THE REFLECTION OF THE INFORMATICS SOCIETY REQUIREMENTS IN EDUCATION

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Abstract

There is the need to understand which is the course and the dynamics of the development of modern society – in order for the education reform to succeed in what it has proposed: to modernise and to make efficient the didactic process, which should be finalised by an optimum preparation of the youth for their professional, cultural and social integration. Its tendency for dynamising and optimising at maximum the human activity, for modifying the connection between the creative activities and the routine ones especially imposed the introducing of the calculation electronic systems and equipments in all the fields. The informatics had a rapid quantitative and qualitative development. The huge networks, as the banking-financial ones, the Internet, the commercial ones with dozen of users who change information from all fields and in all directions transformed the plannet into an "informational plannetary village". The school has a primordial role for the attenuation of the impact with the informatics field, for preparing the youth in the use of the computers and the knowledge of the field. We all are – even we mentally want to admit it or not- in an informational society where dominate the information, its stocking, processing, transmitting and managing. "Illiterate" in the third millenium has the significance of the lack of experience in informatics field. Our integration – at the individual level and at the national scale one- in the system that governs the world depends of what the generations – who attend and will attend our schools – will achieve in the informatics education.

Keywords: technology, cultural factors, research

"The 21-st century has seen launching in the same time the atom era, the space era, the electronics and informatics era, the modern biology era, the new materials era and that of the universe understanding".

At the beginning of this century when the technological fever comprised most of the developed countries, we can call the first decade quite the *technological revolution decade in education*.

At the beginning of this article, concerning the way the education reflects the tomorrow's society needs, there are to keep in mind the *common tendencies of the informatisation in the European countries,* enunciated at the European seminar "An European Platform for the Development of a Cooperation Mechanism in The Informational Technics Field in Education" – Moscow, 1991. [E. Noveanu, D. Noveanu, 1993]:

- the education systems regulates according to the suprasystem trying to answer to the necessities of the individual integration in an informatised society;

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- the state decisively involved in the promotion of education informatisation; it has been awared of the education role in the society programme, but also the necessity of improving it faster, in order to assure to the respective society the competitive character in technologic and scientifical perspective;
- the informatisation approaches comprise an extremely large area, stressing on the applications which assure a basic informatics culture for each graduate;
- it is assured a minimum technical equipping for the practical activities;
- it is assured the specific training of a sufficiently great body of teachers;
- it has been crystallized a coherent programme (programmes, projects) for the education informatisation;
- it is payed an increasing attention to the pedagogic, psychological, socio-pedagogic, economic investigations.

The Informatised Society

1. The civilization factors

The science is – paradoxically today – in a conflict with the society: admired and suspicioned in the same time, bearer of hopes for the future, but also a proposer of some ambiguous notions, generously financed and in the same time unable to keep all its promises, showing spectacular successes and in the same time accused of not serving directly the society objectives.

Nevertheless, *science and technology* are extremely powerful instruments today. Comparing science and technology, Gradwell's (1986) shows that:

Technology – is an opened system;
- it uses deductive reasons;
- it uses practical methods;
- it is preoccupied by what things should be;
- it has discoveries which lead to theories as a result.

Science – is a closed system;
- it uses analitical reasons;
- it uses scientific methods;
- it focuses on things that exist;
- it starts from problems and it is guided by theories. [James L. Barnes, 1988, p. 215]

To all of these is added the culture too, as "the main lever of the cultural identity of a people, a fundamental instrument of the surviving and an inseparable factor of the economic and social development process; an instrument of learning and an impulse of change" [M. Malița]; the research and the education, completing this way the list of the civilisation factors. The unity of education with research and technology and their role in the development of science and culture are revealed by G. Secară in the scheme:

SCIENCE
CULTURE – EDUCATION – RESEARCH
TECHNOLOGY

by culture understanding that factor, creator of spiritual values; by science- that factor, a theoretically provider of new knowledges concerning the world around us; by technology- a practical factor, a constructive of material objects one; by research- this methodological factor of the action led in the knowledge field; by education- that instructive-educative factor, a new human values provider, in order to continue and develop the civilisation. [G. Secară, 1986]

Trying an underlying of the relations between CULTURE – TECHNOLOGY – SCHOOL, Ray Page designs the following scheme starting from the nature of technology till the adoption of some strategies for the introduction of technology in school, depending on the characteristics of each culture.

THE NATURE OF TECHNOLOGY
THE FUNCTIONS AND THE ROLE OF TECHNOLOGY IN SCHOOL
STRATEGIES FOR THE INTRODUCTION OF TECHNOLOGY IN SCHOOL CURRICULUM

[Ray Page, 1988, p. 250]

The civilization development is based on the achievements of science and technology, achievements which determined and determine considerable mutations in education, research and culture and which it influence science and technology. The formative-educational system (the institutional organization of the school unities, instruction and professional training) under the impact of the new educational technologies will have different evolutions comparing with the current ones. The higher education confronts with the potential impact of the new electronics.

Information theory, quantical physics, genetics, molecular biology, micro analytical chemistry generate new knowledge, among them those of the communication and information having the most important weight and with the greatest possibilities of using in school.

The new technologies produce meaningful changes in the other sectors, also (industry, agriculture, intellectual work, that of management); there are changes which mean the training in numerous other jobs, which request superior training specialists in other new fields, also, those able to master and improve the new technologies, to continue and develop the current surveys.

2. The elements of the society – new technologies connection

"The building site of the information highways was opened. The

information revolution which consists in the capacity of producing, treating, stocking and using the informant rationally will make the difference between states."[René Lefort in G. Văideanu, 1996] "The invested time in learning is one of the variables which explain the differences in efficiency among pupils, classes and nations" says G. Văideanu (1988).

The modernizing of the instructive-educative technologies must be achieved so that the efficiency of those which are taught to be enhanced, meaning the learning time saving, the getting thoroughly into the studied material and the stressing of the operational character.

In "Declaration" of the Stanford meeting (1986) the clear elements of the connection between society and the new technologies are underlined:
- the citizens must be trained in order to live in an informational society;
- in different countries it has been passed to a massive introduction of computers (and of informatics) in education; those who decide that in education must focus the attention on this very important field also;
- the researchers from different countries must unify their efforts in order to get results, applicable to an international level;
- the international organizations which operate in this field must develop these activities which facilitate the change of information and cooperation;
- all of these who have competencies in this field are invited to participate at the organization of such multinational research projects and of pilot-projects of multinational interest;
- the declaration is a message of the participants to this meeting addressed to the international community in order to support the continuation of the surveys concerning the use of computers in education. [E. Noveanu, D. Noveanu, 1993]

3.   General trends that are basis of the introduction of NIT in school (politics and strategies)

The strategies and politics that are the basis of the introduction in school of the computer and of the informing technologies let to see some general tendencies:
- the informing technologies used as a pedagogic tool can have a powerful influence on the way of assimilating the knowledge, on the learning content and the reports between disciplines, on the role of the educators and of the school and class organization;
- the decision of equipping just some pilot-schools or of proceeding to applications in the limited frame of a project or of a discipline is generally based on two series of connected considerations: those linked to the costs and those concerning the efficiency.

The best strategy would be the combination of the two ways of approaching; the state should support the introduction of informatics in all schools and in the same time, it should take the initiative of launching experiments in a restrictive number of well equipped schools, in order to establish the extent of effective contribution of informatics to the teaching-

learning process (Japan, Sweden, some states from USA).

The action of introducing the computer in the school institutions was influenced in a great extent by factors which don't belong to the didactic world (these factors differ just by their relative weight from one country to another):

- economy demands – the reshape of the economic activity gives birth to a request of new competences, especially in the informatics field;
- industry interests – the introduction of informatics technology in education completes and gives an impulse to the national microelectronic industry development;
- commercial pressures – the producers encourage the informatics introduction in school in the frame of the comercial strategies, focusing on the increasing of the sales in factories and family;
- social pressures – often, the parents are the first ones who want to wish the use of the computer in school and the pupils come to school interested in informatics and with certain basic knowledge, gained in the family (especially for the primary school pupils);
- cultural factors – mass-media talks about the economic and social transformations- which directly or indirectly appear – connected of the informing technologies;
- political factors – the political leaders see in the informatics initiation programmes a good mean to be known in an obvious and concrete manner, by their intention of improving the educational system;
- the technological factors – the informatics progress extends its area of aplication and reduces the execution time and the costs.

Whatever the educational system structure would be, the role of the public forces is essential especially in the beginning stages of the informatisation (centralization/decentralization). The governments can act in five directions: on the equipments, programmes, reserch activity, teachers that must benefit of a proper training, both before and its entire development.

The introduction of the computer in school is an innovation which ask for ideas and the oportunity of its putting into practice. Probably this creativity develops easier in a decentralised background.

The educational structures must be sufficiently supple in order to resist to the evolution of the society needs, to the integration of the new educational principles and to the aplication of some improved teaching-learning methods. It must be applied this principle of educational structures flexibility to the programmes of applying the new informational technology (NIT).

"The introduction of NIT in schools firstly should focus on the facilitation of learning in important disciplines. It is essential to apply the national strategies as pilot-projects, which can help to the identification of the problems and the decisions to be taken in order to execute some complete national programmes. NIT will continue to improve according to a model of "permanent change" (to take into account and to reflect the flexible

infrastructures of administration and support; the flexibility of programmes, of examining methods, te evolutive character of the roe of the pupils needs)." [Recomendations at the Paris Congress, 1989, by E. Noveanu, D. Noveanu, 1993]

The informatics is called to be among the instruments able to improve the internal and external efficiency of the educational systems. It is concretised in this way more strategies for the future:

- the computer number increase offered to schools, teachers, pupils. It must be adopted flexible programmes where these machines will be systematically used as a subject matter and auxiliaries of gaining the programme's discipline;

- the producing of a greater number of quality didactic logistics;

- training of a greater number of teachers, qualified to teach the pupils to use the computer. As long as the recently qualified in this field teachers won't have an access to a sufficiently numberof computers and to a variety of logistics at reasonable prices, the computers will have a low impact on the educational programmes;

- measures which can allow teachers to devote more time NIT studies. In the systems where the syllabus are relatively uniform, it should be easy to introduce everywhere general programmes of initiation in the use of computers in education, allowing the teachers to devote the strictly needed time to know the way of introduction on a computer of the school activity, not being necessary to waste time redoing the programme. "As a consequence of analysing the computer in the 80's education it is noticed that most of the countries applied a very simple diseminating strategy, starting from the hypothesis that the introduction of some informatics material and logistics will automatically lead to a fundamental change of the way the pupils do their work class. The next stage consists – for the specialists in programmes field, for the textbooks' authors, teachers, specialists in informing means and others – in the priority role given to the teachers as main agents of change promotion." [W. Pelgrum, 1992]

Conclusions

"A world of computer, as the tomorrow world will be, comes with its *uncountable* in front of minds. It gives them new relations, new meanings, but it wants to impose new languages." (C. Noica)   In order for the education reform to succeed in what it proposed – the modernisation and the making efficient of the didactic process, which lead at the end to an optimum training of youth for the professional, cultural and social integration – it must realise which is the course and the dynamics of development of the modern society. Its tendency of dynamising and maximum optimising of the human activity, of modifying the report between the creative and the routine activities especially imposed the insight in most of the fields of the

equipments and counting electronic systems.

The informatics has known an exponentially quantitative and qualitative development. The occurence of the faster and faster computers, of the different performant backgrounds of stocking and sending the information, of some new programming strategies determines as for the informatic field to be one of the top field in the modern society. Starting with the administrative and routine activities, continuing with fields like: industrial-economic, nuclear, aerospatial, research ones, recreation activities, education, artistic creation, the computers came strongly and imposed as an ideal work partner. The huge networks, as the financial-banking ones, the Internet, the commercial networks with dozen of users who change information from all the fields and everywhere, transformed the plannet into "a informational planettary village".

The actual trend tries to integrate the computer in the daily life of people, by working activities, by recreation, informing, selfinstruction, economical administration by the conecting of the users at the informational highways. In this technological context, people's life will transform according to everyone's possibilities to evoluate in the global system. School has a primarily role for the attenuation of the impact with the informatic field, for preparing the youth in the use of the computers and in the field knowing (the synchronising of the disciplines syllabus – informatics; the setting of some informatics labs where to develop classes to almost all the didactics disciplines; the adaptation of the teacher's staff to the new demands).

We are – even we want it or not from the mentally point of view – in an informational society, where information, stocking, processing, transmitting and managing of it are dominant. Being illiterate in the third millenium means lack of experience in the informatics field. Our integration on an individual plan and also, at the national level in the system governing the world, depends firstly by what the generations who pass and will pass through our schools will achieve.

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