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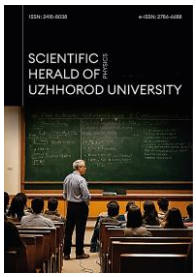

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Functional literacy development of junior schoolchildren based on digital educational resources

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Abstract

Relevance. In the context of the reorganisation of the educational process policy of the Republic of Kazakhstan, the issue of teaching primary school children to develop functional literacy becomes urgent, which is an important step for modernising the educational system of the Republic of Kazakhstan and ensuring the competitiveness of the young generation.

Purpose. The study aims to develop and experimentally verify the model of functional literacy development of junior schoolchildren based on digital educational resources.

Methodology. The study employed analysis, comparison, systematisation, classification, generalisation, experiment, and methods of mathematical statistics.

Results. The concepts of "functional literacy", "development of functional literacy of junior schoolchildren", and "development of functional literacy based on digital educational resources" were defined. The research was conducted in general education schools "School-lyceum No. 66" and "School No. 16" (Karaganda). As part of the experiment, the development of the functional literacy of junior schoolchildren model was carried out, namely the implementation of components with selected methods of their formation and pedagogical conditions, which was used to improve the educational process in primary schools of the Republic of Kazakhstan.

Conclusions. The results of the conducted experiment formed promising directions for improving the educational process aimed at the development of functional literacy in the Republic of Kazakhstan through the formation of components, as well as pedagogical conditions and the development of methods of their implementation. The practical significance of the

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study consists in the development and implementation of the model, components, pedagogical conditions and methods of development of functional literacy of junior schoolchildren in the Republic of Kazakhstan.

Keywords: primary education; methodology of training organisation; meta-subject results; components; pedagogical conditions of training; digital technologies.

Introduction

The Republic of Kazakhstan requires modernisation of the education system to improve the competitiveness of the young generation in the labour market. The economic and social development of the Republic of Kazakhstan in the context of digital society and the strengthening of the world information flow depends on the existing level of functional literacy of the young generation. Modern schools can provide students with a significant amount of knowledge but are unable to provide them with the skills to use the acquired competencies in practice and everyday life.

Numerous studies, including those by A.B. Aitbaeva and Zh.N. Shaigozova [1], prove that the process of formation of functional literacy should include procedural reading and explanatory text types. Several shortcomings existing in the education system of the Republic of Kazakhstan is highlighted, namely insufficient reading technique, analysis, summarization and information interpretation skills among junior schoolchildren. Thus, the necessity of updating the system of primary education as a guarantee of the development of functional literacy in primary school pupils is evident. Investigating the issues of improving literacy among the population, I. Abualrub et al. [2] concluded that Kazakhstani society needs specialists who can quickly adapt to the modern-day changes. It is proved that in the conditions of modernity, universal competencies or functional literacy is a requirement to ensure professional development. Researchers have defined the concept of "functional literacy", which consists of the established close relationship between the general education of a person and ability to use the acquired knowledge in practice in various situations, to apply the acquired knowledge in practice, to carry out self-assessment and strive for self-development [3].

Active research on the structure of functional literacy by V. Kovalchuk et al. [4] identified a model of functionally literate personality, which include action correlation and coordination with the actions of other people, independent decision-making, lifelong learning, plethora of competences, quick non-standard decision-making, social adaptation, command of native language and modern digital technologies. According to O.A. Khashan et al. [5], the modern education system of the Republic of Kazakhstan aims to develop and educate a personality capable of adapting to the rapidly developing society. Such a process should start from primary school. That is why teachers in the field of primary education and in the process of formation of functional literacy of pupils need to use modern teaching techniques, including digital technology employment. Since reading is an effective means of personal development of students at the primary school age, this kind of activity contributes to the development of information analysis skills, in particular, of information obtained from the Internet. However, despite numerous studies in this area, the issue of methodology for the formation of functional literacy of junior schoolchildren remains insufficiently researched.

Thus, the study aims to develop and experimentally test the model of functional literacy development of junior schoolchildren based on digital educational resources of the Republic of Kazakhstan. The following tasks are to be addressed in the process of conducting the research:

1. Study the experience of implementation of the model of functional literacy development of junior schoolchildren in the Republic of Kazakhstan.
2. Develop a model of functional literacy development of junior schoolchildren, components, as well as pedagogical conditions.
3. Select the necessary methodological tools aimed at the development of functional literacy of junior schoolchildren.
4. Implement the model and pedagogical conditions for the development of functional literacy of junior schoolchildren.

Building the educational process on the updated model will contribute to the effective provision of functional literacy of pupils as a guarantee of their future competitiveness in the labour market.

Materials and Methods

Analysis was employed in studying the problems related to the issues of the formation of functional literacy in junior schoolchildren. Synthesis was used to review philosophical, psychological, pedagogical and methodological literature based on the standards of primary education in the Republic of Kazakhstan. The comparison was employed in the study of educational programmes, used to teach junior schoolchildren, with working curricula and educational-methodical complexes. The classification was used to study the literature base, and generalisation was used to address the experience of implementation of the model of formation of functional literacy of junior schoolchildren in the Republic of Kazakhstan. The statistical, formative and control experiment was used to determine the levels of implementation of the model of functional literacy development of junior schoolchildren.

The study was conducted during the 2022-2024 academic years and was carried out in general education schools "School-lyceum No. 66" and "School No. 16" (Karaganda city). To ensure the representativeness and authenticity of the sample, the peculiarities of group formation, age and gender of respondents were determined. Formation of the control and research group was carried out by pair selection. The sample consisted of 128 respondents studying in the 4th grade, age ranging from 9 to 10 years old. The control group included 63 students and the experimental group included 65 participants. There were no significant differences between the experimental and control groups before the experiment. The results of the experimental data were evaluated in terms of high, medium and low levels.

To check the levels of functional literacy development of junior schoolchildren the following components are defined: conceptual-target, content-technological, and result-evaluative. The model of functional literacy development of junior schoolchildren was proposed. To verify the results of the conceptual-target component of the model, an author's questionnaire developed for junior schoolchildren to determine learning motivation was used. The content-technological component was verified by solving integrated tasks aimed at checking the formation of knowledge and skills of junior schoolchildren aimed at ensuring the formation of functional literacy. The resultant-evaluative component was determined via a test, specifically developed to assess the formation of functional literacy and interviews to obtain information about the level of junior schoolchildren's understanding of learning objectives and the level of functional literacy formation.

According to the results of the conducted expert assessment, conclusions regarding the average and low level of realisation of functional literacy development of junior schoolchildren were made. Within the framework of the formative stage of the experiment, pedagogical conditions and a model were proposed, which was used in teaching junior schoolchildren of the experimental group. The aspects of the pedagogical process that should be considered in the process of developing functional literacy of junior schoolchildren were identified. The coaching method was used to form the conceptual-target component. The level of increasing the content-technological component of functional literacy formation is proposed by improving the software and methodological support: the base of tasks for the primary school subjects "Literary Reading", "Mathematics", and "Natural Science". The result-evaluation component involves tracking and correcting the results of the learning activities of primary school students.

The organization of functional literacy development of primary school students in the conditions of digitalization of education was conducted in three stages: the orientation and preparation stage aimed to determine the goals and objectives of functional literacy development, to form teachers' and students' understanding of functional literacy, to prepare the necessary material and technical base; the activity stage includes the implementation of specific programmes and projects for the development of functional literacy, the formation of a system of monitoring and evaluation of the results of the project. Thus, the organisation of the development of functional literacy of primary school students in the conditions of digitalisation of education should be goal-oriented and systematic, considering the peculiarities of modern education and the development of society. The following pedagogical conditions were developed: development of functional literacy of primary school students in the conditions of digitalisation of education; motivation of primary school students to engage in the process of learning activities; development and improvement of subject competencies in the primary school subjects "Literary Reading", "Mathematics", "Science".

After obtaining the results of the study at the establishing and forming stages, the control stage was conducted, the obtained data were summarised, conclusions were drawn and prospects for further research were determined.

Results

With the profound socio-economic changes taking place in the Republic of Kazakhstan, the human being is asserted as the highest social value, full development of personal abilities, satisfaction of needs, and harmonisation of interpersonal relations. Ensuring the practical realisation of the outlined tasks is entrusted to the individual himself, confident social space interaction [6].

The pedagogical design of primary education in the Republic of Kazakhstan should move from the transfer of knowledge to the formation of competencies of the 21st century, be a pledge for the development of mobile intelligence – the ability to think logically, analyse life and professional situations and solve problems beyond the limits of available experience. Pupils in primary school with high-level functional literacy should be able to solve everyday questions and stereotypical tasks, have a basic level of reading and writing skills, and assess the quality of knowledge acquisition. In the age of digitalisation, literacy should only be functional. It is the formation of reading competence that allows the younger schoolchild to perceive and understand the information of the digital environment. With the rapid changes in the world, there is a need to ensure continuous personal development [4]. With active inclusion of pupils in independent cognitive activity, which can be organised both during classroom lessons and in the process of doing homework, it is necessary to use a variety of forms and methods, among which a special place belongs to the project and situational task. Since the issue of developing functional literacy in junior schoolchildren is poorly studied, it is necessary to conduct research in this direction [1; 7].

In the course of the experiment, the concept of "functional literacy" was defined as a dynamic set of knowledge, skills and competencies necessary for successful functioning in society. Its basis is not only the possession of basic reading, writing and numeracy skills, but also the ability to understand and use information from different sources: texts, tables, graphs, diagrams, and multimedia; analyse and critically evaluate information: determine its reliability, relevance, objectivity, create own texts: express thoughts and ideas clearly, concisely, and reasonably; solve problems: use knowledge and skills for practical application in different situations; interact with others: communicate effectively, co-operate, work in a team; learn throughout life: adapt to change, constantly update knowledge and skills.

Functional literacy is not limited to a particular field of knowledge but is interdisciplinary. It includes reading literacy (comprehension of texts of different genres and styles, critical thinking, and analysing information); mathematical literacy (understanding mathematical concepts, symbols and laws); scientific literacy (understanding scientific concepts, and research methods); information literacy (searching, processing, storing and using information from different sources); digital literacy (using digital technologies for communication, learning, problem-solving). The development of functional literacy is a dynamic process that aims to acquire knowledge and skills in reading, writing, mathematics, quick information retrieval, the use of digital technologies, the development of competencies in learning, creative problem solving, communication, critical and creative thinking, and personal qualities. The development of functional literacy

is not only the task of the school but also the responsibility of the family, society and the state. Under the concept of "development of functional literacy based on digital educational resources" the process of training junior schoolchildren based on access to diverse and relevant information resources, and opportunities for independent learning: learning games, simulations, virtual laboratories; tools for working with information: search, analysis, evaluation, creation; tools for communication and cooperation: forums, chat rooms, wiki environments is implied.

In the system of primary education of the Republic of Kazakhstan, the use of teaching methods in the process of formation of functional literacy of junior schoolchildren should be creative and flexible. This condition, aimed at developing functional literacy based on digital educational resources, is put into practice in Kazakhstan thanks to small classes with up to 10 students. Flexible timetables allow pupils to work on individual tasks and make significant progress in learning. The second condition for the development of functional literacy is the establishment of mutual understanding based on trust between the student and the teacher. The third condition is the creation of a favourable educational environment using digital educational resources for learning within the framework of elective courses. This environment is different from the school environment because many students have negative experiences of learning at school.

To ensure functional literacy in primary school, it is recommended to use teaching methods based on analytical, structural and reading approaches. The essence of the analytical approach is teaching reading and writing according to the methodology from simple to complex. The global structural approach compared to the analytical approach is based on the use of visual aids. The reading approach takes place in the process of formulating hypotheses while reading a text, which allows an understanding of the meaning of the text and its content. Depending on the method chosen by the teacher, the individual interests of the pupils and their special needs should be considered, and thematic materials appropriate to the daily environment of the younger pupils or the pupils' materials should be used. All methods and their combinations are suggested for use in the research process.

To implement the model of development of functional literacy of junior schoolchildren, a confirmatory and formative experiment was carried out. It aims to determine the level of development of functional literacy of junior schoolchildren and to check the effectiveness of the proposed model. The study was conducted during the 2022 – 2023 academic years and was carried out in general education schools: "School-lyceum No. 66" and "School No. 16" (Karaganda city). The sample consisted of 128 respondents studying in the 4th grade, whose age category is represented in the range from 9 to 10 years old. The control group included 63 students, and the experimental group included 65 participants. To determine the levels of functional literacy development at the stage of the establishing experiment, a model was built, based on which three components of functional literacy development of primary school students in the conditions of digitalisation of education (conceptual-target, content-technological, result-evaluative) were identified.

The conceptual and goal-oriented component includes the methodological basis for the development of functional literacy of junior schoolchildren in the conditions of digitalisation of education. The model aims to develop functional literacy of junior schoolchildren in the context of education digitalisation; to motivate junior schoolchildren to engage in the process of learning activities; to develop and improve subject competencies in the primary school subjects "Literary Reading", "Mathematics", "Science". The systemic, personality-oriented, activity-oriented, conceptual, and poly-subject approaches were used as a basis. The following principles were applied: visuality (use of visual materials such as pictures, diagrams, and tables for better understanding and assimilation of information); nature-appropriateness (ensuring that the teaching material corresponds to the age peculiarities and level of students' training); activity (encouraging active participation of students in the learning process, use of interactive teaching methods); systematicity and consistency (ensuring logical links between topics and lessons, a gradual complication of learning material); perspective and continuity (addressing the prospects for the development of students' knowledge and skills, ensuring links between previous and subsequent learning material); humanisation (creating an atmosphere of trust and cooperation, respect for the student's personality, opinions and feelings). These principles will organise the initial process in efficient and effective for education.

The content-technological component implements the functions of methodological support for the development of functional literacy of junior schoolchildren in the conditions of digitalisation of education. The content-technological component includes a set of pedagogical conditions: content, technological and organisational conditions (ensuring the gradual organisation of the use of different types of digital educational resources; involving junior schoolchildren in the use of digital educational resources; creating positive emotional stimuli for the development of functional literacy of junior schoolchildren based on digital educational resources); software and methodological support: a database of tasks for the primary school subjects "Literary Reading", "Mathematics", "Natural Science". The development of functional literacy of junior schoolchildren in the conditions of digitalisation of education was organised in three stages: orientation and preparation, activity and final. The result-evaluation component provides diagnostics of the level of functional literacy development of junior schoolchildren in the conditions of digitalisation of education; and involves tracking and correcting the results of learning activities. The expected result of the model is the formation of functional literacy in junior schoolchildren.

The issue of the inherent level of development of functional literacy of junior schoolchildren was addressed at the ascertaining stage of the experiment. The study was conducted during the 2022-2023 academic years and was carried out in general education schools "School-lyceum No. 66" and "School No. 16" (Karaganda city). The following methods were used to determine the components of functional literacy development in the control and experimental groups:

1. To obtain the level of development of the conceptual-target component, author's questionnaire developed for

junior schoolchildren aimed at checking their motivation for learning was used. Google Forms were used for the survey. By using Google Forms, all answers were automatically saved in Google Tables, facilitating the analysis of the data using the built-in tools of Google Tables. The benefit of using Google Forms is the ability to create, edit and complete the form on mobile devices. Processing of answers according to the proposed key to the questionnaire has shown that junior schoolchildren have predominant motivation for "good grades" – 47.6% (situational level), and aspiration for leadership – 52.4%. In 34.2% of respondents (low level) insufficient awareness of values of their work performance has been revealed.

2. The content-technological component was verified by solving integrated tasks aimed at checking the formation of knowledge and skills of junior schoolchildren aimed at ensuring the formation of functional literacy during the study of primary school subjects "Literary Reading", "Mathematics", and "Science". The levels of cognitive-activity component of readiness were verified using theoretical questions concerning the content of subjects and practical tasks aimed at developing functional literacy of junior schoolchildren. Kahoot, a platform for creating interactive quizzes, was used for testing. Kahoot allows the creation of quizzes using different types of questions such as multiple-choice questions, true/false questions, and matching questions. Kahoot provides a real-time quizzing experience that makes learning more engaging.

3. The result-evaluative component was proposed to be checked with the help of testing, which is designed specifically to assess the formation of functional literacy and interviews to obtain information about the level of understanding of learning objectives and the level of functional literacy. Exam.net is a fee-based platform for online testing. Exam.net can be used to create tests using different types of questions, such as multiple-choice questions, true/false questions, and essay questions. Exam.net can also be used to track student results and provide feedback.

The results obtained after the suggested activities are processed and presented on Figures 1 and 2.

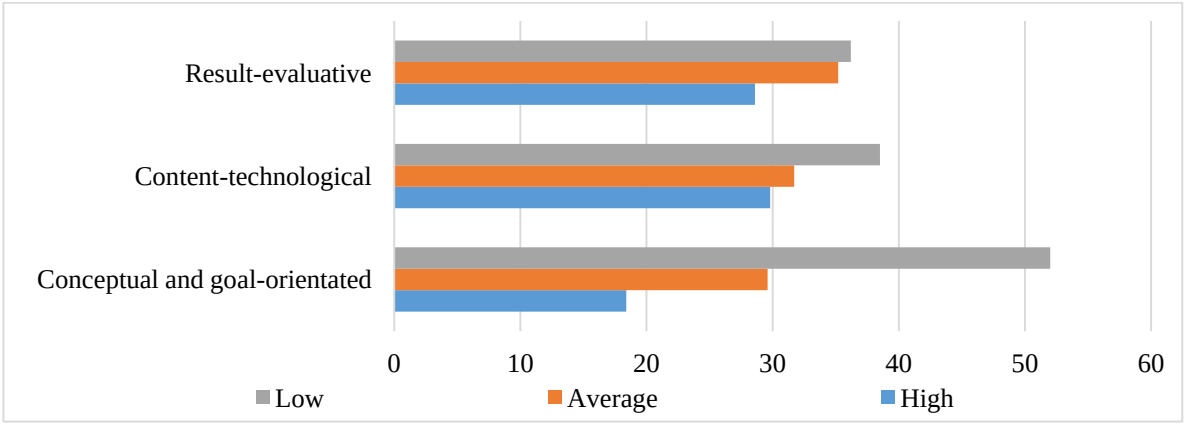

Figure 1. Results of the assessment of functional literacy development of junior schoolchildren in the control group at the control stage of the experiment

Source: compiled by the authors.

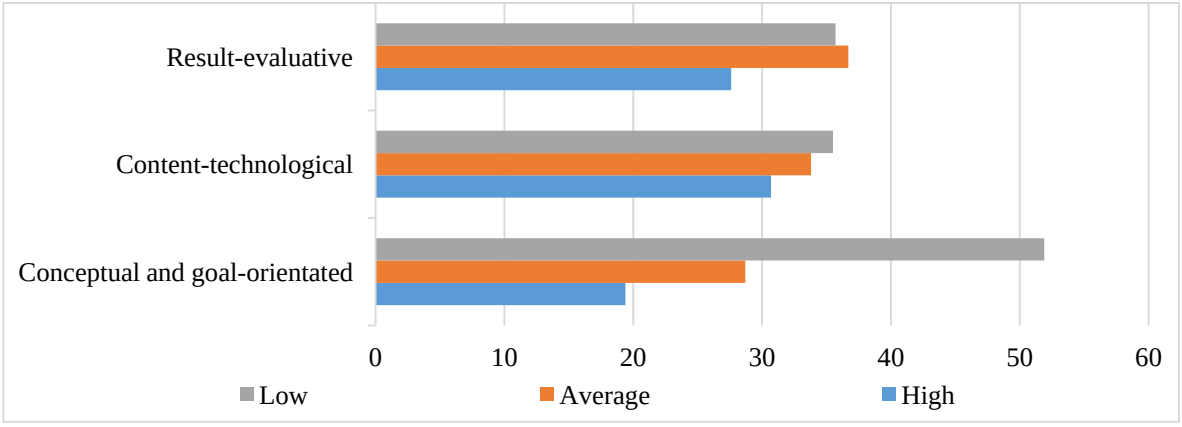

Figure 2. Results of the assessment of functional literacy development of junior schoolchildren in the experimental group at the establishing stage of the experiment

Source: compiled by the authors.

Based on the data obtained from the establishing experiment, it is possible to assert the need to improve the training of junior school pupils as a guarantee for the development of their functional literacy based on digital educational resources. Based on the results of the obtained data, it is possible to assert that the respondents of the control and experimental groups have a low and average level of motivation for learning, which indicates a reluctance to develop functional literacy. Insufficient formation of the content-technological component indicates the need to develop functional literacy in junior schoolchildren. The resultant-evaluative component of readiness requires improvement because it is important to be able to evaluate one's achievements and knowledge in a certain branch. Thus, it became necessary to conduct the formative stage of the experiment. The formative experiment was aimed at solving the following tasks: implementation in the educational process of pedagogical conditions and methods of development of functional literacy of junior schoolchildren, which is the author's model of training of junior schoolchildren with technologies of formation of its components. In the control group classes were conducted according to the traditional methodology, and in the experimental group according to the proposed methodology with the use of digital educational resources.

To form the conceptual and goal-oriented component, the coaching method was used as one of the varieties of creative partnership between teachers and students, which allows them to realise their personal and professional potential. During the coaching, the teacher in the subjects "Literary Reading", "Mathematics", and "Science" was presented in the role of a coach, and the participants of the coaching were elementary school students. Coaching, as a pedagogical technology, was used in the study to maintain high learning motivation of junior schoolchildren, encourage active independent activity, expand opportunities for learning and self-improvement, develop skills of self-assessment and self-reflection, form the ability to set goals, plan, and organise their learning activities. The level of improvement of the content-technological component is proposed to be improved through the implementation of software and methodological support: a database of tasks for the primary school subjects "Literary Reading", "Mathematics", and "Natural Science". The result-evaluation component involves tracking and correcting the results of the learning activities of junior schoolchildren. For this purpose, it is advisable to use Moodle, which is a learning management system that can be used to create and conduct online courses. Moodle is a test creation tool, which can be used to create multiple-choice tests, true/false questions, and essay-questions. Moodle can also be used to track the results of younger students and provide feedback to them.

After the implementation of the model of functional literacy development of junior schoolchildren, a repeated survey was conducted among the respondents of the experimental group, who were trained according to the experimental method. The results of respondents' distribution by levels of competence at the stage of the formative experiment are presented in Figures 3 and 4.

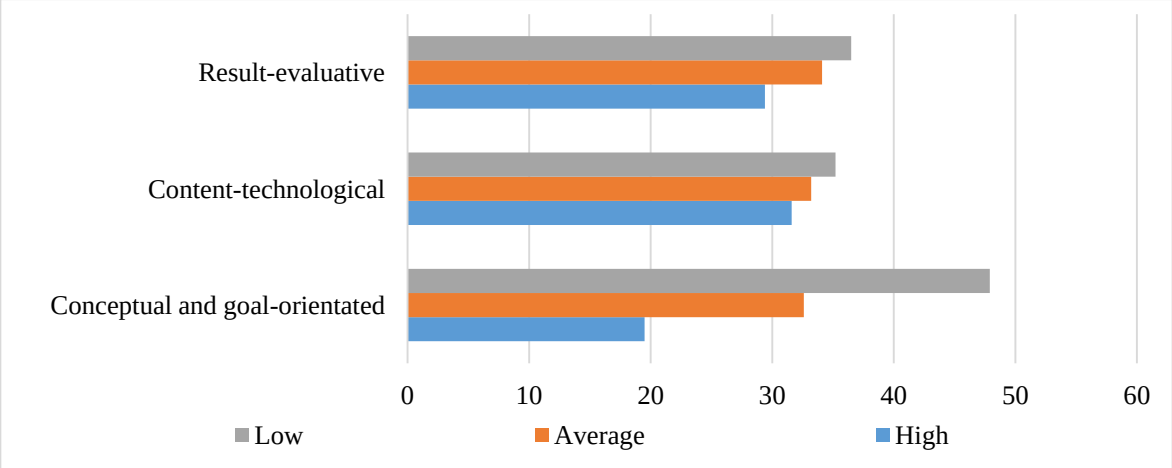

Figure 3. Results of diagnostics of functional literacy development levels of junior schoolchildren in the control group at the formative stage of the experiment

Source: compiled by the authors.

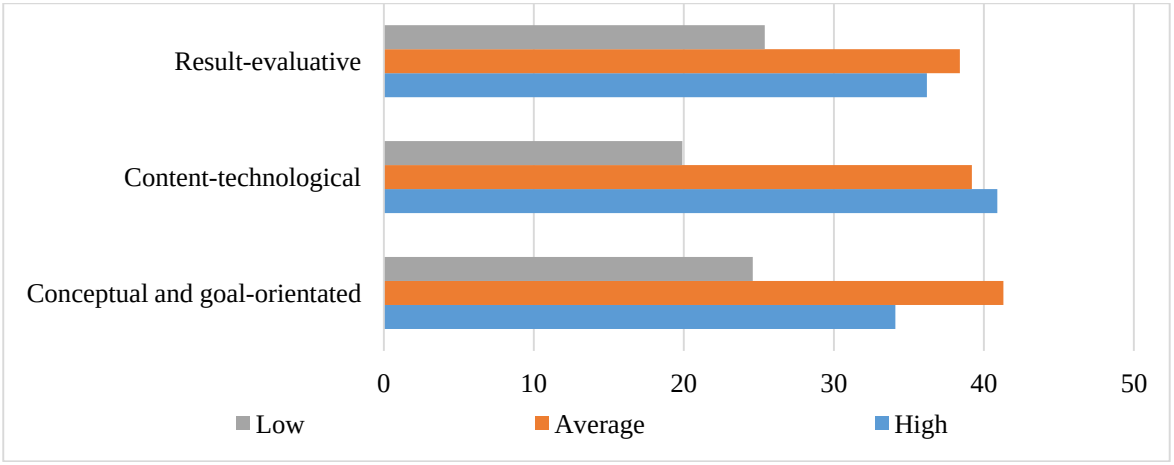

Figure 4. Results of diagnostics of levels of development of functional literacy of junior schoolchildren in the experimental group at the formative stage of the experiment

Source: compiled by the authors.

The results obtained at the formative stage of the experiment highlighted the necessity of solving the problem of developing functional literacy in junior schoolchildren. The formation of the studied definition as a holistic pedagogical process based on the interaction of teachers and students in the implementation of the pedagogical process is considered. Thus, the theoretical and practical analysis of the problem under study identified the risks complicating the process of developing functional literacy of junior schoolchildren: organisational level (insufficient involvement of pedagogical and material resources to ensure quality teaching of functional literacy in primary school); methodological level (low level of interest of primary school teachers in contextual methods of teaching students at the stage of functional literacy formation); personal level. The study results conclude that the timely identification, neutralisation and minimisation of the above-mentioned risks influenced the effectiveness of using the possibilities of the author's model of functional literacy development of junior schoolchildren. Pedagogical conditions and the model were implemented in the study.

The implementation of the first pedagogical condition – contribution to the programme and methodological support of primary school subjects "Literary Reading", "Mathematics", and "Natural Science" with the tasks aimed at forming functional literacy – contributed to the creation of an orientation basis for responsible professional actions. The implementation of the second pedagogical condition – the use of contextual teaching methods in educational and professional activities stimulated the increase in the level of development of functional literacy of junior schoolchildren. The principle of openness of contextual learning made it possible to create and test the author's set of situational and project tasks of contextual type. The third pedagogical condition is the use of digital learning technologies during the formation of functional literacy in junior schoolchildren. The condition aimed to use interactive tools for the development of reading, writing, mathematics, critical thinking and other aspects of functional literacy, to create interactive and motivating learning environments that will help children to better assimilate the material and develop the necessary competencies; to use digital technologies to personalise learning and adapt it to the individual needs of each student.

Suggested digital tools that can be used for early childhood education are tablets and laptops (can be used to read e-books, watch educational videos, and work with interactive games and tasks); interactive whiteboards (allow teachers to demonstrate lessons, use interactive resources and collaborate with students in real-time; educational games and programmes (many educational games and programmes that can help students explore different subjects such as maths, reading, science and social studies exist) robotics (can help students develop problem-solving, critical thinking and coding skills; virtual and augmented reality (can help students explore the world in a 3D environment).

Benefits of using digital learning tools include increased motivation and interest – digital tools can make learning more interesting and engaging for students; promoting individualisation of learning – digital tools can be used to adapt learning to the needs of each student; developing 21st-century skills – digital tools can help students develop skills in problem-solving, critical thinking, communication and collaboration; preparing for the future – in today's world, people need to be able to use digital tools to learn; and promoting the development of functional literacy in primary schools. Thus, the developed model aims to develop functional literacy of junior schoolchildren and has a place in the system of training the younger generation in the system of primary education of the Republic of Kazakhstan.

Discussion

The formation of functional literacy in primary school pupils is important in the system of primary education of the Republic of Kazakhstan. The construction of a quality process of training of primary school pupils is a guarantee of education of highly qualified specialists capable of forming functional literacy in schoolchildren and acts as a new way to improve the system of primary education. In the process of studying the experience of scientists regarding the formation of functional literacy in the system of primary education, it is possible to assert the need for

new ways to improve the methodology of training the younger generation in primary schools of the new generation, capable of forming professional literacy of schoolchildren in the conditions of digitalisation of education [8-11].

Based on the analysis of studies related to the problems of formation of functional literacy in elementary school, the concept should be defined as a basic learning of personality, which is represented by a readiness to interact with the outside world, the ability to solve non-standard problems, the ability to build social relationships in correlation with moral values. It is determined that elementary school students of the Republic of Kazakhstan do not have a sufficient command of writing, have low skills in working with textual information, meta-subject universal learning actions, and skills of communication culture. Teaching functional literacy to junior schoolchildren is carried out according to the outdated model of teaching, which requires revision of the process of training junior schoolchildren in elementary school [12; 13].

Studying the structure of reading functional literacy, A. Marougkas et al. [14] concluded that it is composed of the following criteria: cognitive, emotional-value, motivational and activity. The researchers believe that functional reading literacy is an integration of theoretical knowledge, practical skills and a set of personal qualities. Given the indicated components of readiness, it is considered necessary to apply them in the development of the model of functional literacy development of junior schoolchildren. The peculiarities of functional literacy development during distance learning were actively studied by O.A. Khashan et al. [5]. The researchers identified the following types of practical activities that should contribute to the development of functional literacy, namely: working in digital libraries using Google Docs, Google Slides, Google Drawings, and Google Forms platforms) as a guarantee of the formation of digital competencies; creating a media post on any topic with subsequent uploading to the Internet; creating a "book trailer", which is a short video where schoolchildren listen to stories at random. The outlined approach was used in the study because the formation of reading functional literacy is facilitated by such practical tasks, which are performed by junior schoolchildren in a remote format and allow them to establish interaction with the digital world.

Changes in the social space of the XXI century require a response of an individual to the necessary changes. Therefore, according to M.G. da Silva and H.S. Ferreira [15], the concept of "functional literacy" should be defined as the ability of the young generation to interact with the external environment, adapt and function in it. According to scholars, young individuals within the modern digital space should be able to organize their cognition in the social space. However, in modern conditions, the number of individuals who are not literate and socially passive is actively growing. Therefore, the study is relevant to the development of a model for the development of functional literacy of junior schoolchildren. Analysing the formation of functional literacy in elementary school, Shaurya et al. [16] connect this skill with the use of a set of seven skills that play an important role in the successful work with texts, documents and digital information. Based on the position of the researchers, there is a need to develop a methodological framework for functional literacy that aims to build the identified skills and is developed in the course of the study.

The primary education system of the Republic of Kazakhstan suggests considering the following indicators of functional literacy, namely general literacy (writing essays, reasonable answers to questions, a wide vocabulary of words); digital literacy (the ability to use computer equipment and programs, the Internet); emergency literacy (knowledge of first aid and actions in emergencies); information literacy (knowledge of searching, synthesizing and analysing information, and the ability to analyse, synthesize and analyse information to ensure the possession of functional literacy at a high level). To ensure the possession of functional literacy at a high level, it is necessary to possess the following key competencies: the ability to analyse large streams of information and compare it, to highlight the main things, to carry out adequate self-assessment, to develop independence, cooperation, to take initiative, the ability to find ways to solve problem situations. In the process of improving the training of future elementary school teachers, there are aspects of the pedagogical process, namely: the peculiarities of the organization of teaching-practical lessons, the content of the teaching material, the activities of the teacher and younger students at teaching-practical lessons.

The structure of functional literacy, according to Z. Cencelj et al. [17], should include the following content competencies: subject competencies (language-literary, mathematical, natural science, social, health-saving, technological, artistic literacy) and integrative (communicative, reading, information). The researchers' opinion is supported that the integrative content of reading literacy is manifested in the accompaniment of subject components during the study of all subjects in elementary school. The study proposes the following components of the model: conceptual-target, content-technological and result-evaluation. K. Habib and T. Soliman [18] define the "literacy" concept as the presence of communication skills in society. It should relate to the social practice of an individual, social interrelations, and knowledge, and assume the mastery of language and culture. According to scientists, literacy is manifested in several forms, namely: written, computer, mass-media, mathematical, sign, and political. This opinion of scholars is important and deserves to be developed in line with the need to create a culture of literacy in the context of the educational environment.

Researching the classification of types of literacy of junior schoolchildren, Zhao et al. [19] concluded that it should include prose literacy (comprehension of different types of texts); documentary literacy (competent information presentation skills); and mathematical literacy (calculations and technical skills). The proposed approach is deemed correct, but the study singled out digital literacy, which consists of the ability to navigate in digital space and the Internet, and informational literacy (the ability to actively process a rapidly changing large flow of information). S. O'Hara and R.H. Pritchard [20] actively investigated the issues of meta-subject coordination formation. According to the researchers, it includes meta-skills underlying the formation of functional literacy, namely: working with large amounts of information, communication ability, and regulatory and cognitive skills.

A certain approach finds support within the research, and it is suggested to use tasks on knowledge formation and its use in practice, considerations, and hypothesis formulation.

The most effective means of formation of functional literacy in junior schoolchildren includes situational tasks, which tend to develop reading literacy and information competence. Situational task for younger elementary school students is a basis for practice-oriented learning based on specific subject knowledge. The peculiarity of using such types of tasks is the presence of a problem question, which relates to a certain text and has a different form of representation, namely: tabular, schematic, or graphic. The didactic function of a situational task is aimed at mastering elementary school pupils' competencies and finding ways of solving various tasks and stages of working with information. The similarity of situational and problem tasks consists in the presence of the problem and additional questions at the stage of its solution. Situational tasks are structured by levels. Such tasks are built on both curricular and extracurricular material. The study proves that the proposed model, components and pedagogical conditions of the model of functional literacy development of junior schoolchildren can provide training of a highly qualified specialist competitive in the labour market.

Conclusions

The study concludes that the model of functional literacy development of junior schoolchildren is based on the modern methodological system. The active implementation of the model of educational process organisation in educational institutions has been proved to require qualitative training of primary school junior pupils, which requires updating the methodology and searching for pedagogical conditions in the organisation of the educational process. In the course of the research the concept of "functional literacy", "development of functional literacy", and "development of functional literacy based on digital educational resources" was defined. It was determined that this trend requires the creation of a model as an element of the methodology aimed at increasing the level of functional literacy development of junior schoolchildren.

The following components of readiness, namely conceptual-target, content-technological, result-evaluative; model, pedagogical conditions and model of development of functional literacy of junior schoolchildren were identified during the ascertaining stage of the experiment. The development levels of the components were determined. Diagnostics of readiness levels of the selected components behind the proposed model during the study of primary school subjects "Literary reading", "Mathematics", and "Natural science" by junior schoolchildren was carried out. The results of the obtained data were followed by conclusions about the need to reorganise the model of development of functional literacy of junior schoolchildren. The forming stage of the experiment was carried out, during which the model of development of functional literacy of junior schoolchildren was tested and the influence of the proposed model on the level of formation of functional literacy was studied. The generalised data of the research results allow us to conclude the effectiveness of the implemented methodological tools for the formation of readiness components. At the same time, the policy of educational institutions in Kazakhstan should be oriented towards updating the methodological component of training of junior schoolchildren in primary school.

Further research prospects aim to develop a wider range of methodological tools to improve the training process of junior schoolchildren in the Republic of Kazakhstan. The primary results obtained require expansion and deepening of the developed problem, so the development of a wider set of scientific and methodological support will contribute to the formation of systemic knowledge about future activities, as well as the development of skills and abilities to use them in practice.

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Conflict of Interest

The authors declare that there is no conflict of interests.

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Розвиток функціональної грамотності молодших школярів на основі цифрових освітніх ресурсів

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Анотація

Актуальність. В умовах реорганізації політики освітнього процесу Республіки Казахстан актуальним стає питання навчання молодших школярів розвитку функціональної грамотності, що є важливим кроком для модернізації освітньої системи Республіки Казахстан і забезпечення конкурентоспроможності молодого покоління.

Мета. Метою дослідження є розробка та експериментальна перевірка моделі розвитку функціональної грамотності молодших школярів на основі цифрових освітніх ресурсів.

Методологія. У дослідженні використовувалися аналіз, порівняння, систематизація, класифікація, узагальнення, експеримент, методи математичної статистики.

Результати. Визначено поняття “функціональна грамотність”, “розвиток функціональної грамотності молодших школярів”, “розвиток функціональної грамотності на основі цифрових освітніх ресурсів”. Дослідження проводили в загальноосвітніх школах “Школа-ліцей № 66” та “СШ № 16” (м. Караганда). У рамках експерименту здійснено розробку моделі функціональної грамотності молодших школярів, а саме впровадження компонентів з обраними методиками їх формування та педагогічними умовами, що було використано для вдосконалення навчально-виховного процесу в початкових школах Республіки Казахстан.

Висновки. Результати проведеного експерименту сформували перспективні напрямки вдосконалення освітнього процесу, спрямованого на розвиток функціональної грамотності в Республіці Казахстан шляхом формування компонентів, а також педагогічних умов і розробки методик їх реалізації. Практична значимість дослідження полягає в розробці та впровадженні моделі, компонентів, педагогічних умов і методик розвитку функціональної грамотності молодших школярів в Республіці Казахстан.

Ключові слова: початкова освіта; методика організації навчання; метапредметні результати; компоненти; педагогічні умови навчання; цифрові технології.