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**THE ROLE OF READING LITERACY IN SHAPING THE
INFORMATION CULTURE OF SECONDARY SCHOOL
STUDENTS AGED 11-16**

Ibrayeva Zh.K.¹, *Kenzhebekkyzy M.², Ospanova Zh.T.³

^{1,*2}Al-Farabi Kazakh National University, Almaty, Kazakhstan

³Astana IT University, Astana, Kazakhstan

Abstract. The digitalization of education has raised serious pedagogical challenges for developing schoolchildren's information culture. Reading literacy is essential for enabling learners to understand, interpret, and critically engage with digital information. Nevertheless, the specific contributions of individual reading literacy dimensions remain underexplored.

This study examines the impact of reading literacy dimensions on schoolchildren's information culture within digital environments. The objectives are to conceptualize the relationship between reading literacy and information culture, analyze how reading literacy supports digital information practices, and clarify the educational implications of integrating reading literacy with digital and information and communication technology (ICT) literacies.

A quantitative descriptive research design was employed. Data were collected from 104 secondary school students aged 11 to 16 years using a structured questionnaire that assessed reading literacy dimensions (comprehension, interpretation, evaluation, and reflection) and information culture practices. Descriptive statistical analyses were conducted.

The results indicate that students demonstrate moderate levels of reading literacy and information culture. Comprehension and reflective reading are more strongly associated with information culture, while interpretation and evaluation are less consistently developed. These findings highlight the differentiated roles of reading literacy dimensions and underscore the importance of integrating higher-order reading instruction into digital education to foster critical and responsible information use.

Keywords: reading literacy, comprehension, digital environments, information culture, education, information literacy, pedagogy, interpretation

Introduction

In the present time, young people are exposed to massive amounts of digital information, and increasingly in nonlinear and multimodal ways, with little filtering and quality control. Within this, both technological skills and strong reading literacy are needed in order to understand, evaluate and utilize information [1]. As digital learning environments continue to expand, it is important to evaluate the role of traditional reading skills in fostering the development of schoolchildren's information culture.

Language is not a neutral tool for expressing ideas. It is essential to the formation of human thought. Psychological and conceptual structures develop within language, not apart from it. As a result, language is a primary means of shaping social identity and cultural awareness [2]. This view is consistent with linguistic relativity theory and cultural linguistics, which posit that how individuals interpret information and how they construct meaning from texts are both shaped by embedded norms of discourse within specific cultures. From this point of view, reading literacy is not just a cognitive competence, but rather a culturally mediated process [3, 4]. Some researchers indicate that people now read not only print but also digital content in various formats. These texts can be written in personal, social, professional, and academic contexts. In these domains, the text's intention can be related to anything in life [5]. Changes in reading practices and language use, especially in digital contexts, affect not only communication but also how individuals understand, interpret, and assess knowledge. In this context, literacy development is central to how cultures and societies address challenges related to tradition and cognitive change.

The development of reading literacy is particularly important for enhancing perceptions of the digital space and fostering an information culture among schoolchildren during their study of English, including other foreign languages. According to Bulatbayeva, Smagulova, and Kusainova (2025) reading skills play a significant role in students' cognitive development, expanding their worldviews and communication competence [6]. Therefore, the systematic use of various text types is essential for students to understand text structures, compositional and organizational patterns, and functional-semantic text types, which are highly relevant for processing information in both academic and digital contexts.

Empirical research increasingly demonstrates that digital reading literacy is shaped by cognitive, metacognitive, and socio-educational factors, rather than by technological exposure alone. Cognitive aspects include processes like thinking, knowledge acquisition, memory, and problem solving. Metacognitive knowledge is the conscious awareness of and knowledge about one's thinking processes, including control strategies, planning, monitoring, and evaluating comprehension and production. Socio-educational factors refer to social and educational aspects that appear in the life conditions of people, such as parental instruction or availability of learning resources. For example, Chen (2017) found that self-regulated learning strategies and parental education not only predict students' digital reading literacy, but also the retrieval of information from web pages, comprehension of digital texts, and the ability to communicate digitally. Chen's research findings demonstrate that students who are able to plan, monitor, and evaluate their own reading also have no problem navigating the digital information environment. The author achieved this through structural equation modeling combined with multigroup invariant analysis. Thus, reading literacy can be viewed as the foundation upon which meaningful and responsible information practices among schoolchildren are built. This, in turn, means that in the digital environment, information culture is shaped by reading skills, self-regulation, and access to educational resources [7].

This research aims to find an answer to the following question: How is reading literacy connected with the information culture of children at school in digital environments?

To address this question, this paper will:

- Conceptualize the relationship between reading literacy and information culture.
- Explore how reading literacy supports digital information practices.
- Clarify the educational implications of integrating reading literacy into digital literacy.

To provide further context, the following section will examine linguistic and metaphorical perspectives relevant to information processing.

The scientific novelty of this study lies in its empirical, dimension-specific approach: rather than treating reading literacy as a single construct, it separately measures comprehension, interpretation, evaluation, and reflection among secondary school students aged 11 to 16 and compares their respective associations with self-reported information culture practices in digital environments.

Research on digital reading practices enables us to have a strong theoretical background for the development of children's information culture in school conditions while using digital sources. While some studies look at larger populations, by concentrating on reading as a culturally situated activity, they reveal how interaction with digital texts affects engagement with and use of information, and the interpretation of that information into knowledge [8]. We consider digital reading not just as a technical action, but as a social and cultural practice in which young users handle information within their ordinary digital environments.

In the information culture, reading literacy is a basic competence for schoolchildren in order to effectively function in a digital information environment. Information culture encompasses a stable set of values, norms, skills, and practices that direct how individuals search for, interpret, evaluate, and utilize information within particular cultural and technological contexts [9]. In this context, reading literacy develops information culture by ensuring the comprehension of complex texts, critical evaluation of sources, and reflective engagement with information.

Materials and methods

Reading literacy education is becoming a key competency that shapes students' information culture in the digital world. Reading literacy is described as involving both comprehension and a set of interpretive and evaluative competencies needed to deal with complex, multimodal digital texts and information spaces [10]. Empirical studies support this claim, demonstrating strong correlations between reading-related competencies and digital information practices. For instance, Moreno-Morilla and Guzmán-Simón (2021) found that primary students with higher reading literacy levels utilised more effective information search, interpretation, and integration strategies in digital contexts [11].

Moreover, Chen (2017) demonstrated that reading literacy and self-regulated learning are significant predictors of students' digital reading performance, which is reiterated by recent meta-syntheses on digital-literacy research [7,12].

But other research suggests that being more exposed to digital texts is not the automatic cause of a greater information culture. Although students have basic reading skills, they often face challenges in how to critically judge credibility and authority in digital environments, illustrating the disparity between functional reading abilities and culturally informed information judgment [13].

Taken as a whole, this body of research suggests that while digital environments have broadened access to information, the development of schoolchildren's information culture depends primarily on higher-order dimensions of reading literacy, such as interpretation, evaluation, and reflection, rather than simple exposure to technology. This perspective underpins the conceptualization of reading literacy as an essential component of information culture and informs the present study, which investigates how different dimensions of reading literacy affect schoolchildren's information culture in digital contexts.

The research was carried out within a pedagogical paradigm, utilising a quantitative descriptive approach to examine the reading literacy and information culture among secondary school students in a digital environment.

The selected design enabled a systematic investigation of the relationship between educational competences and student learning experiences, consistent with the contemporary research literacy paradigms that emphasize evidence-based evaluation of learning outcomes.

To strengthen the methodological transparency and empirical grounding of the study, the following complementary groups of scientific methods were applied:

- theoretical methods (analysis, synthesis, and generalization of scientific literature on reading literacy, digital literacy, and information culture), used to substantiate the conceptual framework of the study;
- empirical method: a structured Likert-scale questionnaire survey, the core empirical instrument of the study, administered to 104 secondary school students aged 11-16 to measure four reading-literacy dimensions (comprehension, interpretation, evaluation, reflection) and information culture practices;
- statistical methods: descriptive statistical processing of the survey data, including frequency and percentage distribution analysis for each questionnaire item and calculation of the arithmetic mean (M) and standard deviation (SD) for each reading literacy dimension and information culture indicator;
- comparative-analytical method: comparison of the mean scores across reading literacy dimensions in order to identify which dimensions are most strongly associated with information culture practices, which constitutes the empirical core of the study's scientific novelty.

Participants and educational context

The sample group was 11-16 years old secondary school students, representing a critical stage of compulsory education advanced reading and information-related competencies are actively developed. The target population

is also comparable to that of international educational surveys like PISA and provides a basis by which the findings can be interpreted within a larger academic context. In addition, the study was both voluntary and anonymous, guided by ethical standards of pedagogical research.

Research instrument

The data were gathered through the structured questionnaire, specifically designed for school-based research. The tool is grounded in pedagogical literature on information literacy and in the PISA 2022 conception of learning as active, reflective, and empowered [9]. It is defined as a multidimensional notion that includes the capabilities to comprehend, interpret, and understand (comprehension) as well as to reflect and evaluate. These dimensions reflect various facets of the learning process, ranging from simple text comprehension to critical and reflective engagement with reading material. Information literacy is in this context defined as a set of educationally relevant practices: information seeking, evaluation of sources and responsible use of information within digital learning environments.

The questionnaire items focused on students' experience of carrying out practical work with digital texts that students regularly meet in schools where they study, including articles from the Internet, educational websites, posts from social media and other multimodal digital material that contain images and mixed text formats.

Participants were asked to assess their reading strategies and information practices when interacting with such digital texts, which represent sources of information in contemporary digital learning environments.

All questionnaire items were adjusted to the students' cognitive and content levels. Responses were captured on a five-point scale, where 1 indicated strong disagreement with the statement and 5 indicated strong agreement with it.

The test instrument was constructed to focus on students' competencies, attitudes, and reflection in learning. The survey was administered at school electronically in order to ensure standardized conditions with the guidance of a teacher.

Data analysis procedures

Questionnaire responses were coded numerically and processed using standard descriptive statistical procedures. For each item, frequency distributions and percentage distributions across the five response categories were calculated. For each reading literacy dimension (comprehension, interpretation, evaluation, reflection) and each information-culture item, the arithmetic mean (M) and standard deviation (SD) were computed to characterise central tendency and response variability.

Results

The results include the respondents' demographic characteristics, descriptive statistics for reading literacy dimensions and information culture, and an analysis of the relationships among these constructs.

The final sample comprised 104 secondary school students aged 11 to 16 years. The sample involved both female and male students, with 58.7 % being female, 41.3 % being male respondents.

Most participants reported regular internet access at home, indicating that the student body is situated in a digitally connected learning environment. The majority of participants (102 out of 104) reported consistent access to digital technologies, and thus, digital learning resources should generally be accessible for participants. That level of access offers an applied context for investigating reading literacy and information culture in digital contexts.

As shown in Figure 1, regarding digital reading devices, students' favourite was the smartphone (95 users), which is indicative of the relevance that mobile technologies have on students' reading habits. On the contrary, only a small number of participants read using a computer or laptop ($n = 4$), tablet ($n = 4$), and printed books ($n = 1$). This trend suggests that students' interaction with digital texts is largely located in a mobile-based network.

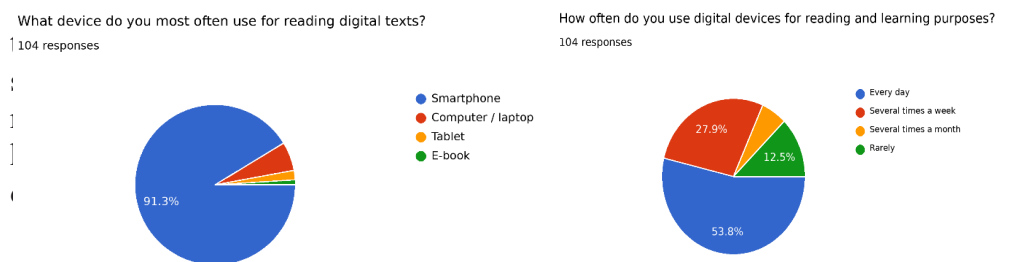


Figure 1 - Means of digital text reading devices and frequency of daily reading on them for learning

In summary, the demographic profile indicates a learning environment characterized by widespread digital access, predominant smartphone use, and diverse patterns of digital reading engagement. These factors are significant for interpreting study results concerning reading literacy and information culture in digitally rich contexts. Educational motivation and information literacy currently differ among schoolchildren of various ages. Given that elementary school students also possess smartphones, it is essential to define information literacy for all students and to structure the educational process to foster functional literacy.

The second section of the questionnaire evaluated students' interpretative reading competence in digital environments (sample shown in Table 1). It specifically measured their capacity to construct meaning beyond the literal level, establish connections within and across texts, and integrate information from multiple sources.

As Table 1 indicates, self-reported comprehension skills are relatively stronger among students, while interpretation, evaluation, and reflection tend to show more variation and often lower levels of agreement, reflecting uneven

development of higher-order reading literacy in digital environments. The students have more confidence in basic comprehension skills than higher-order reading processes. For instance, 44.3% agreed or strongly agreed that they can understand the main idea of digital texts and 45.2% of respondents can find specific information in digital texts. Moreover, skills of interpretation present lower levels of agreement, 29.8% of students agreed or strongly agreed they can interpret information from different digital texts focusing on the same theme.

Responses to evaluation items are a little better, but remain uneven. For example, 51% of respondents agree/strongly agree that they are able to assess whether information posted online is accurate, and 51% said they can compare accounts from different sources to see which one is more trustworthy. All reflection items show moderate agreeability rates, with 47% of students claiming that they reflect on whether the digital information would help them reach their goals. Overall, these results indicate that students feel relatively confident in more basic aspects of comprehension as well as some practices regarding their evaluation, but that more complex processes like cross-text interpretation and reflective engagement do not consistently develop within student practice.

Table 1. Distribution of students’ responses to reading literacy in digital environments (%)

Dimension	Questions	1 (strongly disagree)	2	3	4	5 (strongly agree)
Comprehension	I can understand the main idea of digital texts such as articles, websites, or online posts.	9.6%	21.2%	25%	35.6%	8.6%
	I can find specific information in digital texts even when it is not clearly highlighted	2.9%	27.9%	24%	34.6%	10.6%
	I understand digital texts even when they include links, images, or different text formats	4.6%	17.4%	39.5%	35.6%	2.9%
Interpretation	I can explain the meaning of a digital text in my own words	6.7%	16.4%	34.6%	35.6%	6.7%
	I can understand how different parts of a digital text are connected	7.71%	16.3%	33.6%	38.5%	3.8%
	I can interpret information from more than one digital text on the same topic.	10.6%	21.2%	38.5%	26.9%	2.8%

Evaluation	I can judge whether information on the internet is reliable or not	3.8%	17.3%	27.9%	37.5%	13.5%
	I can tell the difference between facts and opinions in digital texts.	3.8%	23.1%	30.8%	28.8%	13.5%
	I can compare information from different online sources to decide which is more trustworthy	5.8%	20.1%	23.1%	35.6%	15.4%
Reflection	I think about how the information I read online can influence my opinions.	8.7%	24%	26%	27.8%	13.5%
	I reflect on whether digital information is useful for my goals or tasks.	7.7%	15.4%	22.1%	37.5%	17.3%
	I consider the possible consequences of using or sharing online information.	8.6%	21.2%	23.1%	37.5%	9.6%

Descriptive analyses showed that the mean score of interpretative reading literacy student confidence level was $M = 3.08$ ($SD = 0.78$, on a five-point Likert scale), indicating an intermediate level for students' confidence in interpreting digital texts.

At the item level, students expressed the greatest confidence in their ability to rephrase the content of a digital text ($M = 3.19$, $SD = 1.02$). A similar mean score was found for understanding connections between sections of digital text ($M = 3.14$, $SD = 1.00$).

As demonstrated in Table 2, students have relatively higher self-reported comprehension abilities, with lower overall reports of interpretation, evaluation, and reflection, as well as more varied levels of agreement by construct, which suggests uneven development of higher-order reading literacy in digital environments.

Table 2 shows that quick information retrieval ($M = 3.59$) and rereading digital texts when comprehension is insufficient ($M = 3.61$) are prevalent practices. These results indicate that students typically possess the procedural skills necessary to navigate digital information environments and exhibit active reading behaviors when facing comprehension challenges.

Moderate mean values for using multiple sources ($M = 3.27$) and for comparing different digital texts ($M = 3.30$) suggest only partial engagement with integrative information practices. The lowest mean score was found for considering the author of online information ($M = 2.97$), indicating that analysis of credibility is not often applied.

Table 2. Frequency of student responses by digital reading literacy dimensions

Item	Mean (M)	SD
I can quickly find relevant information online	3.59	0.96
I use multiple sources when searching for information	3.27	1.16
I check who created the information before trusting it	2.97	1.17
I pay attention to the publication date of online information	3.29	1.15
I usually read digital texts quickly to find answers	3.33	1.14
I reread digital texts when I do not understand them the first time	3.61	1.05
I compare different digital texts before forming an opinion	3.30	1.19

Taken together, these data indicate that students actively and competently use digital resources; however, some aspects of their work with texts, such as critical evaluation and synthesis of information from various sources, remain underdeveloped.

Discussion

This study investigates the influence of various aspects of reading literacy on schoolchildren’s information culture in a digitalized environment. The findings indicate a multifaceted profile of students’ online reading practices, with notable strengths in operational engagement with digital information and ongoing challenges in higher-order literacy skills. The subsequent discussion considers the implications of these results for teacher education literature, pedagogical theory, and directions for future research.

The demographic data demonstrate that students in this study are immersed in a digital learning culture defined by widespread internet access and the predominance of smartphones as primary devices for reading digital texts. These results are consistent with recent research [6] that documents teenagers’ preference for mobile devices as their main source of information. Nevertheless, significant variation in digital reading rates for academic purposes indicates that high levels of access do not automatically result in frequent use of digital texts for school-related activities.

Mobile reading environments often promote rapid scanning and fragmented attention. Although these processes can be effective for information retrieval, they are typically brief and may lack opportunities for reflective or evaluative engagement.

A comparison of reading literacy dimensions shows these students report strong comprehension but are less confident in interpretation, evaluation, and reflection. Most feel comfortable understanding main ideas and finding information in digital texts, but fewer express confidence in integrating information across texts, critically evaluating content, or making judgments beyond a single source.

The moderate mean score for interpretative reading literacy (M = 3.08) indicates students can understand texts but have difficulty integrating information from multiple digital sources. This aligns with prior work indicating that reading across texts and combining information from them are higher-order skills that

usually need to be taught explicitly and built up through practice. The variation in scores also suggests these skills are not consistently developed among all students.

However, practices associated with critical evaluation, such as verifying the authorship of information and systematically assessing credibility, were reported less frequently. The relatively low mean score for checking source authorship ($M = 2.97$) suggests that critical evaluation is not yet a routine practice for many students. Likewise, only moderate engagement with source comparison indicates limited synthesis across texts.

Conclusion

The present study examined how different dimensions of reading literacy affect school students' information culture in digital environments. The results indicate that reading literacy influences information culture through several distinct mechanisms. 'Basic understanding' and 'reflective reading with source' were identified as the most influential factors in enabling students to access, interpret, and reflect on digital information. In contrast, interpretative and evaluative reading skills exhibited weaker and less consistent effects, suggesting that advanced literacy competencies remain underdeveloped among many students.

In relation to the first objective, the study conceptualized the relationship between reading literacy and information culture, proposing that information culture is fundamentally rooted in the reading process rather than being solely a technical or procedural skill.

The findings indicate that comprehension and interpretation are the two reading competencies most directly linked to how well students function in digital information spaces. Teachers have a significant role in cultivating these competencies among students in educational institutions. In the contemporary educational landscape, teachers are expected to demonstrate not only proficiency in pedagogical practices [14], but also a capacity for methodological adaptability and digital literacy [15].

The results show that access to digital media is insufficient itself to create information oriented culture. The research also highlights the significance of critical reading literacy in cultivating an information culture and developing educational programs that encourage creative engagement with information, rather than simple reproduction.

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11-16 ЖАСТАҒЫ ЖАЛПЫ БІЛІМ БЕРЕТІН МЕКТЕП ОҚУШЫЛАРЫНЫҢ АҚПАРАТТЫҚ МӘДЕНИЕТІН ҚАЛЫПТАСТЫРУДАҒЫ ОҚУ САУАТТЫЛЫҒЫНЫҢ РӨЛІ

Ибраева Ж. К.¹, *Кенжебекқызы М.², Оспанова Ж.Т.³

^{1,*2}Әл-Фараби атындағы Қазақ ұлттық университеті, Алматы, Қазақстан

³ Astana IT University, Астана, Қазақстан

Аңдатпа. Білім беруді цифрландыру мектеп оқушыларының ақпараттық мәдениетін дамыту үшін күрделі педагогикалық қиындықтар туғызды. Оқу сауаттылығы оқушылардың цифрлық ақпаратты түсінуіне, түсіндіруіне және сыни тұрғыдан әрекеттесуіне мүмкіндік беру үшін өте маңызды. Соған қарамастан, жеке оқу сауаттылығы өлшемдерінің нақты үлесі әлі де толық зерттелмеген.

Бұл зерттеуде оқу сауаттылығы өлшемдерінің сандық ортадағы мектеп оқушыларының ақпараттық мәдениетіне әсерін зерттейді. Мақсаттары - оқу сауаттылығы мен ақпараттық мәдениет арасындағы байланысты тұжырымдау, оқу сауаттылығының цифрлық ақпараттық тәжірибелерді қалай қолдайтынын талдау және оқу сауаттылығын цифрлық және ақпараттық-коммуникациялық технологиялар (АКТ) сауаттылығымен біріктірудің білім беру саласындағы салдарын анықтау.

Сандық сипаттамалық зерттеу дизайны қолданылды. Деректер 11 жастан 16 жасқа дейінгі 104 орта мектеп оқушысынан оқу сауаттылығы өлшемдерін (түсіну, түсіндіру, бағалау және рефлексия) және ақпараттық мәдениет тәжірибелерін бағалайтын құрылымдалған сауалнаманы пайдалану арқылы жиналды. Сипаттамалық статистикалық талдаулар жүргізілді.

Нәтижелер оқушылардың оқу сауаттылығы мен ақпараттық мәдениеттің орташа деңгейін көрсететінін көрсетеді. Түсіну және рефлексивті оқу ақпараттық мәдениетпен тығыз байланысты, ал түсіндіру және бағалау онша тұрақты емес. Бұл нәтижелер оқу сауаттылығы өлшемдерінің әртүрлі рөлдерін көрсетеді және ақпаратты сыни және жауапты пайдалануды дамыту үшін жоғары деңгейлі оқуды оқытуды цифрлық білім беруге біріктірудің маңыздылығын көрсетеді.

Тірек сөздер: оқу сауаттылығы, түсіну, цифрлық орта, ақпараттық мәдениет, білім беру, ақпараттық сауаттылық, педагогика, түсіндіру

РОЛЬ ЧИТАТЕЛЬСКОЙ ГРАМОТНОСТИ В ФОРМИРОВАНИИ ИНФОРМАЦИОННОЙ КУЛЬТУРЫ УЧАЩИХСЯ 11-16 ЛЕТ

Ибраева Ж. К.¹, *Кенжебекқызы М.², Оспанова Ж.Т.³

^{1,*2}Казахский национальный университет имени аль-Фараби

Алматы, Казахстан

³Astana IT University, Астана, Казахстан

Аннотация. Цифровизация образования создала серьезные педагогические проблемы для развития информационной культуры школьников. Читательская грамотность необходима для того, чтобы учащиеся могли понимать, интерпретировать и критически взаимодействовать с цифровой информацией. Тем не менее, отдельные аспекты читательской грамотности остаются недостаточно изученными.

В данном исследовании рассматривается влияние аспектов читательской грамотности на информационную культуру школьников в цифровой среде. Поставлены следующие задачи: определить взаимосвязь между читательской грамотностью и информационной культурой, проанализировать, как читательская грамотность поддерживает цифровые информационные практики, и уточнить образовательные последствия интеграции читательской грамотности с цифровой грамотностью и грамотностью в области информационно-коммуникационных технологий (ИКТ).

В исследовании применялся количественный описательный дизайн. Данные были собраны у 104 учащихся средних школ в возрасте от 11 до 16 лет с помощью структурированной анкеты, оценивающей аспекты грамотности чтения (понимание, интерпретация, оценка и рефлексия) и практики информационной культуры. Для анализа данных использовалась описательная статистика.

Результаты показывают, что учащиеся демонстрируют умеренный уровень грамотности чтения и информационной культуры. Понимание и рефлексивное чтение сильнее связаны с информационной культурой, в то время как интерпретация и оценка развиты менее последовательно. Эти результаты подчеркивают дифференцированную роль аспектов грамотности чтения и важность интеграции обучения чтению более высокого уровня в цифровое образование для развития критического и ответственного использования информации.

Ключевые слова: грамотность чтения, понимание, цифровая среда, информационная культура, образование, информационная грамотность, педагогика, интерпретация

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Information about the authors:

Ibrayeva Zhanar Kulmatovna – Doctor of Philology, Research Associate Professor at the department of Turkology and Language Theory, Al-Farabi Kazakh National University, Almaty, Kazakhstan, e-mail: zhanar.kulmat@gmail.com, ORCID: <https://orcid.org/0000-0001-9094-3034>

Kenzhebekkyzy Mereke – Doctoral student of the educational program “Foreign Language: Two Foreign Languages”, Al-Farabi Kazakh National University, Almaty, Kazakhstan, e-mail: kenzhebekkyzymereke@gmail.com, ORCID: <https://orcid.org/0009-0003-1112-2740>

Ospanova Zhanna Tolyubaevna – PhD, Associate Professor of the School of General Education Disciplines, Astana IT University, Astana, Kazakhstan, e-mail: zh.ospanova@astanait.edu.kz, ORCID: <https://orcid.org/0000-0002-4369-5557>

Авторлар туралы мәлімет:

Ибраева Жанар Кулматовна – филология ғылымдарының докторы, Түркітану және тіл теориясы кафедрасының доцент-зерттеушісі, әл-Фараби атындағы Қазақ ұлттық университеті, Алматы, Қазақстан, e-mail: zhanar.kulmat@gmail.com, ORCID: <https://orcid.org/0000-0001-9094-3034>

Кенжебекқызы Мереке – «Шетел тілі: екі шетел тілі» докторанты, әл-Фараби атындағы Қазақ ұлттық университеті, Алматы, Қазақстан, e-mail: kenzhebekkyzymereke@gmail.com, ORCID: <https://orcid.org/0009-0003-1112-2740>

Оспанова Жанна Төлеубайқызы – (PhD) философия докторы, Жалпы білім беретін пәндер мектебінің қауымдастырылған профессоры, Astana IT University, Астана, Қазақстан, e-mail: zh.ospanova@astanait.edu.kz, ORCID: <https://orcid.org/0000-0002-4369-5557>

Информация об авторах:

Ибраева Жанар Кулматовна – доктор филологических наук, доцент-исследователь кафедры Тюркологии и теории языка, Казахский Национальный университет имени аль-Фараби, Алматы, Казахстан, e-mail: zhanar.kulmat@gmail.com, ORCID: <https://orcid.org/0000-0001-9094-3034>

Кенжебекқызы Мереке – докторант образовательной программы «Иностранный

язык: два иностранных языка», Казахский национальный университет имени аль-Фараби, Алматы, Казахстан, e-mail: kenzhebekkyzymereke@gmail.com, ORCID: <https://orcid.org/0009-0003-1112-2740>

Оспанова Жанна Толубаевна – доктор философии (PhD), ассоциированный профессор Школы общеобразовательных дисциплин, Astana IT University, Астана, Казахстан, e-mail: zh.ospanova@astanait.edu.kz, ORCID: <https://orcid.org/0000-0002-4369-5557>