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MEDIAL EDUCATION – THE REASONS FOR COMPLEX COMPETENCE OF BIOLOGY AND ENVIRONMENTAL PROTECTION STUDENTS

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Abstract

Media are the integral part of the contemporary reality, their role in social life and in education seems to be more and more important. Medial education is connected with the knowledge interdisciplinary in nature which is situated between science and everyday life. This kind of education is also a consequence of the development of new information and communication technology. The research issue has been focused on the influence of the various media on students' competence connected with the communication and mediation of biological and environmental problems. The article takes into account the different opinions dedicated the role of media in biology and environmental education and defines the social and cultural reasons for complex competence students. 129 biology and environmental protection students participated in the practical part of the research (survey and cards of activity). The data were interpreted in view of the new concepts of social communication and mediation and point to the fact, that these students' skills are essential for knowledge transformation and connection between science and society.
Key words: *media, competence, education, environment*

Introduction

Changes in the to-date ways of work and medial / information technology tools use in teaching and learning are necessary (Potyrala, 2007). Necessity of these changes is the consequence of psychical needs of learners in the situation of universal access to information. The changes must regard the content, form and range of information together with individual experience of the information user (Potyrala, 2009).

Ecological and environmental education particularly emphasize the following attitudes: acting in accordance with the rules of ecoethics and ecological culture connected with coexistence with the surrounding nature, sensitivity to the beauty of nature and the effects of its destruction, emotional and practical involvement in protecting nature and the environment. In connection with the development of the media there are a lot of theories which show the reasons for the crisis on the one hand and on the other fast development of civilization. Some are sure that influence the environment on human existence is deterministic and the differences in human views and attitudes are connected with the ways of communication (Potyrala, 2008).

Science surprises us with ever new discoveries. They allow better knowing the beginnings and development of life as well as their control today. It is accompanied by admiration, hope but also fear company us because of the application of science. What knowledge is vital for man? Omnipresence of computer networks opened up the world of knowledge. Progress in the field of biology requires a broader approach to making teaching contents available to students.

Media most frequently are the sources of the social awareness connected with the idea

of sustainable development and biodiversity, people more often are interested in it. Basing on the examples in different countries we can say about the tendency towards 'citizen ecological knowledge'. But we can observe "biological illiteracy" in all the societies, which is connected with neglecting scientific facts and basing one's own opinion on the information provided by the media.

The concept of sustainable development refers both to social and cultural development and to economic development as well. It is also connected with the changes occurring in nature, development of the animated nature, succession of ecosystems and global sustainable processes occurring in the biosphere. Biodiversity, to put it simply, is the diversity of life-forms along with all their variability on the level of genes, species and ecosystems, on the scale of Earth or lower biogeography units. The issue of biological diversity became one of the main paradigms of ecology, contemporary environmental protection and environmental policy.

According to Potyrala at al. (2009), the curricula meet basic teaching standards however, their realization does not catch up the social and civilizational transformations. Development assumes consideration of them.

Electronic media multiply experience and thus constitute an important part of educational environment. The phenomenon of knowledge transfer must be perceived in a complex manner and transformed due to the changing motivations, ways of information reception and mechanisms affecting the content interpretation (numerous patterns of behavior, transience of views, and instability of systems).

The priority for education in the contemporary world of media should be among others relationship between science knowledge and medial culture and improvement of professional opportunities and permanent education.

Bogaj et al. (2000) referring to the opinion of the authors of a report entitled Education for Europe claim that contemporary media, especially information techniques, lead to: 1) transfer from objective to construed knowledge; 2) transforming educational mission of teaching into the mission of equipping students with methods of individual learning; 3) increasing, and in future maybe prevailing, role of the process of communicating and gaining knowledge with the help of technology; 4) transfer from industrial society to learning society.

Methodology of Research

The following objectives have been specified:

1) formulating general, theoretical assumptions of methodical concept of ecology and environmental protection teaching and learning with use of different ways of communication and acquiring knowledge with help of media,

2) studying aspects related to functioning of the models of didactics communication and mediation as instruments for formulating cognitive strategies in students.

Research problem: Do the contents to which media 'refer' students play educational function including communication and mediation competence?

Research hypothese: Suggested system biology and environmental protection students' teaching and learning due to media is partly adapted to the requirements of information society as far as educational function connected with creating medial competence in range of communication and mediation of the biology and environmental issues.

129 biology and environmental protection students participated in the practical part of the research (survey and cards of activity).

Students' activity was connected with the situation learning model and different models of communication and mediation (Table 1). The tasks led students to use various sources of information for solving environmental problems. The students were after the courses of information technology, so their basic skills established ability to use many sources of information for explaining biological phenomena and processes as well as for formulating and justifying their own opinion.

Table 1. Students' activities in face of different situation connected with the creating medial competence in range of communication and mediation of the biology and environmental issues (* student's activities mentioned in parentheses according to typology of extended answer problems according to T. Szaran, 2000, figures in parentheses – tasks/activities' numbers).

Students' activities	Type of situation problems (according to Długowiejska and Hłuszyk, 1999)	Type of communication (according to Goban-Klas, 2005 and Kalinowska, 2007)
collecting information (*analyzing /1/, classifying /2/, summarizing /3/)	theoretical problem, aiming at control and evaluation of the ability of integrating knowledge in various scientific areas and systematizing it in adequate structures	communication as transmission; informative communication; mediation
interpreting (*justifying /4/, creating /5/)	problem controlling and evaluating the ability to communicate in various situations	communication as understanding; persuasive communication; mediation
communicating (* synthesizing /6/, comparing /7/, generalizing /8/, applying /9/)	decision – making problem, requiring the students to solve a problem situation on the basis of the possessed scientific knowledge	communication as integration; informative and persuasive communication; mediation
hypothesis posing (*associating reasons /10/, drawing conclusion /11/)	corrective problem, aiming at control and correction of problem situation	communication as exchanging; informative communication; mediation
creating concepts and theory checking (*comparing /12/, controlling /13/)	problem aiming at control and evaluation of the degree of mastering the knowledge and skills regarding planning and predicting results of undertaken theoretical and practical activities	communication as acting; informative and persuasive communication; mediation

The research was connected also with the analysis of the curriculum and teaching standards at university level and the analysis of the students' answers connected with the practical application of different form of communication during biology and environmental protection studies.

In the research attention has been paid to media as the aid in acquiring knowledge and

aid of communication of contemporary environmental issues. The following examples of subject contents were taken into account:

- reasons for and results of air pollution in the world in medial messages,
- worldwide contemporary environmental problems in available sources of information,
- computer tools enabling data analysis regarding the atmosphere structure and degree of contamination of biosphere,
- demographic explosion in developing countries in the media,
- media helpful in dialog on: acid rains, greenhouse effect, air components, disappearance of atmospheric ozone,
- media-aided dialog for solving complex environmental problems.

Two strategies of communication were applied: 'good message' (positive information, advantages) and 'bad message' (critic of previous behavior, pessimistic predictions). Every situation was treated as a case study.

Results of Research

Majority of the respondents (90%) say that the best method to obtain their achievements in ecology and environmental protection study is the work with different sources of information present in the media. In their opinion the best teaching aids are the models and simulations and the additional sources of information – for example some parts of articles. On the other hand the questions asked by students show the main kinds of errors connected with the environmental problems and education about them. For example they understand education 'about' sustainable development but not 'for' it. The attempt of the answer to the question was undertaken: do the media help in environmental education? In students' opinion the main topics preferred to media-aided teaching and learning regard degradation of natural environment (17% of respondents) and climate changes (13%).

The number of tasks solved correctly by students and the level of their communication and mediation abilities is presented in table 2. The results put main attention on the fact that system of media-aided biology and environmental education is partly adapted to the requirements of information society. The teaching contents partly need help of technology, some part of them need only the ability of information gathering and collecting and they are connected with communication understanding as a simple data transmission.

The students look mainly for short texts or selected documents specifying legal grounds for nature protection and environmental protection in the Internet (21%) or for pictures (36%), most of them are only interested in the press titles (43%).

Table 2. Results of the attempts of modernizing educational process as a level of students activity in medial communication (n =129).

Students' activity	**Students' communication and mediation skills**	**Result s** /percentage of tasks correctly solved/
collecting information	valuing	78.3
interpreting	critical thinking	58.1
communicating	transmitting	76.7

hypothesis posing	anticipating	61.2
creating concepts and theory checking and controlling	alternative thinking, decision making	48.0

The results confirm the author's views that system biology and environmental protection students' teaching and learning due to media is only partly adapted to the requirements of information society. Necessity of the changes is connected mainly with the fact that medial and subject education has too small number of links and such skills as critical and alternative thinking aren't sufficiently educated with thought about their utilization for instance in environmental management.

Summarizing is the best skilled action (Figure 1. 3., 38, 3% solved tasks), synthesizing seems to be students' the weakest side (Figure 1. 6, 17%), the skills connected with the gathering data are on higher level than the ability of knowledge integration in larger structures.

Communication understood as transmission is more popular than communication as integration, preparing students to informative communication is easier than preparing them to scientific dispute, persuasive communication and to mediation, so usually the students' activities are connected with the summarizing. People usually fear conflicts, they perceive them as a kind of war. The essence of problem is often lost.

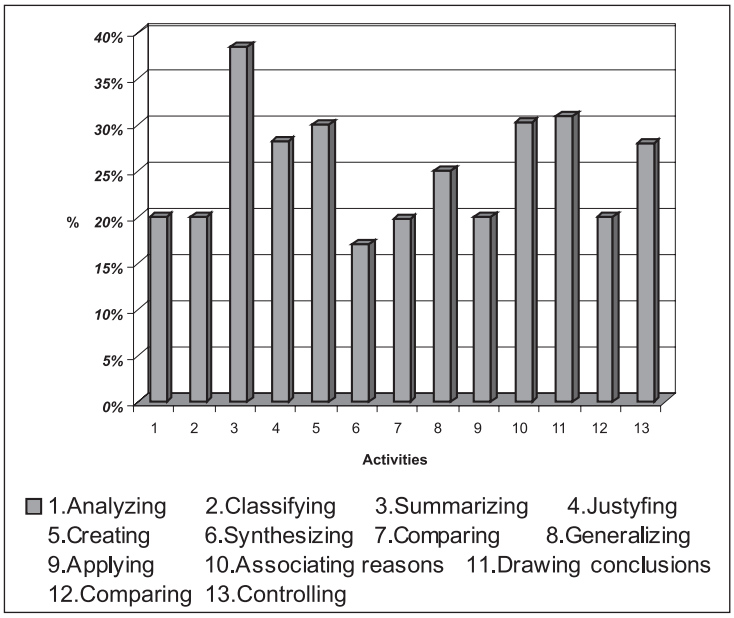

Figure 1. Percentage of tasks correctly solved (in connection with typology of extended answer problems and students activity).

Conclusion

The students are interested in intensive development of science and knowledge created by the media because some contemporary issues are close their everyday problems. Creating students' medial competences during biological and environmental education is one of European standards connected with preparing students for life in a society of knowledge. In curricula there are a lot of possibilities for different models of communication. There are a lot of connections between medial

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and biological and environmental education. Multidisciplinary way of biology and environmental protection teaching means integration of contents from various areas of knowledge and medial itself. Ethical problems may constitute the leading in medial teaching.

In connection with these tendencies and with changes in the way of biology teaching and in connection with students' interests and their professional life in the future teacher training at university level should take into account the prospective aspect of qualifications. We must also understand deeper philosophy of the reform. In view of these changes the priority is defining a canon of teachers' medial skills. According to the worldwide tendencies, medial teaching is to help students in learning about regional and local social, health and environmental problems and solving various civilization issues. 9. 10. 1.

Hence the conclusion connected with raising the status of particular didactics and the fact that more emphasis must be put on the quality of professional proficiency in practical – medial aspect. It is connected with:

- forming in students complex information and communication competence,
- preparing detailed tasks and the range of e-education,
- realizing teaching objectives in alternative, virtual environment of learning
- computer-aided standards' university subjects.

Medial education as such may not play the most important educational function, as it frequently happens nowadays, but must be connected with the whole system of education, in order to create a new quality of not frustrated and not socially alienated man in the information era (Siemieniecki, 2000). Only the interdisciplinary model of education offers a chance to raise members of knowledge society, interpreting generally available medial information on the basis of scientific rudiments. The process of integrating information technology and particular subjects of teaching means integration regarding curriculums, didactic aids, strategies and media-aided methods of teaching (Potyrala, 2005).

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