Introduction

For the last decades, mankind has been witnessing an unusual development, namely a rapid advancement of various technological fields, including Information Technology. This phenomenon has exercised a great impact on people's views of learning and teaching. The system of education has also been affected by technological progress[1]. Education, being one of many spheres of human interaction, is the subject of continuous metamorphoses which are triggered by the changes in many aspects of human life. The directions of the changes are determined by numerous concepts of education that have recently sprung. All the changes in education naturally result from the transformations in social and technological aspects of education.

Information technology (IT) is one of the most important factors influencing the life of individuals and societies around the world. It plays an important role in education as it brings multiple novelties into the sphere of education.

Special attention should be paid to teachers as they are the ones who are responsible for guiding the student through the complex process of learning information technology. To fulfil this function, the teacher should be well prepared and competent[2].

The issues concerning the application of IT in the learning process have been widely discussed. It was unknown, however, what would change since the year 2000 in the way of how IT is applied to the teaching process. In order to investigate that change, a dedicated research project was conducted.

The following dissertation presents the outcome of the research performed in 2010. It is an opportunity to sum-up the achievements of introducing ICT into the education process.

---

[1] Maciej M. Sysło, E. Gurbiel, Technologia informacyjna, książka dla gimnazjum i liceum Kraków 2003 p. 35.

[2] Duraj – Nowakowa K., Gotowość zawodowa nauczycieli, Wydawnictwo Naukowe WSP, Kraków 1986, p. 96.

The effects of the research are reflected in the structure of the following paper. It consists of four chapters:

- The first chapter deals with various issues of IT education. The discussed topics will include: the role of education in information society and introducing IT in schools. Furthermore, the author will discuss the role of computers in teaching and learning. The application of computers in teaching will be discussed thoroughly, with special attention paid to the negative phenomena that may possibly be triggered by ICT. This chapter will also provide some remarks concerning the cognitive and constructivist approaches to Computer-Aided Learning.
- The second chapter will discuss the role of information technology in teacher education. It will present new opportunities in information technology and their possible application in teaching. The reader will find here an exhaustive description of the process of teacher education in the age of the information society. Among the other issues this chapter will include: the phenomenon of self-learning and the perspectives for using e-learning methods in teacher training. On top of that, there will be discussed various legal, social, ethical and educational aspects of IT and procedures for monitoring computer systems in information security policy. The Internet is presented as a source of reliable information and communication that may be utilized to increase one's knowledge.
- The third chapter will elaborate upon the discrepancies between quantitative and qualitative research and discuss the methodology of established theory. This part will present the reader with the aims, issues and hypotheses for the author's research. It will also provide necessary information concerning the methods, techniques, tools and the research sample.
- The fourth chapter presents the outcome of the research into the application of IT in general education. The author will discuss the reasons for and against using IT during lessons at school. The research presents the profile of a teacher who uses IT means in the didactic process. This chapter will also provide an outline of the personality characteristics of teachers who use computer techniques in educational planning. The author will comment upon the outcome of the research project and present the conditions for using IT solutions in school education.

- The last, fifth part will provide a summary of the empirical material and present the final remarks. It will provide the details concerning the works cited as well as tables and graphic interpretations of the outcome of the investigation. All the things mentioned above will be supplemented by an extensive annex comprising the questionnaires used in the research.

Chapter 1. Key issues in computer education

1.1. The Role of Education in the Information Society

Having gone through a long period of evolution, human kind has achieved another level of development. Since that moment we can speak of an *information society*. In specialized literature, we can encounter many arguments for and against using this term to describe the global society. The age of information has come. In the following years, we are expecting more and more advanced technologies to be introduced. This will bring us closer to the vision of the world that is almost deprived of physical workers. New computer technologies have caused significant changes in the way that information is collected, processed and shared. This trend has resulted in numerous changes in learning and teaching strategies, communication and it has changed the character of various jobs. This phenomenon has also contributed to alterations in the hierarchy of many companies. What becomes important is the fast exchange of information between departments or workers that co-operate in creating a product or service. Only by doing so, can companies thrive against the competition in the market.

P.F. Drucker predicts an upcoming shift from Technology to Information[3] [4], as is now happening in business[5]. In other words, although it is the technology that is in the focus of computer science, the impact on the exchange of information is becoming stronger and stronger and perhaps this aspect of Information Technology will soon take over. The new era that has developed recently has been given various names in academic literature. P.F. Drucker calls it either “The Society of Knowledge” or “Information Society” and D. Beli (1973) calls it “Post-Industrial” or “Post-capitalist” society. M. Castells distinguishes three factors that impact the shape of the future of human civilization. They are: extensive migrations, the transformation from

[3] The notion of IT refers to various computer systems used for collecting, processing and saving information. Compare:. J. Kisielnicki, IT jako narządzie wspomagające zzl, „Zarządzanie Zasobami Ludzkimi" 2002, nr 6, p. 77-86.
[4]The author’s remark
[5] Drucker P.F., Zarządzanie w XXI wieku, MUZA S.A., Warszawa 2000, p. 104.

capitalism to information-capitalism[6] (manifested, e.g. in the globalization of commodities exchange) and the development of Information Technology[7]. All the above terms came into existence as a result of the development of computer technologies. Information Society, however, should not be mistaken for Computerized Society. According to one of the definitions, Information Society is the one that collects, stores, exchanges and utilizes data. This is why information[8] has become a commodity[9]. To advance another definition, Information Society is one in which national income, jobs and the employment structure are dependent on IT, databases and data communication systems." [10]

Both definitions stress the role of information (and knowledge) as a defining characteristic of Information Society. The labour market employs more and more workers who specialize in gathering, storing and exchanging information. Therefore, the knowledge and the ability to process information is the basic resource in companies.

Having analysed the above concepts, it is impossible to disagree with the statement that it is knowledge (information) that has the power to shape the hierarchy of social groups. When money was the main resource, money was the criterion that located an individual in the group hierarchy. Later, it was money plus information which had this power. Nowadays, it is mostly information. Experts predict that soon the elite of society will consist mostly of people who not only have knowledge, but are also able to process information and utilize it in a creative way.

To sum up, the future will bring about many challenges for the people who want to be members of the Information Society. These people are required to exchange a large amount of data, make use of many data resources. Furthermore, they must be ready for frequent changes and must

---

[6] Drucker P.F. speaks of the transformation from capitalism to post-capitalism. The latter results in a new social stratification based on the knowledge of the individual [in:] P.F. Drucker, Społeczeństwo pokapitalistyczne, op. cit.

[7] Szymborski K., Nowy (wspaniały?) cyberświat, „Gazeta Wyborcza", Warszawa 2000, nr 42, p.15.

[8] The author's remark

[9] Denek K., Przyszczypkowski K., R. Urbański-Korż, Aksjologiczne podstawy edukacji, Poznań-Toruń 2001, p. 18.

[10] Sienkiewicz P., Zatrudnienie i praca w społeczeństwie informacyjnym, Mila College, Wyższa Szkoła Informatyki, Warszawa 2001.