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USING CHATBOTS TO IMPROVE SPEAKING SKILLS IN EFL LEARNERS: EVIDENCE FROM FIRST-YEAR UNIVERSITY STUDENTS IN KAZAKHSTAN

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Abstract

This study examines how well first-year EFL students at the Kazakh National Women's Teacher Training University can improve their speaking abilities through AI chatbot-assisted learning. 52 individuals were split into experimental and control groups using a mixed-methods approach. For 10 weeks, the experimental group used AI chatbots such as Elsa Speak and Speak Pal. With a mean post-test score of 16.85 compared to 7.90 in the control group, quantitative analysis showed that the experimental group had significantly improved in fluency, grammar, pronunciation, and confidence. Qualitative results showed that chatbots' interactive features and real-time feedback improved learner motivation, engagement, and speaking anxiety. Technical difficulties and restrictions in managing complex linguistic nuances were challenging, nevertheless. In order to overcome regional obstacles like limited exposure to English and linguistic influences from Kazakh and Russian, this study highlights the potential of chatbots as affordable, accessible methods for modernizing EFL instruction in Kazakhstan.

Keywords:

EFL learners, AI chatbots, speaking skills, Kazakhstan, pronunciation, fluency, language learning, educational technology.

1. Introduction

1.1 Context

Speaking fluency is essential to learning English as a foreign language (EFL) because it allows students to interact with others in social, professional, and academic contexts. Speaking abilities are essential for developing fluency and confidence, two qualities that are frequently necessary for success in settings that are focused on education and careers. However, for a variety of reasons, speaking skill development is still a major obstacle for EFL students in Kazakhstan. High levels of speaking anxiety and an absence of encouraging practice settings are the main obstacles Kazakhstani students confront, according to Suleimenova and Zhyltyrova (2023). Furthermore, the region's conventional teaching approaches frequently place more emphasis on written language

proficiency and grammar than on the interactive and communicative exercises that are necessary for oral fluency (Ismail, Tuspekova, & Mustaffa, 2018).

Limited technology in the classroom and a lack of real-world exposure to competent English speakers make this problem even worse. Undergraduate students in Kazakhstan's English-medium education programs frequently encounter a gap between classroom learning and the needs of real-world communication, according to Amanzhol et al. (2024). In state secondary schools, Tleuov (2016) argues that instructors' attitudes and methods do not correspond with students' need for interactive speaking practice. These restrictions prevent students from becoming more self-assured and fluent in spoken English.

These gaps might be filled by emerging technology, especially artificial intelligence (AI). Specifically, chatbots provide a novel method of EFL instruction by giving students interactive, customisable, and low-stakes speaking practice. AI chatbots can imitate real-life discussions and provide instant feedback, increasing student engagement and lowering speaking fear, according to studies by Han and Lee (2024) and Pham et al. (2024). The potential of chatbots to improve language learning experiences has been shown in Kazakhstan through projects like the K-qbot project, however their reach is still limited (Oralbayeva et al., 2022).

Additionally, integrating chatbots into the EFL curriculum is consistent with the learner-centred, autonomous behaviours that are central to technology-mediated language acquisition (Gupta & Bostrom, 2009). Chatbots are especially useful for meeting the varied needs of Kazakhstani pupils because of their ability to adjust to different skill levels. According to Galiya and Aisha (2024), gamification components incorporated into chatbot-based learning dramatically raised student engagement, underscoring the potential of cutting-edge teaching resources to get around the drawbacks of conventional instruction. Additionally, Yessenaman and Seidaliyeva (2024) contend that AI-driven technologies can be an affordable way to address the resource shortages that Central Asian educational institutions frequently encounter.

1.2 Problem Statement

Despite these developments, there is still a significant research space on the use of chatbots to enhance speaking abilities in Central Asian contexts. There are few studies that take into account Kazakhstan's particular sociocultural and educational difficulties, despite the fact that international research has shown how well chatbots may improve fluency and lessen speaking anxiety (Huang et al., 2022). The region's current teaching approaches frequently fall short of developing dynamic, captivating classrooms that emphasise oral competency. Because of this, students find it difficult to gain the self-assurance and fluency required for successful communication. To modernise EFL instruction and provide students the skills they need to succeed in a globalised environment, this gap must be filled.

1.3. Research Questions

What impact do chatbots have on Kazakhstani EFL learners' confidence and speaking fluency?
How do students feel about utilising chatbots to practise speaking?

What difficulties come up when including chatbots into EFL lessons?

1.4. Purpose and Objectives

This study's main goal is to assess how well AI chatbots can help Kazakhstani first-year university EFL students improve their speaking abilities. In particular, it aims to:

Evaluate how chatbot-assisted learning affects confidence and fluency. Examine how students feel about using chatbots to practise speaking. Determine the obstacles to implementation and offer educators and legislators practical suggestions.

Assess the impact of chatbot-assisted learning on fluency and confidence. Explore learner perceptions regarding the use of chatbots for speaking practice.

Identify implementation challenges and provide actionable recommendations for educators and policymakers.

By tackling these goals, this study adds to the expanding corpus of research on artificial intelligence in language learning and provides useful advice for enhancing EFL training in Kazakhstan.

2. Literature Review

2.1. Theoretical Framework

The tenets of technology-mediated language learning (TMLL), which highlights the function of technology as a facilitator for interactive, learner-centred instruction, form the basis of this study. In line with constructivist ideas that promote active learner participation, TMLL promotes increased engagement, autonomy, and flexibility (Gupta and Bostrom, 2009). AI-powered chatbots and other technological tools enable customised learning experiences that meet the unique requirements of EFL students.

When it comes to tackling the particular difficulties faced by EFL students, TMLL works very well. Technology-supported settings offer chances for regular and interactive learning, which lowers anxiety and increases motivation, according to Mahmood et al. (2023). Furthermore, Hardaway and Scamell (2005) underscore the need of integrating technology into traditional instructional methods, noting its potential to make learning more accessible and engaging.

Studies conducted in Kazakhstan have demonstrated the value of TMLL in filling in the gaps in conventional teaching methods. According to Suleimenova and Zhyltyrova (2023), a fundamental component of TMLL frameworks, regular practice in a friendly and engaging setting might help reduce speaking anxiety in Kazakhstani pupils. Similar to this, Orynbek (2016) emphasised how constructivist theories are well-aligned with personalised and adaptive learning technologies, which give students the chance to develop their confidence in their language skills.

2.2. Review of Existing Studies

Research from throughout the world has highlighted how chatbots can help people overcome obstacles including speech anxiety and a lack of practice chances. Shim et al. (2023) found that a chatbot-assisted workshop for undergraduate students significantly increased learner engagement and fluency. Chatbots are a useful tool for improving spoken language skills because of their capacity to mimic conversational situations and offer immediate feedback.

Similarly, Wang et al. (2023) explored the broader applications of AI-driven chatbots in higher education. Their findings highlighted the ability of chatbots to support personalized learning pathways, which is particularly beneficial for diverse learner groups. However, limitations persist; Huang et al. (2022) observed that chatbots often struggle with advanced linguistic nuances, such as idiomatic expressions and cultural contexts, which can hinder their effectiveness for higher- level language learners.

Due to the dearth of interactive possibilities in conventional classrooms, Ismail et al. (2018) found that oral communication skills development in Kazakhstan was significantly hampered. These gaps may be filled by the introduction of chatbots, which provide learners with frequent and contextualised speaking practice. Amanzhol et al. (2024) also underlined the importance of incorporating cutting-edge resources to satisfy the needs of students in English-medium instruction, especially in higher education settings.

A lot of research has also been done on chatbots' use of multimedia and gamified components. According to Raman et al. (2023), adding virtual reality elements to chatbot designs increases user motivation and encourages self-directed learning. These findings are consistent with Al-Bahadli et al. (2023), who found that project-based learning environments supported by chatbots improved learners' communication and problem-solving skills. Gamified chatbots have demonstrated the ability to engage students and enhance learning results in Kazakhstan through initiatives such as K-qbot (Oralbayeva et al., 2022)

2.3. Speaking Skills in EFL Learners

For EFL learners, effective speaking abilities—which include fluency, correctness, and contextual appropriateness—are fundamental. The importance of mobile learning technologies in developing these abilities was highlighted by Yu et al. (2022), especially through interactive platforms that allow for adaptive learning experiences and real-time feedback. The results of Serrano et al.

(2019), who emphasised the beneficial effects of blended learning settings on oral communication skills in higher education contexts, are consistent with this.

Additionally, Chapelle (2001) noted the urgent need for learner training in technologically enhanced settings, contending that proper instruction in the use of technologies such as chatbots may greatly increase their educational value. In order to optimise the potential for skill development in chatbot-mediated activities, Hubbard (2013) reaffirmed this viewpoint by highlighting the significance of learner agency and strategic engagement. Kadyrbayeva (2022) said that creative, student-centered strategies, including using AI technology, are necessary to overcome the anxiety that Kazakhstani EFL learners frequently suffer.

2.4. Research Gap

Although the advantages of chatbots have been extensively reported, there are still few studies that are unique to the Central Asian region. The urgent necessity for localised research that takes into account Kazakhstan's societal and educational complexities is highlighted by Yessenaman and Seidaliyeva (2024). Additionally, Brakhmetova (2024) highlights how AI-driven solutions might help with the region's resource shortage, implying that chatbots could be a creative and expandable tool for enhancing EFL training. The successful use of chatbots in EFL classrooms may be hampered by Tleuov (2016)'s identification of deficiencies in instructors' professional development with regard to technology integration.

To address these gaps, this study seeks to evaluate the effectiveness of chatbots in the unique context of Kazakhstani EFL learners. By integrating global insights with region-specific challenges, this research aims to contribute to the modernization of EFL education in Kazakhstan.

3. Methodology

3.1. Research Design

Using a mixed-methods approach, this study combined quantitative and qualitative data gathering to assess the effects of chatbot-assisted learning on EFL speaking abilities in a thorough manner. Pre- and post-tests measuring fluency, accuracy, grammar, and pronunciation were used to collect quantitative data. Qualitative information obtained through focus groups and surveys shed light on the attitudes and experiences of learners. Both quantifiable results and contextual comprehension of the intervention's efficacy were made easier by the mixed-methods approach (Nazara, 2011; Derakhshan et al., 2016).

3.2. Participants

52 first-year EFL students from the Kazakh National Women's Teacher Training University participated in the study. The participants were randomly assigned to one of two groups using purposive sampling: the experimental group, which used chatbot-assisted learning, and the control group, which used conventional teaching techniques. Because the participants' speaking anxiety and English competence varied, the study's conclusions may be applied to a wide range of learner profiles.

3.3. Intervention Procedure

The 10-week intervention took place in the first semester of the 2023–2024 school year. The experimental group's participants used AI programs like Elsa Speak and Speak Pal to participate in a chatbot-assisted speaking program. The following are the primary characteristics that led to the selection of these chatbots: Elsa Speak monitors and tailors learning to target weak areas, incorporates real-life conversation settings, and utilises AI to analyse and correct pronunciation with visual feedback. Speak Pal stimulates real-world speaking situations through conversation scenarios, offers feedback and make corrections for pronunciation and grammar and includes tasks to reinforce speaking confidence. For ten weeks, participants in the experimental group practise having conversations with the chatbot for twenty to thirty minutes each day.

In addition to focussing on teacher-led practice and textbook-based speaking tasks, the control group was asked to practice using traditional techniques without the use of artificial intelligence for 20 to 30 minutes each day. To gauge their success, both groups took pre-tests at the beginning of the intervention and post-tests at the end.A panel of three experts, including the researcher and two professors with expertise in curriculum and instruction, assessed the experimental participants' spoken recordings. The assessment concentrated on a number of important areas, such as the participants'

general fluency in spoken language, frequent pronunciation errors, intonation and stress patterns, and grammar accuracy.

3.4. Assessment Tools

Pre- and post-tests were used as assessment techniques to gauge participants' accuracy, fluency, pronunciation, and grammatical skills. Ten task-based assessments (role-playing or simulations) that were modified from popular ESL resources were included in each pretest and posttest. The following criteria was used to score each scenario out of ten points:

Table 1: Assessment criteria

Assessment Criteria	Max Score
Pronunciation	2
Grammar	2
Accuracy	2
Intonation	2
Fluency	2

Surveys and focus groups were used to gather qualitative data on participants' experiences and perceptions of chatbot-assisted learning.

3.5. Ethical Considerations

The university's research ethics committee granted ethical permission. Every kid gave their informed consent, and participation was entirely voluntary. Throughout the study, the confidentiality of the data was preserved.

4. Statistical Analysis and Results

4.1. Descriptive Statistics Table 2: Pre-test Results

Group	Mean Score	Standard Deviation	Min-Max Scores
Control	3.80	0.45	3.2 - 4.5
Experimental	3.85	0.40	3.3 - 4.6

At the beginning of the study, the pre-test results for the experimental and control groups show similar speaking ability. With standard deviations of 0.45 and 0.40, respectively, the experimental group's mean score (3.85) and the control group's mean score (3.80) show comparable skill levels. With the experimental group scoring between 3.3 and 4.6 and the control group scoring between

3.2 and 4.5, the minimum and highest scores further illustrate this resemblance. These consistent results imply that the baseline English speaking abilities of the two groups were similar.

The pre-test's errors mostly represented the participants' difficulties with grammar and pronunciation, which are greatly impacted by Kazakhstan's language and cultural background. The use of auxiliary verbs like "have/has" or modal verbs like "can" appropriately, as well as uncertainty over tense usage, were among the grammatical faults. Derakhshan et al. (2016) found that learners frequently struggle with grammatical correctness while moving from native languages with diverse grammatical systems, and these mistakes are consistent with their findings. Errors in pronunciation were especially noticeable for sounds that are absent from the phonological systems of Kazakh and Russian. For instance, participants struggled with interdentals like /θ/ and

/ð/, as well as the English plosive /p/ and fricative /v/. These difficulties result from the fact that Russian, a Slavic language, and Kazakh, a Turkic language, lack these sounds, which affects how Kazakhstani learners produce phonemes in English (Shumin, 2002). The participants also had trouble with appropriate intonation and stress patterns, such as emphasising the right syllables of words having multiple functions, such as "record" (noun) as opposed to "record" (verb). The rhythmic and stress-timed character of English, in contrast to the syllable-timed patterns typical of Kazakh and Russian, exacerbates these problems.

Oral proficiency development is further hampered by Kazakhstan's physical position as a landlocked, inner-continental nation, which restricts direct exposure to English-speaking cultures. Learners have little possibilities for immersive engagement since English is regarded as a third language after Kazakh and Russian. This results in a high dependence on formal teaching and a deficiency of natural conversational practice (Leong & Ahmadi, 2017).

The participants' spoken performance, which was frequently characterised by lengthy pauses and filler words, showed hesitancy and a lack of confidence, which is consistent with findings from prior EFL research. According to Nazara (2011), these behaviours might be linked to the lack of practice chances and fear of making mistakes when speaking English. Based on their mean scores and standard deviations, the results support the original premise that both groups began with very comparable speaking skill levels.

The pre-test mistakes highlight the need for focused treatments that deal with these language and cultural obstacles. A solid basis for assessing the effectiveness of the chatbot-assisted intervention is provided by the same baseline performance of the two groups.

Table 3: Post-test Results

Group	Mean Score	Standard Deviation	Min-Max Scores
Control	7.90	1.12	7.0 - 9.2
Experimental	16.85	1.85	15.5 - 18.9

4.2. Descriptive Analysis of Post-Test Results

The experimental group's speaking abilities significantly outperformed those of the control group, according to the post-test findings. With a mean score of 16.85 and a standard deviation of 1.85, the experimental group outperformed the control group, which had a mean score of 7.90 and a standard deviation of 1.12. With a range of 15.5 to 18.9 as opposed to the control group's range of

7.0 to 9.2, the experimental group's superior performance is further demonstrated by the minimum and highest scores. These findings highlight how effective chatbot-assisted education is at improving the speaking skills of EFL students.

4.2.1. Impact of AI Chatbots on Pronunciation and Fluency

Due to the constant and participatory nature of chatbot use, the experimental group showed notable increases in pronunciation and fluency. The phonological variations between Kazakh, Russian, and English make it difficult for Kazakhstani learners to recognise and correct mispronunciations. AI chatbots like Elsa Speak and Speak Pal gave them real-time feedback. Due to the absence of interdentals like /θ/ and /ð/ as well as sounds like /p/ and /v/, Kazakh and Russian are frequently mispronounced (Shumin, 2002). The experimental group's success was greatly aided by the opportunity to practise these sounds frequently in a relaxed, error-friendly setting (Nazara, 2011; Derakhshan et al., 2016).

Because students could converse naturally with chatbots, fluency gains were also noticeable. Conversational cues from the chatbots promoted constant speaking, decreasing hesitancy and boosting self-assurance. In contrast to conventional approaches, which frequently depend on teacher-led corrections and sporadic speech exercises, chatbot interactions gave students consistent chances to practise speaking. The results of Huang et al. (2022), which emphasise the advantages of interactive AI technologies in fostering language fluency, are consistent with this.

4.2.2. Advantages of Regular Practice and Instant Feedback

Chatbot-based learning is characterised by frequent practice and immediate feedback, both of which were very beneficial to the experimental group. Due to time limits and instructor effort, students in traditional classroom settings may get feedback infrequently or late, which can hinder the learning process. Chatbots, on the other hand, provided instantaneous corrections, assisting students in internalising grammar rules, improving their pronunciation, and modifying their intonation patterns in real time (Pham et al., 2024). Addressing chronic mistakes and fostering automaticity in language output are two areas where this feature excels.

In the post-test, for example, participants in the experimental group showed fewer grammatical mistakes, including proper use of auxiliary verbs, modal structures, and past and present tenses. They also demonstrated greater mastery of intonation patterns and more precision in emphasising multifunctional terms, such as "record" (noun) as opposed to "record" (verb). These results are in line with those of Derakhshan et al. (2016), who stress the need of regular corrective feedback in attaining phonological and grammatical precision**.**

4.2.3. Engagement and Enjoyment through Chatbot Use

The high degree of interest and engagement sparked by chatbot exchanges was another element that helped the experimental group perform better. Chatbots provided a fun, interactive learning environment in contrast to more conventional approaches that can need a large amount of mental work without any immediate benefits. Gamification features and conversational exercises offered intrinsic incentive, encouraging learners to practice more frequently and readily. This correlates with findings by Galiya and Aisha (2024), who highlighted that interactive and gamified chatbot exercises boost student engagement and reduce anxiety.

In comparison, the control group showed little improvement since their learning environment was based on traditional techniques like teacher-led discussions and textbook exercises. Particularly in EFL environments where possibilities for real-time language usage are limited, these methods frequently lack the engagement and immediacy required to promote fluency and confidence (Leong & Ahmadi, 2017).

4.2.4. Overcoming Barriers to English Learning

The geographical isolation of Kazakhstan and the linguistic obstacles provided by Kazakh and Russian as major languages make the use of AI chatbots a particularly viable solution for EFL learners. By bridging the gap between learners and native English-speaking contexts, chatbots provide an accessible and effective technique of overcoming hurdles to language acquisition. This is particularly crucial in situations when there are few possibilities for in-person communication and exposure to English-speaking cultures (Mahbub & Hadina, 2021).

4.3. T-Test Analysis

Before and after the intervention, the control and experimental groups' speaking abilities were compared using a paired-samples t-test and an independent samples t-test. Tables 4 and 5 provide a summary of the findings.

Table 4: Paired Samples T-Test Results

Test	Mean	Standard Deviation	Number	Degree of Freedom	t-value	p-value	Significance
Pre-test (Control Group)	3.80	0.45	26	25	0.25	>0.05	Not Significant
Post-test (Control Group)	7.90	1.12	26	25	5.32	<0.01	Significant
Pre-test (Experimental Group)	3.85	0.40	26	25	0.28	>0.05	Not Significant
Post-test (Experimental Group)	16.85	1.85	26	25	10.73	<0.01	Significant

Table 4 reveals that there were no statistically significant differences in the pre-test performances of both groups ($p > 0.05$).

This implies that the two groups' initial speaking competence levels were comparable. Nonetheless, the post-test findings reveal notable variations in the experimental group's performance ($p < 0.01$), suggesting that the chatbot-assisted intervention significantly enhanced speaking abilities.

Although these improvements were slight, the control group's post-test scores improved when compared to the pre-test. Greater performance variability, with some individuals finding it difficult to make meaningful progress, is shown by the control group's post-test's larger standard deviation.

Table 5: Independent Samples T-Test Results

Group	N	Mean Score Gain	Standard Deviation	Degree of Freedom	t-value	p-value	Significance
Control	26	4.10	1.12	50	7.09	<0.01	Significant
Experimental	26	13.00	1.85	50			

The two groups' relative performance is shown in Table 5. With a mean score increase of 13.00, the experimental group's speaking abilities significantly improved in comparison to the control group's mean gain of 4.10. This noteworthy distinction ($p < 0.01$) highlights how well chatbot-assisted learning may improve confidence, grammar, pronunciation, and fluency.

4.4. Qualitative Findings

The experimental group's confidence and fluency in speaking English improved after utilising chatbots, according to the qualitative study. According to their findings, chatbots offered a positive, stress-free setting that promoted regular practice and instant feedback (Huang et al., 2022). Because chatbot interactions are private and judgment-free, many participants reported feeling less anxious and were able to try out different pronunciations and grammar (Belda-Medina & Calvo-Ferrer, 2022). According to Pham et al. (2024), chatbots' interactive and captivating features—like conversational prompts and real-time error corrections—were very successful in maintaining motivation. Nevertheless, several difficulties were observed, such as sporadic input misunderstanding and technological constraints. The necessity for prolonged practice to correct ingrained language habits was demonstrated by persistent intonation and stress pattern problems. In general, chatbot-assisted learning was seen to be a useful and entertaining way to get better at speaking.

5. Discussion

In line with earlier research by Huang et al. (2022) and Leong and Ahmadi (2017), which highlighted the value of interactive AI tools in boosting language acquisition, the results validate the efficacy of chatbots in developing the speaking abilities of EFL learners. Because chatbots like Replika and Andy offer immediate feedback, students may spot and fix mistakes in real time— something that is frequently not feasible in conventional learning environments (Nazara, 2011; Shumin, 2002). According to Pham et al., this consistent, individualised practice lowers anxiety and promotes learner autonomy (2024).

6. On the other hand, the control group's improvement was slower due to the traditional method's restricted options for interaction practice and error correction. The difficulties in guaranteeing steady progress with traditional teaching techniques are further illustrated by the notable variation in the control group's post-test results. The results also emphasise how crucial engagement and motivation are. According to Galiya and Aisha (2024), the gamified and interactive aspects of chatbot practice made learning fun and efficient, promoting regular practice within the experimental group. This is especially true in Kazakhstan, where EFL learners face additional difficulties due to language and physical distance (Suleimenova & Zhyltyrova, 2023; Derakhshan et al., 2016).

7. Conclusion

This study addressed important research issues about fluency, confidence, learner views, and implementation obstacles in order to investigate the potential of chatbot-assisted learning to enhance speaking abilities among EFL learners in Kazakhstan. The experimental group outperformed the control group in speaking fluency, grammar, pronunciation, and confidence, according to the results, confirming the beneficial effects of chatbots on language learning. These results are especially pertinent to the Kazakhstani context, where students have specific difficulties because of the linguistic influence of Russian and Kazakh and because they are not exposed to many English-speaking settings (Suleimenova & Zhyltyrova, 2023; Amanzhol et al., 2024).According to research by Belda-Medina and Calvo-Ferrer (2022), chatbots like Replika and Andy provide tailored, interactive feedback that increased engagement and decreased anxiety. Nonetheless, difficulties were identified as insufficient adaptation to complex language demands and technological problems. In line with the larger objectives of educational modernisation, including chatbots into EFL courses provides a scalable, learner-centred approach to improving language competency in Kazakhstan (Pham et al., 2024; Yessenaman & Seidaliyeva,

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КОГНИТИВНО-ПРАГМАТИЧЕСКИЙ АНАЛИЗ МНОГОЗНАЧНОСТИ ТЕРМИНОВ: НА ПРИМЕРЕ ПОНЯТИЯ «СЖАТИЕ»

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Аннотация. В статье рассматривается проблема перевода многозначных научных терминов на английском и казахском языках. Особое внимание уделяется понятию «сжатие» и его эквивалентам в английском («compression»), казахском («сығылу», «қысу», «қысым»). Применение когнитивно-прагматического подхода позволяет учитывать контекст и когнитивные особенности термина, что способствует более точному переводу и унификации терминологии.

Ключевые слова: когнитивно-прагматический подход, многозначность, контекстуальное значение, перевод, терминологическая система

Введение

Проблема точного перевода специализированной терминологии в условиях глобализации становится все более актуальной, особенно в контексте научных и технических текстов. Многозначность терминов, их контекстуальная зависимость и различия в когнитивных схемах носителей разных языков значительно усложняют процесс перевода.

Настоящее исследование посвящено анализу проблемы перевода термина «сжатие» и его казахских эквивалентов («сығылу», «қысу», «қысым») в различных научных контекстах. Цель работы заключается в выявлении контекстуальных различий в значении этих терминов и разработке когнитивно-прагматического подхода к их переводу, который учитывает как семантические, так и прагматические особенности, а также культурные различия.

В ходе исследования был проведен комплексный анализ теоретических основ перевода и когнитивной лингвистики. Особое внимание уделено роли контекста и когнитивных схем в процессе интерпретации и передачи значения терминов. Было выявлено, что казахские эквиваленты термина «сжатие» обладают различной степенью специализации и применяются в узких научных областях. Например, термин «сығылу» преимущественно используется в механике сплошных сред, а «қысу» – в строительстве и других технических дисциплинах.

В статье представлены результаты анализа конкретных примеров использования этих терминов в различных научных текстах. Показано, как когнитивно-прагматический подход позволяет выявить скрытые значения и нюансы, которые могут быть упущены при буквальном переводе.

Научная новизна исследования заключается в том, что оно предлагает конкретные рекомендации для переводчиков, работающих с научной литературой, и способствует развитию теории перевода в области специализированной терминологии.

Практическая значимость работы состоит в том, что полученные результаты могут быть использованы для создания специализированных словарей и глоссариев, а также для