

**INFORMATION TECHNOLOGY IN THE CONTEXT OF  
PEDAGOGICAL INNOVATION FOR SUSTAINABLE  
DEVELOPMENT.  
EXAMPLES OF ACTIVITIES IN POLAND  
AND AUSTRIA**

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***Abstract:** The main issue raised in the text is the issue of using information technology in education, in a multilayered manner, which compels intellectual and ethical considerations. Attention was paid to the problems of the Internet in the era of globalization, the common home of all people, which is the object of human concern for sustainable development. There is also an important issue of the TECHNOLOGY of integrated EDUCATION - humanity and everything that surrounds it is a unity, and nature is not something separate.*

*The role of education in shaping an awareness of possible international dialogue in the issue of re-established ecology is also underlined. Modern technology in education is not an action aimed at completely stopping human interference in nature and preserving it in an absolutely intact state, but a harmonious coexistence and joint development of a man together with the world around him. It is primarily a new lifestyle, a positive use of information technology for solidarity between people and the resulting new attitude to nature.*

*The competences belonging to the imagination of information technology undoubtedly include skills such as: anticipating the technological and Internet effects of the actions undertaken, the ability to see and integrate human connections, school education and IT processes and design activities with the requirements of technological knowledge. It is nowadays that it is a call to the proper attitude of man towards the world around him.*

**Keywords:** Information technology, globalization, computerization, sustainable development, educational innovation, ecology

## 1. INFORMATION TECHNOLOGY AND SUSTAINABILITY IN EDUCATION

The problem of nature protection has a social dimension. Natural resources should serve primarily to satisfy basic human needs. Both the benefits and costs of civilization and technical development should be equally distributed to all citizens. It is above all a new lifestyle, solidarity between people and the resulting new attitude to nature (Peacocke 1991: 147-149). Work on these issues may result in developing new attitudes towards ecology, ecological values and, consequently, love for the Creator of the world and people in society. Sustainable development - is such a socio-economic development in which the process of integrating political, economic and social activities takes place, preserving the natural balance and durability of basic natural processes, in order to guarantee the possibility of satisfying the basic needs of individual individuals of present and future generation (Prawo ochrony środowiska, Dz.U. (DZIENNIK USTAW)2001.62.627, Art. 3 ust. (USTĘP) 50 (Environmental Protection Law, Journal of Laws, Journal of Laws 2001.62.627, Article 3 paragraph (USP) 50);; cf. Sztumski 2006, p. 73-76).

It is known from experience that knowledge about sustainable development is not enough - this one is disseminated, and for many years has found a place in the core curriculum of a modern school. Sustainable development would have to become the value that people will manage and feel responsible for strengthening it. And this already requires systematic, consistent and careful educational activities, involving the development of morality and responsibility for their actions and others. Therefore, formal and informal education should raise and expand the awareness of complex environmental, social and other connections, in which every educational institution always participates (Brożek, Gawlik 2011, p. 10-33).

The shaping of the pro-environmental attitude was reflected in the International Strategy on Environmental Education, where the following statement is stated: "Environmental education cannot be one more item added to the existing grid of hours. It should be included in the programmes of all subjects regardless of the age of the learners (...). Its content should penetrate into the components of school education programs" (Kowalak, 2009: 313-314).

The main task of the school is to implement an educational programme that promotes sustainable development, to combine ecological education of students with moral education. The school is an institution that supports both individual and social development. Support for individual development is accomplished through help in shaping personality, deepening self-awareness, searching for new forms of self-realization, which is indispensable for the student to experience personal happiness. This is what the social development imposes - growing in culture,

getting to know and taking over patterns of functioning, finding in the world and contributing to it, conditioned by personal development. In this development, a teacher plays an important role, modelling the behaviour of students, and gives an example to follow.

International cooperation of schools requires such meetings, which will be of help and inspiration to undertake effective implementation of education for sustainable development in schools. During the meetings, it will be possible to exchange their views to reinterpret the content and to evaluate the methodological workshop in the work of teachers. Different ways of understanding eco-development, as the implementation of the global concept of activities, for sustainable development, are improving education, and teaching and teaching.

The PARTNERSHIP which is characterized by interaction and communication is important in this process. The educational community is a huge communication space THROUGH THE INTERNET, through which teachers, parents and children send messages through infinitely many channels. Thanks to this, a convenient source of inspiration and development, interaction, and meeting with man and man is created.

Educational activities aimed at the experience and understanding of reality, "use-tested experiencing", making social changes and constant attempts to understand oneself and others create conditions for thoughtful and conscious actions, using the strength and power of authorities and values creating culture.

Strong emotions accompanying the information contained in audiovisual communications are coded in the children's consciousness. Upbringing to the media means shaping appropriate attitudes towards the mass media. The attitude itself means a relatively permanent attitude of a person (negative or positive) to a specific object. Negative attitude shows addiction to the media leading to the creation of a specific mentality, in other words a distorted worldview (in a broader perspective). Positive attitudes require some effort on the part of the "receiving" media message. They are based on his critical thinking, preserving them and allowing them to preserve their own opinions in specific creative activities. We share positive attitudes with attitudes: critical - healthy objectivity; selective reception; creative activity - insufficient media coverage to satisfy the field of creativity and for personal intellectual pursuit; wide horizons - built on a proper hierarchy of values, dialogue - when the ability to communicate participatively or interactively is undertaken; tolerance - opening up to the phenomenon of diversity. Upbringing for information is an education for the information society.

Thanks to the analogy between what happened before and sometimes the newest, young people can develop specific intellectual predispositions useful in their lives, such as: criticism, the ability to think logically, analysis of political and social phenomena, selection and evaluation of information provided by the mass media, a sober assessment of the situation, attitudes and statements of politicians also in ethical terms.

The Internet is a dynamically developing tool and the space of knowledge. It is difficult to imagine contemporary science and education without this source. On the other hand, we observe that young recipients are not prepared to use this source. For example, a mass phenomenon is the copying of all kinds of content or uncontrolled use of sources of knowledge that are not verified from the scientific point of view. The existence of threats of unperturbed use of the Internet and the lack of strategies for schools to prove their children's ability to properly use Internet sources has been proven (Smyrnova-Trybulska 2017, p. 130-139).

The Internet is entering more and more new areas of our lives: e-learning, electronic libraries, virtual laboratories, medicine, services (banking, tourism). The basic element of these and similar websites are websites that make up more complex websites, portals and internet platforms.

### 1.1. Information technology (IT)

It occurs as a new field of cognition as a source of help in teaching other fields. A **multimedia computer** with **software**, **multimedia** and **the Internet** are its main components. An electronic book (*e-book*) is defined as content stored in electronic form, readable using special computer software. The manual in a digital form enriched with multimedia links (files) and simple hypertext structures becomes a multimedia textbook. In turn, the term *hyper-book* is referred to an electronic book with the characteristics of hypertext with all its consequences - the richness and diversity of navigational and thematic links. The basic didactic functions of the modern textbook are: information and cognitive function, research, practical and self-education. Multimedia materials, published *online*, allow to implement didactic postulates, such as: multilateral cognition, adjusting the pace of information transfer to individual features, viewpoint, etc. For the multimedia model of the script, didactic functions were defined as follows:

- presentation of educational content (included in the curriculum and outside the curriculum),
- visualization of the teaching material and illustration of practical implications,
- supporting the process of independent performance of tasks (especially in the case of those students who are not able to "grasp"),
- individualization of teaching content and adjustment of the rate of information transfer to individual features,
- individualization of the learning process,
- enabling self-control of learning outcomes (Okoń 1996, p. 71).

At present, it is not enough to consider computer technology only from the perspective of education technology, but it should be taken into account that it has become an integral part of every field of human activity, so it should appear in almost every field of education as an element of this field. For nearly 20 years, IT

education (or education related to computers) has been the subject of constant interest of quite a large group of specialists. This was appreciated by the management of the Ministry of National Education and Sport, establishing the IT and Media Education Council. The success of this body and people cooperating with it can include the study "Standards of teacher preparation in the field of information technology and IT", which was used, among others, in the ministerial standards of teacher training. The team cooperating with the Council has also developed a new proposal for the informatics core curriculum for secondary schools and related maturity requirements (Sysło 2004: 37).

## 2. INFORMATION TECHNOLOGY - EXAMPLES OF ACTIONS

Living with "big screens" - TV, computer, Internet and mobile phone - may soon become the dominant form of socialization of a young man. Virtual reality, which however does not always correspond to what is real, affects human beings. The contemporary virtual world is effective and has great power, it is a MASS means of data transfer, and thus has a profound impact on people, interpersonal relations, development of science and the entire world economy. The world of cyberspace has created its own tools (instant messengers, blogs, email), brands (Google, Yahoo!, Facebook), or contact methods (webcam, social networks).

This results in visible socialization and interpersonal changes, which include:

- handling several multimedia at once;
- learning with active (active) multimedia devices;
- mass usage of the world of cyberspace in science and with homework (the latter has more and more often the form of unreflective copying);
- social interaction with parallel active use of multimedia (conversation on a Gadu-Gadu, talking with a peer and parallel communication by a mobile phone);
- devoting more and more time to multimedia;
- slower sleep time (visible already from older primary school classes);
- night fatigue (the result of the so-called lack of sleep and lack of temporal access between sleep and discontinuation of multimedia).

Multimedia devices are increasingly taking on the "subjectivity" of a human being, and we are becoming more and more dependent on multimedia (Andrzejewska, Bednarek, Sarzała 2007, p. 79-83).

The comparison of actions in Austria indicates that teachers in Poland represent a rather passive attitude of the Internet user and prefer using content created by others over their own activities and activities for the co-creation of the modern network (*Applications based on own observation and research workers from Kirchliche Pädagogische Hochschule Wien / Krems*). We mainly browse

websites and contact via the network. Thus, teachers generally attach great importance to the use of tools to operate information, but it is more important to them to participate in the process of seeking information (acquiring from others) than participation in the process of creating content (creation for others).

Nowadays, schools are looking for innovative teaching methods. New technologies perfectly fitting this trend. We can include 3D printing and 3D CAD design. These two areas have not been included in curricula in other countries since today. The development of creativity, spatial imagination, new technologies thanks to 3D engineering changes the current approach to science.

In order to prepare the next generations for the professional future as much as possible, educational institutions are happy to buy 3D printers. In Austria, the use of 3D printers in education is not a technological novelty, it seems a natural choice of devices for building three-dimensional reality. Austrian teachers use them in virtually every school subject - from mathematics (creating and printing solids), plastics (creating sculptures, decorations), biology (printing cell models) and above all in technical classes and information technology (3D object design, projection and technical drawing). As stated at the educational fair: everything can be printed, only the imagination limits us, because 3 D printers cannot only develop, but also complement the didactic base with everything we come up with, it is also possible to print projects that will be created by students. The most popular application of 3D printing is rapid prototyping, which accelerates the testing of new solutions, increases the efficiency of school activities. Using a printer equipped with two heads, the students, preparing for a given profession, can create geometrically complex objects with high precision, they can quickly make further corrections to the project and verify them in a 1: 1 scale.

The use of a 3D printer enriches the learning environment and makes it easier for students to acquire and remember the material. 3D printing can also have a big impact when choosing a profession by students. It allows them to experience the successes and pleasures associated with a scientific or engineering career. It opens up new opportunities in areas that students may have previously considered boring or exceeding their abilities. It can also arouse the desire to consciously change the world (Malara, Ryńca 2017: 9-26).

The implementation of 3D printing technology in the Polish school is already happening, but its widespread use is only a matter of time. There are more and more 3D printers available on the market at affordable prices, which are designed and used specifically for institutions that want to provide students with the option of using their devices in person, and not just watching the next teacher's activities with this modern form of printing (from looking at no one has learned anything yet). The set also includes a specialized 3D scanner, including 3D pen 1.0, which includes, among others, templates for creating objects, additional accessories and instructional videos, which works well in schools in Austria.

Companies provide telephone support for people, i.e. teachers and lecturers who support 3D printers in educational institutions. Teachers in Poland are directed at a curriculum that is helpful in preparing lessons on 3D printing devices. The whole is complemented by the XYZmaker program, thanks to which students will be able to develop their modelling skills from an early age. Printers coming out from under the XYZprinting wings (which distributor is AEMCA) are equipment designed for those who not only want to learn the basic techniques of 3D printing, but also to explore its secrets and develop their skills. What is also worth mentioning is the Polish printer Zortrax, which has gained recognition around the world. A 3D printer is just a tool. How it will be used in education - depends on the creativity and competence of the teacher. Contemporary education requires reforms, looking at Western trends, we learn that learning is provided through experience, *much better to see and touch*, using 3D printing in class activities (Kwapuliński, 2008, p. 31-57).

Let's not forget that the creation of the printout must precede the computer modelling process. The opportunity to prepare your own, completely original project from scratch and get tangible results is a source of enormous satisfaction for the student. Satisfaction with the effects of own work encourages further involvement in learning new technologies, stimulates creativity in the child and the need to acquire new skills. Looking at Western trends, we are slowly learning that learning is provided through experience, which is why methodologists emphasize the role of activating teaching methods. Instead of learning by heart how different objects are built, it's much better to see and touch them.

This is the first, most important advantage of using 3D printing in class. With the use of spatial printers, you can create mock-ups of geographical lands or settlements, but also implement completely abstract ideas of students.

Young people in Poland and Austria, however, have common computer interests related to communication. Almost every Internet user uses instant messengers that allow you to communicate with other people in real time (that is, send and receive messages in a short time, as during a conversation).

The most popular communicators used in Poland and around the world include: ICQ (the most popular in the world), Gadu-Gadu (the most popular in Poland), Skype (the largest and most popular voice communicator in the world based on P2P technology), Tlen.pl (the second one relative to the popularity of communicator in Poland). It is worth noting that there are also multicomunicators that allow communication with users using other types of communicators through the appropriate set of plugins (e.g., Oxygen, Konnekt, Miranda IM, AQQ, Pidgin, Kopete or Trillian).

An example of the use of 3D printing can be an EU project managed by the Polish Universities: "*Learning by Making* as Motivation Trigger. 3D Printing etc.". The aim of this project is primarily:

- Design and model an active, learner-centred teaching approach for engaging underachievers into STEAM related projects through real product design and making practices
- Help underachievers in STEM related subjects to improve their performance and develop 21st century skills through their engagement in interdisciplinary projects in three dimensional object design
- Plan and enact activities and workshops that promote teacher professional learning and pedagogical change
- Create Open Educational Resources (OER) that will support school community members (within and beyond the partnership) to apply the MAKEITREAL learning intervention
- Open STEM education through the infusion of arts and the support of product design and making practices moving beyond clichés according to which only STEM-talented students can make it.
- Establish synergies among schools, academia and the industry towards creative and meaningful engagement in STEAM education (<https://makeitreal.info/>).

## 2.1. Educational programs

An educational program is a computer program supporting the teaching process. Educational programs are: electronic textbooks, programs supporting repetition and memorizing and checking the level of knowledge. Games and educational programs are a great complement to didactic materials. They can support the learning process or introduce the user into the world of science, so they should be included in the collections of each library. Education through play facilitates the learning process, which is why libraries should promote the use of educational games. By giving students tools to access information, we allow them to indicate what needs to be done so that learning at school can be effective and useful in real life. If in education we do not use the possibility of electronic communication, it will be tantamount to the fact that our ancestors did not use the alphabet and books (Blömeke 2010, p. 43n).

Computer game is not a simple successor of board games known to us for centuries. This is a completely new technical and social phenomenon. Researchers dealing with cyber-bullying indicate that it is not enough to mention gaming characteristics (psychological, technological, cultural, sociological), but it is necessary to show their extremely strong impact on players' behaviour, especially the potential of “absorbing into the NETWORK”. However, we would like to explicitly say that we do not belong to supporters of the liquidation of these games or forbidding the use of them by young people and children. Already at the outset, we note that the essence of the problem lies in understanding when and under what conditions and which games the child can use (Boroń-Zyss 1995/1996: 31n).



Nowadays, information technologies are closely connected with the concept of multimedia education. They are identified with methods and techniques of communication in the area of creating, storing, selecting, transmitting and sharing information. They determine the pace and level of development and have a significant impact on structural and social changes, which is largely determined by the speed of sending, searching and processing information. They influence the individual's activity and way of thinking by improving the techniques of collecting, processing and generating information - they change the social structure and create the information society (por. Monet 1999, p. 8; Bednarek 2006: 46).

## **2.2. ADAPTER portal**

This is the first cinema on the web created especially for people who cannot see or hear. In Austria as well as in Poland, ADAPTER IN SCHOOL is a response to the needs of schoolchildren. It is part of the ADAPTER portal, which was prepared for children and youth. It has been noticed that children with hearing and sight dysfunctions cannot use widely available film education or adaptation of film school readings. In addition to the films, additional educational materials with sign language are made available to students. The ADAPTER portal is available at the address [www.adapter.pl](http://www.adapter.pl). ADAPTER gives everybody a chance for a home movie screening. All you need is internet access, a computer, telephone or tablet. The portal is very easy to use and available according to WCAG 2.0 standards. This means that a blind person can easily navigate through the keyboard and screen readers. ADAPTER has also been designed in black and yellow and white. It was not about a clear look, but above all about making the site readable by the visually impaired. The portal is based on an available player created by *Vimeo*, which allows the video to be paused, undone and moved forward using cursors. The simplest and most effective solution - the Internet! (Baron, Ford, Kay 2007: 113).

Innovative actions have also been taken in Poland. In addition to standard subtitles, movies with simplified subtitles are also available. That's why two types of subtitles are provided for the films posted on the ADAPTER IN THE SCHOOL: standard - for the hearing-impaired youth and subtitles for the deaf youth. This solution is mainly for young deaf people who use sign language and only in later years learn to read and write fluently. For this group, the mother tongue is a foreign language. That is why simplified subtitles are also a great form of learning the Polish language (Szczygielska 2016, p. 79-83).

From everywhere we are bombarded with slogans of innovation and creativity. The skills and knowledge requirements change all the time. How should we look after our internal sustainable development. We should not yield to the dictates of the organization. Sustainable development is the perception of man and his spirituality. Noticing the family, society in the process of constant change. It is an attempt of an evolutionary search for the growth of knowledge and skills. Searching for productivity at no cost. It's building an organization with responsibility. We have

shaped this sustainable development from an early age. In a school that expands knowledge of technological novelties, there cannot be any subjective treatment of a student who needs to develop integrally, holistically in his / her environment.

The aforementioned qualities of education enriched with new technology contribute to the sustainable development of the human person, in which the school can help by:

- definition of teaching objectives;
- improving teacher-student interaction;
- creating and sharing knowledge sources;
- improvement of the reception standards of audiovisual information;
- enriching the control and evaluation of the learning process;
- perfecting individualization.

Multimedia performs a variety of functions: support activities undertaken by the teacher and student activities, make classes more attractive, shape and develop independence. They are a source of information and inspire you to undertake comprehensive self-activity. They constantly maximize the improvement of skills related to searching and selecting information in accordance with the needs and objectives of education. They support the creation of conditions for learning and practising various skills: from simple sensory and motor skills, to more complex ones - connected with making decisions and solving problems (Błaszczak 2008, p. 446).

### **2.3. Application of information technology and multimedia resources on the example of WU (Vienna University of Economics and Business)**

WU (Vienna University of Economics and Business) is one of the first schools in Austria to introduce compulsory use of Notebooks as a working tool for all students. In the 1990s, this school, as well as many other Austrian schools, had professionally equipped computer rooms, used for such subjects as, for example, computer formatting of texts and for foreign language learning. In 2000, a new working tool was introduced, namely the Notebook. Students deciding to attend this elite, private economic school, under the supervision of the Vienna Traders Fund (Fonds der Wiener Kaufmannschaft), undertake to fully use notebooks from the second grade in this five-year school of economics, ending with the final exam.

Notebooks are used in all teaching subjects except physical education. The decision that the use of this modern work tool starts only from the second year of teaching at school is dictated by pedagogical and practical considerations. Students have one year of proficient knowledge of typing on a computer keyboard with ten fingers, while the number of errors per minute should be minimal and evaluated in the form of practical tests. During the first year of teaching, students get personal access to the school's electronic network (account) and are gradually introduced to the use of

various possibilities of electronic search and data processing, i.e. acquiring knowledge available on the World Wide Web.

Starting from the second grade, the full use of the notebook as a student's work tool begins. It is used firstly as an electronic notebook, for the student's various work in a given subject. Many years of experience show that pupils using the notebook write down the content given by the teacher faster than students who write in a traditional way. Students' notes can be immediately sent electronically to students to work in groups or to the teacher for control. It is also possible to use students' problems developed during the classes. In a similar way, saving and sending homework takes place, which is electronically checked by the teacher. In the same way, homework adjusted by the teacher is obtained. Preparing their electronic notes and documents, students get to know not only the basic formatting of texts in Word, but learn to prepare documents in accordance with the required European standards. Creativity of work develops when choosing the graphic introduced to your own text, so that it emphasizes or reflects the described content. In the information and communication technologies (Informations- und Kommunikationstechnologie) classes, students learn to use professional programs, create websites, create their own advertising films, and posters using programs such as Adobe or Corel Draw. An interesting and important issue is the issue of "copyright", that is, honest dealing with someone else's text or graphics. The students with whom this topic is taken up are interested in this issue, they discuss selected examples and learn about binding rules and regulations. In this way, ethical attitudes to the responsible use of multimedia are shaped at WU (Vienna University of Economics and Business).

The notebook is used not only as an electronic notebook storing notes, tasks and exercises from all years of teaching, but also serves as a textbook. Students have two options to use the electronic textbook: the first is the purchase of a printed copy, to which on the relevant website the student receives reserved electronic access and can use the exercises there, or extensive information extending the subject discussed in the lesson. It can also perform tests that check their knowledge on a given topic, or to memorize completed exercises. The second option is full electronic multimedia textbooks, available on the network or entered into the student's computer memory.

A notebook is also a tool by means of which knowledge of students is tested in the form of various tests, which are enriched graphically constitute an interesting alternative to written tests or cards. Class works in the mother tongue and foreign languages are also written in notebooks and sent for check electronically. Students have the opportunity to use an electronic dictionary or automatic spell check functions in Word. They must demonstrate grammatical knowledge in their native language, because automatic suggestions for amendments do not always agree with the forms required in a particular text.

The written exam in German language, economic subjects, foreign languages and mathematics requires the use of a notebook. Students receive their matriculation tasks in both electronic and printed form. Completed graduation work is also given in both forms: electronic record in the previously specified file of completed secondary school certificate and in the form of a printout of previously completed tasks. A notebook in combination with a projector (beamer) is often and willingly used as a tool during presentations as part of the matriculation exams.

At WU (Vienna University of Economics and Business) the electronic Feedback method is used more and more, i.e. the assessment of students' work by the pedagogue, as well as the assessment of individual lessons by students and the work of the teacher. To this end, student's favourite applications such as Kahoot and Mentimeter are used.

#### **2.4. Sustainable development and information technology at WU (Vienna University of Economics and Business)**

Since 2003, WU (Vienna University of Economics and Business) has been carrying out projects devoted to sustainable development and spirituality. The inspiration for this is the subject of the Catholic religion, which organizes about 12 to 15 pro-ecological or pro-social projects every year, inviting various teaching subjects to common activities as well as other religions and religions. The method of work is based on the economic project management, which is provided for on the third level of the curriculum. Over the course of 15 years, the school has gained a number of experience in this area by carrying out approx. 200 projects in the field of sustainable development, in which approx. 2,000 students participated, engaging in Austria and abroad. All activities were focused on the common platform Amicus Award, which as a prize is given to three of the best projects made in a given year. Amicus Award is organized annually by one of the oldest classes, using its own programmed website, school Internet, as well as many IT functions such as PPT presentations, contact with project partner organizations by e-mail, electronic project descriptions and photographic documentation. The whole is described by the students in the form of articles and photographic and electronic documentation and sent to the media through the agency of the PR Office of the Vienna Traders Fund.

An example of a combination of sustainable development and information technology can be an international project called S.Ec.Mo. (Social-Ecological Movies). In this project, students of the second class decided to make short films about the subject of sustainable development in the school environment by means of a time-lapse method, inviting pupils from Poland to work together and creating international film groups. After learning about the technique of making films by frame-by-frame, each group looked for the right theme, wrote a script and shot individual scenes, which were later submitted by groups of students to a program enabling the creation of films from thousands of individual photographs. After

finishing the work, a festival of student films was organized and a special pedagogical board awarded prizes to the best film groups.

Many years of running projects in the spirit of sustainable development and spirituality, as well as using modern means of information technology, cause a lot of interest among students and teachers of WU (Vienna University of Economics and Business) in joint engagement in the modern world.

Media education provides teachers with greater freedom in teaching methods. Currently, there is a great emphasis on modern teaching methods based on the use of technical means as well as various multimedia programs.

It should be remembered that the technical message can never fully involve the teacher. The best results are usually achieved by combining technical means of communication with a "living" impact on the recipient. There are various views and positions on the role and place of the process of computerization of Polish education.

## CONCLUSIONS

Man is moving through his actions to the existing balanced interaction between organisms and the environment, the whole ecology of the earth, thoroughly change, and yet man is completely dependent on nature, therefore man's mission to the world can be described by three verbs: transform, serve and protect; nature is not a self-renewing magazine, therefore man cannot take a gladiatorial attitude towards her; we are not the only or last generation, hence we cannot leave the wastes in decline. Today, ecology is a call to the proper attitude of man towards the world around him (Krawczyk 1986, p. 13-23).

The problem begins to appear when "technical culture" overcomes man: when things instead of serving man, subordinate man to themselves. There is a "dehumanization" of culture, contamination of the base human environment in which man lives. As Fr. Józef Dołęga: "If specific actions are taken to protect the environment, they are usually limited to removing the disastrous effects of human activity, not the causes of the threats. The main cause of all environmental hazards is the man himself" (Dołęga 1993: 159, after Langiewicz 2002: 517).

At the time of the information society, tasks in the field of media and information education become one of the most important challenges facing education. Recently, state institutions have taken a number of initiatives aimed at fundamental modernization of Polish schools and raising the digital competences of Polish society. Among these initiatives, the "Digital School" project has a special place, the aim of which is the comprehensive implementation of the use of information technology and improving access to digital technologies.

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