

Formation of Safe Behaviour of Primary School Students on the Internet

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Abstract: The article is devoted to the urgent problem of keeping primary school students safe in the digital environment. In the era of widespread digitalization, junior schoolchildren are actively exploring the online space, therefore their protection from potential threats is of the utmost importance. The paper examines the main risks that young users may face, such as cyberbullying, access to unwanted content, fraud and leakage of personal data. Special attention is paid to methods and strategies for developing junior schoolchildren's basic skills of digital literacy and responsible behaviour on the Internet. Practical recommendations are offered for teachers and parents on creating a safe online environment, teaching children to recognize dangers and respond effectively to them, as well as developing critical thinking when working with information on the web. The aim of the article is to help reduce risks and ensure a favorable and safe Internet experience for primary school students.

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1 INTRODUCTION

The problem of child online protection is of strategic significance, and it is reflected in key legislative acts of the Russian Federation. In particular, the Federal Law No. 436-FL "On the protection of children from information harmful to their health and development" emphasizes the need for a child to develop competencies in the field of personal security, considering this as a fundamental element of the safety of the life of the whole society and as a factor influencing the level of national security of the state (Federal Law, 2010). The concept of information security for children (Decree of the Government of the Russian Federation №1105, 2023) focuses on the fact that information, being the most important resource for the development of modern society, simultaneously represents a potential source of threats, especially for minors. Emphasizing the importance of this issue, the Parliamentary hearings' Recommendations of the Federation Council on keeping children safe in the digital environment indicate the need to adapt the education system to the changes in the social development of junior schoolchildren (Parliamentary hearings' Recommendations of the Federation Council, 2017).

As modern education involves a continuous process of obtaining information from a variety of sources, including unsafe ones, there is an urgent need to develop and implement effective strategies for enhancing the level of safe behaviour on the Internet among primary school students (Bronnikova, Kurilo, 2017). The increasing requirements to the independence of junior schoolchildren also dictate the need to develop their knowledge and practical skills to ensure their safety on the Internet (Zotova, 2017).

In the framework of this study, safe behaviour is considered as an integrative concept which includes knowledge, skills and abilities that form a stable internal state of security. The acquisition of these competencies helps reduce the risk of a child getting into potentially dangerous situations, ensuring his psychological well-being and development in a digital environment.

Despite the recognized importance of developing the competencies of junior schoolchildren's safe behaviour on the Internet, it should be noted that systematic and targeted training in the basics of such safety is mainly implemented at the level of basic general education. The key deficit in this context lies in the fact that in primary school the child learns only fragmentary elements of theoretical knowledge

in the field of Internet security, mainly within the framework of the academic discipline "The Outside world". At the same time, by the time they graduate from primary school, students are expected to possess a significant amount of both theoretical knowledge and practical skills that ensure their safety in the digital environment (Gavrilycheva, 2012).

A.V. Kirilenko's works have made a significant contribution to understanding the concept of safe behaviour on the Internet, revealing the concept of information culture as an integral part of safe behaviour, as well as defining criteria for the formation of safe behaviour in junior schoolchildren (Kirilenko, 2018). The theoretical basis is also formed by the research of T.E. Sokolova, who formulated the definitions of "safe behaviour" and "safe behaviour on the Internet" (Sokolova, 2017).

The features of the junior schoolchildren's safe behaviour in the digital environment were investigated by B.S. Volkov, who considered the personal characteristics of junior schoolchildren and their attitude to personal safety in general (Volkov, 2014). O.A. Zavalova analyzed the features of the formation of information culture among junior schoolchildren as a basic component of safe behaviour on the Internet (Zavalova, 2020). N.V. Ivanova studied the personal characteristics of junior schoolchildren that influence the choice of methods and means of forming safe behaviour in a digital environment (Ivanova, 2014).

O.N. Miaeots developed methods for the formation of junior schoolchildren's safe behaviour on the Internet (Miaeots, 2005), and E.L. Kharchevnikova identified the pedagogical conditions for the formation of safe behaviour in this age group (Kharchevnikova, 1999).

The analysis of the scientific literature shows that the research in the field of safe behaviour focus mainly on studying the age characteristics of junior schoolchildren and determining the pedagogical conditions for the formation of such behaviour on the Internet. There is a lack of research aimed at identifying and analyzing psychological mechanisms for the formation of safe behaviour in the digital environment in primary school students, and the development of psychological models and technologies that take into account the individual characteristics of a child's cognitive and personal development, modern technologies that allow children to master the skills of safe interaction with electronic resources (Elkonin, 2018).

2 MATERIALS AND METHODS

The aim of the study is to carry out a theoretical analysis and generalize the psychological mechanisms of formation of junior schoolchildren's safe behaviour on the Internet, to develop and experimentally test a model for the formation of safe behaviour that takes into account the individual characteristics of cognitive and personal development of primary school students.

Research objectives:

1. To carry out a comprehensive analysis of psychological, pedagogical and methodological literature on the problem of forming junior schoolchildren's safe behaviour on the Internet.

2. Apply a set of diagnostic techniques aimed at determining the initial level of formation of safe behaviour on the Internet in junior schoolchildren.

3. As part of the experimental work, to develop, substantiate and test a set of extracurricular activities aimed at shaping the junior schoolchildren's safe behaviour on the Internet, developing critical thinking and an informed attitude to online risks.

4. To analyze and interpret the results of experimental work in order to determine the effectiveness of the developed complex of extracurricular activities and identify prospects for further improvement of the process of forming junior schoolchildren's safe behaviour on the Internet (Genedina, 2018).

The following methods were used to solve the tasks set:

- Theoretical analysis: the study and systematization of psychological and pedagogical literature on the research problem.

- Empirical methods: psychological and pedagogical experiment: conducting ascertaining, formative and control stages in order to identify and evaluate the dynamics of the formation of safe behaviour of junior schoolchildren.

- Diagnostic methods: the use of a set of valid and reliable methods to assess the level of formation of safe behaviour of primary school students on the Internet.

- Data processing methods:

- Qualitative analysis: analysis and interpretation of data obtained during observations, conversations, analysis of student activity products (essays, drawings, projects) in order to identify the features of the formation of safe behaviour.

- Quantitative analysis: statistical processing of data obtained as a result of testing and questionnaires using mathematical statistical methods to determine the reliability of the results

obtained and identify statistically significant differences between the control and experimental groups.

Safe behaviour on the Internet presupposes the presence of well-developed skills (Zavialova, 2020). The analysis of scientific papers on this issue allowed us to determine that the skills of junior schoolchildren's safe behaviour on the Internet represent a set of skills and knowledge that ensure the competent use of information technology, as well as the ability to effectively use technology to search and obtain information necessary for the development and socialization of a personality, with minimal risk to themselves and others.

Research in the field of information security highlights the importance of protecting the vital interests of individuals, society, and the State. In this context, special attention is paid to the vulnerability of children, who, due to their age characteristics and lack of experience, may be adversely affected by misinformation, incomplete or untimely information (Antonova, 2014). In this regard, the formation of competencies in the field of information security among junior schoolchildren is becoming a priority task that requires the consolidation of efforts of teachers and parents. Uncontrolled access to the Internet can have destructive consequences for a child's development, which necessitates the development of effective strategies for the prevention and correction of the negative effects of the digital environment (Knyushenko, 2015).

Within the framework of primary school age (7-9 years), defined by D.B. Elkonin as a key period for the formation of the foundations of personality, the development of safe behaviour is closely related to the dynamics of mental activity and occurs under the influence of a complex of psychological neoplasms and features of the social development (Elkonin, 2020).

The key factors influencing the formation of safe behaviour include:

- Development of learning activities: new responsibilities related to learning activities form the prerequisites for the development of theoretical consciousness and thinking.

- Development of reflexive abilities: the predominance of the "I must" motive over the "I want" motive contributes to the formation of the ability to adapt one's desires to social norms and expectations.

- Development of arbitrariness: the growth of arbitrariness makes it possible to suppress impulsive desires and act in accordance with social and regulatory requirements.

- Formation of socially significant qualities: the development of contact, tolerance, empathy and benevolence creates the basis for the formation of personal qualities necessary for safe interaction in a social environment, including on the Internet.

Participation in joint activities, educational cooperation and friendly relations contributes to the formation of junior students' ability to anticipate different points of view, argue their position and interact constructively with others. An important factor is also taking into account the peculiarities of attention at this age, characterized by the predominance of involuntary attention and the difficulty of concentrating on uninteresting or monotonous activities (Grigoriev, Stepanov, 2020). In this regard, effective strategies for the formation of safe behaviour should take into account the age-specific mental development of junior schoolchildren and be based on the use of bright, unusual and interesting materials that stimulate cognitive activity and ensure effective assimilation of information.

In the context of this study, safe behaviour on the Internet is considered by us as an integrative quality of personality, which includes criteria and indicators that ensure a state of internal security and minimize the risks associated with the use of digital technologies: a cognitive criterion reflecting awareness of the basics of safe behaviour on the Internet; value-motivational, showing the formation of a value attitude towards the safe use of the Internet and the motivation to comply with it, and an activity criterion reflecting the formation of practical skills that ensure safe behaviour on the Internet (Gippenreiter, 2018).

Our study was conducted in March-April 2025 at the Secondary School № 2 in the village of Akyar in Khaybulla district of the Republic of Bashkortostan of the Russian Federation. 50 third graders participated in the experiment. In general, the results of the ascertaining stage of the study using diagnostic techniques based on Yu.B. Gippenreiter's individual questionnaire "What would you do?", T.V. Borisova's "Action with information", "How will you find information?", A.V.Kirilenko's "Is it safe or not?" revealed the insufficient level of formation of safe behaviour on the Internet among junior schoolchildren, manifested in low information intelligibility and a lack of information security skills (Fig. 1). This fact, as noted above, is due, in our opinion, to the fragmented nature of education. At the same time, in accordance with the requirements of the Federal State Educational Standard of Primary General Education, by the time

they complete their studies in primary school, students must have sufficient theoretical knowledge and practical skills to ensure their safety in the digital environment, which actualizes the task of developing and implementing effective psychological and pedagogical technologies aimed at solving this problem (Order of the Ministry of Education of Russia N 286, 2021).

Generalized quantitative results for all methods are shown in Figure 1.

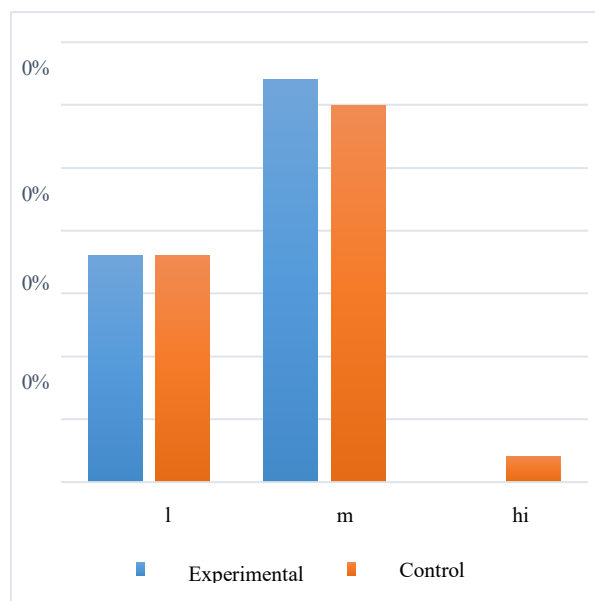


Figure 1: Comparative results of the study in the control and experimental groups using 4 diagnostic methods at the ascertaining stage.

It can be seen from the diagram in Figure 1 that a low level of formation of junior schoolchildren's safe behaviour on the Internet was detected in 36% of primary school students. Such a student does not know what to do if his account is hacked on the Internet, and he is also ready to come to a meeting with a stranger scheduled over the Internet and open a file on his computer that came from an unknown email address. The child cannot find information on a given topic, is distracted by extraneous websites, does not demonstrate the formed skills of information conversion and interpretation: when searching for information, he prefers to use books and encyclopedias, is not ready to use the Internet even with the help of an adult; he does not know which sites can be used to search for reliable information, does not demonstrate the ability to distinguish dangerous websites from safe ones: he does not know what online safety is, cannot say how

dangerous websites can differ from safe ones, does not believe that it is necessary to follow the safety rules when working on the Internet.

The medium level of formation of junior schoolchildren's safe behaviour on the Internet was found in 64% of children of this age group. The child does not know what to do if his account is hacked on the Internet, but he is not ready to come to a meeting with a stranger scheduled over the Internet, and will not open a file on the computer that came from an unknown email address. The child is able to find information on a given topic, but it takes more than 15 minutes, he is distracted by extraneous sites, demonstrates partially formed information conversion and interpretation skills: when searching for information, he prefers to use books and encyclopedias, he is ready to use the Internet only if an adult helps him; he does not know which sites can be used for searching reliable information. The child demonstrates partially formed skills to distinguish dangerous websites from safe ones: he generally knows what online safety is, however, he cannot say how dangerous websites can differ from safe ones; he believes that in general it is necessary to follow the safety rules when working on the Internet, but can only name 1-2 of them.

A high level of the indicator was detected in the control group in 4% of children. They know what to do if his online account is hacked. The student is not ready to attend a meeting with a stranger scheduled over the Internet, and will not open a file on the computer that came from an unknown email address. The child is able to quickly and without being distracted by extraneous sites to find information on a given topic, demonstrates the developed skills of information conversion and interpretation: when searching for information, he prefers to use the Internet; he knows which websites can be used to search for reliable information; he is ready to contact a teacher only in case of difficulty; he demonstrates the developed skills to distinguish dangerous websites from safe ones: he knows what online safety is and can tell how dangerous sites can differ from safe ones; he believes that it is necessary to follow the safety rules when working in the Internet can only name 4-5 such rules.

Based on these results, we have developed a program for the formation of safe behaviour of primary school students on the Internet. We assumed that the process would be effective if:

- to develop and implement a set of extracurricular activities for the formation of junior schoolchildren's safe behaviour on the Internet using

effective methods (didactic games, situational conversations, research activities);

- to implement the stages of working with children, taking into account the logic of forming the junior schoolchildren's safe behaviour on the Internet.

At the first level of our work, we implemented a set of extracurricular activities. It included 10 theoretical and practical classes.

At the second level, the stages of working with children were implemented, taking into account the logic of forming the junior schoolchildren's safe behaviour on the Internet. The stages included the following:

- the preparatory one. At this stage of the work, the teacher not only explained the task to the children, but also performed it first, showing all the students exactly what to do and how to do it. The junior students had to not only monitor how the teacher was acting, but also actively comment on his actions and ask questions;

- the basic one. At this stage, the assignments were performed by the children themselves, the teacher carefully monitored how each child was performing the task, assisted him, prompted, and, if necessary, repeatedly showed a correct sample;

- the final one. The children performed the tasks completely autonomously and as independently as possible. The teacher only monitored the activities of the children and helped them only after the students asked him.

In addition, the Program included working with parents and teachers.

After carrying out extensive and purposeful work, a control section of the research was carried out, the results obtained are summarized and quantified in the diagram (Fig.2).

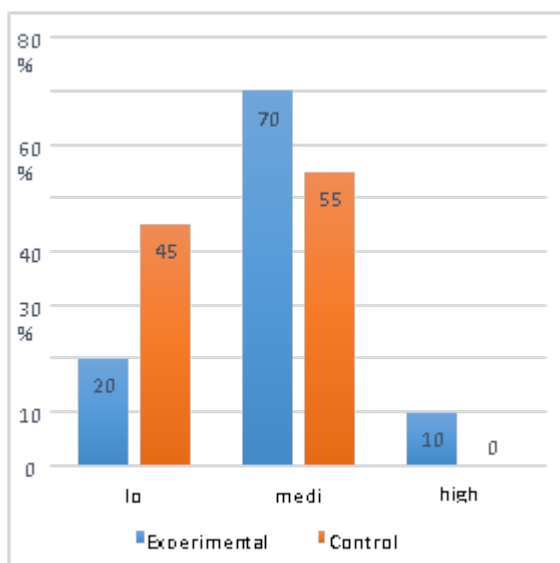


Figure 2: Comparative results of the study in the control and experimental groups using 4 diagnostic methods at the control stage.

From the diagram in Figure 2 it can be seen that in the experimental group, the level of formation of junior schoolchildren's safe behaviour on the Internet increased significantly, the number of children of primary school age with a low level decreased to 20% (initially it was 45%), and the medium level increased to 70% (from 55% at the ascertaining stage). A high level of formation of junior schoolchildren's safe behaviour on the Internet was found in 10%, whereas previously this indicator was equal to 0.

The results of the control group did not change relatively to the results obtained at the first stage of the work. Based on these results, we conclude that the Program we have developed and tested for the formation of junior schoolchildren's safe behaviour on the Internet shows a high level of effectiveness: children have become more aware of what to do if their online account is hacked, they are also not ready to come to a meeting with a stranger scheduled over the Internet, and they will not open a file on their computer that came from an unfamiliar email address, students can quickly and without being distracted by extraneous websites to find information on a given topic., They also demonstrate well-developed information conversion and interpretation skills: they prefer to use the Internet when searching for information; they know which sites can be used to find reliable information; they are ready to contact a teacher only if they have difficulty.

Thus, the results prove the effectiveness of working with children and the validity of the hypothesis put forward.

3 RESULTS AND DISCUSSION

In the process of analyzing theoretical sources devoted to the formation of junior schoolchildren's safe behaviour on the Internet, it was found that an integrative understanding of security should be considered as the conceptual basis of the study, including knowledge, skills, and value orientations that ensure a state of internal security and minimize the risks associated with the use of digital technologies. In the context of this study, safe online behaviour is defined as conscious and responsible interaction with the digital environment that allows a child to use the Internet for development and learning without causing moral or material harm to himself or others. At the same time, the key element is the formation of primary school students' skills in safe handling of information technologies, ensuring the competent use of digital tools to obtain the necessary information and protect against potential threats.

The results of the analysis of the existing teaching practice indicate an insufficient level of development of the process of forming safe behaviour in junior schoolchildren, manifested in general information illegibility and a lack of information security skills. This problem is caused by the fact that according to the primary school educational program, the formation of these competencies is often fragmented and is carried out mainly within the framework of individual academic disciplines. However, given the increasing role of the Internet in the lives of modern children and the need to protect them from the negative effects of the digital environment, the formation of safe behaviour is becoming a priority pedagogical task.

Following A.V. Kirilenko, cognitive, motivational and activity components were identified as criteria for the formation of junior schoolchildren's safe behaviour on the Internet, which make it possible to assess the level of threat awareness, the formation of a value attitude towards security and the availability of practical skills to protect against potential risks.

An analysis of the results of the ascertaining stage of the study made it possible to establish that among the junior schoolchildren who took part in the experiment, a low and medium level of formation of safe behaviour on the Internet prevails.

At the same time, a high level was not detected. It is important to note that these indicators were comparable for the experimental and control groups at the ascertaining stage of the study, which indicates the uniformity of the samples and provides the opportunity for a correct comparative analysis of the effectiveness of the developed pedagogical impact.

The obtained results served as the basis for the development of the content of the formative stage of the study aimed at shaping the junior schoolchildren's safe behaviour on the Internet, taking into account the identified deficits and characteristics of each group of subjects.

One of the promising methods of forming the junior schoolchildren's safe behaviour on the Internet is didactic games which allow them to acquire the necessary knowledge and skills in an exciting and accessible way. In addition, research activities have significant potential, which contributes to the development of critical thinking, the formation of the ability to analyze information and draw independent conclusions (Gerasimova, 2019). Research activity involves not only conducting experiments, but also analyzing their consequences, which contributes to the formation of a responsible attitude towards one's actions in the digital environment. In the process of research, junior schoolchildren not only acquire theoretical knowledge, but also learn to apply it in practice, as well as develop the creative abilities necessary to solve non-standard tasks related to ensuring online safety.

4 CONCLUSIONS

The conducted research, devoted to the problem of forming junior schoolchildren's safe behaviour on the Internet, made it possible to achieve the goal and solve the formulated tasks.

In the course of the theoretical analysis, it was found that effective formation of safe behaviour in a digital environment requires an integrative approach that takes into account cognitive, motivational and activity components, as well as age and individual characteristics of the mental development of junior schoolchildren (Wenger, 2010).

The results of the ascertaining stage of the study revealed an insufficient level of safe behaviour formation in the majority of junior schoolchildren, which confirms the relevance and significance of the problem under study. These results made it possible to identify lack of knowledge, skills, and abilities, as

well as identify the insufficient level of safe behaviour in the digital environment, which formed the basis for developing the content of the formative stage of the experiment.

As part of the formative experiment, a model for the formation of junior schoolchildren's safe behaviour on the Internet based on the use of didactic games and research activities was tested. The results of the control stage of the experiment showed that the implementation of the developed model made it possible to achieve statistically significant positive changes in the level of formation of safe behaviour among junior schoolchildren in the experimental group compared with the control group. This fact proves the effectiveness of the proposed approach and confirms the hypothesis of the study.

In conclusion, it should be noted that the results of this study contribute to the development of pedagogical science and can be used to improve educational practice aimed at developing safe behaviour among junior schoolchildren on the Internet, confirming that the key success factor is the creation of an educational environment that stimulates cognitive activity, the development of critical thinking and the formation of a value attitude towards safety on the Internet. The developed methodological recommendations can be useful for teachers and parents seeking to ensure the safety of children in a digital environment.

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