

Internet safety of schoolchildren in the context of the Republic of Sakha (Yakutia)

La seguridad escolar en Internet en el contexto de la República de Sakha (Yakutia)

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ABSTRACT:

The study determines the possibilities of online safety of children and adolescents in the Republic of Sakha (Yakutia), analyses ongoing activities to improve the Internet connection quality, where new fiber networks are provided for settlements and the inhabitants are not ready for such volume of not always necessary information, for cyber safety of children and adolescents to prevent them from negative influence, for providing rules for children and adolescent safety on the Internet.

Keywords: Internet safety, schoolchildren, cyber safety, social network

RESUMEN:

El estudio determina las alternativas de seguridad en línea de niños y adolescentes en la República de Sakha (Yakutia), analiza las actividades en curso para mejorar la calidad de la conexión a Internet, donde se proporcionan nuevas redes de fibra para los asentamientos y los habitantes no están preparados para tal volumen. Información necesaria para que la seguridad cibernética de niños y adolescentes evite que tengan una influencia negativa y así proporcionar reglas para la seguridad en Internet.

Palabras clave: seguridad en internet, escolares, seguridad cibernética, red social.

1. Introduction

Digital media content, games and applications are now widely available for children and adolescents, both for fun and for learning. Children today are often described as a digital generation that uses Internet opportunities from birth. Growing up on the Internet involves social activity, which means that children, like adults, need cyber safety. Cyber safety for children is an under-researched area, and little is known about how best to teach children

and adolescents online safety. We are focused on what is called “Understanding the Internet” by children and adolescents, arguing that it is impossible to educate children about cyber security until we know more about how they understand what the Internet is primarily.

The purpose of the study is to determine the possibilities of Internet safety of children and adolescents in the Republic of Sakha (Yakutia) background. The study was carried out by a team of teachers and staff of the North-Eastern Federal University. This allows using the University personnel potential to solve the cyber security problem (Barakhsanova et al., 2016, 2017), as well as identify possible risks in the current conditions of the Russian education system) (Nikolaeva et al., 2014; Prokopiev, 2015) and effective adaptive training of students in Russian pedagogical universities to use e-learning technologies (Vlasova et al., 2018).

2. Research methods

The study was carried out in the framework of an interdisciplinary approach to cyber safety issues. The methodological basis is the scientific works of Russian and foreign scientists on the problems of Internet safety. While developing the issue, general theoretical basics were used: a synthesis of domestic and foreign experience, empirical data: questionnaires and expert observation. The empirical base includes data from NEFU educational side (North-Eastern Federal University) and Official website of the Russian Internet Safety Center, websites on Internet security and threat statistics.

3. Literature review

Research related to cyber safety of children and adolescents has increased lately. This is due to various studies that confirm the processes associated with the fast mastering of the Internet on various platforms, e.g., mobile technologies, etc. Studies show that this population frequently get access to the Internet, both in educational institutions and at home, using their own or their parents’ devices, such as touch-screen tablets and smartphones. These devices are used mainly for viewing digital media content on the Internet, social networking, and for using entertainment and learning applications.

Foreign researchers are interested in the issues of implementing digital education in higher education (Gaebel et al, 2013) as a whole and its various aspects. In particular, in (Pathak, 2016) the author explores the development of online educational models, which, in his opinion, leads to a change in the educational process in traditional universities. This requires a study of the methods of teaching certain disciplines online. The article (Rock et al., 2016) is devoted to the pedagogical problems of teaching research methods and mathematical statistics in the e-learning environment, in which the authors provide specific practical examples of online work with students. Considering the positive aspects of a new flexible type of training, a number of researchers note the disadvantages dealt with in the work (Yang et al., 2017).

In work Schulz, Ghislain, Reichert studies, various aspects of the changing nature of the pedagogical need for innovative digital information and educational environments are discussed (Schulz, 2014), while the economic, market factor in the motivation of educational activities is increasing (Clark, 2016). The authors of the articles cite examples of methods for assessing the readiness of teachers in higher educational institutions to solve professional problems using e-learning technologies (Akaslan, 2011), analyze the experience of social cooperation and the use of network tools (Imran et al., 2016), study teachers’ attitudes, their involvement and support for online professional development (Gunter & Reeves, 2017). Nevertheless, it should be noted that in the analyzed works the issue of studying effective ways of using the Internet in professional activities is not fully presented. The problem of the quality of education in a constantly changing world is dealt with in the works of one of the leaders of the Worldwide CDIO Initiative (Kamp, 2016).

The theoretical foundations of the study are derived from the works of domestic authors on the need to ensure children’s safety when working on the Internet (Bergman, 2014), an article by D.A. Bogdanova “From Internet Risks to Digital Citizenship” (2017), a review of

the problem of children's information security on the Internet made by V.A. Brusikova (2016), M.V. Danilenkov (2017), the monograph by O.N. Dobrotenko "Information Security in Russia in the Context of Globalization: Foreign Policy Aspect" (2016), where the author reveals information safety in the context of globalization, considering foreign policy relations between states, study of psychological factors related to the safe use of the Internet, as presented in the works by G.V. Kalashnikova and Yu.S. Pezhemskaya (2017) "Internet environment threats to children and adolescents' psychological safety"; by Z. Kulkova (2017) "Topical issues of children and adolescents' psychological safety in the Internet space", and also by S.V. Nikolaev (2016) "On some promising mechanisms for implementing the state policy in the field of ensuring children's information security on the Internet, aimed at the future development of information technologies". Issues of risks of the Internet space for adolescent health according to the materials of foreign publications are analyzed by A.A. Sokolova (2015), the issues of ensuring information security are reflected in the works by G.A. Sycheva (2016), A.V. Tolokonnikova (2015), V.E. Chebotarev and O.G. Zabelina (2014), T.Y. Bogacheva (2014).

As for the studies reviewed, most of them suggest that children's independent use of the Internet opportunities is not safe, especially given the lack of such a subject as cyber security in the education system. Typical risks faced by children and adolescents on the Internet are: buying goods and applications not approved by parents, mobile security of cellphones while installing harmful (or unnecessary) applications, viewing unacceptable digital content, as well as meeting or interacting with unknown people. Considering that at present, young children can technically surf the Internet without adult support, many of these risks can arise due to the lack of adult supervision.

It should be noted that the development of young children is understood as a link between experience and practice. All the children's experiences are connected with all aspects of life. It is important to understand that the context gives rise to the practice of activities and the use of various tools to achieve the chosen goal. L.S. Vygotsky (2005) argues that the process of conceptual development begins with children's "everyday" concepts. Everyday concepts stem from the daily practice of children and the use of tools, such as using a toothbrush to brush teeth in the morning and evening, washing and so on. The opposite of everyday concept is a scientific concept. The scientific concept gives an explanation of how and why everything works, for example: "brushing your teeth removes food that can cause tooth decay". L.S. Vygotsky (2005) explained how combining everyday concepts with scientific notions creates a complete worldview. When children understand reasoning from their everyday experience from a scientific point of view, that is, "we brush our teeth after eating, because it removes food that might otherwise cause holes". This understanding is important for younger children, because it has an explanatory power. It can be used by children in their decision making and reasoning.

4. Materials

The study was carried out from 2015 to 2018 by a team of authors who are teachers of the pedagogical and physical-technical institutes of NEFU. This allows a deeper understanding of the problems and tasks of effective training of educational specialists to identify and develop general, specific and current issues as regards the features and possible risks of using the Internet.

At the first stage, a priori information was collected, analyzed and systematized on the problem of teachers' readiness to use the Internet for solving professional issues, as well as how students of pedagogical universities – future teachers – are prepared to solve these problems.

The initial methodological prerequisites for the study are: 1) the development of new content for training students of a pedagogical university in the field of Internet technologies with a focus on their practical application for solving professional education problems; 2) changing the nature of the educational process due to the students' involvement in an active work during the learning process, including the use of e-learning network technologies; 3) students' training in the e-information and educational environment, adapted to their future

professional activity. The research participants set a goal not only to qualitatively teach students to master the proposed Internet technologies, but also to motivate students to actively use them as tools for learning, self-study, and for implementing new adaptive educational activities in an information-educational environment.

At the second stage, students of the pedagogical institute (BD in professional and humanities specialties), undergraduates majoring in Teacher Education were chosen as research subjects. More than 300 bachelor students and 8 master students took part in the experiment.

Given that development is connected to contextualized children's experience, we argue that children's understanding of using the Internet can be more effective and logical if they comprehend the Internet concepts. Studies show that when teachers and educators explain new topics, then the information that is known to students is taken as examples, it is easier to explain and it is easier for them to later project scientific knowledge with the everyday experience. At present, the number of children and adolescents who do not understand all the dangers of the Internet is growing, which makes it necessary to elaborate the Internet concepts considering cyber security.

The findings presented in this article are shown as a result of an experimental study conducted in the Republic of Sakha (Yakutia). A randomized study involved groups of teachers and children, an experimental and a control group. The purpose of the study was to identify the knowledge of children and adolescents associated with the use of the Internet, as well as to determine levels of understanding cyber safety. The experimental part was developed by a group of teachers at North-Eastern Federal University and was designed to develop an understanding of the cyber safety of children and adolescents when they use the Internet. To determine the effectiveness of the cybersecurity experiment, we conducted a quiz. In this article, we report only on a survey conducted with both groups, paying particular attention to their knowledge of working on the Internet.

The participants in the experiment are ten (10) teachers and educators in the experimental group and eight (8) teachers and educators in the control group. Teachers and educators were selected from various schools, both urban and rural. All teachers and educators have higher education, and also have work experience of at least four years. Teachers and educators were randomly assigned to the control and experimental groups.

Children and adolescents, participants in the experiment were divided into 102 persons in the experimental group, and 63 participants in the control group. Children were invited to take part in the experiment with the consent of their parents and guardians. All children were asked to give their own consent to participate in the experiment. As for their gender identity, there were 48% female and 52% male persons. Children and adolescents were of 5 to 13 years.

We developed the survey ourselves, because no studies had been found to compare with. The findings presented in this article were taken from the survey for the first time. In this publication, we do not describe the design of the survey and its subsequent adjustment. A brief overview is presented below.

The study was conducted on the basis of a review of regulatory documents, articles and public projects, the questions are developed by us. A review of sources showed that children use technologies in relation to socio-cultural attitudes; children understand the Internet opportunities in searching for information and that the Internet is safe for them. Also, the analysis of the sources presented the basis for a survey of children and their understanding of using the Internet opportunities, as well as cyber safety, for example: technologies is a tool and technology control is a tool as well; experience of using the Internet for communication; lack of restrictions on the part of parents and conceptual limitations in understanding processes. Based on an analysis of sources focused on children, a draft survey was developed. The draft survey was reviewed several times and finalized after adjustments. The final survey included 15 questions.

In 4 out of 15 questions children and adolescents were asked to mention what kind of opportunities the Internet provides them through various gadgets. The following five

questions included situations taking place with children and related to their behavior as for cyber safety (for example, some application pops up in which unknown people ask to input confidential information, and what a child will do in such a situation). The remaining questions were aimed at finding out how and who uses the Internet in their families. These answers were used to familiarize younger children with the concept of the Internet. Individual surveys were used to base the survey on randomized control.

In the study, the term "Internet" is used in conjunction with the terms "the Internet network" and "online," in order for children to better understand the basic terminology.

We accept that these terms are not synonymous, but it did not matter for the survey among teachers and staff.

All surveys were conducted with children during the educational process, at classes. Interviews were held straight with children. The interview usually took about 10-15 minutes for each child, and the recording was made, which was later deciphered and was confidential. The conclusions outlined in this article should be viewed as an attempt to study the mentioned issues in one region, given that they are received during a small-scale experimental study.

5. Results

Most of the participants in the experiment demonstrated that they use the Internet opportunities, the rest are familiar with various "instrumental" parts.

The analysis of the survey revealed 3 main groups which involve understanding of children's everyday comprehension of the Internet: the Internet use by family members; information access and receipt; entertainment (watching movies, playing computer games and chatting).

Further, the basic concepts of how children's typical answers as for using the Internet are presented. Everyday ideas of children (including typical answers) are: recording; job; everything you need to know; calling people; e-mail; movies; games; pictures; a place to play games; Mom uses it; adults use it; they work on the Internet; electricity; keyboard; computers; screen; electronics; phone; smartphone; the Internet is your phone and our computer. Here the concept of understanding the Internet is presented. E.g., informational and entertainment concepts located in the contextualized practices section assume that children understand the Internet from the point of view of those who use it and why (for example, dad uses the Internet for work).

Family, informational and entertainment concepts, located in the instrumental section, suggest that children understand the Internet in terms of technology providing access to it, who uses these tools and how these technologies work (e.g., the Internet is distributed both by wire and WiFi or someone's father works online, because there is electricity).

6. Discussion

Teaching cyber safety rules to children and adolescents becomes urgent, given how quickly they gain access to the Internet opportunities and use mobile devices for this purpose. There are different approaches to cyber safety education; the Internet is a technological and social structure in which users exchange information and data without knowing each other. Not all adults have this understanding, let alone children, but there is an understanding why you shouldn't talk to unknown people on the Internet, don't get to where you can receive potential viruses, and why they can stumble upon (or intentionally find) unacceptable content. The results of the basic stage of the pilot project suggest that the concept of the Internet for children should be understood as an area where cyber security skills should be used.

In our study, the question regarding acquaintance with the Internet, was asked to children, it shows the extent to which the data are additionally taken into account for children's everyday ideas about the Internet. Most younger children do not understand this issue, the older ones understand and want dating on the Internet. Our study could not effectively determine how younger children understand the Internet. This is despite our best efforts in

this study to pay special attention to “Internet cognition”.

Also, more than 43% of the children – participants in our experiment demonstrated familiarity with the Internet. Based on sociocultural research, “familiarity” was defined in terms of contextualized practices and the use of tools as a platform for the daily development of conceptual knowledge. Everyday concepts of the Internet for these children are “family”, “information” and “entertainment”. These concepts challenge the notion of children’s ideas about the Internet that are tied to the technologies that they use at a given time. This is regardless of the form of the device (desktop computer, tablet or smartphone), because the concepts refer to the Internet in terms of using information or entertainment by family members, and not technology as such. Instead, the everyday perspective emphasizes a significantly developing knowledge base about the Internet in the daily lives of children. This includes everyday concepts about the Internet, depending on how and why the Internet is used, who regularly use the Internet and the role of technological tools in using the Internet. For example, a child who said: “I know what the Internet is, you can buy things and games, and you can play ...” illustrates the understanding of the Internet as a base for content and buying “things” (apps or games). Similarly, another child, describing the tools that allow access to the Internet, who uses the Internet and why: “My sister, my mom and dad use it. My sister does lessons using it, chats with friends. My mom and dad work there”. There is a level of awareness about the tools that provide Internet access, social practices (e.g., email, social networks) related to the use of apps. The results of our study suggest that only a few children are not familiar with the Internet, most of them have their own ideas about it, thus giving us an understanding that it is necessary to teach cyber safety from an early age.

In the absence of pedagogical practices related to the safety of children and adolescents on the Internet, it may be tempting to define a security policy, simply adapting existing educational programs by introducing a cyber safety concept intended for older children for younger and middle-aged students. However, an understanding of children’s ideas about the Internet suggests an alternative approach. Instead of adapting existing approaches to cyber safety, new ones need to be developed, since the generations of children are too different. Studies show that when a teacher or educator focuses on overly complex concepts, children do not perceive this information. If a child knows that the Internet, which his dad regularly uses at home or where he watches movies, also includes a network of digital technologies used by many people, then he has a conceptual basis from which one can understand why it is necessary to follow cyber safety rules.

According to this analogy, children are trained in road safety issues, based on an understanding of vehicles and roads, so that they know why it is important to look both ways before crossing the road and so on. To understand the importance of road safety, children do not have to know how a car works, but they need to know what a car and a road are. With regard to safety on the Internet, children do not need to know about the complexities of the Internet and specifically about how it works (in fact, most adults have no idea of it). Nevertheless, there is a possible value in building children’s concepts of the Internet, as they understand that what they use includes many interconnected technologies that allow them to communicate, have fun and learn.

7. Conclusion

The findings and results of the study were obtained in the course of the survey by educators and teachers of children aged 5 to 13 years based on gender.

The results show the following:

- the rapid development of mobile technologies using children’s Internet has led to an increase in the level of access to the Internet and has facilitated communication with children all over the world;
- currently, adolescents need cybersecurity training;
- The area of cybersecurity is, first of all, to establish that children understand about the Internet and how to protect themselves.

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