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**DEVELOPMENT OF ECONOMIC THINKING OF STUDENTS  
FROM MIDDLE SCHOOL THROUGH TECHNOLOGICAL  
EDUCATION**

Elena Manolescu (a)\*, Claudiu-Mihail Manolescu (b)

\* Corresponding author

(a) Technical University of Civil Engineering of Bucharest, Lacul Tei Bvd., no. 122 - 124, Bucharest, 020396,  
Romania, ileana.manolescu@gmail.com

(b) Bucharest Academy of Economic Studies, 6 Română Square, Bucharest, 010374, Romania, claudiu.manolescu@gmail.com

**Abstract**

In our days, technological progress knows an unprecedented growth rate both in terms of the pace of achievement, and of how it influences the needs and choices of each individual and society as a whole. Thus, the individual is forced to adapt to these changes which affect his life economically, professionally and socially. This paper constitutes a research on how some economic issues are treated in the "Technological Education" manuals for gymnasium (fifth to eighth grade) available in school years 2005 – 2015, in Romania. In the same time we try to show the impact of these economic aspects on the economic thinking of the youth future society. We highlighted the transdisciplinary nature of the Technological Education and the link between: economic, technological and social development areas. It is also emphasized the education importance in general as well as the technology education in particular, in the process of permanent evolution and transformation of the three areas mentioned above, areas that interrelat and influence each other.

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## 1. Introduction

The aim of education is to create responsible and economically independent generations. Education, like any human activity that is the offspring of an interest, has always had economic scopes with a special economic importance for individuals, communities and countries.



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The governments of nowadays are aware that an educated workforce is essential for the economic prosperity and therefore invest more and more in education. Due to the fact that the technological development occurs at accelerated rhythms, the way information is kept and shared has made the access to knowledge and technology a crucial must for those willing to be a part of the global economy (Toma, 2012). Taking into account the changes in the work field it is absolutely imperative to answer the following question: “What kind of education do the nowadays students need in order to gain financial independence and support the future generations of pensioners?”

A great number of the jobs for which the present education systems have been created are rapidly disappearing. On the same time, new labour forms are in the making, especially as a result of the transformations generated by digital technologies. It is almost impossible to predict what kind of jobs the nowadays students will hold five, ten or fifteen years from now (assuming that they will have jobs) (Robinson & Aronica, 2015, p. 86-87).

If we analyse the way the situation has evolved within the IT (Information Technology) domain, we can conclude that an important industry with massive global implications has developed, vertically and horizontally in present economy and society. This field has reached the stage from which it influences and transforms lives, technologies and industries and the future seems to grant to this domain one of the most important roles in regard with the sustainable economic and social development mankind will need. Software and hardware, internet, servers, computers, tablets, phones, monitors and lately TV sets represent a huge range of IT goods used by both modern people at work, at school, at home during leisure time, at shopping, on vacation and public administrations all over the world. This very rapid IT evolution was not foreseen 70 years ago when the first electronic digital operational computer was manufactured in the USA in 1946. In Romania, in 2015, The Information Technology and Communications (IT & C) sector was the second engine of economic growth after the trade sector which was the first (Pâslaru, 2015).

Tourism is another example of an economic sector that has underwent a tremendous development at global level. Nowadays it represents 10% of the worlds' GDP, 7% of the world export volume, and provides one in eleven jobs (World Tourism Organization [UNWTO], 2016, p. 3). In Romania this domain represents a strong factor for economic growth and development and therefore programs and government strategies encouraging it should be implemented.

Although providing a better life quality and making life easier for an increasing number of people, technology development leads to the disappearance of numerous jobs such as mailman, clockmaker, shoemaker, skinner and even actor as long as there are movies with characters invented and brought to life by computers. On the same time the “online shopping” concept allows people to buy anything while operating a computer, tablet or smartphone (on the Internet) – music, books, interior decorations, jewels, clothing, all sorts of electronics, furniture, food etc. Under these circumstances a person with selling skills becomes of no interest and importance for a potential employer and the courier services that intermediate between the seller and final client become very important. All these are just parts of the challenges posed by the transformations the modern world is going through.

The Internet has created a reality anticipated by few analysts or economists: the one in which the employee does not need a company as long as he is able to use his skills in order to meet the client's demands. Taking into account this context and returning to the question “What kind of education do the

nowadays students need and how do we prepare them to become accomplished adults?" we can conclude that in the new economy millions of people could pass easily from the know-how delivering employee to the entrepreneur position. Who are those able to take this step? Those capable of "selling" their knowledge to the consumers without being forced to work after a schedule enforced by an employer. These people are editors, consultants, spokespersons, coaches, trainers, online writers, creative, educated, visionary persons. They will held the supremacy in this economy of the future. (Dimitriu, 2011).

Among the socio-human sciences Economics has passed as the philosophy of wordly things as suggestively R.L. Heilbroner called it. He called the greatest economists of the times wordly philosophers because they strove to encompass in a philosophical vision the wordliest human occupation – the strife for material goods (Heilbroner, 1994) required for covering human needs, desires and aspirations. In his "An Essay of the Nature and Significance of Economic Science" Robbins (1932) wrote that Economics is the science that studies human behaviour as a relation between human objectives and limited means with alternative usage. American economist and Nobel laureate for economy Samuelson gives Economics the same understanding: Economics is the study of how men and society choose, with or without the use of money, to employ scarce productive resources which could have alternative uses, to produce various commodities over time and distribute them for consumption now and in the future amongst various people and groups of society (Samuelson & Nordhaus, 1985). Atkinson (1982) wrote that Economics studies how limited resources are allocated in society for meeting alternative needs. In his view, Economics is the study of the way people choose limited resources depending on their needs and make these choices.

As a consequence, economics is that social science that studies the way in which rare, limited resources should be judiciously allocated in order to fully satisfy the (virtually unlimited) human needs / demands that are in permanent multiplication and diversification. The central point in studying economics is to find highly efficient solutions aimed at balancing the tensions between the needs and the resources to fulfil those needs.

The human needs / demands are on an accelerated raise and permanently multiplying and diversifying being virtually unlimited. The resources that can cover these needs / demands are virtually limited. They are on an ascending trend also due to science and technology advancement. Their ascending trend is lower than the ascending trend of the needs thus there is a tension between needs and resources. Therefore the economic activity is the human activity that uses primary resources (nature and labor) and derivate resources (capital) for producing goods and services to cover the human needs / desires. The rational use of resources implies the observance of the economic efficiency principle: we compare the effect (the expected result of the undertaken activity) with the effort (expenditure, resource usage) in order to achieve a greater effect with a smaller effort.

In a market economy the way economic efficiency is approached becomes crucial for the competitiveness level, development rhythm and economic growth.

The economic growth achieved by an economic entity (household, company, branch of national economy or national economy) is the result of the evolution of income obtained in a certain period of time. At macroeconomic level and not only at this level it is desirable for the new created value connected with final consumption (GDP) to be on a permanent ascending trend. If there is a descending trend, the

national economy would go through a time with limited economic activities and negative economic and social inferences.

Economic growth and stability are necessary but do not suffice for economic development (Altăr & Armeanu, 2014). To make this aspect clear we must underline the economic growth is a quantitative-qualitative concept in regard with what economic growth implies.

As economic growth is measured at national level by GDP growth rate and at company level by turnover, economic growth implies a long term dynamic balance, sustainable growth based on the optimum use of all available resources, permanent development of innovative potential and human capital, powerful institutions to favour economic development and fair allocation of income and national wealth.

“Technological Education” curriculum debates the categories of needs and resources necessary for the production of economic goods and services destined to cover individual and social needs (Toma, 2006). We must notice that this discipline curriculum grants special importance to a sustainable and durable economy in which individual and social needs are met. This is proof of a serious concern in regard with the ecological part of every economic activity. This concern is extremely actual and an absolute necessity for every present and future human activity. Among the core objectives of the curriculum there are: detecting the pollution sources and involving the young students in debates or activities related to preventing and fighting pollution (Lichiardopol, Neacșu, & Stoicescu, 2005), when, for example, are discussed certain aspects such as: environment preservation; evolution of territorial planning; urban planning and building lay out; space arrangement; utilities networks and rules for travelling by public transport; dwelling types and ambient comfort; different types of materials used for product manufacturing. Through Technological education learners have to be encouraged to deal with the problems in their real or virtual environment. Each Technological education lesson in gymnasium has to be authentic, in the sense that what the student is learning has meaning to him or her as an individual, or as a member of a different formal or informal groups (Toma & Baciu, 2015).

## **2. Aspects of the Curriculum of the Discipline “Technological Education” for Gymnasium Education (Fifth to Eighth Grade)**

According to the National Curriculum for compulsory education, Technological Education is a compulsory discipline, component of the curriculum area “Technologies” that takes into consideration the following aspects:

1. The positive experience the Romanian education system has accumulated since Technological Education has been taught in gymnasium (fifth to eighth grade);

2. The compatibility between the Romanian curriculum and those of the secondary education systems in EU and other countries with advanced educational systems;

3. A vertical and horizontal coherency between the initiation in technological processes and development of practical abilities by correlating the skills provided by the disciplines “Practical Abilities” and “Technological Education” taught in the primary education system with the skills provided by other objects of study in the compulsory education.

The curriculum focuses on education for quality. Studying the product and services quality and educating the consumer and producer allow the development of an attitude aiming at values connected

with quality. The “Technological Education” curriculum focuses also on developing students’ entrepreneurial skills and initiative spirit, both very important for the good understanding and adjusting to the present socio-economic system.

### **3. Research Aspects**

This research is based on the content analysis of the “Technological Education” manuals for gymnasium (fifth to eighth grade) available in school years 2005 – 2015, in Romania.

#### **3.1 Research Observations**

After surveying the above mentioned curricular documents we can conclude that all modules teach the students, at their level of understanding, the following economic elements:

- a. Nature of the individual and social human needs / desires and specifics of their evolution;
- b. Nature of the resources able to fulfil these needs and specifics of their evolution;
- c. Significance of the market economy;
- d. Significance of the “economic efficiency” concept;
- e. Rational producer behavior;
- f. Rational consumer behavior;
- g. Significance of production costs;
- h. Significance of prices for goods and services;
- i. Significance of profit;
- j. Significance and importance of the relationship between quality and price during transactions;
- k. Significance of production technology process;
- l. Production process;
- m. Factors of production (labor, nature, capital);
- n. Features of labor market;
- o. Interrelation between human resources quality and economic and social development level;
- p. Pollution – effect of production;
- q. Significance and importance of sustainable economic development.

### **4. Conclusions**

As history of economics has proved, the education and innovative systems are the most powerful engines for long term economic development.

We consider that there is very important to invest in technologies and people in order to modernize the technical capital and specialize the human capital. In this way the competitiveness of the national economy can place itself on a permanent ascending trend. The raise in competitiveness is essential for the economic growth and might represent the core vector of the development of the Romanian economy. This raise can be achieved in a first instance by the correct allotment of the public and private funds needed for the development of the human capital and research-development-innovation sectors (Manolescu, 2015).

The challenges posed to a modern society subjected to a permanent change clearly show the educational system is compelled to adapt to the dynamics of the new economic and social needs. The

fulfilment of these needs requires creative and trained people able to understand what is going on in their environment and predict the future trends of the socio-economic system. From this point of view we can say that Technological Education for the fifth-eighth grade has fulfilled these conditions since it appeared as an independent subject of study having a strong interdisciplinary characteristic and contributing to the students' general knowledge (Toma, 2012). On the same time, the theoretical part of this educational discipline represents only a starting point for providing information during the practical-applicative projects the students undertake under teachers' guiding.

In the end we can conclude the Technological Education curriculum focuses on providing the students with entrepreneurial skills and initiative spirit. We consider these aspects are very important for their good understanding of and adjustment to the present socio-economic system. Having profound interdisciplinary and practical characteristics, Technological Education contributes to the general knowledge of the students. By attending Technological Education curriculum, the students get help in understanding the changes the highly technologized and computerized present economy and society are going through (Toma, 2004). On the same time, the students are shown the direction in which the whole socio-economic system converges to. Once being aware of this trend, the students will be able to make their own choices that enable them to integrate as independent adults into the system.

## References

- Altăr, M. & Armeanu, D. (2014, January 13), Creșterea economică este necesară dar nu și suficientă pentru a asigura dezvoltare economică. *Ziarul Financiar*. Retrieved from: <http://www.zf.ro/>
- Atkinson, L. C. (1982), *Economics*, Richard D. Irwin, Inc, Homewood. Illinois.
- Dimitriu, O. (2011, July 25), Joburile traditionale, pe moarte. Vezi ce meserii se caută în Noua Economie, *Business24*. Retrieved from: <http://www.business24.ro/>
- Heilbroner, L. R. (1994), *Filozofii lucrurilor pământești: viețile, epocile și ideile marilor economiști*. București, Ed. Humanitas.
- Lichiardopol, G., Neacșu, S., Stoicescu V. (2005), *Educație tehnologică: clasele V-VIII: ghidul profesorului*. București, Ed. Aramis Print.
- Pâslaru, S. (2015, December 7), IT&C a devenit a doua locomotivă a creșterii economice în 2015, după comerț. Industria a rămas în urmă, *Ziarul Financiar*. Retrieved from: <http://www.zf.ro/>
- Robbins, L. C. (1932), *An essay on the nature and significance of economic science*. London, Macmillan & Co.Ltd.
- Robinson, K., Aronica, L. (2015), *Școli creative: revoluția de la baza învățământului* (E. Vasiliu, Trad.). București, Ed. Publica.
- Samuelson, P. A., Nordhaus, W.D. (1985), *Economics* (13<sup>th</sup> ed.). McGraw-Hill Book Company.
- Toma, S., Baciu, I. (2015) Interactive ITC Applications for Technological Education. *Proceedings of The 10th International Conference on Virtual Learning. Virtual Learning – Virtual Reality. Energy Module* (pp. 406 – 413). Timișoara, Bucharest University Press.
- Toma, S., (2012). Educația Tehnologică – Identitate și Legitimare, în rev. „Arotem”, Nr.3 (pp.11-17). București, Ed. Impuls. Retrieved from <http://edtecho.info/>
- Toma, S., (2006), Changelles Facing Technological Education. *The 2nd International Conference EDU-WORLD 2006: Education Facing Contemporary World Issues*”, 3, (pp. 20-25). Ed. Universitatea Pitești.
- Toma, S., (2004), Technological Education in the Knowledge Society, *The First International Conference EDU-WORLD 2004: Education Facing The Contemporary World Problems*. Ed. Universitatea Pitești.
- World Tourism Organization. (2016). *UNWTO tourism highlights*. Retrieved from: <http://www.e-unwto.org/.doi:book/10.18111/9789284418145>