

# ***Characteristics of Knowledge-Based Economy and New Technologies in Education***

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**Abstract:** *The work aims to investigate some characteristics of a knowledge based economy and on the other hand the new technologies used in education. We recognize the extraordinary technical performance of current electronic systems. But they respond to actual needs of society in education? In this paper we try to answer the following questions:*

- *What are the characteristics of knowledge-based economy in terms of education?*
  - *What are the new technologies used in education?*
  - *What are the major problems in education today?*
- We can talk about quality education when using electronic training tools?*

**Keywords:** *educational ideal, knowledge economy, electronic training.*

**JEL:** *I2; I21; I28.*

*What are the characteristics of knowledge-based economy in terms of education?*

A first feature of knowledge-based economy is given by the **six contradictions that are manifest during instruction:**

- the contradiction between the period of time when the individual has the quality of instruction object and the duration of his being object of his own activity;
- the contradiction between the time assigned for documentation, for identification of knowledge sources and the time assigned for the assimilation and processing of the acquired knowledge;
- the contradiction related to the increasing gap between the evolution of the students' information demands and the diversification of the information possibilities;
- the contradiction between the natural logic of the instruction branches' sequence and their recovery in the education programs;
- the contradiction between the need for instruction's individualization and the mass character of permanent instruction, and
- the contradiction between concepts, practices and systems that are used in the instruction process.

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A *second feature* is given by *the educational ideal's role in a nation's well-being*. While before December 1989 the educational ideal of the Romanian society was creating a "multilaterally developed" human being, able to respond to the political, social and economic demands, the change in the international policy has imposed changing the educational ideal, as well. Thus, in the period 1990 – 1996, the new political regime in our country has correlated the educational ideal with the openness obtained as a consequence of the change. According to the educational theories of the time, the desirable educational ideal was to create a plurivalent individual who'd be able to easily adjust and integrate to the political, economic and social environment, found in transition. The year 1996 brings a new change in the Romanian policy. Including Romania on the international market and finding access fields became a priority. The idea of the business environment according to which the division of labor and the entrepreneurs' specialization would allow a fast and sustained development of certain fields has been accepted. The educational ideal adapted to this challenge and the US model was adopted as the economic growth model to be followed. Changes have been brought to the educational ideal's definition, in order to fit with the new requirements. During 1996-2007, preparing highly-trained specialists, able to face competition, was a national priority. Therefore, major changes have come up in the educational program, at the level of instruction methodologies. In primary education, there were introduced distinctions on subjects while the awards have been removed. No more competition was desirable amongst children, until they were outlined and developed with certain skills, abilities and habits in a well-defined field. The branches of knowledge have been subordinated to curricular areas. They had the mission of delimitating the instruction and research horizon in order to consequently allow identification of the professions the students would follow. Until 2004, curricular areas and alternative manuals have been introduced for the entire primary and gymnasium education, and 2007 commenced with the completion of the change process in all pre-academic education. Alongside Romania's integration in the European Union on January 1<sup>st</sup>, 2007, the extended labor market imposed new rules and extreme caution. It is not to be neglected the fact that, starting January 1<sup>st</sup>, 2007, the European Union is a community that gathers 27 member states and a population of 492,8 million inhabitants, having 23 official languages.<sup>2</sup> The educational ideal had to be adjusted to the new political, social and economic climate. Its definition hasn't proved to be easy to find, at all. For each historical stage, the ideal squared with the human type that was desirable for that period, with various consequences on the long run. No-one was willing anymore to sacrifice generations without taking into account its lasting development. For the first time, it has come up the assessment of the political decision's risk in defining the educational ideal. Educational plurivalence was bringing about a series of benefits related to the rapid integration on the labor market, but at lower levels, while the excessive specialization and improvement

<sup>2</sup> europa.eu – European Union's portal

were causing the organizational performance negative consequences on social and personal level and also rather high expenses for professional reconversion in those sectors which were decreasing or ceasing their activity. A compromise solution was found: *creation of a human being who would be fit and well-prepared for an unknown world, who'd be able to assume the risks of his decisions and actions.*

*A third feature is given by the contemporary educational models*, results of the educational ideal. Being developed in accordance to the educational ideal that was defined in the respective period, the educational models can be grouped in three important categories: *the individual, the sociocratic and the creative model*. Some authors (Diaconu, M. & Jinga I., 2004) deem these models are in a conflict. The grounds of this conclusion are presented in paper's content. I also mention that other authors specify that the sole activities bringing surplus value to the society are the creative activities. Synergetic actions, activities deployed in view of achieving certain objectives or other types of activities are susceptible of the reference criteria interpretations: performance, efficiency, efficacy, volume, etc.

*What are the new technologies used in education?*

I've identified and isolated the concept of e-Learning through the perception of those who study the field of electronic instruction, researchers who expressed a point of view in the specialized literature but also practitioners who, with or without defining the notion, have developed such systems. Defining the concept has proved to be rather difficult. While in 1993, Graziadei, W. D, biology teacher at the New York University was coordinating the project „Teaching and Learning via The Network - Virtual Instructional Classroom Environment in Science (VICES)” in the attempt of describing the advantages of delivering content via e-mail and online reading, nowadays, the e-Learning concept can be found, by a simple interrogation of an Internet searching electronic engine, in millions of articles (GOOGLE: over 45.000.000, YAHOO: 69.800.000, LIVE SEARCH: 3.100.000). Unfortunately, in the Romanian public libraries there are less than 20 titles in foreign languages and 4 in Romanian (National Library: 18 in English and 4 in Romanian, Central University Library: 15 titles amongst which 4 in Romanian, Central Library of the Bucharest Academy of Economic Studies: no titles).

A shortcoming of the e-Learning concept can be also represented by the apparition of derived concepts, such as iLearning (instruction mediated by internet), m-Learning (instruction mediated by mobile communication equipments), v-Learning (virtual instruction), g-Learning (game instruction), u-Learning (depending on the individual instruction need), etc.

There are voices claiming that the apparition of new notions could signify the fact that e-Learning is conceptually obsolete, but others consider that the electronic instruments family with instruction purpose gets to complete the perception horizon of the e-Learning concept. No matter how would we call this phenomenon, of instruction mediated by informational and communication

technologies, it is certain that at present there is a multitude of models and forms of electronic instruction, which are detailed in the content of chapter II. Within the chapter, I have also presented some of the most well-known systems of e-Learning, developed by specialized soft companies, but in *open source* system as well. Some of these systems are being used in over 200 countries, ensuring the instruction support for over 600000 users<sup>3</sup>.

*What are the major problems in education today?*

These major factors have been identified as a result of a SWOT analysis of the present stage of the organizations that arrange instruction by using electronic communication techniques, as well as of the environment where they carry out their activity. The analysis performed at the Bucharest Academy of Economic Studies, and at Universities in the country as well (Bucharest Polytechnics University, Carol I National Defense University, SNSPA, Bucharest University) and abroad (D'Artois University – France) has led to the identification of issues that justify the process of improving the traditional instruction systems, amongst which we mention the following:

- non-correlation between instruction processes and the dynamics of the technical-scientific progresses;
- impossibility of acknowledging in due time, at different instruction levels, of the instruction need, according to the individual's psycho-physical features and to the social, economic and political environment he belongs to, as well;
- lack of information for the political or economic decision factors regarding the instruction level of the population's various categories;
- inexistence at the level of communities organizing instruction of an informational and communication infrastructure that would allow obtaining in due time the necessary information for the achievement of certain detailed social, economic or political analyses;
- absence of the integrated instruction systems which would allow both control in real time of the instruction-educational process, and its correlation with the actual consumptions of human, material, financial or time resources;
- non-use of efficient instruments for the substantiation and dynamic pursue of the instruction level's evolution per individual in order to be able to make a valuable reasoning regarding the existing human resources fund at a certain moment in time;
- non-use of tools with forecasting character in the direction of the instruction-educational activities, which would allow aprioristic knowledge, with a satisfactory probability, of the evolution of certain quantitative and qualitative indicators related to the instruction level

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<sup>3</sup> <http://moodle.org/community/>

and testing the hypothesis that it could exist a relationship between the instruction level and a nation's well-being;

- lack of a unitary informational system at organizations' level, that would allow grasping the existing interdependencies between the economic activities and the instruction degree of the used human resource, during their functioning.

In addition to these issues, there is a series of requirements which could be satisfied by various action manners, presented in this chapter. In order to select the most appropriate means, we deem necessary to also take into account the social impact, the financial and educational motivation that will contribute to a unitary perception regarding the quality of the e-Learning systems.

*We can talk about quality education when using electronic training tools?*

In order to get an objective measurement of the e-Learning Systems' quality, I have identified a series of indicators, standards and methods. Within the chapter, I have commented a feasibility study<sup>4</sup> for choosing an e-Learning System, a study that was presented in the specialized literature in October 2002. It should be appreciated the fact that an associated researcher<sup>5</sup> at the Romanian Institute of Education Sciences assumes the risk of elaborating such a study in 2002, even empirically, whereas in the Romanian specialized literature it is only in 2005 that, in a study published by the Economic Review, it is debated the necessity of introducing standards in e-Learning, and in 2005 come out the first standards ISO/IEC 19796-1:2005 Information Technology - Learning, education and training - Quality management, assurance and metrics. The e-Learning notion emerges in ISO standards in 2008 ISO/IEC 24751-1:2008 Information Technology -- Individualized adaptability and accessibility in e-Learning, education and training.

*Instead of conclusions*

Nevertheless, at global level, the first attempts of standardizing the e-Learning Systems have been initiated in 1998 by companies such as IBM, Microsoft, Macromedia, Cisco, NetG, Click2Learn, Saba Pathlore Centra, etc. Nowadays, organizations such as ADL (Advanced Distributed Learning), AICC (Aviation Industry Computer Based Training Committee), ARIADNE (Alliance of Remote Instructional Authoring and Distribution Networks for Europe), DCMI (Dublin Core Metadata Initiative), IMS Global Learning Consortium a.s.o. are concerned with researches regarding standardization in e-Learning. The emergence of the indicators that are measuring the qualitative level of e-Learning Systems doesn't solve problems encountered in the instruction process but allow selection of the most adequate solution.

<sup>4</sup> <http://www.1educat.ro/elearning/system/alegerea.html>

<sup>5</sup> <http://www.fpse.ro/>

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