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Formation of financial literacy of primary school students based on digital content

R.K. Izmagambetova¹, D.R. Zharikbaeva², A.M. Baikulova³, E.N. Aitzhanova^{*4}

¹Abai Kazakh national pedagogy university, Almaty, Kazakhstan

^{2,3}Kazakh National Women's Teacher Training University, Almaty, Kazakhstan

⁴Abai Kazakh national pedagogy university, Almaty, Kazakhstan

(E-mail: ¹izmagambetova1988@mail.ru, ²dariga-77@mail.ru, ³aigerim.baikulova@mail.ru, ^{*4}aytzhanova.1971@gmail.com)

Abstract. The article explores the formation of financial literacy among primary school students through digital content, emphasizing its importance in addressing global socio-economic challenges such as debt dependency and low economic awareness. The authors argue that early financial education forms the foundation of responsible economic culture and civic maturity.

The study draws upon Kazakhstan's national policies ("Concept for Improving Financial Literacy 2020-2025," "Concept for Digital Transformation 2023–2029") and international recommendations from the OECD. Using surveys, pedagogical analysis, and comparative methods, the research involved 172 primary school teachers in the Kostanay region. Results revealed a lack of digital learning materials and specific educational programs for financial literacy development.

In response, the authors designed an elective university course titled "Formation of Financial Literacy of Primary School Students," incorporating digital textbooks, teacher guides, and multimedia assignments. The article highlights three structural components of financial literacy: Cognitive – knowledge of financial principles; Activity-based – practical skills in budgeting, saving, and spending; Value-motivational – responsibility, independence, and ethical behavior.

The research concludes that digital educational content – including interactive games, videos, AR storybooks, and online platforms – significantly enhances students' engagement and financial competence. The study's novelty lies in the creation of a theoretically grounded, methodologically coherent digital model for financial literacy formation in primary education, promoting the integration of digital pedagogy and financial education for sustainable learning outcomes.

Keywords: Elementary grade, financial literacy, financial behavior, economic culture, digital content.

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*corresponding author

Introduction

In the 21st century, humanity faces a number of global problems. Namely: the growth of people's debts to a bank or an individual; income inequality, which causes social problems such as unemployment and poverty, leads to the collapse of various types of crime, discrimination, and spiritual and moral values.

Enhancing the financial literacy of primary school students is a crucial issue today, as it serves as a means to address complex social issues. Because the formation of financial literacy in primary school students is the initial stage of increasing the economic culture of citizens in society. Teaching aids based on digital content form the financial literacy of primary school students, help regulate value orientations, contribute to the formation of their attitude toward social and material factors, and determine high spiritual and moral goals. Consequently, the lack of fundamental and applied research based on the achievements of digital technology in improving the quality of education of primary school students determines the relevance of the topic.

In recent years, the problem of financial literacy has been reflected in a number of regulatory and conceptual documents of the country. For example, the Concept of Improving Financial Literacy for 2023-2029 states "the formation of an institutional framework of methodological and educational resources, including in digital format, as one of the types of measures to improve the economic literacy of the youth of society" (On approval of the Concept of improving Financial Literacy for 2020-2025, 2020). Based on this Concept, a textbook has been developed based on digital content, assignment creation using neural networks, etc. In his Message to the people of Kazakhstan, Head of State K. Tokayev noted that recently the population's dependence on loans and low level of financial literacy have become a big social problem; therefore, it is important to improve the financial literacy of students of universities and secondary schools (Tokayev, 2023). The Organization for Economic Cooperation and Development (OECD) also argues that financial literacy should be taught to students from an early age (Good Practices on Insurance Intermediates, 2010).

Financial literacy is critical for individuals' socialization, economic participation, and future well-being. Early exposure to financial concepts helps children understand money, budgeting, savings, and responsible financial behavior. Internationally, programs such as Aflatoun and OECD-endorsed curricula highlight the importance of introducing financial education in primary schools. In Kazakhstan, existing platforms like "Fingramota Online" provide general information but lack structured content and experiential learning tools suitable for young children. The research gap includes the absence of systematic programs that integrate digital content, methodological guidance, and teacher preparation to develop financial literacy in primary school students.

In the practice of primary education, comprehensive knowledge of financial literacy is generally not provided, unless it is partially included in the curriculum of certain disciplines (world erudition, mathematics). Therefore, the development of special digital content aimed at the formation of financial literacy of primary school students and its introduction into the primary education process is a problem caused by the needs of society. To achieve this goal, based on the works of domestic and foreign scientists, it is necessary to analyze the methodological, scientific and pedagogical foundations of financial education for elementary school students, develop a concept and define an effective model of economic education for students through

digital content. A scientific article by A. Zhumabayeva et al. (2024) examines the impact of mobile technologies and tools on the educational process and the attitude of students towards them. Scientists note that in the ultramodern world, there is a process of increasing the importance of access to information and communication. It is impossible to imagine a person without a tablet or smartphone. The capabilities and potential of mobile devices are rapidly expanding, the availability of mobile phones is spreading everywhere, and mobile operations are in demand all over the world. The simplicity and versatility of using these mobile technologies have allowed them to become a useful tool in the lives of both young people and the elderly. The active use of smartphones and tablets in society has increased the need and demand for the integration of mobile technologies into the educational process, concludes A. Zhumabayeva et al. (2024). We believe that through digital content that teaches financial literacy (audio and video materials, a website, a textbook developed on the basis of digital content, and didactic materials), students will be able to apply their knowledge and develop the most important elements of financial behavior and self-control skills. The developed digital educational content for elementary school students will expand the availability of additional education in the field of financial literacy. As stated in the document "On approval of the Concept for the Development of Digital Transformation, Information and Communication Technologies and Cybersecurity for 2023-2029", issues related to the formation of students' digital knowledge should be implemented in primary education, taking into account the latest trends in the global economy (Resolution of the Government, 2023). At the same time, on the one hand, the financial literacy of primary school students is improving; on the other hand, the necessary knowledge and skills are being formed through the safe and effective use of digital technologies and Internet resources. At the same time, students' creative and research activities are developing through digital content. Students learn to search for information, process, compare, evaluate, analyze, and draw conclusions.

Scientists (A.E. Zhumabaeva et al., 2022): Given that we live in the "Mobile Age", mobile technologies have an impact on every aspect of life. *One of them is the field of education, that is, knowledge that is obtained independently through a smartphone or the internet. It is a knowledge that has many possibilities and is interesting but unsystematic, quickly assimilated, and quickly forgotten*, – she argues.

From this point of view, for the formation of financial literacy in primary school students, it is necessary to develop accessible digital content, which will be presented through any information or media content that will be created, stored, and transmitted in digital format. It covers a wide range of content types, such as podcasts, practical exercises transmitted through web-text, audio, video, and interactive multimedia games, and teaching aids developed on the basis of digital content.

Training primary school students in financial literacy is to improve the student's ability and willingness to successfully fulfill individual socio-economic roles (landlord, investor, borrower, taxpayer, etc.) by educating them about skills, abilities, and attitudes in the financial sector. The main characteristic of effective financial education programs in both elementary and high school is that students feel the impact of their decisions through active participation in the learning process. In general, "financial literacy education" is not only about acquiring new skills but also about learning how to apply these skills and, based on this, helping students gain experience. Here, we conclude that digital technological tools meet the needs and requirements of modern students.

Methods

In Kazakhstan, the development of financial literacy among primary school students has become an urgent educational priority. Existing initiatives, such as the mobile application “Fingramota Online” developed by the Agency for Regulation and Development of the Financial Market of the Republic of Kazakhstan, provide general financial literacy information for all ages but lack a structured, age-appropriate curriculum that integrates practical exercises and methodological guidance for teachers. International experience demonstrates that early financial education is highly effective; for example, programs such as Aflatoun in the Netherlands and other European Union countries, guided by OECD recommendations, emphasize experiential learning, or “learning by doing,” which allows children to develop practical financial skills from an early age (I. Kuzma et al., 2023; Amagir et al., 2018). Research identifies three essential components of financial literacy: knowledge and understanding, skills and behavior, and motivation and confidence (Artavanis & Karra, 2020), and emphasizes the importance of introducing financial education before adolescence to ensure children acquire foundational competencies such as money recognition, budgeting, and responsible financial decision-making (Paatova & Daurova, 2014; Sherraden et al., 2011). Despite international evidence, there is a significant lack of comprehensive research and structured programs for primary school students in Kazakhstan.

To address this gap, a survey was conducted among 172 primary school teachers in Arkalyk, Kostanay Region, using Google Forms and supplemented with direct interviews. The survey aimed to determine teachers’ awareness of financial literacy, the perceived importance of introducing it in primary education, the factors contributing to its development, and recommendations for practical implementation. The results revealed that 83.14% of respondents had no prior knowledge of financial literacy education for primary students, while 16.86% had an incomplete understanding. A total of 73.26% considered financial literacy development highly relevant to current social issues, and 100% agreed that it should be introduced at the primary school level. Respondents indicated that additional educational materials and specialized programs were largely absent, with 14% noting the unavailability of digital content and 22% reporting insufficient coverage in school textbooks. Importantly, 72.7% highlighted digital content as a critical tool, while 27.3% emphasized the need for an educational and methodological complex aligned with the curriculum. Teachers recommended introducing a specialized discipline for financial literacy, developing additional teaching aids, and creating digital content adapted for mobile learning.

Based on these findings, a special elective course, “Formation of Financial Literacy in Primary School Students,” was developed for future primary school teachers within the 6B01301 – Pedagogy and Methods of Primary Education program. The course, registered on the university’s single platform for higher education (epvo.kz) for the 2024 academic year, provides students with the knowledge and skills required to guide primary school students in understanding money, planning budgets, managing debts, investing, and developing responsible financial behaviors. The course integrates theoretical instruction, digital content including interactive games, videos, and multimedia lessons, and practical exercises such as budgeting simulations, role-play scenarios, and webquests to reinforce experiential learning. Teacher-guided workshops ensure that participants can effectively explain financial concepts to children, while action learning and collaborative methods foster problem-solving skills. The effectiveness of the course and associated methodological complex was evaluated through pre- and post-

course surveys, teacher and student feedback, and comparative analysis of financial literacy competencies, demonstrating significant improvement in knowledge, skills, and attitudes.

The scientific novelty of this research lies in its systematic approach to developing financial literacy in primary school students through digital content and teacher preparation, which has not been previously explored in Kazakhstan. Unlike prior studies that focus on adolescents or the general population, this work targets 6–10-year-old children and integrates interactive digital materials to address cognitive, activity, and value-motivational components of financial literacy. Furthermore, it provides a methodological framework for teachers, including a digital textbook (“Financial Alphabet”), experiential learning activities, and practical guidance for classroom implementation. This approach not only fills a research gap but also introduces innovative pedagogical and technological solutions aligned with international best practices, such as OECD recommendations and Aflatoun programs.

The implementation of this approach confirms that early, structured, and digitally supported financial education can significantly enhance primary school students’ understanding of financial concepts, planning, and responsible money management. Exposure to such education helps students socialize, understand economic principles, and develop a positive attitude toward money, laying the foundation for lifelong financial competence.

What contributes to the development of financial literacy in elementary school students? In question 4, 37% of respondents stated that there are no additional educational materials aimed at developing financial literacy in elementary school students, and 27% stated that no special training programs are provided. 14% indicated that digital content is not available to students, and 22% stated that school textbooks also contain very few specialized topics in this area.

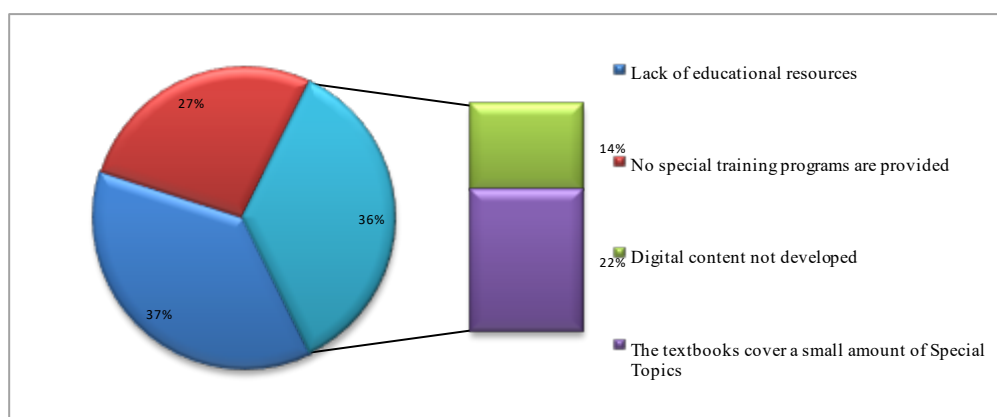


Figure 1. Indicator of Question number 4 of the questionnaire

What tools do you think are of particular importance to you in the formation of financial literacy among primary school students today? In question 5, 72.7% of the survey participants noted digital content, and 27.3% said that it is an educational and methodological complex developed on the basis of the school curriculum. What would you suggest as a future specialist to form the financial literacy of primary school students?

The proposal of the respondents to the question was as follows:

- introduction of a special discipline aimed at the formation of financial literacy in primary school students;

- develop additional teaching aids aimed at the formation of financial literacy in students;
- develop special digital content aimed at the formation of financial literacy, taking into account the transition of students to mobile education.

Based on the results of the survey, an elective course program “Formation of financial literacy of primary school students” was developed for future primary school teachers of the university. Educational program 6B01301 - Pedagogy and Methods of Primary Education created a single platform for higher education, epvo.kz, on April 25, 2024, and registered it for the 2024 academic year (https://epvo.kz/#/register/education_program/application/54053).

In the process of mastering the discipline, students form the financial literacy of primary school students. Students acquire the skills and knowledge necessary to make financial decisions, plan budgets, manage debts, invest, and explain basic financial concepts. Some of the main aspects of financial literacy that are offered to primary school students are: money and coins; budgeting; savings; debts; and mastering the methodology of giving an initial understanding of procurement planning.

Results and Discussion

In Kazakhstan, efforts to improve financial literacy have been initiated through digital platforms such as the mobile application “Fingramota Online”, developed by the Agency for Regulation and Development of the Financial Market of the Republic of Kazakhstan. This platform provides financial literacy content for people of different ages, including primary school students. However, it primarily delivers general information and lacks a structured, age-appropriate curriculum that integrates practical exercises and methodological guidance for teachers. This indicates a research gap in systematically preparing primary school students for financial literacy through pedagogically designed content.

International experience highlights the importance of early financial education. In the Netherlands and other European Union countries, financial literacy is incorporated into primary and secondary school curricula through programs such as Aflatoun, following recommendations from the OECD and the European Commission (I. Kuzma et al., 2023). Studies indicate that effective programs emphasize experiential learning, or “learning by doing,” which helps children develop practical financial skills from an early age (Amagir et al., 2018).

Research identifies three core components of financial literacy: knowledge and understanding, skills and behavior, and motivation and confidence (Artavanis & Karra, 2020). Experts argue that financial education should begin before adolescence, focusing on foundational skills such as coin and bill recognition, budgeting, and responsible financial decision-making (Paatova & Daurova, 2014; Sherraden et al., 2011). Early intervention is shown to significantly improve children’s financial competence and prepare them for responsible participation in economic life.

Despite international evidence, there is a lack of comprehensive research in Kazakhstan on methods for enhancing financial literacy in primary school students. Most studies focus on adolescents or young adults (Lusardi & Mitchell, 2014; Nikolaos & Karra, 2020). Emerging research using AR-based story collections demonstrates that interactive and gamified approaches can significantly improve children’s knowledge, attitudes, and skills in financial literacy (Ratna Candra Sari et al., 2022).

From a pedagogical perspective, financial literacy development in primary school students involves three components:

1. Cognitive component – acquiring knowledge about personal finance, evaluating financial situations, and developing financial competence through self-education.

2. Activity component – practical skills such as planning, organizing, and analyzing personal financial activities.

3. Value-motivational component – fostering responsibility, independence, and a positive attitude toward financial decision-making.

Digital content, including interactive games, video, and audio materials delivered via tablets or computers, can effectively support these components by providing engaging, age-appropriate learning experiences. This aligns with international best practices, emphasizing early, experiential, and gamified financial education as a means of fostering lifelong financial competence.

Scientific Novelty and Contribution of the Study

The conducted research addresses a clear research gap in Kazakhstan, where comprehensive studies on developing financial literacy in primary school students are scarce. While international studies highlight the importance of early financial education, most existing programs focus on adolescents or the general population, leaving primary school education largely unexplored (Lusardi & Mitchell, 2014; Sherraden et al., 2011).

The novelty of this study lies in the development and implementation of a special elective course for future primary school teachers, integrating digital educational content specifically designed to enhance financial literacy in early learners. This approach differs from previous studies by:

1. Targeting primary school-age children (6–10 years), an age group underrepresented in prior research.

2. Using interactive digital content (games, multimedia, digital manuals) to develop cognitive, activity, and value-motivational components of financial literacy.

3. Combining theoretical knowledge with practical application through action learning methods, webquests, and other interactive pedagogical techniques, ensuring experiential learning.

4. Providing a methodological framework for teachers, including a digital textbook (“Financial Alphabet”) and guidelines for curriculum integration, which is not commonly available in Kazakhstan.

This study contributes scientifically by generating new insights into the effective design of digital content for financial literacy and pedagogically by offering a tested model for teacher preparation that can be replicated in primary schools. Furthermore, it fills the gap in research on early financial literacy development and introduces innovative educational tools that align with global best practices, such as OECD recommendations and the Aflatoun program.

Conclusion

Exposure to financial barriers is often linked to insufficient early financial education. This study demonstrates that a systematic, age-appropriate, digitally supported approach can significantly enhance financial literacy among primary school students, improving knowledge, practical skills, and responsible financial behaviors. By training future teachers and providing methodological and digital tools, the study ensures sustainable implementation in primary schools. The proposed model is scalable, replicable, and aligns with international best practices, providing both scientific insights and practical solutions for educators and policymakers.

Exposure to various financial barriers in society often results from a lack of financial literacy. Therefore, forming financial literacy skills in elementary school helps students to socialize, understand economic principles, and develop responsible attitudes toward money. Early

financial education enables children to recognize the value of labor, compare earnings with savings, and manage financial resources competently.

Within the framework of Kazakhstan's «Concept of Improving Financial Literacy 2020-2025», one of the most pressing challenges is to find effective tools for developing financial literacy in primary school students. The results of this study indicate that the most effective approach is the development and integration of digital content into the educational process, designed to be engaging, age-appropriate, and pedagogically structured.

The research demonstrates that digital educational content can enhance financial literacy in primary school students when it:

Analyzes the main problems and prospects for developing financial literacy and proposes a corresponding conceptual framework.

Introduces educational programs and digital resources, including the “Financial Alphabet” textbook, to support teachers and students.

Applies scientific and interactive methods such as action learning, webquests, and conferences to evaluate and improve program effectiveness.

In summary, the study shows that systematic, age-appropriate, and digitally supported financial education can significantly improve children's financial literacy, providing both scientific insights and practical tools for educators and policymakers.

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Conflict of interest

The authors confirm that there are no potential or actual conflicts of interest related to this study.

Contribution of the authors

Izmagambetova R. – was responsible for the concept of the research work.

Zharikbaeva D. – was responsible for coverage and systematization on the chosen topic.

Baikulova A. – developed a detailed plan for data collection, selection of analysis methods, data collection and processing.

Aitzhanova E. – organized and conducted the main experiment as part of the study, described the research methods, a significant contribution to the concept or design of work; collection, analysis and interpretation of the results of the work.

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Р.К. Измагамбетова¹, Д.Р. Жарикбаева², А.М. Байкулова³, Э.Н. Айтжанова^{*4}

^{1,4}Абай атындағы Қазақ ұлттық педагогикалық университеті, Алматы қ., Қазақстан

^{2,3}Қазақ ұлттық қыздар педагогикалық университеті, Алматы қ., Қазақстан

Бастауыш сынып оқушыларының қаржылық сауаттылығын цифрлық контент негізінде қалыптастыру

Аңдатпа. Бұл мақалада бастауыш сынып оқушыларының қаржылық сауаттылығын цифрлық контент негізінде қалыптастыру мәселесі жан-жақты қарастырылған. ХХІ ғасырда қоғам алдында тұрған жаһандық мәселелердің бірі – халықтың несиелік тәуелділігі мен экономикалық мәдениетінің төмендігі. Осыған байланысты қаржылық сауаттылықты ерте жастан қалыптастыру азаматтардың экономикалық мәдениетін арттырудың басты тетігі ретінде сипатталады.

Зерттеу барысында Қазақстан Республикасының нормативтік құжаттары (Қаржылық сауаттылықты арттыру тұжырымдамасы 2020-2025, 2023–2029 жылдарға арналған цифрлық трансформация тұжырымдамасы) және халықаралық ұйымдар (OECD) ұсынымдары негізге алынған. Авторлар бастауыш білім беру жүйесінде қаржылық білім берудің мазмұнын кеңейту, оқушылардың қаржылық мінез-құлқын, өзін-өзі бақылау қабілетін дамытуға арналған цифрлық ресурстардың тиімділігін айқындаған.

Зерттеу әдістері ретінде сауалнама, педагогикалық талдау және салыстырмалы талдау қолданылған. 172 мұғалім қатысқан сауалнама нәтижелері бастауыш сыныптарда арнайы цифрлық оқу материалдарының, оқыту бағдарламалары мен әдістемелік құралдардың жетіспейтінін көрсетті. Осы негізде болашақ бастауыш сынып мұғалімдеріне арналған «Бастауыш сынып оқушыларының қаржылық сауаттылығын қалыптастыру» атты элективті курс әзірленді.

Мақалада шетелдік тәжірибелер (Aflatoun, Fingramota Online, AR-қысқашы әңгімелер) талданған және қаржылық сауаттылықтың үш құрамдас бөлігі – когнитивтік, іс-әрекеттік және құндылық-мотивациялық компоненттер – сипатталған. Зерттеу қорытындысы бойынша, цифрлық контент бастауыш сынып оқушыларының қаржылық білімін дамытудың ең тиімді құралы ретінде ұсынылады.

Түйін сөздер: Бастауыш сынып, қаржылық сауаттылық, қаржылық мінез-құлық, экономикалық мәдениет, цифрлық контент.

Р.К. Измагамбетова¹, Д.Р. Жарикбаева², А.М. Байкулова³, Э.Н. Айтжанова^{*4}

^{1,4}Казахский национальный педагогический университет имени Абая г. Алматы, Казахстан

^{2,3}Казахский национальный женский педагогический университет г. Алматы, Казахстан

Формирование финансовой грамотности младших школьников на основе цифрового контента

Аннотация. Статья посвящена исследованию формирования финансовой грамотности младших школьников на основе цифрового контента. В ХХІ веке одной из актуальных проблем человечества является низкий уровень финансовой культуры населения и рост долговой нагрузки. Авторы утверждают, что формирование финансовой грамотности на ранних этапах обучения способствует повышению экономической культуры граждан и развитию ответственного финансового поведения.

В исследовании проанализированы нормативные документы Республики Казахстан («Концепция повышения финансовой грамотности 2020-2025», «Концепция цифровой трансформации 2023-2029»), труды отечественных и зарубежных ученых, а также рекомендации ОЭСР. Проведён опрос среди 172 учителей начальных классов Костанайской области, результаты которого выявили недостаток цифровых образовательных ресурсов и учебных программ, направленных на развитие финансовой грамотности.

На основе полученных данных разработана элективная дисциплина «Формирование финансовой грамотности младших школьников», включающая цифровой учебник, методические материалы и мультимедийные задания. В статье выделены три ключевых компонента финансовой грамотности: когнитивный (знания), деятельностный (умения) и ценностно-мотивационный (ответственность и установки).

Авторы приходят к выводу, что использование цифрового образовательного контента (видеоуроки, игры, AR-приложения, сайты) является наиболее эффективным инструментом для развития финансовых компетенций учащихся. Работа отличается научной новизной, так как впервые предложена модель цифрового формирования финансовой грамотности для начальной школы, объединяющая теорию, практику и инновационные технологии.

Ключевые слова: начальный класс, финансовая грамотность, финансовое поведение, экономическая культура, цифровой контент.

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Information about the authors:

Izmagambetova R.K. – Ph.D., Postdoctoral fellow, Abay Kazakh National Pedagogical University, Dostyk ave. 13, 050000, Almaty, Kazakhstan

Zharikbaeva D.R. – Candidate of Pedagogical Sciences, Senior Lecturer, Kazakh National Women's Teacher Training University, Aiteke bi 99, 050000, Almaty, Kazakhstan

Baikulova A.M. – Ph.D., Associate Professor, Kazakh National Women's Teacher Training University, Aiteke, 99 050000, Almaty, Kazakhstan

Aitzhanova E.N. – corresponding author, Master of Educational Sciences, Abay Kazakh National Pedagogical University, Dostyk ave. 13, 050000, Almaty, Kazakhstan

Авторлар туралы мәліметтер:

Измагамбетова Р.К. – Ph.D, постдокторант, Абай атындағы Қазақ Ұлттық педагогикалық университеті, Достық даңғылы 13, 050000, Алматы, Қазақстан

Жарикбаева Д.Р. – п.ғ.к., аға оқытушы, Қазақ ұлттық қыздар педагогикалық университеті, Әйтеке би көшесі 99, 050000, Алматы, Қазақстан

Байкулова А.М. – Ph.D., қауымдастырылған профессор, Қазақ ұлттық қыздар педагогикалық университеті, Әйтеке би көшесі 99, 050000, Алматы, Қазақстан

Айтжанова Э.Н. – хат-хабар авторы, педагогика ғылымдарының магистрі, Абай атындағы Қазақ Ұлттық педагогикалық университеті, Достық даңғылы 13, 050000, Алматы, Қазақстан

Сведения об авторах:

Измагамбетова Р.К. – Ph.D., постдокторант, Казахский национальный педагогический университет имени Абая, ул. проспект Достык, 13, 050000, Алматы, Казахстан

Жарикбаева Д.Р. – к.п.н., старший преподаватель, Казахский национальный женский педагогический университет, ул. Айтеке би, 99, 050000, Алматы, Казахстан

Байкулова А.М. – PhD, ассоциированный профессор, Казахский национальный женский педагогический университет, ул. Айтеке би, 99, 050000, Алматы, Казахстан

Айтжанова Э.Н. – автор для корреспонденции, магистр педагогических наук, Казахский национальный педагогический университет имени Абая, имени проспект Достык, 13, 050000, Алматы, Казахстан