

The 15<sup>th</sup> International Scientific Conference  
eLearning and Software for Education  
Bucharest, April 11-12, 2019  
10.12753/2066-026X-19-156

**Extend Centre's Resources for Increasing  
General Digital Literacy**

Natalya ZERKINA PhD.,  
Yekaterina LOMAKINA PhD., Olesya KISEL  
*Institute of Humanities, Nosov Magnitogorsk State Technical University, 38, Lenin St., Magnitogorsk, Russia*  
agatik01@mail.ru, leakaty@mail.ru, olesja-kisel@rambler.ru

Elisabeth LAZAROU  
*Faculty of Engineering in Foreign Languages, University Politehnica of Bucharest, Splaiul Independentei 313,  
Sector 6, Bucharest, Romania*  
elisabeth.lazarou@upb.ro

**Abstract:** *The era of powerful technology progress raises the question of digital literacy. The lack of knowledge and basic skills within the majority of potential users among common people slows down the development of the IT industry as whole as far as it is focused on consumers. It is impossible to educate IT specialists, engineers or any other highly qualified professionals without paying appropriate attention to digital literacy. Due to mass start of daily IT usage among the population it comes to influence the informational sphere as well as the learning process as it is the significant part of the education. So there appears a special user's category it is mass-user's. This category of users is mainly oriented on digital consume but is not aware of digital competence that is the consumers whether common or professional are to be able to learn from digital etiquette to digital security. As for professional for example sphere the issue of digital literacy and its components acquire far too much concern as it affects the industrial, economical, social and other areas of life. The aim of the article is to study the digital literacy as a significant component for modern education process and in particular for specialists in engineering. There were used the method of analysis, interview survey and comparison.*

**Keywords:** *EXTEND Center, Digital etiquette, Digital literacy, IT industry.*

## I. INTRODUCTION

It seems that the word "digitalization" has long been included in the agenda of large-scale events in the area of education. This is not surprising according to the government program "Digital economy", by 2025 the education system in Russia should be set up so as to prepare a sufficient number of literate users of information technology with the necessary competencies in the XXI century for a breakthrough in the future digital world global systems of economics, trade, communication.

"Scientific progress, the development of information and communication technologies, their mass availability expanded greatly the possibilities of a man, and marked the beginning of a new evolutionary process - the formation of information society. For a full life in such a society, a modern man must be able to receive, store, process and use the information by means of information and communication technologies." [2, p.294]

It would seem that literacy is a concept familiar to everyone. According to the most general definition, it is the degree of basic cognitive skills: reading, writing and counting in the native language. But with the development of technology and the complexity of the informational space in which we exist, the concept of literacy is expanding. International organizations that try to classify the

competencies necessary for a modern person speak about the importance of digital, information and scientific literacy. Often these types of literacy overlap and complement each other. Though only an understanding of how digital reality actually works can teach a person to control "informative noise" and make interaction with digital technologies a source of development and education not a stressful insecure space.

We consider EXTEND Centres that are organizing within the framework of the Erasmus + Capacity Building Project in Higher Education # 586060-EPP-1-2017-1-RO-EPPKA2-CBHE-JP «EXTEND Excellence in engineering education through teacher training and new pedagogic approaches in Russia and Tajikistan», to be very useful and helpful in organizing special courses for different groups of population for solving the problem of digital literacy.

## **II. GLOBAL WORLD – GLOBAL TECHNOLOGIES**

In this age of global technological progress, information and communication or digital technologies are developing faster and faster every day. Nowadays it is almost impossible to find any sphere of human life in which digital technologies would not be present day to day. “In the modern industrial world, information is an important resource through which the implementation of communicative principles, and information technology, in turn, become one of the tools to improve the efficiency of the communication process”. [4, p. 408] Communication and interaction of people with each other, professional activities, education, providing, offering and receiving goods and services, health and tourism, public services, environment, transport and others – many issues in these areas can be solved with the help of various online services and applications for mobile devices, which to some extent reduces the time and financial costs. [7]

But in connection with such rapid development of digital technologies, a serious problem has emerged that is the problem of eliminating the "digital illiteracy". The pace of computerization is somewhat faster than the rate of skills improvement within the majority of users, this fact makes the society pay special attention to the concept of digital literacy.

By digital literacy we understand the total amount of human knowledge and skills that allow people to use digital tools for their own purposes. Everyone, both a highly qualified specialist and an ordinary modern person is obliged, within their competencies, to be able to find a "common language" with modern and constantly improving digital gadgets (smart-phone, tablet PC, laptop, etc.).

The concept of digital literacy includes three main components:

- digital consumption;
- digital competence;
- digital security.

Thus, in a broad sense, digital consumption is the degree of availability of information digital technologies: the availability of digital devices, the availability of mobile and fixed Internet, free access to electronic media, as well as the possibility of obtaining and providing public and entertainment services via the Internet. In other words, digital consumption is the knowledge and use of Internet services for work, education and entertainment or any daily life problems. [10]

The concept of digital competence includes the skills of effective use of information and communication technologies, which include: ways to search for information on the Internet, critical susceptibility of information and verification of its authenticity, creation of some content and its placement on the Internet, the use of mobile means for interaction, performing various financial manipulations using online services, as well as the use of the Internet to obtain goods and services.

In the public understanding, digital security is the basis for safe work on the Internet at both technical and socio-psychological levels: ensuring the confidentiality and integrity of the posted information, ensuring reliable protection of the personal data, organization of protection against pirated content, compliance with ethical and legal norms when communicating on the Internet, especially in social networks [8].

## 2.1 Digital literacy as a component of life skills

It must be noted at present the concept of "digital literacy" as a tool for information activities has gone beyond the only ability to use the computer and is also considered in a number of concepts related to technological literacy: computer and IT literacy. Digital literacy serves as a means for development, because it promotes self-education and getting some other important life skills both as a member of the informational society and as a consumer of electronic, digital services. Digital literacy is a kind of framework concept that brings together important groups of skills. Computer literacy includes both user's ones and specialized technical skills in the field of computers. Information literacy is the ability to formulate the information needs to request, search, select, evaluate and interpret information in whatever form it is presented. There should be pointed two key ideas in this respect:

1. Ability to formulate the information needs. In the field of modern teaching methods, this could be defining the boundaries of knowledge or ignorance. This is not yet the wording to the request as it is, but only the understanding that it is at this phase there is a need for some new information.
2. Ability to interpret the information. The point is not just to make notes, to learn the material, but to draw conclusions from it, to formulate clearly the semantic results of the search and present them in the form of a new information product.

Abilities of information needs and realization allow characterizing the information literacy as a kind of learning technology. It consists of the abilities of a person:

- to understand the personal need for information to solve a problem;
- to develop a search strategy by asking relevant questions;
- to find information relevant to the topic;
- to evaluate the relevance of the found information sort, organize, analyze it;
- to assess information quality, accuracy, credibility and reliability;
- to form one's own attitude to this information;
- to present to the audience or oneself one's point of view, some new knowledge and a problem solution or it' new understanding;
- to realize that the use of informational literacy skills in the process of solving a problem (or an educational task) can be extended to all spheres of human life.

These skills are defined by the concept of informational literacy, so they could be taken as contact, creative, information, evaluation and perceptual indicators. At the same time, each of these indicators can be distinguished at high, medium and low levels of their development. This type of typology gives an idea of a differentiated approach to the development of information literacy, when being of high levels on contact or creative indicators, an average or even a low level of information and evaluation indicators is possible. If talking about the levels of perceptual indicator, then there are many cases when people have only one vividly expressed indicator, the rest can be manifested themselves in an undeveloped, "collapsed" state. One thing is unquestionable: without a developed ability to analyze and evaluate texts and their use to solve any problems it is impossible to talk about a high level of information literacy. The practical skills to create texts cannot make individual information literate by themselves. "Digital, information texts are formed from the original verbal, graphic and other texts, which in turn are reorganized into the necessary search and savings form of information content." [5, p.45].

## 2.2 Levels of digital literacy. Netiquette

Levels of meaningful indicators on an individual's information literacy:

1. High level: awareness of the importance of information to solve any problem; development of information search strategy; ability to find information on one's own; evaluate, analyze, sort information; form one's own attitude to this information; the ability to present one's own point of view to the audience; the ability to process information by software.
2. Middle level: cannot quite realize the importance of information to solve any problem; develop a strategy for searching the information; find information on tips, with partial help of the teacher; not quite able to evaluate, analyze, sort information and form one's own attitude to this information; have difficulties in presenting one's own point of view to the audience; process information by software with difficulties.

3. Low level: do not realize the importance of information to solve any problem; cannot develop a strategy for searching information; find information only with the help of the detailed instructions of the teacher; do not know how to evaluate, analyze, sort the information and form one's own attitude to this information; hardly represent one's own point of view to the audience; process information by software

Another important component of digital literacy is the netiquette. "The active use of modern ICT in contemporary informative society raises ethical problems. Nowadays there is a negative trend, in which the use of scientific and technological progress runs in the opposite direction from the moral values." [3, p. 515]

Netiquette (network etiquette) is the rules of behaviour and norms of communication on the Internet, the culture and traditions of the online space, which most Internet users follow. No one ever strictly sets the rules of the netiquette, and they may differ in various forums, in different communities, blogs and societies etc. The primary purpose of these rules is to simplify the interaction between users, so that there were as little as possible any difficulties in communicating on the network. The rules can be established, depending on the thematic inclinations and the accepted style of communication, from any technical features and restrictions, from the contingent and age characteristics of the audience, from the nationality, education and life position of the Internet users and many other things. Often some obvious violations of etiquette are insults, personal transitions, misinformation, intentional deviation from the topic, inappropriate advertising and self-promotion.

It should be noted that users who are accustomed to one set of the rules at any circle of network communication, may unintentionally violate the rules of another circle, not even knowing it. To avoid this, many communities on the Internet offer to first read the rules established by them and formally confirm their consent. That is to put a click in special place for this option. Though even following these steps and rules some users still make some attempts as to violate the set of norms accepted by them just before. Afterwards they sometime even burst in rage when being blocked, banned by the blogger or the head of the Internet community. In other words even being trained in order to obtain the digital literacy these users are not likely to follow it without getting some conscious understanding of what it actually is.[6]

Still the basic rules remain common to all Internet users: to show respect for someone else's opinion, not to become too personal, not to be impolite and not to be rude to other users, not to offend anyone. As a rule, the basic rules of netiquette are similar to the rules of etiquette, the main difference is that the rules of netiquette are the rules of behavior for the virtual space, and the rules of etiquette are for the real behavior that occurs in our reality.

At the end of 2016, the regional public centre for Internet technologies (RPCIT) conducted a comprehensive study of digital literacy of Russian citizens, as a result of which the digital literacy index was 5.42 out of 10 possible points. The main objectives of the study were identified as follows:

- determination of the level of use of digital devices by citizens;
- rating of digital literacy on a regional scale;
- definition of the basic set of Internet services offered to users;
- identification of new needs of users.

Of course, the digital literacy index made by the research scored quite a decent number of points, but the crucial point of the situation is that the level of digital literacy is low for both users and those who have to teach them . "It is necessary to train society by joint efforts, and for this, first of all, it is necessary to listen to those questions which are asked by users" - the Director of RPCIT Sergey Grebennikov[1].

To reduce the possibility of risks on the Internet, it is necessary for all stakeholders to integrate their efforts. "Availability of personal information, mobilization and organizing power of social networks, etc. are quite destructive means for breaking the public order, which are closely related to problems of language violence and language manipulation"[9, p. 220]. Users should be guided by the key recommendations: not to advertise or disclose personal information on public resources, to treat other users with understanding, keeping in mind tolerance of any possible nature, to respect the other users' opinions or cultural and national characteristics which may differ and even to some extent contradict their own ones. When disagreements arise, it is important to approach the problem and response maneuvers rather consciously, trying to avoid any "labeling" and in any case not

to make it *ad personam*; it is necessary to provide assistance and support to victims of negative impact on the Internet.

### **2.3 The role of digital literacy of students in education**

We conducted a social survey among the students of Nosov Magnitogorsk State Technical University at different areas of training, both humanitarian and technical. The purpose of the survey was to identify the level of digital literacy of students and to understand to what extent the chosen direction of training affects the level of the digital literacy. The survey consisted of three questions:

1. Do you think digital literacy is a social or an educational problem?
2. What do you feel yourself like:
  - an elementary user or a beginner;
  - a confident user;
  - an advanced user (an administrator)?
3. How relevant is the use of a computer to you?

Thus, the study has shown that the need for the formation of digital literacy is an important moment of education in general and the formation of basic competencies in the field of digital economy, which every day is becoming more firmly in our daily lives and in the near future will occupy a major place in human life.

According to the results of the survey there confirmed the assumption that 80% of the students believe that they have a good command of the computer, 90% of them are students whose daily activities depend on it, they are students of technical areas, and in particular – areas related to information technology. Because most of the life of such students takes place at the computer and on the Internet; 25% of them consider themselves advanced PC users, poorly imagine life without digital technologies and prefer virtual communication to a real one. The students of Humanities are less proficient in computers and digital devices. Only 30% of them consider themselves confident users. Since the educational activity of humanitarians does not depend so much on information technology, 70% of students of humanitarian areas called themselves elementary users or beginners; to them, the use of a computer is just a need to do some tasks that are not accepted by teachers in any other forms (various electronic works). Such students consider the problem of digital literacy to be a social phenomenon, due to the fact that information technology is firmly rooted not only in our work and study, but also in everyday life.

## **III. CONCLUSION**

Thus, our study has shown that the need for the formation of EXTEND Centres is an important moment of education in general and the formation of basic competencies in the field of digital society, which every day is becoming a stronger part of our daily lives and in the near future will occupy a major place in human life.

We are planning to use EXTEND Centres resources for overcoming the gap between technological needs of contemporary society and digital literacy level of common people.

Nowadays digital education of students is considered as the most important component of educational process. There is also a great social demand to this kind of literacy and knowledge; it surely needs constant attention and support from society and the state authorities as the education combining the upbringing, training and development of the personality of the student. The digital education basing on its originality, organically combines a variety of types for arranging the processes of learning and communication both within and beyond the boundaries of activities being meaningful to both training at university and some leisure time. The information technologies together with digital literacy are of great actual demand; their application in various fields of education and daily life is considered as a real ground for digital society in the nearby future.

## Acknowledgements

The publication is made in the framework of the project Erasmus + Capacity Building Project in Higher Education # 586060-EPP-1-2017-1-RO-EPPKA2-CBHE-JP «EXTEND Excellence in engineering education through teacher training and new pedagogic approaches in Russia and Tajikistan».

## Reference Text and Citations

- [1] Grebennikov S. URL:<http://bit.samag.EN/archive/article/1586>
- [2] Chernova, Elena, Bobrova, Inna, Movchan, Irina, et. al. Teachers Training for Prevention of Pupils Deviant Behavior in ICT, Conference on Information Technologies in Science, Management, Social Sphere and Medicine, 2016. Atlantis Press, <http://www.atlantis-press.com/php/pub.php?publication=itsmssm-16> pp. 294-297
- [3] Chusavitina, Galina, Zerkina, Natalya Informational Ethics Teaching for Future Information Technology Specialist, International multidisciplinary scientific conference on social sciences and art, 2015. Vol. 2. <https://sgemworld.at/ssgemlib/spip.php?article1424&lang=en> pp. 515-521
- [4] Lomakina Yekaterina A. "Information environment" as a total unity of information and informational and communicative principles. "Actual problems of modern science, technology and education: collection of abstracts of the 76th international scientific and technical conference", 2018, Vol. 2, Nosov Magnitogorsk State Technical University, pp. 408.
- [5] Lomakina E A. The question of the philological-pedagogical problems of computer science in the context of the information environment, Foreign languages: linguistic and methodical aspects, 2017, vol.39, Tver State University, 2017. pp. 44-50
- [6] Zerkina, N., Chusavitina G., Lomakina Ye. Verbal Aggression in Virtual Environment, Modern Journal of Language Teaching Methods (MJLTM) 2017, pp.1-7, [http://mjltm.org/files/cd\\_papers/r\\_321\\_170801125022.pdf](http://mjltm.org/files/cd_papers/r_321_170801125022.pdf)
- [7] Zerkina Natalya N., Degtyarev K. S., Smirnova A.V. Organization and self-organization of English language teaching with use of modern IT technologies, The Phenomenon of man, 2015. pp. 153-156
- [8] Zerkina Natalya N... Gryzlova M. S., Vinnichenko A. O. Cyberbullying as a social and pedagogical problem of modernit, Science in the global world Collection Of materials of full-time and part-time student research conference, 2015 .pp. 127-130
- [9] Zerkina Natalya N... Lomakina Yekaterina A. On the issue of language aggression in the Internet space, Information security and prevention of cyber-extremism among young people, materials of the intra-University conference. Edited by G. N. Chusovitina, E. V. Chernova, O. L. Kolobova. 2015. pp. 219-224
- [10] Zerkina N.N., Lomakina Ye.A. Linguistic and digital characteristics of modern information environment, Russian Linguistic Bulletin, 2017. Vol. № 2 (10), pp. 16-18. <https://dx.doi.org/10.18454/RULB.10.11>