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INFORMATION TECHNOLOGIES AS EDUCATIONAL ENVIRONMENT FOR TEACHERS AND STUDENTS IN THE CONTEXT OF GLOBALIZATION PROCESSES

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In the time of globalization simple transmission of information is not sufficient. Constructivism is a popular theory of students' cognition and construction of personal knowledge. The teacher's task is to teach students how to access and organize knowledge, or in other words how to learn. The application of information technologies defines new vistas for education. Multimedia techniques must be treated as useful means that aid teacher in work, modern communication with students, provide new methods of information transfer. The paper describes the results of the research that prove the significance of modern technologies for changing teacher's role in education.

Key words: globalization process, constructivism, teacher and students' activity, information technology, multimedia technique.

Current media and information techniques transform all areas of our life, causing crucial changes in functioning of societies. As noted T. Goban-Klas, today we can speak about the media saturated or mediatized society in which indirect, mediated communication takes place. The direct contacts have been replaced by *Interface-to-Interface.* "This new phase of development – both of the network, as well as information connected by the notion of medium – provides the name for a new social structure: media group. Its separateness, *differentia speciffica,* is defined by the key notions of medium (technology), information (data and knowledge) and (global) network. That is why the phrase "media society" (global media society) can be treated as appropriate name of the new social group" [1].

In modern society knowledge plays the major role in stimulating development, along scientific and research activity enhanced by information technology [5]. U.Eco clearly stresses that new information technologies indicate new way of thinking, studying, transferring ideologies, but we have to watch over development of new media, as a plethora of information can lead to information destruction. "There is no difference between having millions of megabytes of information on a given subject and not having a single one. Let me remind you that

if someone offers you a billion dollars but in one dollar bills, on the condition that you first count this amount, it is better to reject the proposal: If you manage to count it at the speed of one dollar per second (working by night as well), the task will take you over thirty years. If, however, you want to spend twelve hours a day for sleeping, eating, hygiene and other activity, you will need about sixty three years. In the case of a billion dollars, we can always use cheques. In the case of information, however, you cannot take a short cut: The cheque with an information "this file is worth a hundred pieces of information" is worth nothing. If a hundred pieces of information are to be useful for anything, we must learn them one by one" [4, s. 538].

The problem, however, is not limited to information abundance, what is also noticed by U.Eco, but to its selection. In education, a big role is attached to a teacher, who should guide a learning process in such a way so that students have appropriate conditions for putting in order and rational using this information. The importance and presence of the teacher in educational processes is appreciated by W. P. Zaczyński, who notices that "teacher is needed not only to indicate important information to students or 'teach' them to take advantage of the information available on the Internet, but, above all, by her or his physical closeness and emotional bond with students, to make the selected information credible and, what is also very important, to further motivate them for searching important information" [8, s. 237]. The teacher presence in school is needed also if we want to avoid situations as described by N. Postman, in which young people, as a result of poor self-knowledge about technological education, do not use, but are rather *used* by technology.

Information, education, knowledge should become a global commodity which contributes to forming equal opportunities. What matters is proper understanding and arrangement of relations between a human being, who is being flooded with information, and more and more perfect technology, in the context of citizen's individual needs and role in a society. In this process education can play an important role as its task is to prepare the society to new challenges and to solve problems of today's world which are so predominant in face of galloping globalization. Globalization is an impulsive and spontaneous process which forces us to make changes in many sectors of the state, including, educational system. Although it is not easy to define globalization, and it is even more difficult to describe and explain all factors and mechanisms that contribute to its existence, one must assume that current and related to it challenge faced by individual countries consists in a planned strengthening of the media society. This society is characterized by omnipresence and versatility. T. Goban-Klas emphasizes that it is a society in which:

- interpersonal contacts and relations are mainly indirect, media related in their nature, but, at the same time, they are considered to be natural and human;
- media form a kind of a virtual reality, media culture;
- media infrastructure is the basis for information networks and cases of information circulation of various range;
- human actions are supported by media-information technologies;
- the gross national product is mainly generated by information, telecommunications and media services sector;
- information and knowledge constitute the basic production factor, an economic category, while generation and circulation of knowledge is treated as economic activity, social development is based on application of data communications [1, s. 44].

Common availability of information technology in everyday life caused that it has become an important "extension" of school work. Currently, one of the tasks of modern school is preparation of students to life in the mobile and information society, what is confirmed by the provisions of Polish *General Education Core Curriculum* . Computers in education, along with modern information technology are a chance to free us from the rut of encyclopedism. They shape the skill of constant education and of coping with the ever increasing knowledge resources.

In the time of sudden and profound changes that characterize globalization process, education must also be ready for reforms. The teacher cannot stick to the role of a lecturer. Simple transmission of information or the news is not sufficient today. The teacher must form in students such skills as flexibility in action, prompt making strategic decisions, innovation, creativity, partnership in interpersonal relations, or spirit of enterprise. M. Czerepak-Walczak underlines that what really matters is effective demonstration of those skills in strictly specified time and socially depended circumstances. The author calls them cognitive, self-creative, negotiation and organizational, cooperative competencies [2].

The school's task is also to teach students how to contribute to knowledge. This clearly alludes to constructivism – today a very popular theory of cognition and construction of personal knowledge, which stresses that knowledge depends on constant interpretation, reorganization, transformation of the gathered information, which we acquire thanks to, among other things, information technology. The galloping speed of accumulation of knowledge and relative ease with which it can be transferred cause that in the global mobile society its considerable part can be found in computer software. This fact has a noticeable impact on its nature, both in a positive and, due to some related dangers, in negative way. Easy and instantaneous access, i.e. its present relevance, belong to advantages. The information gathered in electronic format is organized in other than traditional way.

It is no longer organized in a hierarchic structure. Various pieces of information create a cross-reference structure, and its new feature is its multimedia nature.

What must me stressed is the fact that access to information does not automatically create knowledge. Pieces of information are data, observed facts, which after absorbing transform into the gathered information bank or a kind of personal database of a given individual. Not all pieces of information we have access to become part of our information bank, and this bank, even if it is huge, does not constitute knowledge. Only understanding provides it with a new quality. The pieces of information start to form a coherent system, in which their owner can easily move, draw conclusions, analyse, compare. The state of organized information we call knowledge. The teacher's task is to show students how to achieve it. The teacher must make them aware that a strategy of learning by heart will never lead to understanding. Even the multitude of remembered facts without the element of their conscious organization does not translate into the student's knowledge structure.

School therefore must be transformed into an organization that is ready to learn, so that it can meet new requirements that occur in the fast developing world. Schools need assistance in "learning how to learn", so that they become organizations that are learning, capable to implement new changes, and in this way, creating their own future. Education cannot be out of touch with reality, it must adapt to the changing conditions and developing civilization. Obviously, it cannot function without contemporary information technology.

Peter Drucker, an American management guru, even claims that a nation which first manages to take full advantage of digital communication and includes it in education techniques, may become the leader in education. Information technology defines new vistas for education. The information age forces us to reorganize traditional educational activities. We must however remember that education is a positive interpersonal relationship between the teacher and the student. Even the most self-reliant student can be sometimes at a loss in face of information overload. Perception of this information is not enough. It is where the teacher's content related and emotional support counts most. Teacher's activity must be coherent with the demands of the educational system, but it must also take into consideration student's needs and interests. Multimedia techniques must be treated as useful means that aid the teacher in her/his work. It is important for the teacher to be aware that without modern communication and methods of information transfer it is difficult to imagine the future of young generations.

Thus, a question arises: What is the extent the information technology changes or will change the reality of our education? This question is strictly related to the following ones:

The teacher with a computer in school or the teacher from the computer screen at home?

Information technology – coherence or risk in teacher-student relations?

Effective teacher or effective information technology? In order to answer these questions, a cycle of diagnostic research has been carried out in the Department of Educational Applications of Information Technology of the University of Rzeszów (Zakład Edukacyjnych Zastosowań Technologii Informacyjnych Uniwersytetu Rzeszowskiego).

The diagnostic research took place between 1999 and 2004 and its main goal was to answer two questions:

1. What is school infrastructure concerning mass communication equipment, including information technologies that facilitate media education?

2. What is the level of teachers' preparation to implement tasks and goals of children and young people media education?

In total, the diagnostic research covered 511 primary schools from the administration unit of the Podkarpackie Voivodship in Poland, but 112 (21.92%) of those schools constitute urban schools and 399 (78.08%) are schools from rural areas. Opinions of 3 523 primary school teachers, teaching various subjects, were taken into consideration in the analysis. The structure of education of those under examination is as follows: MA or MSc higher education 87.22% of those under analysis, BA higher education – 12.78%. The average time in professional career as a teacher was 11 years. Therefore, the thesis that teachers taking part in the survey represent a group with a high level of content related competence and professional experience seems to be justified

The first area of our interest included the diagnosis of primary school infrastructure concerning mass communication equipment, with special stress on information technology. From the data collected in 1999 – 2004 one can draw a conclusion that primary schools from the Podkarpackie Voivodship are systematically better and better equipped with communication means. All schools under analysis were equipped with basic technological means in form of projectors, VCRs, or television, including satellite television. Progress is especially noticeable in information technology area, where not only quantitative (more and more schools have PCs and Internet access), but also qualitative changes take place (updated hardware, wider range of available software).

The second area of our interest concerned the teachers' preparation to implement tasks and goals of media education. From among the teachers under analysis, 71.85% expressed an opinion that there is a need for media education classes understood as teaching about the media, through the media and for the media [3, s. 472–473]. The most popular teachers' conviction is that implementation of media education complements the classes and makes them more attractive. The presented argumentation proves that the group under examination has a poor understanding of the essence of media education in primary school. Only 8.48% of the teachers noticed in media education a chance for preparation of

the pupils to use various sources of information, including information available on the Internet, for introduction into the complicated media world and for teaching of rational use of the media that are available in everyday life.

Only 21.21% of the teachers under examination declared a possibility of media education in primary schools for which they worked. The rest (5.03%) either could not take a stand on the matter or claimed that they did not see a possibility of implementation of media education classes. This argumentation was mainly supported by lack of appropriate infrastructure, lack of knowledge concerning media influence, including knowledge on languages used by various media.

One of the indicators of teachers' readiness to take on new types of didactic activity, including the one within the area of media education, is taking part in various forms of supplementary education and inservice training (professional development). The collected data support the conclusion that 89.27% of the teachers did not take part in any form of supplementary education and inservice training on media education implementation. Only 10.23% took part in training of this kind. Closer analysis of the data indicates that the training in which the examined teachers took part were not content-related to media education, and in by far most cases the main goal of the training was to prepare teachers to give computer science classes in primary school.

Also the research on the role of information technology in young people's life in contemporary Poland has been undertaken [7, s. 306–311]. The basic problem the research dealt with can be formulated as follows: I*s – and if so, to what extent – computer technology used by students under analysis in implementation of didactic tasks formulated by school?*

The diagnostic research was carried out in January and February 2003 and at the end of October and beginning of November 2003 on the territory of the Podkarpackie Voivodship [6]. In total, 986 students of middle schools (also called junior high schools) that operate in urban and rural environment were covered by the research. It is worth to notice that 489 from among them, which constitutes 49.60% of the total number, are students attending middle schools in cities or towns, while 497 (50.40%) attend schools in the country. All students under examination have access to computer technology in their school. Moreover, in the case of students from urban middle schools, 301 (what constitutes 61.55%) from among them have a computer at home, while in the case of students from rural middle schools only 181 (i.e. 36.42%) can use this device at home. From among student that have a computer at home, most have it for a year or less. Young people who do not have a computer at home most often use it at a friend's house – 63.49%, in parents' place of employment – 20.24% or at houses of close family members or other relatives – 16.27%.

The scope of issues undertaken in the research included, among other things, students' opinions on time spent in front of a computer, computer applications,

kinds and sources of interesting software [7, s. 306–311]. In this paper a special attention will be devoted to analysis of the obtained data concerning the question that may be particularly interesting to a reader. The question had the following form: *Suppose you have an opportunity to choose between a) learning at home with a computer; and b) learning with teacher's assistance at school, What would you choose?, underline the selected answer and justify it.*

The data obtained as a result of pupils' answers did not show differences within the environments under the analysis. *Learning with the use of computer at home* was chosen by 35.54 % middle school students, *while learning with teacher's assistance, and thus, staying at school, among their peers, was chosen by 64.46% students.* This fact should be assessed as a very positive tendency. It is the teacher, with modern methodological methods and techniques, who predominates over a technological device. This research has proven that development of modern information technologies does not belittle the teacher's role, but changes it thoroughly and provides her or him with an opportunity that must be necessarily taken.

Concluding, it must be said that teacher training and development process concerning application of information technologies should be continuous by nature. Obviously, simple computer literacy does not suffice in today's world. Also involved is knowledge of legal, social, ethical, aesthetic aspects in relation to access to those technologies and their application. Teachers must be aware that human knowledge and science evolve, and galloping at full speed at that. The more they know about modern technology in educational process, the more attractive they are to their students. We must also remember that effective, i.e. bringing good results, applications of information technology demand earlier preparation of the educational environment, the environment in which education will be total and constructive in its nature.

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5. It is essential to differentiate between *information technology and computer science technology. Computer science technologies* deal, first of all, with computer means and tools (hardware and software) and with foundations of

calculations, e.g. mathematical ones. *Information technology* refers to the application or use of those means and tools.

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ІНФОРМАЦІЙНІ ТЕХНОЛОГІЇ ЯК ОСВІТНЄ СЕРЕДОВИЩЕ ДЛЯ ВИКЛАДАЧІВ І СТУДЕНТІВ У КОНТЕКСТІ ГЛОБАЛІЗАЦІЙНИХ ПРОЦЕСІВ

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Розглянуто новітній підхід до навчального процесу в контексті глобалізації освіти, що не зводиться лише до передачі знань студентам. Звернено увагу на теорію конструктивізму, на засадах якої відбуваються розумові процеси та конструювання особистих знань студентами. Акцентовано на значущости викладача у формуванні умінь студентів учитися, одержувати інформацію й організовувати власну систему знань. Розкрито результати проведеного дослідження, що підтверджують вагому роль інформаційних технологій як важливих засобів педагогічної діяльності викладача, організації нового типу спілкування зі студентами, застосування інноваційних методів організації навчальної інформації.

Ключові слова: глобалізація, конструктивізм, педагогічна й студентська навчальна діяльність, інформаційна технологія, мультимедійна техніка.