THE IMPACT OF MEDIA CULTURE ON THE BIOLOGY EDUCATION OF 'INSTANT GENERATION'

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Abstract

The crisis in education is part of crisis of science and this is one of the dimensions of contemporary culture. The media culture addressed to a large audience through technical means of communication is more and more important. Today's students are no longer the people our educational system was designed to teach (Prensky, 2001). The 'instant culture', which main message is 'carpe diem', speedy communication and sexualization of life, shapes the identity of young people and their lifestyle (Melosik, 2010). The article undertakes theoretical and practical analysis of the trends in biological education, what is presented in the following conceptual framework: /1/ from cognition to metacognition, /2/ from individual experience to community, /3/ from knowledge to attitudes, /4/ from diagnosis to prevention, /5/ from subject skills to life skills. Experimental tests and analyses were designed to verify the research hypothesis assuming that media culture has the influence on biology education of 'instant generation'. The alternative ways of teaching, including negotiation of shape the reality with students of high school are possible during biology lessons. The conclusions can be the basis of new educational models of 'instant generation'.
Key words: *biology education, 'instant generation', media culture.*

Introduction

The crisis in education is part of crisis of science and this is one of the dimensions of contemporary culture. It is connected with loss of content meaning and educational values as well as the means of their implementation (Lewartowska-Zychowicz, 2001). The mass culture which is addressed to a large audience through technical means of communication, becoming more important. Because of it, the creators of mass culture often refrain from taking difficult and serious problems for the entertainment and sensationalism. At the same time scientific and technical progress and development of new information technologies have made the culture available for all, resulting in an increase of consumption in the cultural field.

Globalization in the cultural field is inevitable. It means among other, rapid flow of information, values, patterns and standards of behavior. This is based mainly on the audiovisual transmission which affect mainly on the emotional sphere of the recipient.

Mirzoeff (2003) identifies "visual culture" with the research relating to "visual events", in which a consumer is looking for information, meaning or pleasure provided with tools and visual technologies, specific objects: from the frescoes and oil paintings, through photography, film, TV, digital (multi)media to the Internet. In turn, Jenks (1995) is closer the social theory of visuality or sociology of visual culture, which seeks to develop its own methodology for isolating visuality from the senses and moving the focus to social and sociological issues with taking attention for identity (gender) and social interaction. Man of media culture rejects the ideologies and institutionalized communities, he is closer to small groups. Today's students are no longer the people our educational system was designed to teach (Prensky, 2001). According to Prensky our students today are all "native speakers" of

the digital language of computers, video games and the Internet.

In order to examining the challenges facing the biological education one should to bring some contexts of contemporary culture that have a significant impact on shaping the identity of young people and their lifestyle. These include *instant culture*, which main message is *carpe diem*, speedy communication, ideology of pleasure and the cult of body. The tendency in the society of consumption connected with the cult of body is the phenomenon of sexualization of life (Melosik, 2010). It follows that the identity is constructed from a visual' image of his aesthetic and sexual-body. So, young man creates his or her identity through diet and superdiet, gym and solarium, fashionable clothes, plastic surgery, etc. As a result, dreams and aspirations largely revolve around the body. Body and sex are part of the thousand advertising messages, even those which have nothing common with sexuality (Coca-Cola, cigarettes, etc). Sexualization of society of consumption is also linked to the fact that sex and sexuality is devoid of intimacy and privacy today.

However, as we can see, in this case, youth is located in "cultural trap" - the growing media pressure to successful, intensive and exciting sex life and another clear message: an uncontrolled sex can bring death (AIDS). In these contexts the metaphor 'instant generation' exists in contemporary pedagogy for describing the typical needs of new generation connected with the 'immediacy': *fast food, fast sex, fast car* (Melosik, 2000).

'Instant generation' is quite different than 'snail generation' from the past. So, why the biological education is still the same? Why our students look for knowledge in the Internet not in school? And what does it mean 'new approach to education in knowledge-based society'?

The main purpose of the research was theoretical and practical analysis of the trends in biological education. In order to obtain this goal the following conceptual framework was assumed: /1/ from cognition to metacognition, /2/ from individual experience to community, /3/ from knowledge to attitudes, /4/ from diagnosis to prevention, /5/ from subject skills to life skills.

Theoretical Background

From Cognition to Metacognition

Cognition is defined as the tendency to engage in effortful cognitive activity, metacognition is one's thinking about thinking (Coutinho, 2006). Metacognition refers to one's ability to know and regulate cognitive processes (Schraw & Moshman, 1995). Flavell (1979) conceptualized metacognition as "knowledge and cognition about cognitive phenomena". Fisher (1998) suggests that learners conceptualize new experience as 'mental representations', representing new experiences in terms of 'frames' which act as kinds of mental 'scripts'. These individual cognitive representations derive from social and cultural experience to provide expected sequences of events.

From Individual Experience to Community

Thirty years ago, the results of Wandersman & Giamartino (1980) were organized to explore the roles of characteristics of the community and individual differences as influences on initial participation. Twenty years after, Wasko & Faraj (2000) presented knowledge strategies and key characteristics in connection with the reasons for people participating and helping others in electronic communities of practice. Authors address the question why people contribute time and effort to the provision of knowledge as a public good given the propensity for people to act out of self-interest. They compared the three perspectives of knowledge. There is interesting for example, definition of knowledge: justified true belief (knowledge as object), that which is known (knowledge embedded in individuals), the social practice of knowing (knowl-

edge embedded in community) and some assumptions and design implications: knowledge is decontextualized (knowledge as object), requires identification of experts and interaction for the transfer of tacit knowledge (knowledge embedded in individuals) and members immersed in knowledge flows (knowledge embedded in community).

In 2010, Levinson formulated the thesis that each consumer is simultaneously a producer of information and *new media* are community in nature. Information is objective and not a form of communication.

From Knowledge to Attitudes

Scientific literacy requires citizens interested in and understand the world around them, to be skeptical about scientific matters, to be able to identify questions and draw evidence-based conclusions, and make informed decisions about environment and their own health and well-being. So, school science curriculum has to prepare students for their future roles as citizens among technologies which will have a significant impact on their lives (Dawson & Schibeci, 2003). Wikipedia questioned the position of the pattern of knowledge, which since its emergence the encyclopedia was written by experts, the Wikipedia is written and verified by her readers (Levinson, 2010).

From Diagnosis to Prevention

Among recent events, several social groups have paid attention to risk linked to technology. The public controversies that have taken place since the mid-1990s reveal the inadequacy of the sole scientific expertise to solve this kind of problems. The debate moves from science to politics (Chavot, 2000). Through a controversy dealing with technological risks, Dillenseger (2000) identifies the main items which, in the medias, appear to be able to give a mark of scientificity to a scientific terms. The authors argue that the only scientific approach cannot take into account all aspects of risk. Establishing a relationship of trust between science and the public because of the cognitive gap between scientists and laymen poses many problems. Risk analysis is important only if it takes place from the perspective of doubt and uncertainty.

From years the results of public health and environmental research have opened new vistas with wide-reaching effects. It is only by careful thinking that we may develop sound and prudent rules for action: these are the goals of decision-making theory which cannot, however, provide a quick and easy solution to any given problem (Girault & Girault, 2000).

From Subject Skills to Life Skills

Facilitating not only the mastery of sophisticated subject matter, but also the development of process skills is an ongoing challenge in teaching (Shubhik K. DebBurman, 2002). School-based life skills education appears capable of communicating key information and helping youth develop skills relevant to reducing risk (Magnani et al., 2005).

Students should be able to transfer the reasoning abilities taught e.g. in the context of health, genetics and dilemmas taken from everyday life (Zohar, Nemet, 2002).

Methodology of Research

The main goal of the research was to check if *new media* support the formation of competence in biology learning with particular emphasis on metacognition, information processing, argumentation and questioning and if so, how the influence is revealed.

The detailed objectives were connected with the establishing actual basic assumptions of

change in thinking about education, specifying the possibilities of applying the different tools of *new media* at biology lessons in high school and testing selected elements of the author's model of learning.

The following research hypothesis was assumed: The *media culture* has significant impact on the biology education of *instant generation.* The research hypothesis was verified in accordance with the learning model presented on the Figure 1.

Figure 1: Learning model including the impact of media culture on education.
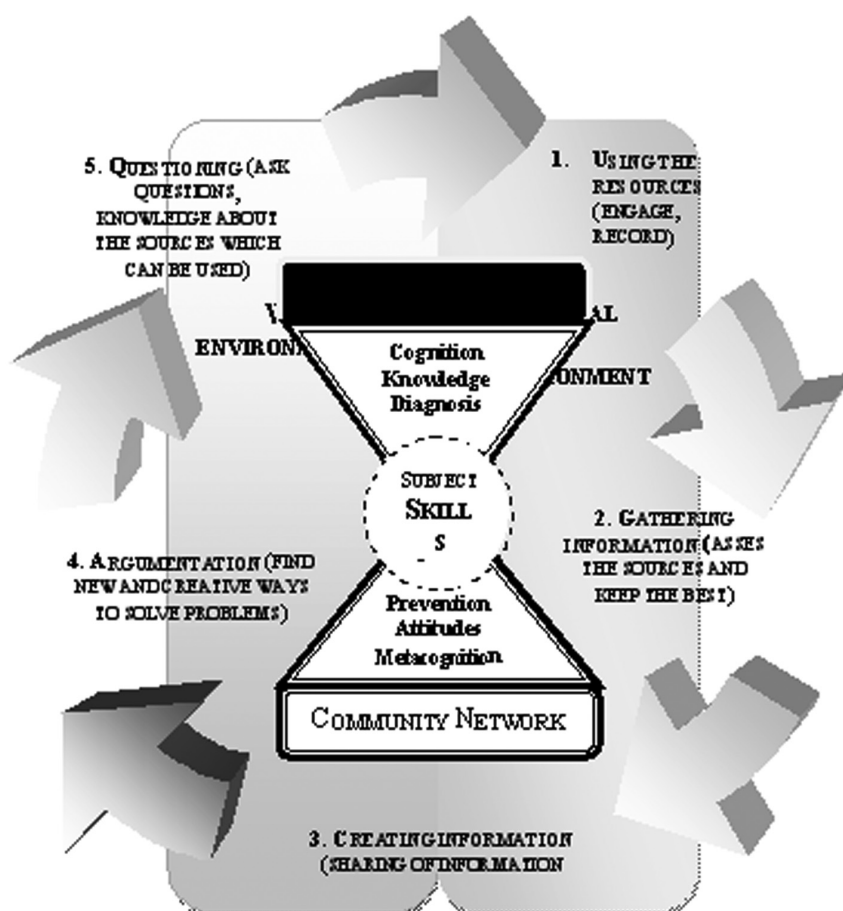
In order to describe the processes of learning and activities connected with the functioning of the learning model, while analyzing the regularities ruling the studied phenomena, the following research methods, according to Pilch & Bauman (2001), have been used:

• analysis of different sources of information (Lisbon Strategy, website Edunews.pl, Health-EU Portal and research data, e.g. published by World Health Organization),

• pedagogical observation and,

• diagnostic survey (as complementary research).

Pedagogical observation (not engaged) was carried in order to specify the ways of representing declarative knowledge (in the form of knowledge of notions and their structuring) and procedural knowledge (in the form of operations connected with information processing) by 90 high school students participating in the classes (30 biology lessons: 10 lessons in three classes, 9 tasks for every class during one lesson). The tasks were connected with the activities 1-5 in-

cluded in learning model (Figure 1). Examples of the websites supporting the process question asking by students and serving in particular cases as an idea generator in biology problems solving were used according to biology lessons topics (nutrition, human body, genetics dilemma, biology achievements and AIDS). As a main opportunities for students communication and the form of community building were taken into account four social networking (*MySpace, Facebook, Twitter, Second Life*) Social networking have been analyzing in the four context: multi-purpose cafeteria, friends as a source of knowledge, immediacy and sex in *second life*. Students engaged in negotiation of shape the reality were the participants of opinion creation process.

Surveys aimed at general orientation towards the issues that are interesting from the point of view of the presented research hypotheses. It was conducted in order to gather the answers to questions asked to a representative sample of a proper population. Statistical analysis covered the replies of students given on survey sheets.

Results of Research

The results are presented in accordance with the assumption of conceptual framework /1-5/.

Analysis of Different Sources of Information

1/ The rapid development of information and communication technologies had led to increased availability and transfer of knowledge. In the educational community is discussed the "Lisbon Strategy", which revived the debate about the scope and meaning of education and competence, key skills and contents necessary to learn in school of twenty-first century.

The 'Lisbon Strategy' emphasizes the development of metacognitive competence in the context of 'life-long learning'. 'The skills and competencies' cover the vast range of outcomes of all forms of education, the results of formal, non-formal and informal learning. Skills and metagognitive competencies are important in large extent because of active citizenship *[Conclusions of the Council and representatives of the Governments of the Member States in connection with the development of skills and competence in achieving the Lisbon Strategy]*.

/2/ One of the sources of information was the website Edunews.pl. Recently the increasing popularity of the new theory of learning – connectivism is observed *['Connectivism: Call in to learn' (03.29.2010) and 'Connectivism, a revolution in learning' (06.04.2010)]*. The digital era is present. The XXI century needs of modern schools and modern learning. To learn - it means: choosing the content, moving them to the files, gathering opinions, joining problems, concluding, questioning, information processing, edits texts, correcting them etc. (Sawinski, 2010).

/3/ Mass media have an important role in the socialization of individuals, therefore, in showing the social norms and values, learning how to be a member of society. Media culture creates the attitudes. '*Adolescents in the United States are engaging in sexual activity at early ages and with multiple partners. The mass media have been shown to affect a broad range of adolescent health-related attitudes and behaviors including violence, eating disorders, and tobacco and alcohol use. One largely unexplored factor that may contribute to adolescents' sexual activity is their exposure to mass media*' (Escobar-Chaves at al. 2005).

/4/ Contemporary media are concentred in large extent on environmental assessment, diagnosis, addiction, assessment of progress in the biological sciences and their impact on the environment. The problems of health regard mainly: HIV/AIDS, cancer, infectious, mental and cardiovascular diseases. '*Since the late 1980s the HIV/AIDS epidemic has been a major health concern and a high priority for the EU [...] As the number of newly diagnosed HIV infections has increased in many EU Member States and in their eastern European neighbours over the*

last years, the measures and action already being taken have to be reinforced and should deliver a sustainable contribution towards curbing down the HIV/AIDS epidemic in the future [Health-EU Portal]. One of the priority of the European Pact for Mental Health and Well-being is Mental Health in Youth and Education.

/5/ Culture Media forced to have some 'life skills'. It means '*abilities for adaptive and positive behavior that enable individual to deal effectively with demands and challenges everyday life. Life skill education aims to provide students with strategies to make healthy choices that contribute to a meaningful life. Life skills are the abilities that help to promote mental well being and competence in young people as they face the realities of life. It helps the young people to take positive actions to protect themselves and to promote health and meaningful social relationship [WHO].*

Analysis of different sources of information confirmed the theoretical assumption of necessary ways of changes in education.

Observation Data

/1/ The process of biology teaching and learning has been analyzed from the angle of effectiveness (revealed in the level of students' metacognitive skills). Students' activity was noticed in particular while integrating knowledge from the media and undertaking action in order to cognize or deepen knowledge of facts and rules on the way to problem solving, classifies data, verifying content structure and performing preliminary organization of information. The results obtained in the three classes are comparable (Figure 2).

Students have not problems with information finding but they don't gather news, the widespread availability of sources creates belief that the necessary information they can quickly recover. The task connected with the searching of biological information and creating opinion on the conflict issues, centered mainly around issues of healthy diet. The students quickly looked for new links and were interested in testing the theories. They had undertaken the discussions in social network and they were willing to improve they competence in this area. The tasks requiring skills of argumentation have been quickly solved, creating information and questioning were less interesting for students.
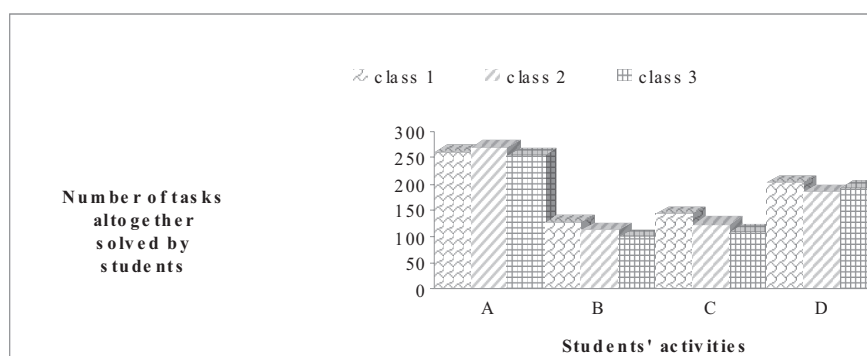

Figure 2: Comparison of 3 classes (1-3) students' activities: A – using the resources, B – gathering information, C – creating information, D – argumentation, E – questioning (n= 90 students, altogether 270 tasks, 90 tasks for 30 students of every class).

/2/ Cooperative learning and problem solving gave possibility of analysis of alternative solutions and discussing on quite different concepts. Finally, the students accepted the concepts which were more close to the new media experiences. On the basis of the new experiences, they have prepared the conceptual maps (FreeMind program). During it they ask about the reason for different phenomenon.

MySpace and *Facebook* services were available to students due to the ability to send group messages, pictures and movies to other participants of discussions. Finally, thematic groups with similar interests and views were formed. Topic, which gathered the largest public was concerned latest media information about the plastic surgery and image of the human body created by the media. Altogether 111 entries on social networking sites and only six mental maps created by students in the classroom were noted.

/3/ Among the questions asked by students in social networking there were questions regarding bioethical problems related to the biological issues. Definitely more such questions were posed by the students due to the nature of information in the Internet and due to the contents made available by the community through IT tools. The most ethical fears are caused by *in vitro* (altogether 34.9 % of the asked questions), while 33 % and 32% of all the questions concerned organ transplants and genetically modified food.

/4/ The way of transferring information due to media determined which schemes activated the student to explain new experiences. One may believe, however, that pre-knowledge directed students' attention to certain information, while another could be ignored. *Second Life* is a kind of experiment connected with the relationship between on-line and off- line reality. Sex in *Second Life* is a short lesson of human body and sexual education.

/5/ It has been noted that much success connected with problem solving arise above all due to the fact that the student cant adapt it to the specific situation quickly. An important feature of the new media chosen by students (*Twitter*) was the immediate possibility of communication between groups. Around 100 signs messages with the links to various texts in the network have reached in a short time students.

Results of Survey

The analysis covered the replies of 90 students given on survey sheets. The survey was used in two forms, that is in a structured form, with answers for selection (5 questions) and in an open form, making it possible for respondents to reply with their own words (5 questions).

Results of Open Form Survey

In case of biological bioethical issues opinions of students were largely impartial (67% of responders). They mostly prefer providing proofs and verifying expressed opinions with the help of available sources of information (85% of respondents).

Results of Structured Form Survey

Results of structured form survey are presented in Table. 1.

Table 1. Main students' opinions on the new media and information available due to various media tools (responses most often chosen by students in questionnaire, n=90).

Topic of survey question	Responses most often chosen by students	The percentage of students who chose the most popular answer
The role of Wikipedia	The main source of scientific information	93.3
The role of Facebook, MySpace and Twitter	Medium of everyday communication	100
Why traditional media are not attractive?	Contains biased judgments and opinions	47.7
Why new media are so popular?	Contains unbiased judgments and opinions	63.3
The role of Second Life	Assists in creating own views and attitudes	63.3

All respondents use new media in everyday communication and in most, treat Wikipedia as a main source of knowledge (only 6.4% of the respondents chose the school as the main source of scientific information). Students' views on the opinions transmitted by traditional and new media are divided, 63.7% of students believe that the popularity of new media stems from the fact that they are unbiased (in contrast to traditional media). A significant number of students (63.3%) admit that *Second Life* creates attitudes of these media users.

Discussion

Presented research and analysis confirm the previous views that changes in the to-date ways of work and information technology tools use in biology teaching and learning are necessary and that contemporary school prefers model of learning by communicating (Juwah, 2006). Necessity of these changes is the consequence of psychical needs of learners in the situation of universal access to information (Potyrala, 2007).

According to John Storey (2003) distinguishing between mass culture and popular culture is essential. Storey underlined that from the one side there is imposing set of meanings by the dominant group, on the other hand we have the activity of recipients and their "production for use". This approach draws attention to the important role of means of production and the fact of active role of information users in production of meaning (Wikipedia - *Facebook*).

According North American Technographics Benchmark Surveys, number of social networking sites users is continued growth from 2007. The forming of attitudes of the consumers and producers of information is a priority. Media often replace the reality (Reeves, 2000). The example of this approach are people engaged in *Second Life*. Shaping students' scientific attitudes during biology lessons was the second aspect of conceptual framework in connection with the medial opportunities. Technology 3D and effects 5D become a great mini-lesson e.g. in biology education in order to form students' attitudes to the problems of the modern world. Today it seems to be clear that students must learn to speak without fear if they asked 'good', correct questions. They should be able to argue, give opinions and defend their views.

Conclusion

Technology offers some of the best opportunities for delivering instruction that engages students in authentic learning. Special attention should be paid on students' individual social needs, how to inspire interest in a variety of areas, to achieve success due to new and creative ways to solve problems. Effective efforts to keep students in school take advantage of these links with the wider community. School-Community Collaboration is a way to safe school.

The ways of thinking about educational changes resulting from the following conditions: /1/ media culture means universal access to information, metacognitive skills are necessary to information processing, /2/ media culture is the culture of social networking media, /3/ media culture creates attitudes, an inexperienced user of the media passively adapts attitudes and behavior to his or her own world, /4/ contemporary media warn against multiple threats as well as rapid progress in the biological sciences, but much less attention has been devoted to prevention and education, /5/ media culture forced to have the life skills.

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