

**CREATIVITY, EDUCATION AND QUALITY FOR SUSTAINABLE  
DEVELOPMENT, THE REAL SUPPORT FOR THE INNOVATIVE  
CLUSTER'S EUROPEAN NETWORK**

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**SUMMARY**

*The objective of this scientific paper is to understand the contribution of the universities, high schools, R&D organizations, smart communities and professional training providers to the social inclusion quality assurance system, innovation, firm performance, regional and social development, through the new innovative and creative regional clusters. Education for sustainable development (ESD) corroborates with the government's policy of providing a world class quality education at all levels. The use of cluster building activities as a means of supporting regional economic development is widespread. However, this scientific study highlights the emerging role of creativity and education in cluster building particularly as a means of facilitating knowledge transfer with small and medium firms. Finally, a fundamental component of a networking/cluster quality project management, concerns the establishment of cooperative relations between the public and the private sector. The aim of such relations is to promote the emergence of a coordinated industrial policy in economic development, and identify, develop and implement coherent actions to support the regional entrepreneurial effort.*

**Keywords:** Quality, creativity, education, sustainable development, cluster, innovation.

**1. INTRODUCTION**

Like the sun, the biodiversity and creativity are also defining resources of our country. The creative economy has become a priority sector and a strategic goal for Europe of 2020. ESD is a partnership employing multiple industries and stakeholders - including the media and the private sector - which uses all forms and methods of public awareness, continuous education and training to promote sustainable development.

„Creative Clusters" are early indicators of a community that is creative - committed to growing an economy and society based on the importance of education, art and culture - or that is developing, training and launch a new economic "architecture ". The case studies also show that a creative clusters agglomeration is not sufficient to lead to the appearance of efficient teams creatively and economically. The crucial component is the "connectivity" among companies within a group, business partners, employees and external sources of innovation, or with companies from other sectors that can act both as clients and as sources of ideas and knowledge.

These three layers of connectivity are supported by a dense network of informal interactions and through creating new networks. [3] The conclusion to be drawn is obvious. We need to invest - proactive investing - in a creative economy to secure the future of our country, and we must do this in three main ways: first, we must invest in the region / area known, second in our people (education is the key to our success formula), and third, we must make these investments together as a multi-sectoral coalition creation (independent entrepreneurs, NGOs, organizations belonging to the central / local government, schools, etc.).

Two elements are considered important in this respect: formation of converging creative sectors and establish interdisciplinary regional management teams.

## **2. CREATIVITY, INNOVATION AND EDUCATION FOR SUSTAINABLE DEVELOPMENT, THE "ENGINE" OF COMMUNITY ECONOMIC DEVELOPMENT**

Creativity (term introduced by G. Allport in 1937) is the ability to identify new links among elements (objects, events, laws) apparently unrelated, that can be seen as a state characteristic of living matter highly organized, able to reach a specific information processing.

In this way we define creativity as the ability to "crystallize" socio cultural information available in terms of time or as a resonance updated information with the present communication time. Creativity involves taking a creative effort that occurs when matching - resonance - "of the possible" represented momentarily by creator, with the background material reality of that moment. A very important element in the assessment process of creativity is the value of the products. The value refers both to the intrinsic qualities of the product, idea and to its social value. There are more forms of creativity, according to the plan in which the creative activity (individual, collective or social) works and to the direct content of creativity (technical, scientific, artistic, organizational, political, etc.).

Depending on the views of the authors, creativity was defined and classified in various ways:

- Creativity is individual capability to produce new and feasible ideas, to combine and rearrange various elements (B. Demory);
- Creativity is the ability to use imagination to modify an existing point of view, and find new, innovative solutions (A.F. Osborn);
- Thinking creatively is an operational technique through which intelligence uses experience in a particular purpose (E. de Bono);
- Creativity with the letter "C" ("Capital C"). This means bringing into existence something genuinely new that receives social validation and is quite valuable to be added to the culture;
- Creativity with the letter "small c" / personal is specific to the individual. It involves ideas or new products for the person, but only for the person;
- "P" creativity (Psychology) is the sense of creativity for which the idea is new for the person no matter how many other people had the idea;
- "H" creativity (History) refers to ideas that are new in the whole context of the of human history;

- "Sculpted" creativity is a specific area and usually occurs at the average age or extended maturity. It is a function of distilled experience, of wisdom and judgment of an individual in a research field over a long period of time;[2]

A creative idea is characterized by the following features: different, atypical, made differently than usual, very suitable for that purpose and brilliant. Innovation (scientific and technologic) is the transformation of an idea into a marketable product, new or improved, or a business, operational process in industry or commerce, or in a new social method.

Stages of an innovation process (referred to in Table 1) are:

- Creativity - the ability to identify new connections among components (objects, events, laws), apparently unconnected;
- Innovative activities - represent all scientific, technological, organizational, financial and commercial steps, which conduct or intend to conduct to the implementation of innovations. Some innovation activities are themselves innovative; others are not new activities but are necessary for the implementation of innovations; the ability of technical convergence - easiness to introduce a new product in the industrial process;
- Entrepreneurship - ability to get success on the market with the new creation;
- The invention - is related to a process of knowledge, which is reflected in technical elements or in technology. Its success resides in its good functioning;
- Innovation - means to introduce innovation in social practice;

Innovation - as defined in the "Guidelines for Collecting and Interpreting Innovation Data"

Oslo Manual, 2005 edition, Eurostat / OECD, is "an activity that results in a product (good or service), or a new or significantly improved process, a new marketing method or a new organizational method in business practices, in workplace organization or in external relations. Innovation is based on the results of new technologies, new combinations of existing technology or on the use of other knowledge acquired by the enterprise ". Creativity is the result of the combination of three main shaping forces: organizations that selects some of the variations produced by individuals, those deemed worthy of preservation, a symbolic field incorporating marked variations and transmit them to future generations, and, finally, the person who, after familiarizing with the domain, will produce major changes in it. According to systems theory, these three subsystems - individual - organization - field - are seen as connected by circular causality (referred to in Fig. 1). [2] Each subsystem is affecting the other, being in turn affected by another one. In this situation, creativity cannot be located within the individual or within any of the subsystems. The inter-relations system is greater than the sum of components (individual-firm-field), so subsystems cannot be studied separately, as they cannot be isolated from one another.

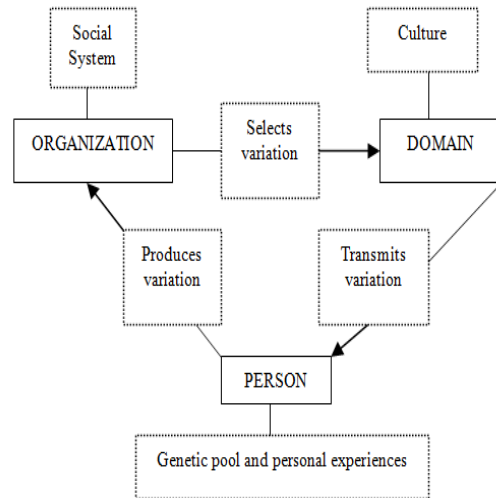


Fig. 1. Circular causal systems in creativity |

Table 1. Stages of an innovation process

Creativity	Refining the idea	Fezability	Innovative activity	Entrepreneurship
(generating new ideas) The volume of ideas is sufficient?	Is the idea consistent with the business identity? Is the idea a sustainable solution to environmental problems of the organization?	Applying the idea is justified by considerations: green; tehcnological; marketing; economic; financial. regarding health and safety at work	Detailing programs: implementation; production; selling; service; recovery; reuse; reconditioning ; mandatory recycling.	Find and adopt best integrated smart solutions for a high quality sustainable development process.
Sources of ideas	Results	Problems	Result	Results
Imagination; Analysis; Ecological observations on: users; environment; various policies used by third parties	Changing market flows offers; Changing paradigm of product quality.	Change indicators; Tangible/ intangible benefits; Description of feasible alternatives; Technical solutions.	A new product: new; better; faster; more aesthetic; more economical; cheaper; safer; more "green".	Increased professional mobility; Encouraging innovation and creativity; Increasing the number of SMEs and hence the number of jobs.

Application: Measuring the process of creativity and the chances of industrial transposition of an idea. Based on the marks awarded to the answers of the questions in Table 2, to plot the value of the idea in the creativity - innovation space (referred in Fig. 2).

Table2. Measuring the process of creativity and the chances of industrial transposition of an idea

Creativity		
Question	Answer	Note
Is the idea original?	Yes/No	
Is it simple?		
Does it lead to achieving a sustainable product?		
Does it generate other ideas, initiatives, questions?		
Does it generate added value?		
Does it generate sustainable consumption?		

Attributed mark	Idea / Activity
1	Unsatisfactory
2	With little chance
3	With average chance
4	With big chances
5	With very big chances

Only proper education can give people the op issues and ethics, values and attitudes, ski development. To achieve this, education mus: characteristics, but also those related to soci effective, education must be dynamic and be in However, many people do not understand the environment because they have insufficient thinking systemically, so they cannot use it perspectives. Human beings and their environ: interaction in which human activities have an history.[6]

Global changes in the environment require nature. This transformation, called global c: understood only if the Earth is conceived as

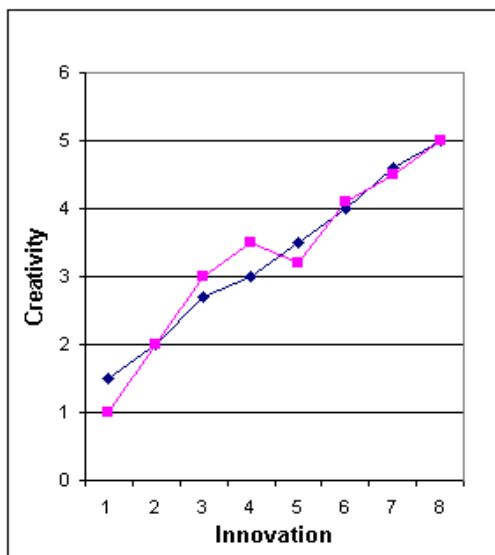


Figure 2. The creativity-innovation space

individual components are interconnected, affecting the entire planet. Human intervention in this system is manifested by depletion of raw materials, changes on a large scale of natural structures, highlighting critical issues on environmental assets. The survey of the Earth system requires a holistic and systemic approach. At this stage we summarize and highlight some relevant guidance on education for sustainable development, ESD [1]: ESD will be possible through education itself because education transmits values and attitudes; Human and environmental systems are systemic approaches that reveal diversity in their relationship; they should be integrated in all disciplines, mainly through an interdisciplinary approach; The Earth is a unique system that must have an integrative holistic approach.

### **3. CREATIVE CLUSTERS, AS A RESULT OF INTELLIGENT COMMUNITY ACTIVITIES.**

The European Commission adopted a Memorandum for life-long learning that was followed by a series of programmatic documents to fix concrete steps that Member States have to follow to achieve the established indicators for 2020 agenda.

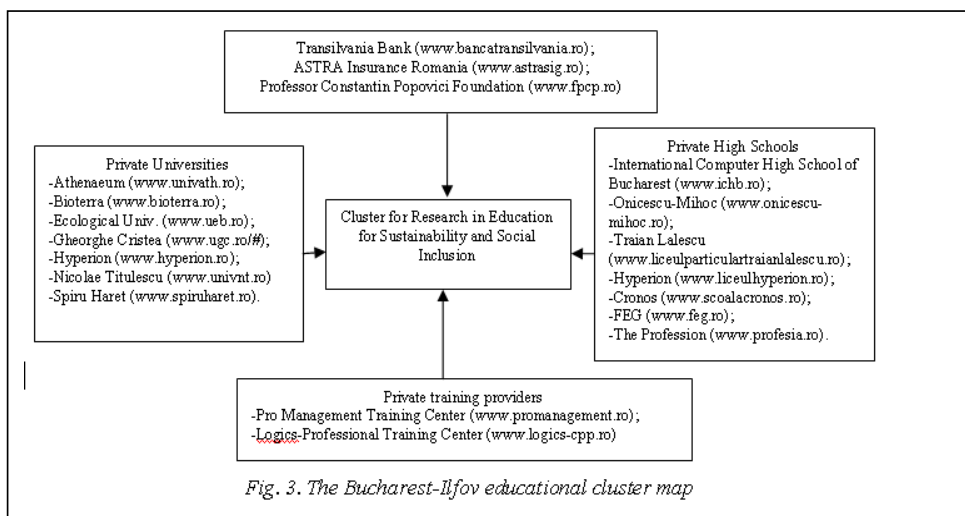
Europe has to turn ideas into new products and services. To reach this level, Europe first needs to produce ideas. The main problem is the geographical focus (referred to in Fig.3) of the processes generating ideas (innovation / creativity), in this case it is about opportunities in the Bucharest-Ilfov region. The creativity value, knowledge implicitly, is determined by the connections between infrastructure / resources and creative/smart communities. [5]

New themes on education and innovation, promoted by European clusters in the context of smart sustainable integrated development, are: Green jobs – social inclusion; Innovation and risk-taking necessary to transform sustainability education; Cluster for Research in Education for Sustainability and Social Inclusion (referred in Fig.3); Green and Sustainability Standards for Career Clusters; Sustainability Team & Operations Cluster Group; Green/Sustainability Knowledge & Skills statements; Education & Training for Sustainable Development; Cluster Hub for Interdisciplinary Education in Environmental Sustainability; The Education Sub-Cluster; Cluster Fellowships; Education about green practices and consumption.

Many countries have recognized that Creative Clusters represent a good investment for future economic growth, and are aligning government support to stimulate this growth, gain global prominence and attract future investment and talent.

### **4. CONCLUSIONS AND INTENTIONS**

Given the growing influence of intellectual capital in the elimination of the causes and effects of the current economic crisis and the specific conditions of Romania (acquisition of legal personality by development regions, as of 01.01.2014, within the new administrative-territorial organization), there are required regional, innovative, educational clusters (Cluster for Research in Education for Sustainability and Social Inclusion), from private organizations that have a high degree of autonomy (private universities, private colleges, continues training providers, banks, insurance companies, telecommunications infrastructure organizations, organizations involved in research and development, etc.) to be developed and implemented.



They will use innovative cluster development methodology (qualitative and quantitative analysis, modeling, implementation and sustainable development) and will require the implementation of an integrated higher level system, "Business Intelligence". Then they will be interconnected with networks of clusters and / or with national/international organizations. The benefits of belonging to an innovative cluster (competitiveness pole) consist mainly of competitiveness and employment rate of labor (interconnection man-skills - skills-knowledge), increasing efficiency, encouraging innovation, reducing constraints for SMEs from large companies, increasing the chances of internationalization of the activities of its components and ensuring capacity to influence educational profiles to meet the needs of companies, in the field of human resources. Regional K-SWOT analysis, applied to the eight Romanian development regions will highlight the main organizations that should be involved in the new process of intelligent integrated sustainable development.

## 5. REFERENCES

- [1] D. Gross, Implementing Sustainable Development in School Curricula, first International GLOBE Learning Expedition, Helsinki (1998).
- [2] \*\*\* Encyclopedia of creativity, Volume 1 A-H, Academic Press, U.S.A., (1999).
- [3] P. Sureephong, N. Chakpitak, Y. Ouzrout, G. Neubert, A. Bouras, Knowledge Management System for Cluster Development in SMEs, International Conference on Software, Knowledge Information Management and Applications, Chiang Mai, Thailand, (2006).
- [4] \*\*\* The European Cluster Memorandum. Promoting European Innovation through Clusters: An Agenda for Policy Action, (2007).
- [5] J. M. Eger, The Creative Community: Meeting the Challenges of the New Economy, San Diego State University, U.S.A. (2012).
- [6] UK Department for Regional Development, Regional Development Strategy 2035. Executive Summary. Building a Better Future. (2012).

Sustainability. Special Issues. Education, Innovation and Training for Sustainable Development in the Context Submit to Sustainability Review for Sustainability Edit a Special Issue. Journal Menu. These 17 Sustainable Development Goals are presented as a master plan that covers the most painful global challenges for the knowledge society; here, we shall address Goal 4 of quality education. Education enables upward socioeconomic mobility and is key to escaping poverty and closing social gaps; however, approximately one fifth of the world's school-age population is not in school. Achieving sustainable development requires education systems institutions, and schools to provide students with knowledge, understanding, the ability to act, and the will to act, which implies that in some situations one may be able to act but should refrain from doing so. They must develop values, skills, attitudes, and knowledge and critical understanding. Millions of children are still denied their right to education. Restricted access to education is one of the surest ways of transmitting poverty from generation to generation. An education of quality relies on qualified teachers who are committed to continuous professional development and is free from corruption. Our activities on quality education. Education for Sustainable Development consequently promotes competencies like critical thinking, imagining future scenarios and making decisions in a collaborative way. Education for Sustainable Development requires far-reaching changes in the way education is often practised today." Council of the European Union, 2010. "ESD is about the learning needed to maintain and improve our quality of life and the quality of life of generations to come ESD enables people to develop the knowledge, values and skills to participate in decisions about the way we do things individually and collectively, both locally and globally, that will improve the quality of life now without damaging the planet for the future." Sustainability in the curriculum. Of major significance in driving cluster development is state support, typically provided by way of national programs and projects. A good example is the "Go Cluster" project, initiated by Germany's Federal Ministry of Economics and Technology. The program is aimed at providing assistance to clusters' senior management with a view to enhancing their qualifications and educating the participants in innovative networks (Prokof'ev et al., 2013). Quality-Access to Success, 17(153), 53-59. Enright, M.J. (2000). Survey on the characterization of regional clusters: Initial results. Cluster policy as a factor for the innovative development of the national economy. Problemy Natsionalnoi Strategii, 3, 7-26. Roriguez-Clare, A. (2005).