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SECURE INTERNET FOR CHILDREN

Abstract: The article touches upon the issue of information security in the field of children's use of the Internet. The number of Internet users is growing today. Thereby, the number of children, using the Internet, is increasing too. Most of the children are not aware of all the dangerous situations they can trap in due to their careless behavior on the Internet. A big number of hackers are waiting for the chance to catch our data or to injure children's mental state via different online methods. Children are at risk of seeing harmful items of information contained in loads of emails flowing into their mailboxes along with spam and viruses. Relying on the above, it can be argued that children are the most important sources of income for manufacturers of computer and mobile games.

A large number of websites offer various methods of protection such as age verification. However, in practice, these methods do not help. Thereby, children have access to a significant amount of prohibited content.

The problem of children's safety on the Internet is reasonably relevant nowadays. Many parents are concerned about the kind of information their children can see on the Internet. The purpose of this study is to highlight children's vulnerability to danger from the Internet and give an overview of the means of limiting dangerous information which can cause problems for children's psychological health.

The main question this article aims to answer is: «How to protect children from dangerous media content?»

Keywords: information, security, children, internet, psychology, society, hackers, deception, internet communication.

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БЕЗОПАСНЫЙ ИНТЕРНЕТ ДЛЯ ДЕТЕЙ

Аннотация: В статье затрагивается вопрос информационной безопасности в сфере использования детьми интернета. Сегодня с быстрым ростом числа пользователей Интернета растет и число детей, пользующихся Интернетом. Большинство детей не знают обо всех опасных ситуациях, в которые они могут попасть из-за своего неосторожного поведения в Интернете. Большое количество хакеров в ожидании удачного момента для того, чтобы перехватить наши данные или травмировать психику детей с помощью различных методов. Являясь важнейшим источником дохода для производителей компьютерных и мобильных игр, контента в социальных сетях, дети рискуют увидеть вредные элементы информации, содержащиеся в большом количестве писем, поступающих на их почтовые ящики вместе со спамом и вирусами. Многие веб-сайты, предлагающие различные методы, такие как услуги проверки возраста. Однако на практике такая защита не всегда является эффективной, и дети получают доступ к значительному количеству запрещенного контента.

Проблема безопасности детей в Интернете сегодня достаточно актуальна. Многие родители обеспокоены тем, какую информацию их дети могут увидеть в Интернете. Цель данного исследования состоит в том, чтобы подчеркнуть уязвимость детей к опасности из интернета и дать обзор средств ограничения опасной информации, которая может вызвать проблемы для психологического здоровья детей.

Главный вопрос, на который призвана ответить эта статья: «Как защитить детей от опасного медиа-контента?»

Ключевые слова: информация, защита, дети, интернет, психология, общество, хакеры, обман, интернет-общение.

In order to better understand this problem, four scientific articles were investigated. The first article taken for studying the problem was the article by Dalmeet Singh Chawla, «Making children safer online» [4]. In this article, the author reports that children are actually exposed to danger from the outside world and on the Internet. The author approves that children have almost no protection. The dangers of the internet such as cyberbullying, video-game addiction, cyber risks are outlined. The author proposes to introduce the program called «digital intelligence quotient» (DQ) at schools. This program allows to increase the intelligence, social interaction and emotional state of children. The totality of the above-mentioned indicators helps to provide 8- to 12-year-olds with the skills they need to thrive in the digital economy. Also, the author tells about different methods of solving this problem, such as developing the intelligence of children with the help of programming and robotics, introduction to school programs with various children education methods, etc. In addition, the article provides statistics on the criterion of DQ, which reports that not all children are ready to use the Internet. This article was very useful for our study, because it describes two optimal methods of preparation children to use the Internet, which are the system of evaluation of DQ, robotics and programming lessons. We believe that these methods can become helpful and effective in conjunction with parental control.

As mentioned earlier, parents play an important role in the development of their children. The safety of children on the Internet begins with their parents, namely with parenting. Very often parents do not realize the consequences of passive attitude to the upbringing of their children. Such parents need to use a variety of methods, tests, programs or pieces of training to prevent problems with the behavior of their children. Ata Ghaderi in her article «Randomized effectiveness Trial of the Family Check-Up versus Internet-delivered Parent Training (iComet) for Families of Children with Conduct Problems» [3] tells about scientific research combined with the two types of family test, namely, the FCU and iComet. The FCU is the second generation of parent training programs. FCU has effects on reductions of externalizing behavior problems, preventing children's depression. The Swedish parent-training program Comet was highly influenced by principles in the Parent-Management Training-

Oregon Model and the Incredible Years model. Comet was also adapted for delivery through the Internet («iComet») and made available to parents with children who have externalizing problems. Families with a child with conduct problems were randomized to one of the conditions for 10 weeks of treatment. The drop-out rate was significantly higher in the iComet (39%) compared to FCU (23%). The results shown by iComet were better than FCU. This can be caused by interactivity of iComet(iComet is available on the Internet and works with parents via the Internet). We collected this information for our study, since it is logical that the use of iComet can affect the emotional (EQ) and social (SQ) coefficients of the DQ system, as well as the overall parenting.

Our problem is also worth considering from a technical point of view. After all, security on the Internet is not only based on human aspects. A large number of ways of ensuring security at the technical level is given in the article «Safe and efficient use of the Internet» [2] which was written by p. K. Downes. From a large amount of information contained in the article, we took for consideration only the part related to the use of anti-viruses, parental control software, and password guessing.

It is essential that every computer has an installed anti-virus program that will periodically check the system for all-known types of viruses and can either isolate or delete the malicious code. Basically, parental control software is a web filter; it determines where a certain computer user (e.g. a child) can go inside a web browser. Timely change of passwords is able to make an email or social network account more secure. The use of characters in combination with uppercase and lowercase letters and numbers enables to make the password unbreakable.

One part of the articles addresses one of the most popular types of attacks called «Phishing». Phishing is a scam that uses email spam, pop-up messages or fraudulent websites to deceive people into disclosing their credit card numbers, bank account information, passwords or other sensitive information. We believe that the use of the above methods by the parents or the organizer of the computer network will improve the security of the computer user. This user can also be a child.

The problem of information security touches on not only children and even not only PC users. We believe that the most important aspect of the information society is globalization. For a more detailed study of the problem, we have examined the article by Daniel Prince under the title «The Security and Protection Challenges of Our Digital World» [1]. The author draws the reader's attention to globalization and the way it

influenced our society, markets, gadgets and many other things. Devices, created, for example, in America, can be used throughout the world, in terms of globalization. In addition, it is reported about various ways how Internet services collect information about us. According to the article, such giants as Apple and Microsoft try to provide the maximum protection of user's personal information. It becomes clear that it is wise to use proven services. It is also worth mentioning that several services have parental control.

We were able to better understand the problem of children's security on the Internet after reviewing the articles above. Thereby, we came to the following conclusion. It is wise to start concerning with child online protection and search for ways of reducing risks arising from children's access to the Internet, instead of limiting children from the Internet. The first way is proper upbringing and supervision of the child by the parents, using various programs and training to improve parenting skills. The second step is improving the education of children in the field of programming. And the last point is the installation of anti-viruses, special filtering programs to filter out prohibited information and timely change passwords. These solutions will help to get closer to solving the problem of children's safety on the Internet. But it will not be possible to completely solve this problem since there is no system inaccessible to intruders and which can completely protect the user.

REFERENCES

1.   Daniel Prince. The Security and Protection Challenges of Our Digital World // 2018 Vol. 51 Issue No. 04 – April. [Electronic recource]. URL:https://www.computer.org/csdl/mags/co/2018/04/mco2018040016.html (04.04.2018).
2.   Downes P.K., «Safe and efficient use of the Internet» / BDJ volume 203, pages 11–22 (14 July 2007), DOI (https://doi.org/10.1038/bdj.2007.587); [Electronic recource]. URL: https://www.nature.com/articles/bdj.2007.587 (14.07.2007).
3.   Ata Ghaderi, «Randomized effectiveness Trial of the Family Check-Up versus Internet-delivered Parent Training (iComet) for Families of Children with Conduct Problems» // cientific Reports volume 8, Article number: 11486 (2018), DOI (https://doi.org/10.1038/s41598-018-29550-

z); [Electronic recource]. URL: https://www.nature.com/articles/s41598-018-29550-z (09.07.2018).

4. Dalmeet Singh Chawla. «Making children safer online» // *Nature* 562, S15-S16 (2018) doi: 10.1038/d41586-018-06848-6; [Electronic recource]. URL: https://www.nature.com/articles/d41586-018-06848-6 (03.10.2018).