

# Scientific Herald of Uzhhorod University

Series "Physics"

Journal homepage: <https://physics.uz.ua/en>

Issue 56, 968–979

Received: 21.10.2023. Revised: 11.02.2024. Accepted: 27.03.2024



DOI: 10.54919/physics/56.2024.96pey8

## Implementation Results of the "Qazaq tili" Web-textbook with Latin Script

**Nurgul Nygmetova\***

Abylkas Saginov Karaganda Technical University  
100027, 56 Nursultan Nazarbayev Ave., Karaganda, Republic of Kazakhstan

**Shara Mazhitayeva**

Karaganda Buketov University  
100024, 28 University Str., Karaganda, Republic of Kazakhstan

**Sholpan Zhetpisbay**

Abylkas Saginov Karaganda Technical University  
100027, 56 Nursultan Nazarbayev Ave., Karaganda, Republic of Kazakhstan

**Abylay Tursyn**

Abylkas Saginov Karaganda Technical University  
100027, 56 Nursultan Nazarbayev Ave., Karaganda, Republic of Kazakhstan

**Sergey Derkach**

Abylkas Saginov Karaganda Technical University  
100027, 56 Nursultan Nazarbayev Ave., Karaganda, Republic of Kazakhstan

### Abstract

**Relevance.** The research relevance is predefined by the need to identify the most effective methodology for teaching the Kazakh language in the Latin script.

**Purpose.** The research aims to evaluate the results of "Qazaq tili" web-textbook usage, identify the problems of Kazakh language transition from Cyrillic to Latin alphabet and analyse how Latin script can influence Kazakh language development from the cultural and historical point of view.

**Methodology.** Empirical and theoretical research methods were used in this research paper, including a questionnaire survey of respondents, classification, comparative analysis, system analysis, logical analysis, synthesis, and deduction.

**Results.** The study presents the current state of the Kazakh language, revealing results from a non-anonymous survey of students on their knowledge of the Kazakh language and the difficulties they encountered. An anonymous survey assessed the ease of navigating the "Qazaq tili" textbook, support for the transition to the Latin alphabet, and the need for more resources to effectively learn the Kazakh language. The analysis included website metrics such as views, visitors, statistics, abandonment, depth of view, and viewing time, with recommendations for improvement. The surveys and analytics provided insights into the textbook's strengths and weaknesses and areas for future application.

**Conclusions.** The study found that motivational factors and resource availability significantly impact the effectiveness of learning the Kazakh language in Latin script. The "Qazaq tili" web-textbook demonstrated effectiveness in teaching the Kazakh language, though there is a need for greater support and resources to enhance learning outcomes. The research

### Suggested Citation:

Nygmetova N, Mazhitayeva Sh, Zhetpisbay Sh, Tursyn A, Derkach S. Implementation Results of the "Qazaq tili" Web-textbook with Latin Script. *Sci Herald Uzhhorod Univ Ser Phys.* 2024;(56):968-979. DOI: 10.54919/physics/56.2024.96pey8

\*Corresponding author



Copyright © The Author(s). This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (<https://creativecommons.org/licenses/by/4.0/>)

highlights the positive reception of the Latin script among students and underscores the importance of continuous improvement in educational materials to support the Romanization of the Kazakh language.

**Keywords:** Kazakh; higher education; digital learning technologies; public support for transition.

## **Introduction**

To date, the transition to the Latin script in Kazakhstan is ongoing and is scheduled to be completed by 2031 [1]. At present, the process of transition to the Latin script is controversial and divisive among the population, especially among the older generation who are used to using the Cyrillic script [2].

Studying the results of the introduction of the web-based textbook "Qazaq tili" with the Latin script is prospective for understanding the effectiveness of using the Latin alphabet in the Kazakh language and identifying the problems that may arise in such a transition. This study can provide insight into what methods, approaches to teaching Kazakh in the Latin alphabet have been used, and how they can be improved or complemented. Research into the effectiveness of Kazakhstani Latin-based teaching materials became relevant after the decision to switch to the Latin script in Kazakh was made in 2017. In this regard, the electronic curriculum "Qazaq tili" in Latin script was created. Enough time has now passed to evaluate the results of this programme and to determine how it has impacted Kazakh language learning [3; 4].

Y. Kumar et al [5] conducted a study on the transition of the Kazakh language from the Cyrillic alphabet to the Latin alphabet and considered the possible problems associated with this process. The authors analysed the political, economic, cultural and linguistic reasons that prompted this decision and revealed that the Kazakh authorities decided to convert the Kazakh language to the Latin alphabet to facilitate the learning and spread of the Kazakh language around the world. D. B. Kydyrbekuly [6] examines the transition of the Kazakh language from the Cyrillic alphabet to the Latin alphabet in the context of digitalization and information technology. The author analyzed the advantages and disadvantages of transitioning to the Latin alphabet in a rapidly changing technological environment. The conclusion was that this transition may have both positive and negative effects on the use of the Kazakh language in the digital environment, as well as on the development of online communications and resources in the Kazakh language.

M. Moldasheva [7] examines changes in the use of the alphabet in the Kazakh language over time, including the transition to Cyrillic in the 1940s and plans for the current transition to the Latin alphabet. G. Batyrbekkyzy et al. [8] conducted a study on the history and prospects of the Romanization of the Kazakh alphabet. The authors described the process of development of the Kazakh alphabet from the period of the Arabic alphabet to the transition to the Cyrillic alphabet, as well as subsequent studies and discussions of the Romanization of the Kazakh alphabet. Recommendations have been made regarding the system of Latin transcription of the Kazakh language. Difficulties that arise during the transliteration of names and surnames into the Kazakh alphabet using Latin script were considered by K. Gabitkhanuly [9]. The author developed several methods of transliteration of names and surnames based on the phonetic and graphic analogy of

sounds, and reviewed various transliteration systems used in different countries and scientific fields and analysed their advantages and disadvantages.

N. K. Kattabekova and Sh. B. Nurmanova [10] in their examined the standardization and contemporary use of the Kazakh alphabetic system, including problems of spelling, teaching and language dissemination, as well as the impact of modern technology on the development of the Kazakh script. In addition, the study analysed the causes and consequences of the transition from one alphabetic system to another and the role of public policy and social change in this process. L. Eisenberg [11] has examined the question of the reaction of the Russian media to the transition of the Kazakh alphabet to the Latin alphabet. By analysing the publications of the Russian media, the author revealed that they perceived the Latinization of the Kazakh script as an attempt to isolate Kazakhstan from the Russian-speaking space and to strengthen the Kazakh national identity.

The research aims to determine the effectiveness of the "Qazaq tili" web-based textbook and to identify problems that may occur in the transition from Cyrillic to Latin. These problems include teaching Kazakh in the new alphabet, adapting for people who previously used Cyrillic, technical issues with using the new alphabet in computer systems and software, and social and cultural challenges associated with revising the national language. Additionally, the study analyzed how the new alphabet might affect the development of the Kazakh language, its accessibility, and its use in society.

## **Materials and Methods**

### **Practical component of the study**

The applied component of this research on the results of the development and implementation of a web textbook on the Kazakh language for university students for levels B1 and B2 was conducted at the Abylkas Saginov Karaganda Technical University. The textbook "Qazaq tili" in Latin script is currently used in half of the groups that study the Kazakh language at Karaganda Technical University, which allowed for studying the effectiveness of this textbook in detail, as well as assessing student satisfaction. In the empirical part of the study, the following methods of scientific knowledge were used: a questionnaire survey of respondents, classification, and comparative analysis.

The respondent survey method was used twice: a non-anonymous and an anonymous survey of students was conducted. The first, non-anonymous, part of the empirical study involved N1=191 participants, including 38 women and 153 men. The average age of the respondents was 19.4 years. The participants were asked the following questions:

1. Have you attempted to learn the Kazakh language?
2. Who in your family speaks Kazakh?
3. What difficulties did you encounter in learning the language at school?
4. Rate your level of Kazakh proficiency (on a five-point scale).
5. What languages do you speak?

Also in the primary survey, respondents provided information on themselves (name, gender, age, contacts, etc.). N2=74 people participated in the anonymous survey (no gender or age). The participants were asked to answer the following questions:

1. What is your level of Kazakh proficiency (B1/B2)?
2. Do you use (web textbooks (q-uirenu.kz) or printouts) in class?
3. Do you support the transition to the Latin alphabet?
4. How do you rate the convenience of navigating through the material ("1" is very uncomfortable and takes a long time to find, and "5" is quick to find what you need)?
5. How do you rate the level of difficulty of the Kazakh classes last term?
6. How do you rate your mastery of last term's material?
7. What is your level of self-study in the Kazakh language?
8. If you have been studying with a web book, what were your limitations when working with the web book?
9. How do you think the web book has helped you personally?
10. What do you think is wrong with the presentation of the material?
11. Rate your level of Kazakh proficiency.

Using the classification method, respondents were assigned to groups, and survey results were processed and allocated according to sections. Comparative analysis was used to compare the results of the surveys of the selected groups of respondents: students with different levels of proficiency in the Kazakh language.

**Theoretical component of the study**

The study of the issue of the Latinization of the Kazakh language required the use of valid research methods. System analysis, logical analysis, synthesis, and deduction were used.

A systematic analysis was used to investigate the concept of effective learning of the Kazakh language in the Latin script: the prerequisites, the current situation in Kazakhstan, and the attitude of Kazakhs to the transition to the Latin alphabet. Logical analysis was used to clarify terms and concepts, as well as to describe a possible vector of events in the transition of the Kazakh language to the Latin script. The synthesis method allowed to combine all the information obtained in the course of the study into one system, demonstrating the effectiveness of the use of the textbook "Qazaq tili". Using the deduction method, based on the total dataset and the results of the survey conducted, the possible negative individual consequences of the Latinization of the Kazakh language were described, which allowed making recommendations for the prevention of these processes.

**Results**

**Results of a non-anonymous questionnaire survey of respondents**

The study surveyed students who used the web textbook "Qazaq tili" in their education. First, it was revealed how the survey participants had previously learned Kazakh (Table 1).

**Table 1.** Under what circumstances did respondents learn the Kazakh language?

Have you made any attempts to learn the Kazakh language	Male
Yes, in school	127
With a tutor	7
With friends and relatives	39
No	45

**Note:** respondents could choose several answers

The study showed that most respondents (66.5%) studied the Kazakh language at school, which may indicate the importance of the educational system for language learning in Kazakhstan. Only a small number of respondents (3.7%) studied the language with a tutor, which may indicate a lack of extracurricular resources for learning the Kazakh language. It is also worth noting that 23.6% have not attempted to learn the Kazakh language, which may indicate a lack of motivation or available resources for language learning.

In the context of the Romanisation of the alphabet in Kazakhstan, these results may point to the need to ensure the availability and effectiveness of learning resources for teaching Kazakh in the new Latin alphabet. There may also be a need to improve motivation to learn the language, especially among those who have not attempted to learn the Kazakh language before. Table 2 shows the responses to the question about the language of communication in the respondents' families.

**Table 2.** Who in the respondent's family speaks Kazakh?

Who in your family speaks Kazakh?	Male
Mom	19
Father	30
Entire family	44
No one	111

**Note:** respondents could choose several answers

It follows from this survey that 58.1% of respondents do not have Kazakh-speaking relatives. At the same time,

among those who have such relatives, the majority (23%) noted that their entire family speaks Kazakh. Since this

survey was conducted in Russian-speaking Kazakh-speaking groups in the city of Karaganda (which has a higher proportion of Russian speakers than the national average), these statistics do not reflect the actual situation in Kazakhstan. Nevertheless, the results of the survey indicate that although Kazakh is officially recognised as the state language, there is a significant proportion of the population who do not speak it. This is mainly because in the past the Soviet authorities actively promoted the Russian language, and many Kazakhs grew up speaking it. There is also the problem of preserving the Kazakh

language in the context of universal digitalisation, with young people using English in social media and messengers.

Overall, these statistics highlight the need for the development of the Kazakh language and culture in Kazakhstan, including educational programmes and language promotion campaigns. Interviewees also described their problems in learning the Kazakh language. The most common responses are shown in Table 3.

**Table 3.** Which language aspect did respondents find most challenging?

Issue description	Male
No issues	30
Had problems with grammar, tense, declension, and phonetics	34
Had vocabulary issues as well as pronunciation and practice	32
Could not comprehend material and teacher, bad teaching at school	40
Had no predisposition to language learning	19
Stated a lazy and careless attitude towards language learning	11
Don't see a point in language learning	2
Misunderstanding of the Kazakh language due to a hearing impairment	1
Other	22

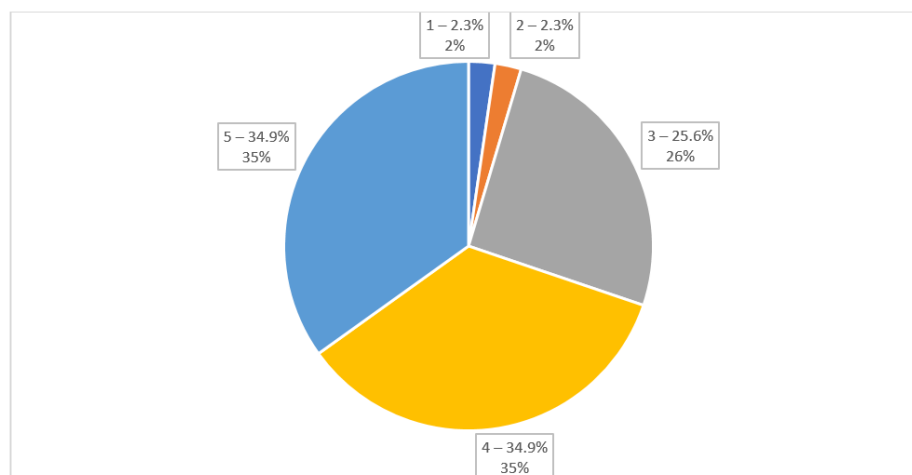
These results suggest that many students in Kazakhstan have difficulty learning the Kazakh language, with problems ranging from grammar and vocabulary to lack motivation and poor teaching and lack of practice in everyday life. In the context of the Romanization of the alphabet in Kazakhstan, these results show that changing the alphabet by itself will not solve problems with language learning. However, the Romanization of the alphabet could have a positive effect on the further learning and development of the Kazakh language if accompanied by appropriate educational programmes and methodologies [12].

To help students in Kazakhstan learn the state language, a comprehensive approach is needed, which would include not only the Romanisation of the alphabet but also improving the quality of language teaching, creating new educational programmes, increasing motivation and

interest in language learning, as well as access to language resources and materials.

**Results of an anonymous questionnaire survey of respondents**

An anonymous survey was also conducted among the respondents on the accessibility, usability, and functionality of the "Qazaq tili" textbook. To assess this parameter, 43 students used the electronic version of the textbook, while 31 students used printouts. This distribution was since only half of the teachers participated in the study, and the survey covered all groups for the control measure. Assessing the ease of navigating through the material, respondents had to give a score from 1 to 5, considering the speed and ease of finding the information they needed, where 1 was very uncomfortable, taking a long time to search, and 5 was quick to find what they needed (Figure 1).

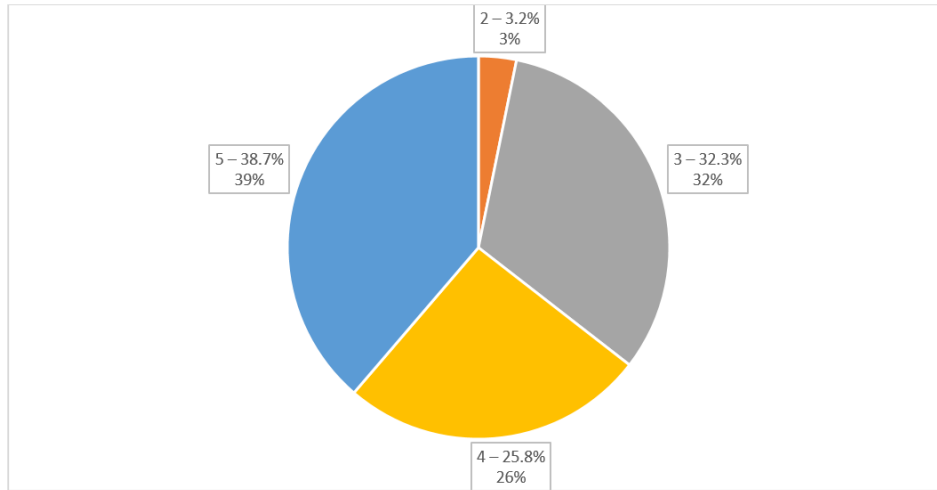


**Figure 1.** Evaluating the ease of navigating through the "Qazaq tili" web textbook

Source: created by the authors.

Most of the students (41 out of 43) rated the usability of the web textbook material navigation as "average" or "above average" (grades 3, 4, 5). This indicates that students did not experience significant difficulties in finding the required information in the textbook. Considering the future Romanization of the alphabet, these results may indicate that the transition to the Latin alphabet may be quite easy for students, as young people are more easily adapted to innovations and are familiar with digital

technology and gadgets. However, it should be kept in mind that the results of the survey of only 43 students are not sufficiently representative of the general population in Kazakhstan and cannot be used to draw broader conclusions. An evaluation of the usability of the "Qazaq tili" textbook in printed form showed the following results (Figure 2).

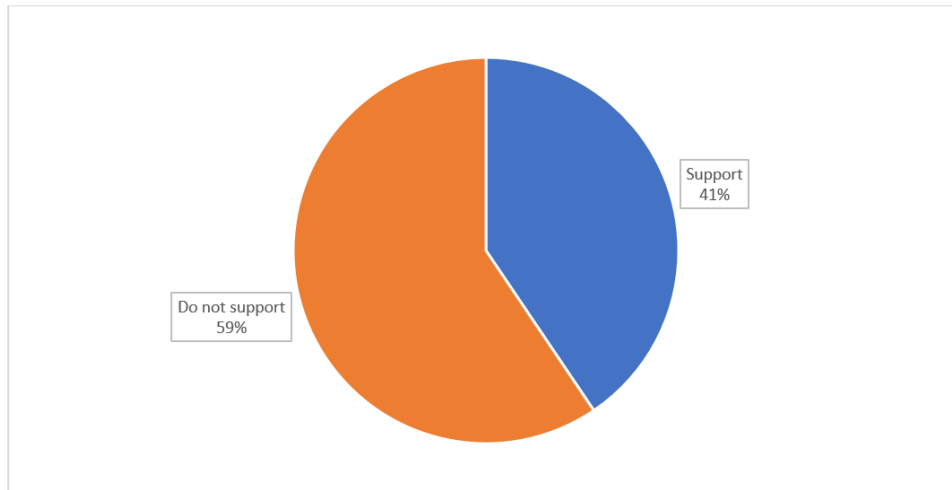


**Figure 2.** Evaluating the ease of navigating through the "Qazaq tili" printed textbook

**Source:** created by the authors.

Because of the survey of 31 students, most of them rated the ease of navigation on the printed materials at level 3, i.e., they found the information they needed, but not too fast and not too slow. Fewer students rated the ease of

searching at a higher level (4 or 5), i.e., some students found the information they needed faster than others did. The study also looked at students' support for the transition of Kazakh from Cyrillic to Latin script (Figure 3).



**Figure 3.** Cyrillic to Latin transition support level

**Source:** created by the authors.

The results of the survey showed that among the 74 students surveyed regarding the transition to the Latin alphabet in Kazakh, 41% supported the idea, while 59% did not support it. These figures can be attributed to the fact that many people in Kazakhstan are used to the Cyrillic alphabet, which has been used in the country for many years. However, it should be noted that the survey

was conducted among 74 students and cannot be representative of the entire population of Kazakhstan. Moreover, people's opinions and preferences may change depending on many factors, such as education, age, cultural and historical traditions, economic situation, etc.

An anonymous survey also showed that most students (over 50%) have a B1 and B2 level of proficiency in

Kazakh, which means an average or above-average level of language proficiency. This may be a positive signal for the introduction of Latin script in Kazakh, as students with higher levels of proficiency may be more prepared for the changes in the language system. At the same time, the percentage of students not supporting the transition to the Latin script (over 50%) indicates that there is a significant proportion of students who do not want to switch to the new script. This may be due to tradition, culture, and stereotypes, and may need to be considered when introducing the Latin script.

In response to the question regarding the difficulty of the material and the effectiveness of its learning, most students rated the level of difficulty of the Kazakh language classes as moderate (3 on a scale of 1 to 5). Most students responded that they learnt the material from last

semester well (4 and 5 on a 5-point scale). However, the level of students' independent work was rated by them at a moderate level (3 on a scale of 5), which may indicate that students need more support and resources to work independently on the learning material.

Students may experience additional difficulties in learning Kazakh in the new alphabet if the level of difficulty is perceived as moderate. However, a good level of knowledge of the previous semester's material may help students to adapt more quickly to the new alphabet. The results of the survey regarding self-assessment of proficiency in the Kazakh language on a 5-point scale (where 1 is not proficient and 5 is very proficient) are shown in Table 4.

**Table 4.** Self-assessment by students of their Kazakh language skills

Mark	Male
1	6
2	19
3	17
4	14
5	18

The results of the survey of 74 students indicate differences in the degree of students' engagement and interest in learning Kazakh, as well as differences in their personal experience of using the language. The level of language proficiency may affect how easily students will be able to adjust to the new schedule [13]. A higher level of Kazakh language proficiency is likely to mean an easier transition to the new schedule, as students will have a greater stock of knowledge and experience in using the language.

#### Analysis of data on the use of the "Qazaq tili" web-based textbook

Results of web textbook analytics:

1. In total, 1.650 page views of the web book.
2. These views were done by 358 visitors to the website.

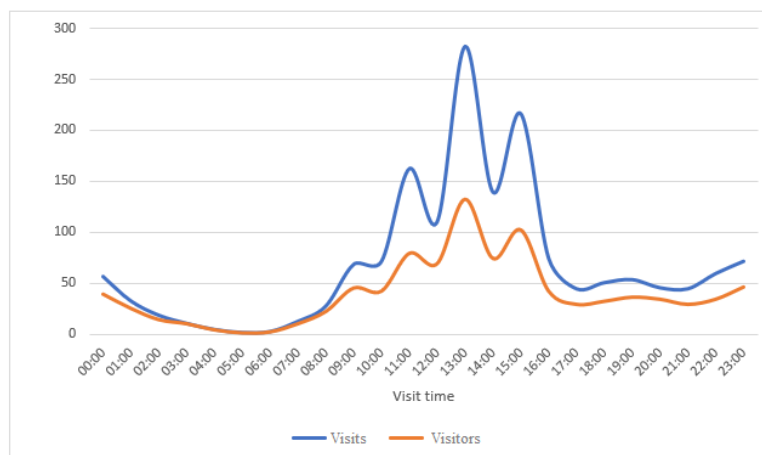
3. The site's performance was 3.15%, meaning that only search engine users made a small proportion of visits.

4. The bounce rate was 10.91%, meaning that almost 2 out of 10 visitors left the site as soon as they entered it.

5. The average depth of view was 1.904 pages per visitor, meaning that visitors accessed more than one page on the site.

6. The average time spent on the website was 4 minutes and 12 seconds.

These results indicate that the web textbook is receiving visits and that some of the visitors spend time on the site and access more than one page. However, 2 out of 10 visitors leave the website without finding the information they need. Thus, additional improvements and optimization of the web book may be needed to increase interest and keep more visitors on the site. Analysis of the source of traffic to the "Qazaq tili" Web-textbook site shows 406 visits from 122 visitors (Figure 4).

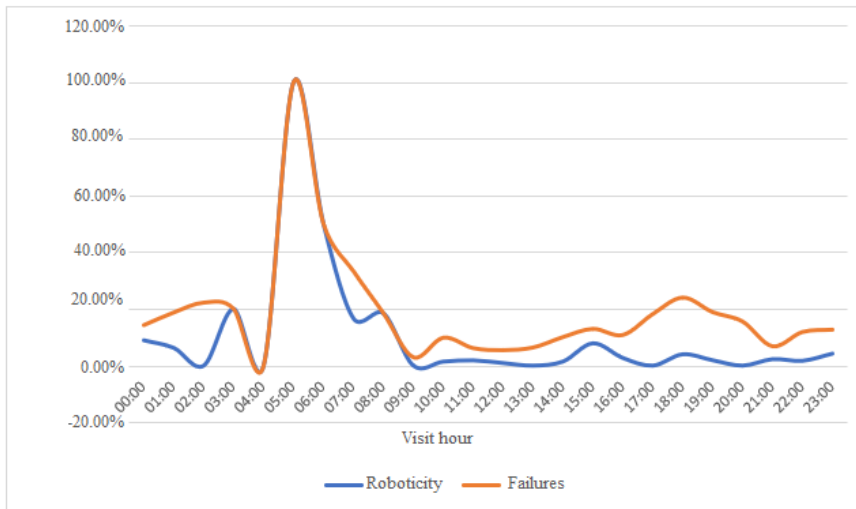


**Figure 4.** Analysis of visits and visitors to the website of the "Qazaq tili" textbook

Source: created by the authors.

The site's uptake was 3.69%, indicating that the primary audience is people rather than bots. However, the bounce rate is quite high at 12.32%, which may indicate that users

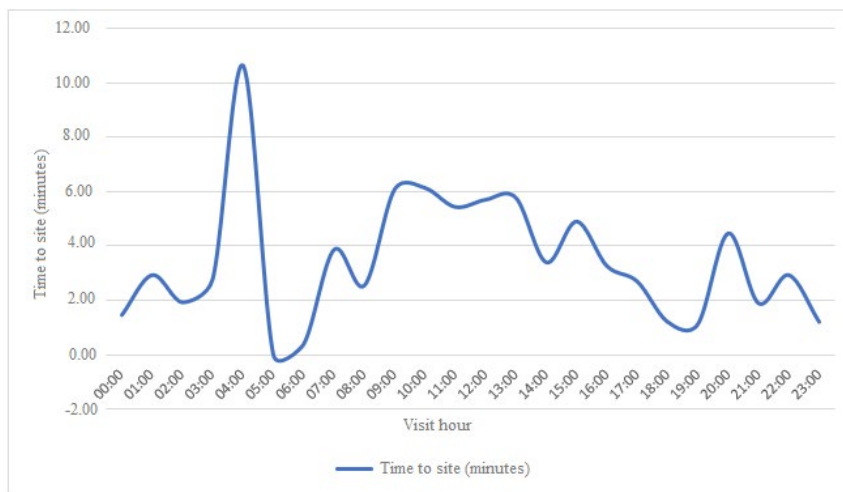
did not find the information they wanted or did not get the results they expected (Figure 5).



**Figure 5.** Analysis of the performance and bounce rates of the "Qazaq tili" website  
**Source:** created by the authors.

The depth of browsing on the site was 1.722 pages, meaning that users averaged just over one page of the site.

At the same time, the average time spent on the site is quite good at 3 minutes and 27 seconds (Figure 6).



**Figure 6.** Time analytics on the "Qazaq tili" website (minutes) concerning the "Hour of visit" parameter  
**Source:** created by the authors.

Based on the data it can be assumed that the source of traffic to the web textbook is not very effective, as the bounce rate is quite high. Perhaps the quality of the content on the website should be improved or the website should be promoted to attract users that are more interested. Most of the traffic to the webbook came from the website q-irenu.kz, which accounted for 260 visits and 49 visitors. In addition, significant traffic came from Yandex (57 visits and 42 visitors), and Google Discover (47 visits and 12 visitors). VKontakte also brought some traffic - 20 visits and 8 visitors. Some traffic sources have a high visit rate, which may indicate that most visitors are bots rather than real users. Overall, the presence of traffic from external resources indicates that external non-student users visited

the site, finding it when searching for certain learning materials and topics.

**Theoretical analysis of the results of a survey of respondents and analysis of data on the use of the web-based textbook "Qazaq tili"**

The transition from Cyrillic to Latin script in educational institutions of Kazakhstan should be carried out gradually and considering the specifics of the educational process. The necessary preparatory work should be organized and carried out with teaching staff, students, and pupils to ensure a smooth transition to the new graphic system [14-16]. It is worth providing quality instruction in the new graphics as part of curricula and providing the necessary

teaching materials in Latin script, as well as supporting students and teachers in adapting to the new system and aiding in solving problems that arise.

It is important to consider that the transition to the Latin script should not negatively affect the knowledge and skills of learners and teachers, nor should it lead to a distortion of the historical and cultural links of the country with other peoples [17; 18]. The textbook can be used as a supplement to traditional teaching methods such as textbooks, lessons, and tutoring, allowing students to broaden their horizons and learn new aspects of the language that might be missed in traditional textbooks or classes [19-21]. It can also help improve reading and writing skills, as it offers a variety of texts and practical tasks.

The average browsing time of the textbook is 1.904 pages and the average time spent on the website is 4 minutes and 12 seconds. These indicators suggest that students are sufficiently interested in the textbook and spend enough time on it to be acquainted with the information presented. It was also found that the main source of traffic is q-uirenu.kz, i.e., students use the textbook as a supplement to traditional methods of learning at the university. At the same time, the use of social networks such as VKontakte and Facebook also indicates the interest of Kazakh users in learning their native language.

For those who do not have access to traditional teaching methods, this textbook can be a valuable tool for self-study of the Kazakh language. It provides a structured approach to language learning, which can be especially useful for beginners, and offers many practical tasks and exercises to consolidate the material learned. It is also available in electronic format, making it easy to use for those who do not have physical access to textbooks or training courses.

## **Discussion**

The results of the study presented, as well as their relevance and prospects for future use, were compared with the results of research by other authors. Z. Bekzhanova and T. M. Makoelle [22] considered issues related to the translation of the Kazakh alphabet from Cyrillic to Latin in their article. The authors analysed the history of the use of the Kazakh language and its script and considered various arguments for and against the transition to the Latin alphabet. The results of the study demonstrate the potential implications of this transition for education, national unity, and social cohesion in Kazakhstan. The authors of the article argue that the transition to the Latin alphabet could negatively affect Kazakhstan's educational system and the teaching of the Kazakh language, as well as the inclusion of minorities. In addition, the article touches on issues of cultural and linguistic identity in the context of Latin script transition and the impact of transition on the homogeneity of society in Kazakhstan. The possible negative consequences of the transition of the Kazakh language from the Cyrillic alphabet to the Latin alphabet described in the study should certainly be considered in public policy and ignoring them could lead to divisions in society and put the Kazakh language at risk. Nevertheless, given the importance of preserving Kazakh national identity in the current political realities of the Central Asian region, and considering the simpler script of the Latin alphabet compared to the Cyrillic alphabet, the

transition to the Latin alphabet is a logical step. This change will enable future generations of schoolchildren and students to master the Kazakh language with less effort.

N. Saduakas and M. Miroy [23] discussed the problem of copying the Kazakh alphabet into the Latin script. The authors considered various aspects of this problem, including the history of the development of the Kazakh language and alphabet, as well as the prospects of transition to the Latin alphabet. The reviewed study argues that the Kazakh language has a rich history and cultural heritage associated with the use of Arabic and Cyrillic alphabets, and the transition to the Latin alphabet could affect the preservation of the cultural heritage of Kazakhstan and make the Kazakh language more accessible for international use. At the same time, the authors of the article point to several problems associated with copying the Kazakh alphabet in the Latin script, such as the difficulty of writing some sounds in Latin, the need to retrain teachers and change teaching materials, and possible problems with the use of the Latin alphabet on the Internet. This study confirms the need to develop new teaching literature as well as to study its effectiveness.

S. Boulay and H. Boulay [24] devoted their study on the process of Latinization of alphabets in Central Asia and discussed the reasons, motives, and consequences of the transition of Kazakh, Uzbek, and Turkmen to the Latin alphabet. They analysed the process of Latinization of the alphabet in these countries and described both traditional and new rules associated with the transition to the new writing system. The study raised issues of cultural and linguistic heritage preservation in the transition to the new alphabet and identity preservation and concluded that the process of Romanization of the alphabet can be considered as one of the steps towards language modernization, but cultural and historical aspects related to the use of traditional alphabets must be considered.

The possibility of problems arising during the transition to the new writing system, such as those related to the need to learn the new alphabet or problems related to the preservation of cultural and linguistic identity, were also highlighted. The political and social factors considered in the article that influenced the process of Latinisation of the alphabet and the possible problems associated with it point to the commonality of processes concerning language and national consciousness in the states of Central Asia. The transitions to the Latin alphabet in Turkmenistan and Uzbekistan have shown that a gradual change from the Cyrillic to the Latin alphabet is possible and that the inhabitants will be able to adapt to the new rules in a relatively short time [25-27].

N. Oralbayeva [28] investigated the attitudes of teachers of the Kazakh language towards the transition to the Latin script and their readiness to teach in this system. During the study, surveys were conducted among teachers of the Kazakh language on their attitude to the Latinization of the alphabet, their level of readiness and the need for appropriate training. The main conclusion of the study was that most teachers of the Kazakh language in Kazakhstan support the transition to the Latin alphabet and are ready to teach in this system. However, many of the respondents also expressed concerns about the need for appropriate training and the development of new teaching materials.

The author stressed the importance of appropriate teacher training and education to ensure a successful transition to the Latin script in Kazakhstan. The development of a manual for university teachers to enhance students' learning of the Kazakh language, based on the web textbook "Qazaq tili", is a promising vector of work. As can be seen from the results of the analysed study, with proper support, teachers and professors can become leaders in popularising the Latin script and the Kazakh language in general.

K. Oqlu [29] describes the transition of the Kazakh language to the Latin alphabet in the 1920s and how this transition affected the development of culture and education in Kazakhstan. The study describes the historical, political, and cultural factors that led to the decision to switch to the Latin alphabet, as well as the process of this transition. The author analysed the consequences of the transition to the Latin alphabet and its impact on the development of education and culture in Kazakhstan. In addition, the article examined the current situation with the use of the Latin alphabet in the Kazakh language and the problems associated with this transition, such as the need to reprint books in the new alphabet and problems with the standardization of spelling. The article under consideration provides an overview of the history of the transition of the Kazakh language to the Latin alphabet and its impact on culture and education in Kazakhstan and analyses the problems and challenges associated with the use of the Latin alphabet in modern Kazakhstan. The study indicates that the textbook "Qazaq tili" accounts for previous experiences and possible problems related to the standardisation of spelling. In addition, the use of information technologies in modern education makes the transition to the Latin alphabet simpler and cheaper.

E. Abdykerimova et al. [30] highlighted the transition of the Kazakh alphabet to the Latin alphabet using modern digital technologies. The authors point out that the use of digital technologies in the transition to the Latin alphabet has many advantages, such as speeding up the process, improving the quality and accuracy of the transition, as well as ease of use in modern communication technologies. The study also discusses the challenges associated with the use of digital technologies in the transition to the Latin alphabet, including the need to update and adapt existing software products, dictionaries, and other linguistic resources. The study stresses the importance of educating the public on the use of the new alphabetic system and digital technology. Discussing the advantages and challenges of using digital technologies in the transition of the Kazakh script to the Latin alphabet and emphasizing the need to prepare and adapt digital resources for a successful transition, the study confirms the effectiveness of digital technologies in the modern educational process, for the transition of the Kazakh language from Cyrillic to the Latin alphabet.

The study reviewed focused on the challenges of the transition of the Kazakhstani script to the Latin alphabet.

The studies examine the historical, cultural, and technical aspects of the transition to the Latin alphabet in Kazakhstan, including the use of digital technologies, and discuss the benefits and challenges of the transition to the Latin alphabet. All the analysed articles agree that the transition to the Latin alphabet is an important step in the development of the Kazakh language and culture, but also presents many challenges, including technical and educational aspects. Research confirms that a successful transition to the new alphabetic system can be achieved with the help of modern technology.

## Conclusions

This study analysed the results of the introduction of the web textbook "Qazaq tili" with Latin script and assessed how the use of this resource affected the learning process and the effectiveness of language learning, its advantages, and disadvantages in the context of learning the Kazakh language. According to the results of the survey, it can be concluded that most students have a level of knowledge of the Kazakh language at the B2 level and among them, 60.5% used the classroom web textbook, while 39.5% used printed copies of the textbook. Most students in all groups showed a negative attitude towards the transition to the Latin script, despite the active efforts of the government to introduce it. The study also revealed that most students used the web textbook in class and appreciated the ease of navigating through the materials on the website, which may be an important factor for institutions when choosing textbooks and formats of materials for students.

This study had several objectives, including the analysis of technical indicators related to the use of the web book. It was found that visitors were more likely to return to the site and spend some time on it, indicating that the information was useful. However, indicators were identified that needed more attention.

The study revealed that a textbook can serve as a supplement to traditional teaching methods by providing additional materials and exercises for students' independent work. In this case, the textbook can be used as an additional resource to help deepen the knowledge and skills acquired in lessons or by working with a tutor.

As the "Qazaq tili" web textbook can help to preserve and promote the Kazakh language in Kazakhstan by providing students with access to quality and up-to-date materials in Kazakh, future research is recommended to focus on identifying methods of popularising the Kazakh language and Latin script in Kazakh society.

## Acknowledgements

This research has been funded by the Science Committee of the Ministry of Science and Higher Education of the Republic of Kazakhstan (Grant No. AP 09261117).

## Conflict of Interest

None.

## References

- [1] Badanbekkyzy Z, Nurkeldi UM, Rysbaeva AS. The phonological aspects of the new Latin alphabet. *Ann Univ Crai, Phil Ling Sci Ser.* 2021;43(1). Available from: <https://anale-lingvistica.reviste.ucv.ro/index.php/laucv/article/view/20>
- [2] Abdurakhmanov NA, Bahtybaev AA, Kupbaeva RM. The problem of the Latin Alphabet in Kazakhstan and Turkey. *Corres Univ Law.* 2021;1(119):41-51.
- [3] Kerimkhulle S, Dildebayeva Z, Tokhmetov A, Amirova A, Tussupov J, Makhazhanova U, Adalbek A, Taberkhan R, Zakirova A, Salykbayeva A. Fuzzy Logic and Its Application in the Assessment of Information Security Risk of Industrial Internet of Things. *Symm.* 2023;15(10):1958.
- [4] Paton BE, Chernets AV, Marinsky GS, Korzhik VN, Petrov VS. Prospects of using plasma technologies for disposal and recycling of medical and other hazardous waste. Part 1. *Probl Spetsial Electrometall.* 2005;(3):49-57.
- [5] Kumar Y, Vaigorova L, Rakhmykul Y. Latinization of the Kazakh Alphabet: Analysis of Reasons for Implementation and Their Possible Problem. *Far J Soc Sci.* 2022;8(1):29-39.
- [6] Kydyrbekuly DB. Latinization of Kazakh in the era of digitalization. *Inter J Inform Com Techn.* 2021;7(2):104-106.
- [7] Moldasheva M. Kazakh language and Arabic alphabet. *Bul Yas Univ.* 2022;2(124):79-90.
- [8] Batyrbekkyzy G, Mahanuly TK, Tastanbekov MM, Dinasheva LS. Latinisation of Kazakh alphabet history and prospects. *Europ J Sci Theol.* 2018;14(1):125-134.
- [9] Gabitkhanuly K. Methods of transliteration of Chinese onomastic names in Kazakh alphabet with Latin graphics. *Tiltanyim.* 2022;87(3):14-29.
- [10] Kattabekova NK, Nurmanova ShB. Formation of the alphabetic system in the history of Kazakh writing. *Bul Yas Univ.* 2021;4(122):184-196.
- [11] Eisenberg L. Culture shock: The Russian media's Soviet response to the Kazakh alphabet shift. *Al-Farabi.* 2022;3(79):98-121.
- [12] Karshigaeva AA. The alphabet is a visual system of articulation segments of speech inherent in a particular language. *Tiltanyim.* 2021;4:14-25.
- [13] Amanbayeva AZ. Features of the orthoepic dictionary in the Kazakh language based on the Latin alphabet. *Tiltanyim.* 2020;3:46-50.
- [14] Bayadilova-Altybayeva A, Tektigu Z, Sadykova S, Akkenzhe T, Akmaral O. Language symbols for conveying culture. *XLinguae.* 2023;16(1):109-117.
- [15] Cristea V-M, Baigulbayeva M, Ongarbayev Y, Smailov N, Akkazin Y, Ubaidulayeva N. Prediction of Oil Sorption Capacity on Carbonized Mixtures of Shungite Using Artificial Neural Networks. *Process.* 2023;11(2):518.
- [16] Fialko NM, Prokopov VG, Meranova NO, Borisov YuS, Korzhik VN, Sherenkovskaya GP. Temperature conditions of particle-substrate systems in a gas-thermal deposition process. *Fiz Khim Obrabot Mater.* 1994;(2):59-67.
- [17] Parent R. Voices of transition: Opinions and views on Kazakhstan's alphabet reform. *Al-Farabi.* 2021;2(74):111-116.
- [18] Ginters E, Mezitis M, Aizstrauta D. Sustainability simulation and assessment of bicycle network design and maintenance environment. In: *2018 International Conference on Intelligent and Innovative Computing Applications, ICONIC 2018 (8601225)*. Plaine Magnien: Institute of Electrical and Electronics Engineers; 2018. DOI: 10.1109/ICONIC.2018.8601225
- [19] Orazbaeva F, Imankulova, M. The role of information and communication technologies in the study of the Latin alphabet. *Bul Ser "Philol sci."* 2020;4(74):267-271.
- [20] Mikhailov P, Ualiyev Z, Kabdoldina A, Smailov N, Khikmetov A, Malikova F. Multifunctional Fiberoptic Sensors For Space Infrastructure. *East-Eur J Enter Tech.* 2021;5(5-113):80-89.
- [21] Niyazbekova S, Zverkova A, Sokolinskaya N, Kerimkhulle S. Features of the «Green» strategies for the development of banks. *E3S Web Conf.* 2023;402:08029.
- [22] Bekzhanova Z, Makoelle TM. Latinization of the Kazakh alphabet: Implications for education, inclusion, and social cohesion in Kazakhstan. *SAGE Open.* 2022;12(4):1-15.
- [23] Saduakas N, Mirov M. On copying the Kazakh alphabet in Latin graphics. *Bul Ser "Philol sci."* 2021;4(74):172-177.
- [24] Boulay S, Boulay H. New alphabets, old rules: Latinization, legacy, and liberation in Central Asia. *Prob Post-Com.* 2020;68(2):135-140.
- [25] Ginters E, Aizstrauts A, Dreija G, Ablazevica M, Stepucev S, Sakne I, Baltruks M, Eroles MAP, Buil R, Gusev M, Velkoski G. Skopje bicycle inter-modality simulator – E-involvement through simulation and ticketing. In: *26th European Modeling and Simulation Symposium, EMSS 2014 (pp. 557-562)*. Bordeaux: France; 2014.
- [26] Sydorets V, Korzhyk V, Khaskin V, Babych O, Bondarenko O. Electrical characteristics of the equipment for the hybrid plasma-MIG welding. In: *58th Annual International Scientific Conference on Power and Electrical Engineering of Riga Technical University, RTUCON 2017 (pp. 1-6)*; 2017.
- [27] Prokopov VG, Fialko NM, Sherenkovskij YuV, Sherenkovskaya GP, Borisov YuS, Korzhik VN, Murashov AP. Analysis of temperature conditions in the system "coating-sublayer-basis" under gas-thermal spray-coating of composite powders. *Elekt Obrabot Mater.* 1992;(2):12-15.

- [28] Oralbayeva N. The Latinization of The Kazakh Alphabet: Kazakh Language Teachers' Perceptions and Readiness. Astana: Nazarbayev University Graduate School of Education; 2020.
- [29] Oqlu K. Transition to Latin alphabet (20s of the twentieth century) modern reality is a result of historical events. *Engl Ling Res.* 2021;10(2):38-42.
- [30] Abdykerimova E, Turkmenbaev A, Junebaev A. The use of digital technologies in the transition to the Latin alphabet is a time requirement. *Yessen Sci J.* 2022;1(42):63-68.

## **Результати впровадження веб-підручника з латинською графікою "Казахська мова"**

### **Нургуль Нігметова**

Карагандинський технічний університет імені Абилкаса Сагінова  
100027, проспект Нурсултана Назарбаєва, 56, Караганда, Республіка Казахстан

### **Шара Мажітаєва**

Карагандинський університет імені Букетова  
100024, вул. Університетська, 28, м. Караганда, Республіка Казахстан

### **Шолпан Жетпісбай**

Карагандинський технічний університет імені Абилкаса Сагінова  
100027, проспект Нурсултана Назарбаєва, 56, Караганда, Республіка Казахстан

### **Абилай Турсин**

Карагандинський технічний університет імені Абилкаса Сагінова  
100027, проспект Нурсултана Назарбаєва, 56, Караганда, Республіка Казахстан

### **Сергій Деркач**

Карагандинський технічний університет імені Абилкаса Сагінова  
100027, проспект Нурсултана Назарбаєва, 56, Караганда, Республіка Казахстан

### **Анотація**

**Актуальність.** Актуальність дослідження зумовлена необхідністю визначення найбільш ефективної методики викладання казахської мови на латинській графіці.

**Мета.** Мета дослідження – оцінити результати використання веб-підручника "Казахська мова", виявити проблеми переходу казахської мови з кирилиці на латиницю та проаналізувати, як латиниця може вплинути на розвиток казахської мови з культурно-історичної точки зору.

**Методологія.** У роботі були використані емпіричні та теоретичні методи дослідження, зокрема, анкетування респондентів, класифікація, порівняльний аналіз, системний аналіз, логічний аналіз, синтез і дедукція.

**Результати.** У дослідженні представлено сучасний стан казахської мови, розкрито результати неанонімного опитування студентів щодо їхніх знань казахської мови та труднощів, з якими вони зіткнулися. Анонімне опитування оцінювало зручність навігації підручником "Казахська мова", підтримку переходу на латинський алфавіт і потребу в більшій кількості ресурсів для ефективного вивчення казахської мови. Аналіз включав такі показники веб-сайту, як перегляди, відвідувачі, статистика, залишення, глибина перегляду та час перегляду, а також рекомендації щодо покращення. Опитування та аналітика дали змогу зрозуміти сильні та слабкі сторони підручника, а також сфери його подальшого застосування.

**Висновки.** Дослідження показало, що мотиваційні чинники та доступність ресурсів суттєво впливають на ефективність вивчення казахської мови латинською графікою. Веб-підручник "Казахська мова" продемонстрував ефективність у навчанні казахської мови, хоча існує потреба в більшій підтримці та ресурсах для покращення результатів навчання. Дослідження підкреслює позитивне сприйняття латинської графіки серед студентів і наголошує на важливості постійного вдосконалення навчальних матеріалів для підтримки латинізації казахської мови.

**Ключові слова:** казахська мова; вища освіта; цифрові технології навчання; державна підтримка переходу.