EDUCATION AND CREATIVITY - TRAINING REQUIREMENTS IN THE KNOWLEDGE SOCIETY

MIRELA IONELA ACELEANU[1], **DOINA IACOB**[2], **ANGELA-ELIZA MICU**[2]
[1] ACADEMY OF ECONOMIC STUDIES BUCHAREST, PIAŢA ROMANĂ NO. 6, SECTOR 1, BUCHAREST, ROMANIA
[2] DUNAREA DE JOS UNIVERSITY OF GALATI, STR. DOMNEASCA, NR. 47, GALATI
doina.iacob@ugal.ro, angelaelizamicu@yahoo.com

Abstract:
In the new economy, in the knowledge society there is a shift from the activities involving the skills to manipulate and manage, to the activities involving the development and application of knowledge. Thus, future professions involve achieving a high level of competence, focusing on the initiative, creativity and problem solving. To perform on the market, organizations rely on their human capital, rather than the physical or financial one, the creative and innovative potential of their employees on their ability to develop new knowledge and ideas. In this respect, education becomes part of the process of globalization and economic resource base that can support a long-term competitive advantage.

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REL classification*: 4A, 12C, 16D, 18D*

The new economy there is an amplification of the importance of intellectual capital, reflecting the increasing dependence of an organization of intangible assets. For any organization knowledge is power and profitability, intellectual capital contributes to long-term sustainability of an organization. Extension of intellectual capital in an organization based on *creativity and innovation.*

In literature, the terms of creativity and innovation are sometimes used as equivalent terms. But moral values expressed by these terms are different, creativity referring to the quality and strength of expression of intrinsic creative capacity and innovation in the utility that has a product or service. However, the creativity and the innovation can not be considered independent of each other`s concepts. Technological innovations on the one hand are a means to ensure human development and on the other hand, they are the expression of the human creative potential.

Information, knowledge become the driving force determining the new economy. In this context we are witnessing an expansion of the importance of human capital, intellectual and social development and to enhance the role of creativity as key factors for long-term sustainable development. Third millennium organizations are learning organizations, in which the core competence is the ability to coordinate all the powers.

The Year 2009 was the European Year of Creativity and Innovation, the main purpose being to promote creativity and capacity for innovation at community, national, regional and local levels. This promotion of creativity and innovation covered not only education and culture, but also other policy domains such as enterprise, media, research, social and regional policy and rural development.

Creativity – A Feature Of The Worker In The Knowledge Society

Education and creativity complement each other, the human potential having an increasingly important role in supporting the technological development and development in general. Creativity is not something special for special people, it belongs to everyone, each person possesses creative potential. It is not directly proportional to the instruction level. *"Creativity is both to the rich and poor, to the literate or illiterate people*" (*Our Creative Diversity* – Report of the World Commission on Culture and Development, UNESCO, 1996). That is why the education should be developed and operated by creativity, education being the key component of human capital development.

The scientific and technical progress actively accompanied the entire evolution of human society, but the implications and its effects were never strong and extensive as in the current period. Virtually there is no area of human activity in which it may not find use and involvement. In turn, *economic progress exerts a significant influence on creativity*, because increasing the material resources, human and financial firm may allocate for this purpose, it improves the organizational and institutional conduct needed for this process (Buda, 2004: pp.10-11).

Technical capacity of a computer, of a power plant or of an atomic bomb is, in fact, evidence, of sense or counter - sense, of appreciation the human performance in activities that require division of labor in society, in report to the dominant values of humanity, the criteria that institutional and social shape (Popescu, 2006: pp.68)**.**

The academician N.N. Constantinescu (Constantinescu, 1984: pp.142) appreciated that what changes in the scientific and technical revolution is how the very substance of the work is expressed in the value of the goods. It's about the fact that:

- the scientific work and application of science increased enormously in importance compared to physical work;
- some logical thinking human activities may be transferred to the machine, thus leading to a separation of action given their time and place or to a remote action;
- the transfer of the means of production is so consumed by the labor action directly at the living present production and to that which acts remote in time and space (scientists, researchers, planners, designers, programmers etc);
- it increases very much the mental energy, nervous energy compared to muscle energy.

As a value creater, scientific, intellectual work moves to the first place in conditions that the increase of the level of scientific knowledge makes the very easy job to have a higher level than that which it previously had. *Knowledge is the strongest form of wealth, the product and its creator.*

In the knowledge based economy, *knowledge holders-people become the greatest value of an organization.* Gathering the knowledge, skills, capabilities of individuals working in business, their potential for creativity and innovation, the human capital of the organization based on knowledge is the key to its competitiveness, market positioning, its market value and its survival. To perform on the market, organizations rely on their human capital, rather than on the physical or financial one. In the knowledge economy the focus is on knowledge assimilated in humans. He is the bearer of tacit knowledge. It is expected therefore that the main factor involved in the process of creating value is the tacit knowledge that resides in people (Swart, Kinnie, 2003).

Thus, the typical organization develops, *called knowledge based or intensive - cognitive organizations*. The term "intensive-cognitive" applies to organizations that have knowledge of greater importance than other inputs and human capital predominates over other forms of capital (Starbuck, 1992). In all definitions found in the literature for these organizations, it is emphasized the dominance of human capital.

Thus, Peter Drucker defines the most cognitive organization as one that "it hires higher educated and committed individuals that create market value by applying knowledge to complex and novel applications of its customers". Swart and kinnie also highlight the nature and quality of trained human capital above all terms that define this type of organization, specifically to the knowledge economy.

The society of the third millennium is the society in which *the workers are valued by what they know. Intellectual capital is a combination of intangible assets that make an organization able to work effectively*.

In the new economy, the economic system of production and value creation has shifted increasingly to the use of information and mind. The economic value is generated on behalf of such knowledge and skill to manipulate information and symbols. That is why, *future professions involve achieving a high level of competence, focusing on the initiative, creativity and problem solving,* an important skill to applying and developing new knowledge and ideas.

Analyzing The European Union Eurostat Yearbook 2009 report, we can see the share of students studying in creative and innovative areas, in the total number of students.

Table 1

Students studying creative or innovative subjects in tertiary education

	Total	Arts (%)	Journalism (%)	Life Science (%)	Maths&Stats. (%)	Computing (%)	Engineering (%)	Architecture (%)
EU-27	18.775	3,9	1,6	2,3	1,2	4	8,7	3,7
France	2.201	4,2	1,4	2,3	1,6	2,6	6,5	2,1
Italy	2.029	5,7	3,2	3,8	0,9	1,7	8,9	5,9
Germany	2.289	3,7	1,1	2,6	2,4	5,9	11	3,9
Romania	835	1,6	1,9	2,4	2,3	...	13,6	0,8
Bulgaria	243	2,3	1,5	0,7	0,5	2,2	16,8	2,4

Source: Science, technology, innovation and entrepreneurship: 2009, the year of creativity and innovation, Eurostat Yearbook 2009, http://epp.eurostat.ec.europa.eu/

In general, developed countries are experiencing a balanced sharing of students in creative and innovative areas, with a higher level for the arts, natural sciences, and psychological sciences.

Romania has a high proportion of students studying Math, Statistics and Engineering.

The new economy has witnessed a shift in activities requiring skills to handle and manage the activities involving the development and application of knowledge. They talk more about *the knowledge worker - the worker based on knowledge*.

In the concept of Professor *Michael Miles* of the University of Ottawa, *the knowledge based employee* is the average person who works for a living, but focuses on the development and use of knowledge. It is often a person under the age of 30 years, has education and looks for personal benefits with minimum effort. He is willing to make effort for the work they do as long as he uses cutting-edge technology, and steps you through the evolutionary process that are part of his career." (Miles, 2003: pp.21-23)

The term *knowledge based employee* was used in 1959 by *Peter Druker* in his book "Borders of the future", referring to people working in areas belonging to information technology such as programming, systems analysis, research.

The terms of *domain based on knowledge, knowledge based work and knowledge based worker* are concepts that are not older than 40 years. They were issued around 1960, simultaneously but independently. First term is based on the knowledge

worker and was used by *Fritz Machlup*, an economist at Princeton, then by *Peter Drucker*. These terms are expanding their scope and *symbolic analysts*, ie to those workers who manipulate symbols rather than machines. In coming years these workers will have, according to some estimates, almost two-fifths of the labor in rich countries. (Suciu, 2004: pp.616)

Knowledge based workers are those whose jobs require a good education, a high school level, are creative and adaptable to changes. Nowadays, standards for knowledge and academic training to employees and managers are very high, being far superior to those of the past. The ability of employees to design strategic solutions, to apply specialized knowledge and collaborate in terms of contextual chaotic demands is *new capability essential to organizations*. This new form of organization designed two coordinates (Miles, 2003: pp.23):

- designing organizational structure that focuses on knowledge skills of employees based on achieving company`s goals,
- shaping culture and behavior of employees within the meaning of involvement and dedication required by the new type of organization.

As Robert B. Reich considers that in an organization the most important assets "*are clever and talented people and not the property that can be bought or sold "*. Even if the past achievements resulted in goods that can be sold (patents, copyrights, brands) and on which *„it can be claimed the legal right of ownership "*, but*" future ideas can not be taken possession of or sold. Whatever conceptual potential value of these assets, their owners will always be in the mind of the real people"*. Thus *„Such goods cannot be exctracted from their heads without their consent or their commitment and can not be obtained by order "*. Moreover, even if *„Their future ideas and dedication can be bought, but if they are not happy with their commitment it is unlikely that they will fully demonstrate ingenuity and creativity".*

Society as a whole is facing large challenges in terms of changing *the way of working and work organization.* The New Economy is characterized by increased incorporation of knowledge into new products and services, increasing the importance of learning and innovation, globalization and sustainable development. Enormous amounts of information change the functioning of markets, making possible restructuring and the emergence of new opportunities to create value by exploiting the available information. New digital technologies make access, storage and transmission of information increasingly easier and more accessible.

With technical and scientific revolution, work efficiency changes continuously, changing the conditions under which it is conducted. There is a simplification of the executive-motor link, physical and mechanical functions and energy in the structure and dynamics of the process of work, increased demands from the sensory area, increasing the share of personality factors (motivations, aspirations, interests, emotion), increasing the share of labor complex, skilled, it emphasizes the trend of simultaneous execution of operations, changes the relationship between physical and intellectual labor, increases the request of higher intellectual functions (creativity, reasoning, deduction, analysis, capacity to make decisions, ability to anticipate).

It also increases the element of creativity at work, it emphasizes the tendency of formation of work teams, there is a process of intelecting the work by increasing the quantity and quality of literacy training. (Manolescu, 2003: pp. 93-97)

In *the new economy*, " which abounds in unidentified problems, solutions and means to address still not addressed unknown", it is not enough to conquer the areas of knowledge, access to these areas being made increasingly easier through the Internet, *but it is more precious to use this knowledge effectively and creativity.* In the new global economy, even the most impressive from an prestigious organization is vulnerable to international competition, especially if it involves routines easily imitated. "The only

advantage that can be put in value in such a competition is the ability to resolve, identify and combine new problems." (Reich, 1996: pp. 149-160).

As a result of globalization and the intensification of international competition the demand for workers with low qualifications decreases, new jobs involving high performance, flexibility, focusing on qualities such as: high level of preparation, creativity, openness to change, initiative. People will have to possess more knowledge, skills and work in multidisciplinary teams. Currently, more people are working in areas where information is created. In the future this share will increase. Widespread use of machinery and equipment will make even the workers who work in basic areas to be increasingly better prepared. Moreover, as more and more work is conducted by the intellectual, holding and handling information is an essential quality for any employee.

If the world has always built wealth of resources from the earth`s resources, mankind now faces a new technological revolution thanks to which the traditional factories leave the place to the "creative society" and the robot comes to replace almost all labor; *the hand* but in no way the brain and the thinking. Which leads to the conclusion that the human spirit, creativity and thinking are a source of wealth, the source of the development. (Servan, 1990: pp.6)

Education - The Primary Requirement Of The Knowledge Society

The role of education institutions is changing in a world where information is accessible by modern informational and communicational systems. Education becomes part of the process of globalization and economic resource base that can support a long-term competitive advantage.

Work has been defined as a process between man and nature by which man makes, regulates and controls the exchange of matter between him and nature within certain social relationships. Acting on nature, people act at the same time, and on them alone, while developing skills to work, enriching their knowledge and experiences and then use them in the process of creating tangible and intangible goods.

During modern history, all countries have focused on economic development. The contemporary world returns to the real goal of the economics, **the man**, the man's wealth and security, both individually and socially. Currently, it is required a new way of development that integrates the human dimension from another perspective - that of the complexity and diversity, in which an important part is education.

Nowadays, the economic analysis of education shall also further highlight the link between educational investment in human capital and the economic growth. The human capital is the amount of potential that people have to make an income. It includes the native capabilities and talent, as well as education and acquired skills. Thus, *education* is the most slowly, but the most powerful part of growth.

Education has long been perceived as a system where young people came to the form and returned to society after a decade, two of theoretical assimilation of information necessary for the productive work. Regardless of how much we claim to humanize the educational process by assigning it several emotional, moral or aesthetic dimensions, the reality is that change is difficult to be managed and the fact that education remains a system with one input and one output, effective as far as statistics, costs, infrastructure and personnel used show us this thing. (Matei, Iancu: 2002: pp.2)

In modern society, the role and functions of education form the subject of intense debate. Every time, experience has shown, however, that in highly educated areas, with a high level of training, the future requirements are faster and more clearly outlined and possibilities of carrying them out.

In this respect, some authors consider that: "regarding *the investment to be made in education and training people in the future, the reward is so great that, in balance*

with the effort, highlights the highest economic efficiency but also the social and human one that exists in our world." (Popescu, 1999: pp.121)

Education becomes essential for any economy, on the one hand because, through education, there are diverse relations between man and society, the man having the ability to contribute as a member of society with something to counterbalance what he receives as a result of his coexistence with other individuals.

In the new economy, **the relationship between work and knowledge** has become the focus point of the analysis, because only the capital accumulation can not ensure the maintenance of sustainable economic growth, due to the decreasing yields specific to this production factor. Thus, the investment in people is the most important investment of the organizations and society, whose results become more evident over time because ideas, knowledge in general can be used and reused indefinitely, it is assessed on its extent of use, thus helping to propel of the growth process.

Regarding the limitation or no limitation of the new production factor, knowledge, in literature there are noted two main ideas:

- one of them refers to knowledge as an inexhaustible and unlimited resource;
- and the other one emphasizes the limitation of knowledge, in terms of the human capacity to acquire knowledge. On the other hand to acquire knowledge, man also needs time. That is why man should not and can not retain all the information he needs, but to know from where he can get the information and in particular to know how to use it.

There may be many **general social benefits** for the less educated population, because there is an **increase in productivity** and the more time is allocated for the education of a person, the more that person becomes adaptable to new challenges. (Suciu, 2004: pp. 584; 592; 612)

The investment in people can bring people not only the best technological knowledge, but by training the potential innovators, leads to an advance of knowledge and thus contributes to the economic growth.

Another reason in support the increasing of the level of education is ***gaining greater stability in the labor market, which reduces the risk of unemployment*.**

Educated people have a greater participation rate in the labor market and their active life is generally superior to those people with lower education.

Among the indicators by which it is examined **the role and the place of the human capital in the moment of the development and strengthening of the knowledge society, thus the new economy and of the development of new labor markets**, "Lisbon Score" has an important role.

To assess the progress made by EU Member States in implementing the Lisbon Agenda it is used the indicator called **Lisbon Score.** This indicator aims to eight dimensions considered to be crucial in observing the national competitiveness of a country:

- creating an information society for all Europeans
- developing a European area for innovation, research and development
- liberalization
- building an industry-network
- creation of efficient financial services
- amplification of social inclusion
- sustainable development.

Lisbon Score highlights the performance of each economy on a scale of 1 to 7. The table below shows the ranking and scores obtained by the 27 EU Member States in 2008, and their progression compared with 2006.

Table 2

Lisbon Score in 2008

Country	Position in 2008	Lisbon Score	Position in 2006
Sweden	1	5,71	3
Denmark	2	5,64	1
Finland	3	5,64	2
Netherlands	4	5,44	4
Austria	5	5,34	7
Germany	6	5,34	5
Luxembourg	7	5,22	8
France	8	5,12	9
United Kingdom	9	5,12	6
Belgium	10	5,11	10
Ireland	11	5,03	11
Estonia	12	5,02	12
Cyprus	13	4,68	21
Portugal	14	4,61	13
Slovenia	15	4,58	16
Czech Republic	16	4,53	14
Spain	17	4,52	15
Malta	18	4,43	19
Lithuania	19	4,39	20
Slovakia	20	4,34	18
Latvia	21	4,25	22
Hungary	22	4,18	17
Greece	23	4,10	23
Italy	24	4,05	24
Romania	25	3,84	26
Poland	26	3,76	25
Bulgaria	27	3,68	27
EU Media		**4,73**	
United States		**5,44**	
East Asia		**5,26**	

Source: www.weforum.org The Lisbon Review 2008

According to the table, it is noted that the Nordic countries occupy the top three positions, of which Sweden takes first place in 2008, in front of Denmark and Finland. Top ten countries remain constant, even if there was a movement between them from one place to another. It is noted that Austria, Luxembourg and France have climbed slightly in the rankings at number 5, 7 and 8. In contrast to these lies Germany and the UK, which have descended on the place 6 and place 9. Despite the current crisis, Ireland, Spain and Portugal continue a favorable trend, placing themselves in the first half of the ranking. Greece and Italy continue to rotate between them (23 and 24) in the bottom of the ranking, being located next to the least competitive countries.

The most significant upward trend is recorded in Cyprus, which climbed eight places compared to 2006 due to the efforts made in all areas, especially in developing the information society, improving the social inclusion and sustainable development. Other five countries climb a place, namely Slovenia, Malta, Lithuania, Latvia and Romania, demonstrating that they have moved in the right direction in some sectors. The largest decline is noted in the case of Hungary, five places down, a trend that can be justified by a weak performance in the financial services. Also, the Czech Republic and Slovakia drop by two places, and Poland falls to one place, being brought forward by Romania, which is the penultimate country in the ranking. Thus, Romania's position in relation to the European Union shows the necessity of our country to continue the efforts to approach EU. You should not overlook the fact that, even if by EU integration we have access to new technologies; it will not be enough for the development of our country if we do not take into account the application of these technologies.

Increasing the international competition requires the workers a better training and capacity to adapt to change. The global economic competitiveness is increasingly based on knowledge and skills. Thus the education and learning *„learning by doing"* lead to greater labor productivity, which corresponds to an increase in the stock of human capital. On the other hand, ***the productive activities are increasingly based on innovation***, which consists of introducing "the new" and its implementation, or, in other words, according to The European Commission, "ability to assimilate and transform new knowledge to improve the productivity and create new products and services". The innovation process is the only hope for ensuring the accelerated speed of technological changes in production processes imposed by social and economic changes taking place throughout the world and it is also the premise of the economic growth and development.

In conclusion, we can say that:

- living in a global economy means both opportunities for successful people and disadvantages for less prepared individuals in facing the rapidly changes;
- higher education institutions have an increasingly role in creating competences by integrating practice into theory through **educational strategies**;
- learned competences through formal and informal education allows individuals to better understand and face the changes of the new economy and modern society;

Thus, to cope with the labor market changes and conditions imposed by the EU membership, Romania should pay more attention to the educational process. This means pursuing some directions of modernization and efficiency of the educational process, particularly through the implementation of viable projects that will benefit the entire society and a better funding of this area, which will bring secure future benefit.

REFERENCES

1. Buda, Steluţa (2004) „Creativity - the basic factor of the economic development ", in Economy Magazine *XXI*, An II, Nr. 1, Trim.I
2. Constantinescu, N. N. (1984) „Labor value theory and the contemporary world ", Political Publishing House, Bucharest
3. Galbraith, John Kenneth (1997) „Perfect society "Eurosong & Book Publishing House
4. Manolescu, Aurel (2003) „Human Resources Management, Fourth Edition, Economic Publishing House, Bucharest
5. Matei, Ani; Iancu, Diana (2002) „New paradigm for education and training ", Research Report, Bucharest
6. Miles, Michael (2003) „Knowledge-based enterprise ", in Employment Relationships Magazine, No. 3, Economic Tribune Publishing House, Bucharest