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О.М. ЛАПУЗІНА

ВИКЛАДАННЯ КОМП'ЮТЕРНОЇ ЕТИКИ У ЗАКЛАДАХ ВИЩОЇ ОСВІТИ ЯК ОДИН ІЗ ЧИННИКІВ ФОРМУВАННЯ СОЦІАЛЬНОЇ ВІДПОВІДАЛЬНОСТІ МАЙБУТНІХ ФАХІВЦІВ

Стаття присвячена аналізу питань ролі комп'ютерної етики при підготовці фахівців технічного напрямку у закладах вищої освіти. Увага акцентується на актуальності та практичної важливості цієї проблеми в сучасних умовах розвитку інформаційних технологій. У статті розглядається особлива роль вищої освіти у створенні стандартів комп'ютерної етики. Стаття націлена на вивчення сучасних форм інформаційної етики, яка є конче актуальною в умовах глобальної діджиталізації, а також на обґрунтування необхідності її вивчення у технічних університетах. Метою статті є загальний аналіз вмінь та навичок студентів технічного напряму навчання та студентів, які навчаються в галузі інформатики і планують бути майбутніми розробниками програмного забезпечення, відповідальними за прийняття рішень щодо різних типів розвитку технологій.

Зроблено висновок про необхідність впровадження курсу етики глобального інформаційного простору, тобто комп'ютерної етики, у навчання студентів, поряд зі створенням та впровадженням кодексів наукової інформаційної етики для науковців та викладачів сучасних вишів.

Ключові слова: комп'ютерна етика, інформаційні технології, студенти, технічний напрям навчання, кодекс комп'ютерної етики.

O.M. LAPUZINA

COMPUTER ETHICS TRAINING IN HIGHER EDUCATIONAL INSTITUTIONS AS ONE OF THE FACTORS OF FORMING THE SOCIAL RESPONSIBILITY OF FUTURE SPECIALISTS

The given article encompasses problems of computer ethics role in the technical specialists preparing process. The attention is focused on an urgency and practical significance of this problem in modern conditions of computer technique development. The article examines the special role of higher education in creating computer ethics standards, analyzes the study of modern forms of information ethics, which is extremely relevant in the conditions of global digitalization, as well as at the justification of the need for its study in institutions of higher education. The skills and abilities of technical students and students who study in the field of informatics and plan to be future software developers responsible for making decisions about various types of technology development are considered in the article.

A conclusion was made about the need to introduce a course on the ethics of the global information space, that is, computer ethics, into the education of students, along with the creation and implementation of codes of scientific information ethics for scientists and teachers of modern universities.

Key words: computer ethics, information technologies, students, technical direction of study, code of computer ethics.

Problem statement. The global information space, in which information flows created by the entire human civilization circulate, puts on the agenda the solution of not only technical, but also moral problems generated by the very fact of the existence of this space. The activation and globalization of information interactions in society place ever higher demands on the information security of the individual, social groups and the whole society. However, the introduction of only legal norms regulating human activity in the global information space does not allow obtaining the necessary level of information security. Therefore, today it is extremely important to develop modern students' skills, ethical rules during their training in higher education institutions to comply with relevant norms of behavior in the information space, namely, computer ethics.

Analysis of recent research and publications. Problems of computer ethics under the conditions of global digitalization are the subject of serious discussions and actions. In the works of scientists I. Alekseeva, N. Bezrukov, M. Kvin, R. Campbell, I. Kulchytskyi, M. Pogoretskyi, R. Seddon, L. Filipova, I. Fomenko and others, the necessity of forming a stable moral and ethical paradigm of information - technical reality, development of moral qualities of computer specialists and users. The need for active implementation of computer ethics is caused, to a greater extent, by the fact that situations created by information technologies often make morally

significant phenomena that were previously outside the scope of moral codes and determined by natural laws [15]. Today, the computer's ability to solve certain conflict situations, predict natural disasters, provide psychological advice, etc. has entered the orbit of moral evaluations. Everything related to the activity of computers must be under the strict control of human ethics. This became the basis for the selection of such a type of ethics as computer ethics, in which non-economic goals often supersede economic ones [10]. One of the first solid academic publications devoted to the problems of computer ethics should be considered the book "Computer Ethics", published at the beginning of the 21st century [9], which is an attempt at a systematic, professional study of the relevant issues with the participation of philosophers, jurists, scientists and practitioners in the field of information technologies.

However, until now, the ethics of the global information space, due to its specificity, is one of the least developed and studied scientific areas.

The goal of the article is to analyze the nature of problems related to the social impact of computers, and to formulate and justify possible ways of introducing and developing computer ethics in higher education, which is necessary for the management of computer technologies.

Main body. Internet technologies have made the transformation of the information space from a local one, covering a rather limited community of people (family, professional and social groups, ethnic group, state) to a global one, including almost all civilized humanity, a reality.

Until recently, the task of safe human activity in the local information space was successfully implemented. Quite effective administrative, legal and ethical mechanisms have been developed that regulate the interaction of all elements of society in the information space and guarantee the safety of such interaction.

Currently, it is possible to highlight a number of main problems that are of concern to researchers in the field of information technologies:

- intentional hacking of software to cause harm and extract income (the theft and use of stolen credit cards with the help of a computer alone causes their rightful owners more than one billion dollars in losses annually);

- passion for computer games, including gambling, which has widely reached today's youth (this passion exploits a person's passion for games and causes an unusual disease – passion for computer games. Its symptoms can be compared to forms of drug addiction);

- ethical problems related to intellectual property (network piracy and hacking, launching viruses by networks that destroy computer programs and destroy information, collecting various information without the knowledge of individuals and companies;

- cyber attacks that affect the information space where information is located, materials of a physical or virtual device are stored. A cyber attack, as a rule, affects data carriers specially designed for their storage, processing and transmission of personal information of users. Due to hacker attacks, the world economy lost more than a trillion dollars in 2021. That's a 50 percent increase from two years ago, according to a joint analysis by antivirus maker McAfee and the Center for Strategic and International Studies (CSIS). Thus, in 2021, the total amount of losses from the activities of cybercriminals was one percent of global GDP. According to experts, recently there has been an increase in cases of the use of so-called "ransomware" programs, with the help of which hackers block access to data on victims' computers and give the opportunity to resume work only after paying a ransom [16];

- the problem of "informational garbage", or spam. Some spammers use known software vulnerabilities or computer viruses to take control of large numbers of computers connected to the Internet and use them to send spam. For this, so-called zombie computers are used [15]. Mass spamming has a low cost per message for the sender. However, a huge number of useless messages causes obvious harm to recipients. First of all, we are talking about the time spent in vain sifting through junk mail and searching for individual letters among it. Very often, Internet traffic is expensive, and the user has to pay for clearly unnecessary emails. The greatest harm comes from the ignorance of spam recipients, who open spam emails, follow links allegedly sent by their acquaintances, download viruses and unknowingly spread them in society (more often than not, working computers are the first on the list of infected). It is believed that spam can be beneficial to ISPs as it leads to increased traffic. In fact, ISPs also bear additional costs due to increased unnecessary load on channels and equipment. It is the providers who have to spend resources on excessive equipment and anti-spam systems. According to publicly available statistics, at least 80% of forwarded letters are currently spam (according to some studies, there are 70 spam messages per day for one Internet user [8]. Most of them are intercepted by mail servers during reception. But even the smaller part that remains is enough to complicate the lives of users. ISPs bear additional costs due to the constant need to fight spammers (redundant equipment, excessive channel capacity, special software for spam recognition).

Testing and analyzing the results of spamming consistently shows its extremely low efficiency, and often almost complete ineffectiveness. For example, during an advertising campaign in California in 2021, 350 million messages about the sale of new natural medicines were sent from 75,869 computers in 26 days. As a result, the company received only 28 orders.

Many states are taking serious measures in the direction of implementing computer ethics norms [8, 16, 17]. Thus, in Thailand, parents are required by law to take into account the age and emotional state of their children when choosing video games [12]. The Greek government has adopted a new law banning all types of computer games in public places [2]. In a number of European countries, it becomes possible to apply fairly strict administrative and legal measures to the initiators of unauthorized sending of information (spam) through telecommunication channels [5]. In Great Britain, since 2003, a law has entered into force, according to which the author of unsolicited e-mails can be fined a significant amount. The Italian authorities, in addition to the fine, the amount of which reaches 90,000 euros, also allow criminal sanctions – imprisonment for a period of six months to three years. The European Parliament adopted

a decision on the protection of electronic communications data (Electronic Communications Data Protection Directive) [6].

Nowadays, the problem of the formation of information ethics of a specialist and the study of the information behavior's specifics, both of individual users and of social groups, acquires special importance. A specialist who works in the age of information technologies must know and follow the basic norms and rules of information (computer) ethics. The relevance of the problem of studying the information behavior of specialists, engineers in particular, is determined by the fact that the world has become aware of the fundamental role of information in social development.

Researchers of Ukraine and many other countries of the world community deal with the problems of studying the information behavior of an individual. Thus, many rules of computer ethics formed the basis of national laws (they are in the Ukrainian Criminal Code), and also became the result of the adoption of international agreements. The Law of Ukraine "On Information Protection in Automated Systems" and "Regulations on Technical Information Protection in Ukraine" contain three articles ("Illegal interference with the operation of electronic computing machines (computers), systems and computer networks"; "Theft , appropriation, demand of computer information") or acquiring it through fraud or abuse of official position"; "Violation of the rules of operation of automated electronic computing systems"), for which criminal liability is provided [4]. Departments of information culture have been created in many universities of the world, educational programs for secondary and higher educational institutions have been developed for the course "Fundamentals of information culture and ethics", and international scientific conferences on computer ethics problems are held [14].

Computer ethics is a set of moral principles and norms regulating relations between people, which have developed on the basis of their work with computers. The change of moral norms under the influence of information technologies is recognized by many researchers. Computer crime is white-collar intellectual crime. Those who commit such crimes must be intelligent enough to manipulate the computer system and be able to gain access to it. One example of computer crime is the theft of funds through computer(s). Often the worst that can happen to such a thief is that he/she is simply asked to return the stolen money. Many times this person is fired, assuming they are an employee, but can be quickly hired by a competitor because of his/her skills. This practically does not prevent the commission of computer theft, since legal actions are not often taken against the attacker.

Another example is unauthorized access to a computer. In case of unauthorized access to the computer, an attacker can steal the company's trade secrets and data. Such a crime may be committed by an employee who intends to sell such secrets to a competitor, or by an outside source who wishes to steal such secrets to further their own welfare. This crime involves both an invasion of property and privacy, and also compromises the computer system itself.

Such a crime is combined with the idea of hacking. Hacking is defined as "any computer-related activity that is not authorized or approved by an employer or the owner of a system or network." Such activity deals with the ethical dilemma of who actually owns the information. In many universities, computer science teachers force their students to hack the university system to prove their skills and knowledge of computer systems. This creates a serious ethical dilemma. Since the students are not causing any harm to the system, is this action morally reprehensible or acceptable? Many computer professionals believe that this act is not ethically sanctioned, and computer science professors should more strongly consider the issue of computer ethics in their classes [1, 3].

Another area of computer ethics concerns privacy. The privacy issue focuses on the most basic functions of a computer, "its ability to store, organize, and share records." Much of the concern is related to the amount of information collection that is made possible by computers and puts people's personal information in a vulnerable position. If someone hacks a computer system, all this information becomes available to him/her. Thus, crimes such as identity theft can occur.

Also, when stored information can be easily shared, the effect of a small error can be amplified. Such errors can remain in the system indefinitely. Computers "create the possibility that incidents in a person's life or errors in their records will follow them throughout their lives, significantly affecting how they are perceived and treated." It is because of this effect that people lose control over their lives.

There seem to be both good and bad effects of computerized records. A good implication is that an organization's need for information implies that "access to relevant information can improve decision-making and therefore make organizations more effective." This in turn provides a positive outcome for the individual as it can mean better services or savings. However, there are still bad consequences. This is due to the fact that "information is used to make decisions about individuals, and such decisions may be based on irrelevant and inaccurate information." Thus, there must be a balance between the need for information on the part of the organization and the interests of an individual. An example of this is the concept of artificial intelligence (AI). It is an attempt by computer experts to simulate the components of human intelligence with the help of machines. It is very important that those who have this opportunity do not abuse it.

Computer technology creates a whole new sphere of ethical dilemmas. From computer crime to privacy to the power of computer professionals, this technology has changed the way the business world must think about ethical decisions. Coupled with the fact that technology is changing so rapidly, it is difficult to establish firm moral codes of conduct for computers and to strictly enforce them.

There are a lot of gray areas where people blame computers when they run into problems. However, in reality, humans make mistakes because they are the ones who created the technology. People just use computers as scapegoats to avoid responsibility. This is why it is

extremely important to educate people about the power and possible abuses of computer technology. Only in this way will society gain a solid understanding of computer ethics and resolve moral dilemmas related to computing in an ethical and appropriate manner [13].

In such circumstances, only the mastering of computer ethics by future specialists will avoid many negative consequences caused by the features of the global information space, and create conditions for fulfilling the necessary requirements for ensuring information security. At the same time, information security is considered in two aspects:

• as a state of an individual in which he cannot be seriously harmed by influencing the information sphere;

• as a property of the individual, which characterizes his inability to cause significant harm to other persons, public groups and the state through the information sphere.

Computer ethics plays a decisive role in the formation of information security of a technical specialist who, due to his upbringing and observance of professional ethical norms, will not harm other people, society and the state even if the opportunity presents itself. Therefore, the decision of future specialists of professional and personal tasks with the help of a computer should be carried out in accordance with generally accepted norms and rules of behavior, in accordance with certain value orientations of the individual.

The Association for Computing Machinery of the USA adopted a computer code of ethics consisting of a number of imperatives:

- honor contracts and other obligations;
- enter the correct information when concluding transactions using the Internet;
- trust "informational" partners;
- respect other people's privacy, even if you have access to confidential information via the Internet.

The Institute of Computer Ethics of the USA, by analogy with the biblical commandments, formulated 10 commandments of a modern technical specialist, especially a specialist in the field of computer technologies [7].

Commandment 1: Thou shalt not use a computer to harm other people. The commandment calls immoral software damage (creation of malicious programs, destruction of other people's information by other means, etc.).

Commandment 2: Thou shalt not interfere with other people's computer work. It is unethical to run programs to track other users.

Commandment 3: Thou shalt not snoop around in other people's computer files. Such behavior is tantamount to reading other people's diaries and correspondence. In addition to files, the commandment also applies to reading someone else's e-mail.

Commandment 4: Thou shalt not use a computer to steal. Fortunately, this commandment has already found its application in practice thanks to the introduction of certain laws into the Criminal Code of many countries.

Commandment 5: Thou shalt not use a computer to bear false witness. The Internet is full of various information, but no one can verify the reliability of this information. Therefore, by introducing unreliable facts or slanderous information into the Internet, you are leading people down the wrong path.

Commandment 6: Thou shalt not copy or use proprietary software for which you have not paid (without permission).

Commandment 7: Thou shalt not use other people's computer resources without authorization or proper compensation.

Commandment 8: Thou shalt not appropriate other people's intellectual output.

Commandment 9: Thou shalt think about the social consequences of the program you are writing or the system you are designing.

Commandment 10: Thou shalt always use a computer in ways that ensure consideration and respect for other humans.

Employees of some Western universities have also tried to formulate their own codes of computer ethics. For example, in the Policy for Acceptable Use of Information Technology Resources of the University of Tennessee, it is considered unacceptable to log into the system under a different name, use your computer account without permission, use a university computer to send obscene , repeated, defamatory messages [11].

In 2021, within the framework of the concept of training the humanitarian and technical elite, developed at the National Technical University "Kharkiv Polytechnic Institute" (NTU "KhPI"), among senior students of some institutes, such as: Educational and Scientific Institute of Computer Modeling, Applied of physics and mathematics, the Educational and Scientific Institute of Computer Sciences and Information Technologies, the Educational and Scientific Institute of Energy, Electronics and Electromechanics, a survey was conducted. The purpose of the survey was as follows: to find out whether students of a technical university are familiar with the concept of computer ethics, whether they have knowledge in this field, how necessary this kind of knowledge is for future engineers, and whether they are interested in obtaining such knowledge.

The analysis of the results of the survey made it possible to formulate the problems of training students of technical specialties in the field of computer ethics, which need to be understood:

- lack of awareness of students about the existing norms and principles of modern ethics of information technologies along with a rather high motivation in obtaining knowledge in this field;
- the desire to master the basics of computer ethics due to the fact that such knowledge and skills will help a modern engineer to increase his authority and contribute to the success of his/her activities.

Unfortunately, when training engineers, the main attention is paid to technical education, interaction with the computer as a means of solving certain tasks. At the same time, the fact that he is deprived of moral guidelines is ignored, the specialist begins to perceive himself as an intelligent machine, transfers the technical handling of the computer to the relations between people, and this leads to far-reaching consequences – the inhumane deformation of the entire culture of the information society. It is not by chance that R. Weeden, in his speech before the US congressmen, said that "some of the decent young people

are unable to assess the ethical and moral consequences of their actions. For example, many, if not all, young hackers in the US can't even think about taking money from an old woman on the street by force. But, on the other hand, it is very real that by simply pressing a few computer keys, they will easily deprive her of her savings" [10].

Conclusions. In today's world, a set of special measures is necessary to ensure an acceptable level of safety of life and activity in the global information space. There must be appropriate ethics – the ethics of the global information space, which is based on the norms of traditional ethics of relations between people, and to which appropriate corrections are added that take into account the realities associated with the formation of the global information space.

It is worth noting that in modern conditions, searching for information is a much less difficult process than processing and analyzing information. Therefore, in the process of preparing essays, term papers, diploma and research papers, students are very often limited to only searching for information on the Internet and composing it or, even worse, copying, which does not develop students' analytical skills. As a result, the performance of such work loses its meaning, because it does not correspond to the main goal of education. In connection with this, the formation of information culture and ethics of using the worldwide Internet in the educational process and in further scientific research becomes an important direction of the work of the teaching staff of higher educational institutions.

In the context of the formation of the information culture of modern students, it seems necessary to introduce a course in computer ethics into the education of students, along with the creation and implementation of codes of scientific information ethics for scientists and teachers of modern universities.

Today, in the conditions of the development of innovative technologies and the Internet, in order to improve the level of education in Ukrainian higher educational institutions, it is necessary not only to use innovative technologies for the process of studying students, but also to oblige teachers to use them in checking student works for plagiarism.

The authors consider the development of goals, content and methods of introducing information ethics courses for a modern specialist into the educational process to be promising directions for further scientific research.

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С.Ю. НОВОСЬОЛОВА, Н.В. ЛЯБАХ

РЕАБІЛІТАЦІЯ ПСИХОЛОГІЧНОГО ЗДОРОВ'Я В ПОСТКОВІДНОМУ ПЕРІОДІ: СОЦІАЛЬНИЙ АСПЕКТ

У статті йдеться про необхідність ефективної реабілітації психологічного здоров'я людей у постковідному періоді; розглянуто нормативно-правові документи, що визначають державну політику щодо реабілітації у сфері охорони здоров'я; з'ясовано, що проблема планетарного масштабу (COVID-19) потребує на своє розв'язання збоку наукової спільноти всього світу, чому сприятимуть дослідження науковців та практиків та науково-комунікативні заходи; доведено необхідне забезпечення доступу до мультидисциплінарних послуг для оцінки симптомів фізичного та психологічного здоров'я постраждалих на COVID-19, проведення подальших тестів та досліджень, надавання комплексних, міждисциплінарних послуг з реабілітації, виходячи з місцевих потреб та ресурсів; наголошено на створенні кабінетів психологічної реабілітації, завданням яких є адаптація постраждалих до життя в нових умовах, не медикаментозними методами; обґрунтовано необхідність заснування багатопрофільних реабілітаційних центрів по всій території України.

Ключові слова: пандемія COVID-19, психологічна реабілітація, психологічне здоров'я.

S.Yu. NOVOSOLOVA, N.V. LIABAKH

REHABILITATION OF PSYCHOLOGICAL HEALTH IN THE POST-VIOUS PERIOD: SOCIAL ASPECT

The article presents the need for effective rehabilitation of people's psychological health in the post-covid period; regulatory documents defining the state policy on rehabilitation in the field of health care were considered; it became clear that the problem of a planetary scale (COVID-19) needs to be solved from the side of the scientific community of the whole world, which will be facilitated by the research of scientists and practitioners and scientific and communicative activities; the necessary provision of access to multidisciplinary services for the assessment of symptoms of physical and psychological health of victims of COVID-19, the conduct of further tests and research, the provision of comprehensive, interdisciplinary rehabilitation services, based on local needs and resources; emphasis is placed on the creation of psychological rehabilitation offices, the task of which is to adapt the victims to life in new conditions, using non-medicinal methods; the need to establish multidisciplinary rehabilitation centers throughout the territory of Ukraine is substantiated.

Key words: COVID-19 pandemic, psychological rehabilitation, psychological health.