carried out among the teachers in primary education concerning their knowledge of the phenomenon of cyberbullying, its symptoms and ways of countermeasure.

Key words: cyberbullying, Internet, teacher, school

Стаття надійшла до редакції 26.03.2013 р.
Прийнято до друку 26.04.2013 р.
Рецензент – к. п. н., доц. Федічева Н. В.

УДК 376 – 056.24 : 378.091.33 – 028.22

M. A. Samuylo, B. A. Samuylo, A. Buchak

USE OF MODERN INFORMATION TECHNOLOGIES IN EDUCATION

Introduction

Teaching of humanities, and especially sciences and technical subjects, seems nowadays to be one of key aspects of education, particularly in the initial period. Social and economic transformations, continuous and extremely dynamic development of technology, including broadly understood information technologies and their availability, cause that children come into contact with this type of technologies at an ever younger age. This is manifested in games, obtaining and exchanging information, presenting one's own views, creativity and education. Devices such as consoles, phones, smartphones, tablets, desktop computers and notebook computers are used in this process. They are ever more universal, fitted out with elaborate software and connected to the Internet, which leads to diminution of functional differences between them. The devices should and ever more often are used in education.

Implementation of modern information technologies into the didactic process depends on measures undertaken by the government and local self-governments, funds allotted for that purpose as well as on the educators and students. One of the factors determining the process of implementing those technologies in schools are IT competencies of teachers, possibilities to improve those competencies and ability to apply them practically in the didactic process. On one hand, every teacher starting work is ever better prepared for that process but also usually significantly behind in comparison to the skills and sometimes the knowledge of the students. Research presented in literature shows that majority of students have a computer at home, spend a dozen hours a week in front of it and that this time is not associated with school education [7]. At the same time, subjects associated with computer science are taught at every stage of education, and computer rooms are present

at every school. This makes it possible to conduct classes using information technologies as early as in the first stage of school education.

It is frequently not sufficient for teachers to keep up with the changes in information technologies, to master and use new technologies. A factor that still impedes the progress in this field are low outlays, especially on replacing fast ageing hardware and software, as well as on research and development and on improving the skills of teachers. Changes in the organization and equipment possessed by schools implemented so far were rather a consequence of technological progress and changes in the way the society is functioning. Nonetheless, those were slow reactions, unable to follow the changes in information technologies and transformations of the society evoked by them. This hindered schools from fulfilling creative functions with respect to the desired social processes and from educating responsible and successful members of the information society [9, p. 9 – 50].

An important aspect is emphasizing of that fact by the teachers, especially that the level of assimilation of those technologies by students, acceptance, ability to use them, and so assimilation in a multimedia society, depend on their attitudes and involvement, knowledge, skills and needs in this regard [9, p. 9 – 13]. In order to achieve that goal it is necessary to update the education programs, to apply new didactic methods, appropriate competencies of the teachers in the field of multimedia education, to appropriately use the multimedia, to prepare and skilfully use interactive educational materials and Internet services which are becoming an ever more important education tool [10, p. 217].

Information technologies

Information technologies themselves constitute or are used to generate various didactic tools, classified under different categories [15, p. 35]. Depending on the subject and context, they may constitute or generate real items and processes, static real images and dynamic images with sound or without, flat schematic images, 3D and dynamic images, spoken and printed language as well as other sounds – music, sounds of the surroundings [6, p. 86].

A computer, together with the necessary accessories and software, is used almost commonly in education. It is ever more frequently a multimedia tool, i.e. it contains many devices which make it possible to receive, process and transmit text, image and sound. It is used by the person learning at the stage of collecting information (conveying the contents, enriching information with illustrations, films and sound, animations, simulating processes and phenomena not available otherwise, presenting examples and exercises to be performed on one's own), processing information (arranging problem situations, integrating new information with information already possessed, organization and elaboration there of), presenting information (planning the presentation method, examining and assessing the resources) and storing information [2, p. 55; 4, p. 137 – 142; 16, p. 11].

Multimedia, sometimes identified as hypermedia, are defined as the entirety of information technology messages and tools available to humans in the learning process. Their characteristic feature is activeness of the recipient during the course of work with them (interactiveness) and ability to use them in the virtual world [5, p. 249]. As a matter of ordinary understanding, a multimedia computer has a built-in, cable-connected or wireless camera, scanner, microphone, modem, information recording devices or carriers, speakers and other data transmission devices. This list is continuously changing due to the technological progress. Nonetheless, hypertext, static image, moving image, animation and sound are always an element of the multimedia system [5, p. 250 – 251].

One of the latest resources that are not yet common in schools are interactive blackboards. They are connected to a multimedia projector and computer. They resemble a traditional white board which acts as a screen for displaying image projected by a multimedia projector. It constitutes a sort of a monitor that reacts to the touch of any sort of an indicator – pen, pencil or finger. It makes it possible to mark, draw and write on the image projected by the multimedia projector, to move selected elements, to browse websites, display animations and films, to add notes to the images, as well as to work with typical software applications. The interface and operation of the boards is relatively simple and does not require specialized knowledge and skills, and thus no specialized training in this regard. The interactive boards can be mounted permanently or can be mobile, it is also possible to adjust the height at which they are mounted. A standard is communication of the board with the computer thanks to infra-red, Bluetooth or cable connection.

Another resource that is used more frequently but still undergoing continuous development is a digital camera. The resolution of the image is increasing from year to year, and most of the models available on the market offer the possibility to shoot films in HD quality, they are only limited by the size of the internal memory or memory cards. They make it possible to take many more pictures than traditional cameras, to view the image right away and to select them directly on the built-in viewer or after transferring the image to the computer. In comparison to traditional cameras they are easier to operate, automatic selection and adjustment of settings allow every user to take good quality pictures. The pictures and films are recorded in digital format, which makes it possible to edit, send them, to attach them to other graphical files, film presentations, to reproduce them multiple times.

Another tool useful in the didactic process is a scanner, which makes it possible to make digital copies of paper documents such as: photos, text, images, tests. It also makes it possible to use classic materials, i.e. traditional photos or documents in a new, more attractive form.

The multimedia projector is one of the most popular devices used in education. It is used to display material prepared by the teacher or students in electronic form. The materials can be multimedia materials, combining text, image and sound. One of the most popular forms of preparing this type of

materials are presentations made in PowerPoint or similar application from the OpenOffice package [12; 5, p. 253 – 257].

The Internet is an ever more important and widely used tool. It is a collection of various types of elements which include WWW (Word Wide Web), based on the Hypertext Transfer Protocol and Hypertext Mark-up Language developed and published by Tim Barnes-Lee in 1991 [11, p. 15]. The Internet, as a system, has the following characteristics: it is open, independent of the operating system, deprived of censorship and receptive to new users, available without any basic software and hardware restrictions, dynamic, which is demonstrated by the fact that it is being continuously updated and improved, dispersed, discreet, remembering, interactive, individualizing the education process, democratic, i.e. it does not take into account the users' individual traits, and automatic [4, p. 143].

Usage

It is possible to use information technologies in education in multiple fields. They can be and are used in the education, skill improvement and self-education processes, in pedagogic research, diagnostics and therapy, in the organization and management of the education process and are an institution carrying out the education process [2, p. 54].

Computer-aided education requires that numerous factors be coordinated:

- appropriate technological infrastructure,
- new teaching methods and changes in the didactic process,
- creative teachers able to hold classes using different sorts of equipment, among other things, laptops, cameras, cell phones, interactive blackboards and Internet tools – messengers, blogs, search engines, e-learning courses, Wikipedia [10, p. 218].

The Web contains various types of information in digital form, for instance, books, photos, films, graphics. It constitutes a commercial and information centre, a place for seeking work, contacts, for exchanging information, it is a learning place. The most important elements of the Internet include electronic mail (e-mail), created in 1971 by Ray Tomlinson, which is the most popular form of communication today. Various types of real-time messengers are of an ever greater importance, today they transmit not only text but also voice and images, other elements include discussion groups and blogs. Use of the Web to transmit music and film files, games, text is enormous, yet controversial due to the violation of the copyrights [11, p. 14 – 18].

In the teacher's work the Internet can be used in many ways. It is one of the most frequently used methods of preparing materials for class, such as searching for interesting materials, going over previously presented materials and preparing aids. A good example can be the educational platform szkolnictwo.pl, which contains a digital form of lectures from textbooks for elementary and junior high school. It is a tool that is useful to students but may also be used as a form of the teacher's preparation for class. Thanks to on-line resources teachers are able to improve their techniques by analyzing class outlines, innovative lecture proposals,

new ideas on how to use existing or to produce new didactic aids found on the Internet. Every new method and means make conducting classes more attractive and enrich the teachers' techniques used in class. However, this new, multimedia form of conducting classes cannot obscure their main goals and most important contents. These means should contribute to effective conveyance of knowledge and to the development of the necessary skills. Acquaintance with information found on the Internet allows teachers to keep their knowledge up to date and then to share the latest information and discoveries in class. Utilization of the communication capabilities of computers, phones and other devices hooked up to the Internet allows for integration with other teachers, experts, students and their parents through discussion fora, chat rooms, blogs, electronic mail or SMS and MMS [12].

Use of information technologies in teaching science is particularly useful. In this case multimedia presentations constitute an excellent supplement or are the only form of conveying information concerning certain technological processes, operation of machines and equipment, procedures, demonstrating how things work, making it possible to get to know and understand them better [1, p. 119]. One of the basic criteria of effectively teaching science is use of didactic resources, including multimedia ones [13, p. 230].

Functions of didactic computer programs

Students are able to contact their teachers at school directly. However, if a computer and the Internet are introduced into the teaching process, it will not only be possible for teachers to deliver information directly to students but students will also be able to seek the necessary information on the Net on their own. Implementation of information technologies makes it possible to apply specially developed computer programs in the teaching process. They can be assigned the following functions:

„- conveying new contents of the teaching program,
- supplementing knowledge already possessed,
- checking the level of comprehension of knowledge and skills,
- stimulating interests in a given field of knowledge,
- individualization of teaching,
- student's communication with the computer" [4, p. 138].

In the early educational stages use of didactic programs may foster the process of enlarging vocabulary by the student, support the development of language skills, develop interests, practice perceptivity [2, p. 55]. Software plays the most important role in teaching computer science, supporting the process of solidifying knowledge and skills usually learnt by students before, as well as the process of supplementing and systematizing them. It also allows students to identify proper substantive goals and to develop methods of rational selection of available information [16, p. 16 – 17]. Software chosen according to the students' age makes it possible, at the initial stage, to become acquainted with how a computer works, to introduce the names of various elements of the computer in an attractive way and to teach how to use the

mouse and the keyboard, and later to use the software to edit text, graphics or use the Internet's resources [12].

Appropriately chosen and applied software is a useful tool in teaching mathematics, allowing students to better understand match functions and operations. As regards teaching of foreign languages, multimedia programs combine traditional form of teaching language skills with animations, films, audio sounds. Foreign language learning software allows students to learn how to properly pronounce words, expressions, sentences. An important aspect of their application is allowing the students to become involved in the course of study, to adapt its speed and degree of difficulty to one's own needs. Also in teaching art and music use of computer software and appropriate multimedia tools may support the creative development of the students, be used to disseminate and evaluate the works produced by the students [2, p. 55]. It may also constitute a significant and valuable supplement to a classic library by offering books in electronic form and various databases [16, p. 21].

An important aspect of application of information technologies is support of the school management process [16, p. 23 – 24]. They are currently the basic tool used in running accounting ledgers, the secretary's office, allow for rational and effective control of employees and students, serve as a means of contact with parents [2, p. 57; 16, p. 26 – 29]. An example can be the Class Register by ProgMan, which makes it possible to keep track of the grades and marks in descriptive form indicating the student's achievements and skills, attendance and remarks concerning the student's behaviour and attitude [8, p. 60-61]. Information concerning the school, class and students is also kept in the register. It makes it possible to generate reports on the students' progress over a specific time interval and to statistically process all the data, thus making it possible to compare different values describing various subjects, classes, grades and so on. It is possible to convey data concerning marks and attendance and other information to students and parents through a predefined and appropriately secured e-Register service, by forwarding information to a cell phone through the m-Register application or via SMS. Thanks to an option making it possible to generate summaries containing information about the attendance, marks, results and classification of students, presence in class, progress at school, educational achievements, behaviour, personal data, additional information about the student or the number of classes missed, it may replace the traditional register [8, p. 60 – 61].

Contemporary information technologies in work with students with special educational needs

Modern media can be used in work with students with special educational needs. „Spoken books" or films presenting, for instance, adaptations of compulsory readings can aid dyslexic students. Computers have also proven useful in therapeutic work with children having specific reading problems. From the child's perspective many of the therapist's activities are associated with fun and pleasure, while the therapy itself becomes attractive. The therapy's effectiveness increases thanks to the introduction of

polysensoric education, based on three senses: sight, hearing and touch. It has been observed that children quickly (often much faster than adults) learn to use computer software. Advantages of work with computers are:

- possibility to be used multiple times,
- possibility to repeat a given exercise,
- fast feedback about the instruction being carried out correctly or incorrectly,
- better, less stressful tolerance of comments about mistakes,
- possibility to work with a group of students, while ensuring contact comparable to an individual therapy,
- adaptation of computer programs to the child's individual needs – possibility for the student to choose the level of difficulty and type of exercises and, for instance, the duration of exposure to the stimulus and the number of repetitions,
- possibility to make, store, print notes using a text editor as an aid for students with a low graphomotoric level of writing. [14, p. 137 – 138].

In certain types of disabilities these technologies are the basic or even the only means of communication with the surroundings [2, p. 56].

Summary

Currently the teacher's function as a source of information is continuously diminishing. Especially in the field of technology the teacher is not able to assimilate and master the entire knowledge, particularly the most recent one. The quantity of the information on every subject cannot be embraced by a single person. Meanwhile, students are capable of acquiring knowledge from other sources, usually faster and more readily available than teachers. They have access to different types of databases containing an extensive and up-to-date, although not always complete, knowledge from almost every field. Teachers are also using ever better didactic aids. Relatively simple tools used not very long ago, such as blackboards, counting frames, globes, maps, geometric figures, schemes and photos, simple models of various devices, have been largely replaced first by audio and video recordings and then by computers with ever more modern multimedia functions. An excellent supplement is information, data which can be obtained or viewed through the Internet.

Computer programs may help in work with students with varied skills and educational needs. They make education more attractive and arouse motivation to learn, help develop creativeness, improve the perceptive and motoric functions, make it possible to be successful and to create a sense of self-worthiness [14, p. 138 – 139]. Computer games may entertain and, at the same time, teach. If they are educational, they can come in handy in teaching foreign languages or other subjects at school. They allow students to expand their knowledge and acquire new skills. Games arouse curiosity, motivate to exert effort and work on one's own [3, p. 99 – 100].

Positive aspects of multimedia education in comparison to traditional education is a significant (56%) increase in effectiveness, huge (38 – 70%) time saving, faster (60%) pace of learning and greater (25 – 50%) scope of

knowledge being assimilated. Negative aspects in some cases may include poorer formation of thoughts and justifications and lower value of creative activities [6, p. 96].

The diversity of didactic tools promotes interest in science and technical subjects, hence, apart from schemes, charts, models, samples, use of didactic films, multimedia presentations, simulations of how things work and effects of technological processes is recommended.

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Самуйло М. А., Самуйло В. А., Бучак А. Використання сучасних інформаційних технологій в освіті

У статті представлено сучасні інформаційні технології та їхню роль у соціальних змінах і освіти. Характеризується стан і можливість використання цих технологій у навчанні, особливо на ранніх стадіях, робота зі студентами з особливими освітніми потребами та школа функціонування.

Ключові слова: навчання, інформаційні технології, медіаосвіта.

Samujło M. A., Samujło B. A., Buczak A. Использование современных информационных технологий в образовании

В статье представлены современные информационные технологии и их роль в социальных изменениях и образования. Характеризуется состояние и возможность использования этих технологий в обучении, особенно на ранних стадиях, работа со студентами с особыми образовательными потребностями и школа функционирования.

Ключевые слова: обучение, информационные технологии, медиаобразование.

Samuylo M. A., Samuylo B. A., Buchak A. Use of Modern Information Technologies in Education

This article presents modern information technologies and their roles in social transformations and in education. It also depicts the state and possible uses of those technologies in education, especially during its initial stages, in work with children with special educational needs and in functioning of schools.

Key words: teaching, information technologies, media education.

Стаття надійшла до редакції 26.03.2013 р.
Прийнято до друку 26.04.2013 р.
Рецензент – к. п. н., доц. Федічева Н. В.