase in the accuracy of usage and a meaningful understanding of terminology. Visually, the data demonstrate the uniformity of the effect among different groups of students, which indicates the universality of the applied methodology and its independence from the initial level of language training. Thus, the figure confirms that the digital glossary contributes not only to the quantitative growth of indicators, but also to the stabilization of the quality of terminological competence.

At the end of the project, students filled out a questionnaire on a 5-point scale, where they assessed their motivation, the convenience of the method, and their perception of the terminology work:

Table 3. Results of the student survey

Indicator	Average value
Increased interest in the subject	4.4
Convenience of the digital format	4.6
Confidence in the use of terminology	4.2
Engagement in the learning process	4.5
Desire to use the method in the future	4.7

These tables reflect students' subjective assessment of the effectiveness of using digital terminological glossaries in the process of learning Russian and English as non-native languages. The highest average value is observed in the indicator «Desire to use the method in the future» (4.7 points out of 5), which indicates a high degree of acceptance and positive attitude of students towards this method. Such parameters as «Convenience of the digital format» (4.6) and «Involvement in the learning process» (4.5) were almost as highly appreciated, which indicates the successful integration of digital tools into the educational environment and their stimulating effect on the learning activity of students.

The indicators «Increased interest in the subject» (4.4) and «Confidence in the use of terms» (4.2) also have high values, but are slightly lower than the others, which may indicate the presence of certain difficulties in mastering new vocabulary or the need for further support from the teacher at the stage of the method implementation. In general, all values exceed 4.0,

which suggests a positive perception of the digital glossary methodology by students and its potential effectiveness in the context of trilingual education.

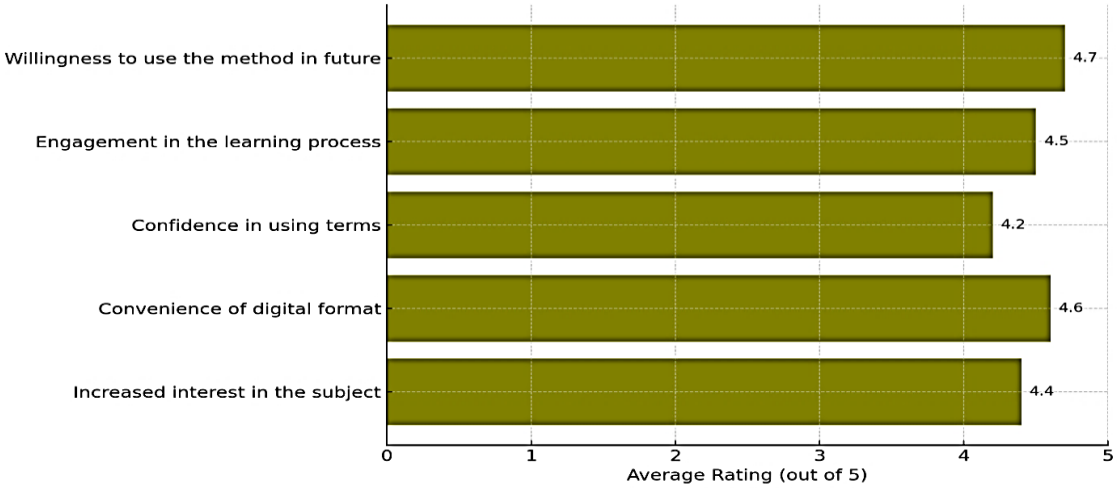

Figure 2. Students' Evaluation of Digital Glossary Use

The content analysis of the created glossaries allowed us to identify the following positive aspects:

1. The accuracy of the terms (in 86% of cases) corresponded to academic and professional standards.

2. Contextualization of terms through examples, visualizations, and parallel translation occurred in 72% of the papers.

3. 65% of the students demonstrated creativity and independence in presenting the material.

Special attention should be paid to the positive impact of group and pair work on the development of communicative competence and cooperation skills.

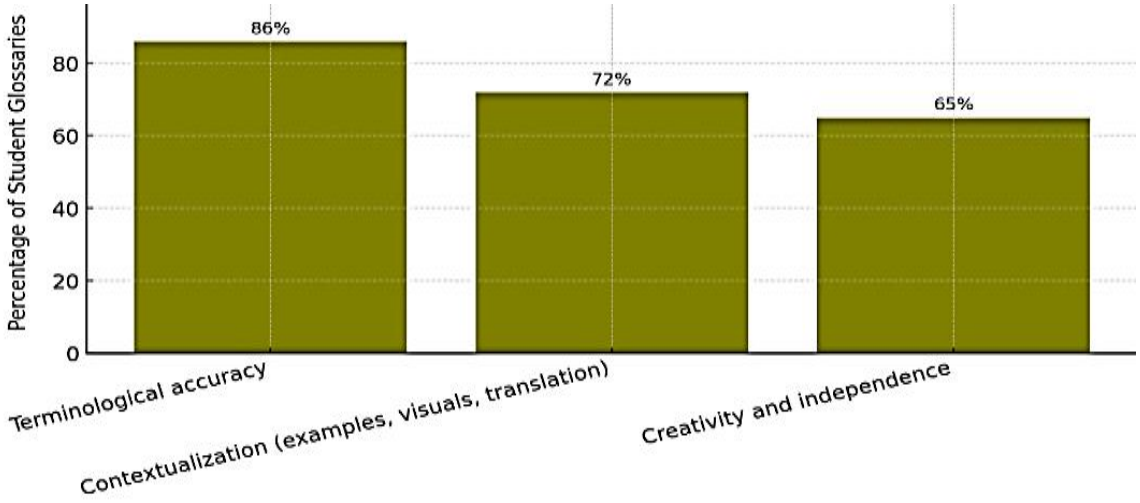

Figure 3. Content Analysis of Student-Created Digital Glossaries

Figure 3 reflects the results of the content analysis of the glossaries created by students and shows that the largest proportion of works is characterized by high accuracy of terms (86%), which indicates a correct understanding of the conceptual framework. Contextualization through examples, visualizations, and translation is present in 72% of cases, indicating a transition from simple reproduction to meaningful application. A creative and independent approach was shown in 65% of the papers, which confirms the involvement of students in productive activities. In general, the figure demonstrates that the use of digital

glossaries forms not only knowledge of terms, but also the ability to work with them in a professional context.

Despite the positive results, the following difficulties were identified during the project:

Table 4. Identified difficulties and ways to solve them

Difficulties	Decision
The problem of translating specialized terms without direct analogues in the Kazakh language	1. To solve this problem, it is necessary to include explanatory dictionaries and glossaries in the course, developed by the teacher taking into account the specifics of the specialty and common terms. 2. The use of descriptive translation strategies is recommended, as well as the search for contextual analogues based on real texts (for example, from peer-reviewed journals or specialized websites). 3. Introduce an element of collective discussion of controversial terms into the tasks, followed by the development of variable interpretations in the glossary.
Insufficient language base of students, especially in the English segment	1. It is necessary to provide for the division of tasks by levels of language training (differentiated approach) - for example, a basic and advanced glossary. 2. Strengthen support for students with a low level of language proficiency through language templates, model flashcards and video instructions. 3. Organize a preliminary vocabulary-oriented warm—up before completing the project work, with an emphasis on reading and analyzing texts in the specialty.
Different levels of proficiency in digital tools	1. Include a short training module (online guide, video, systematic instructions) on using glossary creation platforms (Google Sheets, Notion, Quizlet, etc.). 2. Provide for the possibility of choosing the glossary format depending on the student's digital competence (for example, an Excel spreadsheet for beginners, Notion for advanced students). 3. Encourage work in pairs, where one of the students can act as a technical assistant, contributing to the development of cooperation skills and digital mutual assistance.

These difficulties made it possible to clarify the requirements for methodological support of the project and to develop proposals for the individualization of tasks.

The results obtained make it possible to consistently answer the research questions posed.

1. The effectiveness of the digital glossary method: The experiment confirmed the high effectiveness of the method: the increase in indicators amounted to more than 26 percentage points in both disciplines with a statistical significance of $p < 0.01$. At the same time, it is important not only to improve the quantity, but also the qualitative transition from receptive knowledge of terms to productive use. Similar dynamics in Russian and English show that effectiveness is determined not by the type of language, but by the nature of learning activities — the construction of meaning through translation, contextualization and visualization. Therefore, the digital glossary acts as a mechanism for the formation of terminological competence, and not just a means of memorization.

2. Difficulties in mastering terminology: The analysis of observations, interviews and content analysis revealed several persistent problems:

– lack of direct equivalents of terms in the Kazakh language, requiring descriptive translation;

– insufficient language base, especially in the English segment;

– different levels of proficiency in digital tools;

– the tendency of students at the initial stage to perceive the term as a translation, rather than as a concept.

These difficulties show that the main difficulty lies not in memorizing a word, but in forming a conceptual structure in a non-native language.

3. The role of project and digital activities: Questionnaires and behavioral observations showed an increase in motivation, engagement and independence. Project work has changed the nature of educational activity: the student has become not a consumer, but a creator of educational content. The digital environment provided visualization, multi-channel perception and the possibility of teamwork, which increased internal motivation. The self-construction of the glossary facilitated the transition from completing the assignment to solving a professionally oriented task.

The combination of quantitative and qualitative methods allowed us to obtain complementary data: testing revealed an increase in knowledge, questionnaires revealed changes in motivation, and content analysis revealed the depth of assimilation of terminology. Observation and interviews confirmed the transformation of learning activities and revealed the real difficulties of students. Thus, the mixed research design showed that the effectiveness of the digital glossary is determined not by a single factor, but by a combination of cognitive, linguistic and activity changes.

The increase in the average score in the discipline «Russian as a foreign language» from 52.3% to 78.6% and in the «English language» from 48.7% to 75.2% ($p < 0.01$) indicates the practical effectiveness of the digital tool. These data correlate with the results of previous studies that emphasize the effectiveness of digital tools in language education [16, 221]. The student survey also confirmed a high appreciation of the convenience of the format and the desire to continue working with glossaries, which confirms the positive perception of this methodology by students.

The digital glossary proved to be especially important for Kazakh-speaking students who have to simultaneously learn two non-native languages in a professional context. Its use contributes to the removal of language barriers, the active assimilation of lexical and grammatical structures and the formation of the conceptual apparatus of the discipline. The use of visual components (illustrations, diagrams, and screenshots), translations, and examples in glossaries contributes to a better understanding of the meanings of terms, and the project format of work helps to develop skills in analyzing, summarizing, and independently searching for information.

Conclusion

The conducted research has confirmed the effectiveness of using digital terminological glossaries as a tool for the formation of professional vocabulary among students with Kazakh language of instruction, studying Russian and English in the context of trilingual education. The aim of the study is to identify the impact of the digital glossary on lexical and communicative competence was achieved at both the theoretical and empirical levels. A comparison of diagnostic results before and after the introduction of the digital tool showed a statistically significant improvement in terminology mastery, as well as an increase in student motivation, engagement, and confidence in speech practice. The practical significance of the study lies in the development of a methodological model that can be adapted in educational institutions implementing programs in several languages. The creation of digital glossaries contributes not only to language development, but also to the acquisition of digital and project skills necessary in the modern academic and professional environment.

For the discipline «Russian as a Foreign Language», digital glossaries have become an important tool for understanding and memorizing professionally significant terms in a new language environment. The use of cards with translations, visual examples, and explanations of terms in the students' native language (Kazakh) helped to reduce the language barrier, develop interlingual connections, and expand vocabulary. The increase in the average score from 52.3% to 78.6% indicates a significant improvement in academic performance, especially in a context

where Russian is studied as a second or third language in the educational trajectory.

As part of the English language course, working with glossaries enabled students to master the basics of academic and professional style, which is particularly important for natural science majors (Chemistry, Ecology). The increase in the average score from 48.7% to 75.2% demonstrated the effectiveness of combining terminology practice with project work. Students showed not only an interest in language, but also skills in independently selecting, structuring, and presenting information, which indicates the formation of linguistic autonomy.

The digital learning products developed by students in the form of personalized glossaries served not only as supporting material, but also as the result of conscious and creative activity. They made it possible to combine language training with elements of digital literacy, collaborative learning, and visual design. In addition, participation in project work strengthened students' academic engagement and reinforced their self-organization and teamwork skills.

The prospect of further research is to expand the sample by including students of other specialties and training levels, as well as the introduction of interdisciplinary cases involving teamwork on digital products. In the future, special attention should be paid to the formation of unified digital platforms that allow you to save and use the created glossaries as an element of an educational resource and terminological knowledge base.

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ЦИФРЛЫҚ ГЛОССАРИЙ ЖАСАУ ЖОБАЛАРЫ АРҚЫЛЫ КӘСІБИ ТЕРМИНОЛОГИЯНЫ ДАМЫТУ: ҚАЗАҚТІЛДІ СТУДЕНТТЕРДІҢ ОРЫС ЖӘНЕ АҒЫЛШЫН ТІЛІН ҮЙРЕНУІНІҢ ЖАҒДАЙЫ

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Аңдатпа. Мақалада көптілді білім берудегі цифрлық терминология глоссарийлерінің педагогикалық әлеуеті талқыланып, орыс және ағылшын тілдерін шет тілі ретінде оқитын қазақтілді студенттерге назар аударылады. Бұл зерттеудің мақсаты үш тілде білім беру аясында орыс және ағылшын тілдерін ана тілі ретінде оқитын қазақ тілді студенттердің кәсіби лексикалық құзыреттілігін қалыптастыру үдерісінде цифрлық терминологиялық глоссарийлерді қолданудың тиімділігін анықтау болып табылады. Теориялық негізін цифрлық дидактика, лексикография, жобалық оқыту тұжырымдамасы саласындағы еңбектер қамтамасыз етті. ([5; 6; 9] еңбектері зерттеудің теориялық негізін құрады). Эмпирикалық бөлім Қ.Жұбанов атындағы Ақтөбе өңірлік университетінің базасында жүзеге асырылды, оған «Хореография», «Көркемдік білім», «Физика», «Информатика», «Химия» және «Экология» алты мамандық бойынша 1 курстың 87 студенті қатысты. Біріктірілген әдістер қолданылды: диагностикалық тестілеу, сауалнамалар және жоба тапсырмаларының бөлігі ретінде жасалған цифрлық глоссарийлердің мазмұнын талдау. Зерттеудің жаңалығы – студенттердің тілдік, кәсіби және цифрлық даярлығын біріктіруге ықпал ететін көп функциялы құрал ретінде цифрлық глоссарийдің негізделуінде. Нәтижелер көптілді жоғары білім беру ортасындағы мұғалімдер мен оқу бағдарламасын әзірлеушілерді қызықтырады.

Түйін сөздер: цифрлық глоссарий, терминологиялық құзыреттілік, жоғары көптілді білім, жобалық оқыту, сандық дидактика.

РАЗВИТИЕ ПРОФЕССИОНАЛЬНОЙ ТЕРМИНОЛОГИИ ПОСРЕДСТВОМ ПРОЕКТОВ ПО СОЗДАНИЮ ЦИФРОВЫХ ГЛОССАРИЕВ: ПРИМЕР ИЗУЧЕНИЯ КАЗАХОЯЗЫЧНЫМИ СТУДЕНТАМИ РУССКОГО И АНГЛИЙСКОГО ЯЗЫКОВ

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Аннотация. В статье рассматривается педагогический потенциал цифровых терминологических глоссариев в многоязычном образовании с акцентом на казахскоязычных студентов, изучающих русский и английский языки как иностранные. Цель исследования – выявить эффективность использования цифровых терминологических глоссариев в процессе формирования профессиональной лексической компетенции у казахскоязычных студентов, изучающих русский и английский языки как иностранные в рамках трехъязычного образования. Теоретическую основу исследования составили работы в области цифровой дидактики, многоязычного образования и проектного обучения [5; 6; 9]. Эмпирическая часть была реализована на базе Актюбинского областного университета им. К. Жубанова, где приняли участие 87 студентов 1-го курса шести специальностей: «Хореография», «Художественное образование», «Физика», «Информатика», «Химия» и «Экология». Были использованы комбинированные методы: диагностическое тестирование, анкетирование и контент-анализ цифровых глоссариев, созданных в рамках проектных заданий. Новизна исследования заключается в обосновании роли цифрового глоссария как многофункционального инструмента, способствующего интеграции языковой, профессиональной и цифровой подготовки студентов. Результаты представляют интерес для преподавателей и разработчиков учебных программ в многоязычной среде высшего образования.

Ключевые слова: цифровой глоссарий, терминологическая компетенция, многоязычное высшее образование, проектное обучение, цифровая дидактика.