BEYOND THE FAST-FOOD MODEL OF EDUCATION. IS THE SCHOOL CAPABLE TO FOSTER CREATIVITY?

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Abstract: Many critics argue that the institution of modern school, and the teachers as educational agents are not just incapable to stimulate, but also seem to block the innate creativity of the students. The research described in this paper is a literature review aiming to identify the key factors that influence the creativity in the educational environment in order to formulate practical actions towards an education for creativity. We propose a new model of creativity in the educational context, and conclude that a reformed school remains the main social instrument for promoting creativity.

Keywords: creativity, models of creativity, education for creativity

1. INTRODUCTION

"We have sold ourselves into a fast food model of education, and it's impoverishing our spirit and our energies as much as fast food is depleting our physical bodies" says Sir Ken Robinson in [19].

Though the development of creativity is claimed to be an imperative objective of modern education, there are surprisingly few educational initiatives dedicated to fostering creativity of students. Xu et al in [28] have made a thorough inventory of the courses dedicated to fostering creativity in universities from North America, Europe, Japan, and China. Surprisingly, they only found only 39 such courses, and in most cases these were isolated initiatives of individual professors well known for their interest in the research of creativity. And despite the billions of Euros invested by the European Union in lifelong learning programmes, we identified only two projects on this topic, which received financing before 2013.

In a comprehensive study, Cachia et. al ([6]) interviewed more than 7000 teachers from 27 European countries. They concluded that "there is a discrepancy between how teachers perceive creativity and the way they claim to foster creativity during their teaching", and note that "in many countries, education policies and objectives mention the need for creative learning, but do not provide an encompassing working definition of creativity or instructive guidelines on how it should be promoted at school."

The situation seems to be even worse in the public education system in North America.

Under these circumstances a decline of creativity is possible, and even predictable. Bronson et al. ([4]) note that in North America, after 1990 there is a visible increase of the intelligence quotient IQ, accompanied by a constant decrease of the creativity quotient, measured with the Torrance Test of

Creative Thinking (TTCT, see [27]). The causes of this phenomenon are still unclear, but the effects may be severe and require energetic actions for fostering the creativity in the educational context. Bronson concludes that "while our creativity scores decline unchecked, the current national strategy for creativity consists of little more than praying for a Greek muse to drop by our houses."

The solution, according to Robinson, is to abandon the paradigm of the school as a factory: "The fact is that given the challenges we face, education doesn't need to be reformed – it needs to be transformed. The key to this transformation is not to standardize education, but to personalize it, to build achievement on discovering the individual talents of each child, to put students in an environment where they want to learn and where they can naturally discover their true passions." ([19-20])

This paper proposes a pragmatic review of the vast literature dedicated to the study of creativity in education aimed to identify the key factors that influence creativity in both negative and positive directions, in order to provide the stakeholders with a clear view of the actions required.

Beyond this introduction, this document is structured as follows:

- Section 2 briefly describes the general conceptual framework,
- Section 3 identifies the key factors influencing the creativity, as presented in the literature, and derives several action directions to foster creativity through education.
- Section 4 is reserved for conclusions.

2. CONCEPTUAL FRAMEWORK.

2.1 Choosing a definition and a model of creativity. We will not attempt to clarify here the many aspects involved in the definition of creativity. As demonstrated in the comprehensive analysis of this topic offered by Parkhurst ([18]), there is still no unanimously accepted definition of creativity.

An extensive analysis of all the theoretical aspects of creativity is available in [25]. For practical reasons, in this study we will adopt the definitions of creativity and innovation proposed by Teresa Amabile:

"Creativity is the production of novel and useful ideas in any domain", and *"Innovation is the successful implementation of creative ideas within an organization"* ([3]).

Jan Fagerberg in ([9]]) brings supplementary clarification by emphasizing the difference between "invention" and "innovation": *"Invention is the first occurrence of an idea for a new product or process. Innovation is the first commercialization of the idea."*

Thus, the creativity is the process of developing ideas that are simultaneously novel, and valuable from a practical perspective (the inventions), while the innovation is the process of capitalization of the results within an organization.

Many researchers (see for example [14]) made a distinction between "Creativity" (with capital letter) – called "the big C", which designates exceptional results (e.g. the works of Leonardo da Vinci, Shakespeare, Picasso, Einstein, etc.) and "the little c"), which defines the everyday creativity, accessible to almost all people (e.g. create a new culinary recipe, find an original interior design solution, etc.).

Most researchers agree that "the little c" can be acquired and developed through education, and, along this study, we will use the term "creativity" in this acception.

The definition formulated by Amabile addresses only one of the "4 Ps" of the creativity (the 4 Ps are: "person", "process", "product", and "place" or environment see [25]), namely the creative person, which is convenient when studying the creativity from an educational perspective.

2.2. A simple model of creativity. Amabile also proposed a model of creativity ([3] see figure 1.).

According to this model, the creativity has three components:

- *The Expertise* is the individual knowledge base that is the starting point of any creative processing of the information. Nothing can be built in the absence of a foundation. One cannot be creative, for example in organic chemistry, without a solid knowledge of the functional groups, and, generally speaking, it is not possible

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to reach performance in any domain, without having a good knowledge of the state of the art in that field.
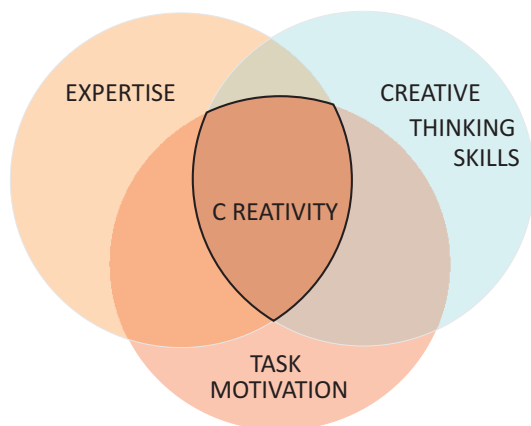

Fig. 1 The components of creativity, according to Amabile

- *Creative thinking skills*. This component of the creativity is defined by a specific way of processing the information from the knowledge base, which is favorable to using new perspective on the problems, and to following new cognitive paths. (see below the definitions for "lateral thinking" and "divergent thinking".) The creative thinking skills can be – in principle – improved by learning specific heuristics, but, in the same time are influenced by a series of personality traits such as independence, the capacity to take moderate risks, the ability to tolerate ambiguity, etc.
- *Motivation* is the "energy source" of any human endeavor. Though there are many studies proving that incentives (a typical extrinsic motivation, see the definitions in Ryan, [23]) may stimulate, or even - in certain conditions - may inhibit creativity, Most researchers agree that intrinsic

motivation is preferable as element that stimulates creativity.

Though very simple, the Amabile model of creativity has the advantage that it clearly shows several means to influence the creativity in the educational process: the expertise can be improved by an efficient design of the curriculum, the creative thinking skills can be acquired by learning and practicing some specific heuristics, and the motivation of the students can be addressed by adjusting the educational environment from an organizational perspective ([16]]).

3. KEY FACTORS AND ACTION DIRECTIONS TO FOSTER CREATIVITY THROUGH EDUCATION

The idea to foster the creativity of the students through education is not new. Back in 1965, Bruner argued that children should be encouraged to "treat a task as a problem for which one invents an answer, rather than finding one out there in a book or on the blackboard" ([5]). Four decades later Scott ([24]) unequivocally confirmed Bruner's idea and concluded: "Thus, creativity training appears beneficial for a variety of people, not just elementary school students or the unusually gifted. Taken as a whole, these observations lead to a relatively unambiguous conclusion: *Creativity training works*".

However, the educational environment may either stimulate or inhibit the creativity of the students. Cachia ([6]), and Craft ([7]) identified a number of inhibiting factors:

- The prescriptive environment of the school;
- The curriculum oriented towards quantity rather than quality of the information;

- The lack of consensus regarding the definition and the model of mental processes associated with creativity;
- A certain confusion of values: teachers frequently perceive some behaviors or personality traits specific to creative students (e.g. stubbornness, hyperactivity, argumentiveness, and independence) as "misbehaviors".
- Teachers are not trained to foster creativity of students: though most of them claim they encourage students to be creative, they simply don't know how to do this;
- The lack of quality educational content for teaching creativity. Teachers and students are equally in need of such materials;
- The lack of simple and easy to use instruments for the assessment of creativity;
- The lack of IT&C tools to support teaching for creativity.

Davies et al. ([8]) counted the following environmental factors that could have a positive influence on the creativity of the students:

- Flexible use of time and space;
- availability of appropriate materials;
- working outside the classroom/school;
- 'playful' or 'games-bases' approaches with a degree of learner autonomy;
- respectful relationships between teachers and learners;
- opportunities for peer collaboration;
- partnerships with outside agencies;
- awareness of learners' needs, and nonprescriptive planning."

Other researchers indicate a variety of other factors that can influence creativity in school:

- Moods and emotions ([17])
- Pattern recognition and "visual thinking" ([12]);
- Organizational and institutional influences ([10]);
- Teamwork ([11]);
- Some cultural factors (Rudowicz, 2003);
- The ability to use certain heuristics, e.g. TRIZ ([2]);

And, last but not least, an essential factor that could dramatically impact the future of teaching for creativity is the use of ICT in education ([1], [15], [13], [21],[26]).

For a better understanding of the influence of the educational environment on the creativity of the students, we propose an extension of the Amabile model, as shown in figure 2.
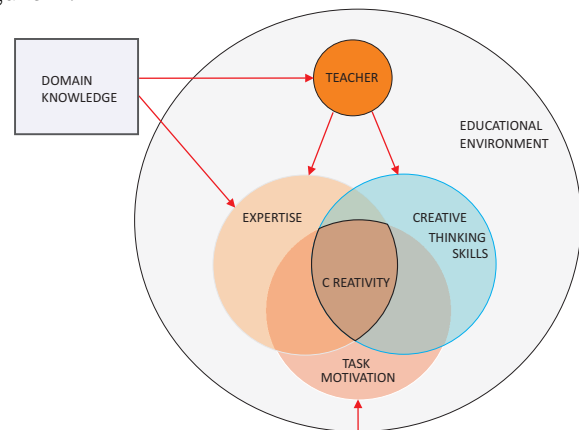

Fig. 2 An extended model of creativity for the educational context

This extended model obviously includes *the teachers* as essential educational agents, and *the general learning environment*, as seen from organizational, and social interactions perspectives. (The ICT tools involved in the educational process are also considered as included in the environment.) The proposed model clearly illustrates the interactions between the elements of the educational system.

Considering the above mentioned factors, the following *action directions* for fostering creativity through education become obvious:

- Eliminate the factors that inhibit creativity. The responsibility for this lies with the decision makers at the European, national, and organizational level, and – to a certain degree – with the teachers, who should contribute to the creation of a less-prescriptive educational environment. In this category of measures, we count: the reform of the curriculum, defining and promoting a respectable social status for the teachers, which includes decent salarization, increasing the autonomy of the public schools, etc.
- Attract teachers in CPD (Continuous Professional Development) courses to help them understand the psychological mechanisms involved in creativity.
- Develop educational content specially aimed for the education for creativity. This includes both courses for teachers, and

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specific courses for students designed to improve their creative thinking skills, and help them acquire certain specific heuristics.

- Develop solutions based on IT&C to promote creative problem solving in education.
- Develop simple and easy to use IT&C tools for the assessment of creativity.

Ala-Mutka et al ([1]) extend the responsibility from teachers to policymakers, researchers, and other practitioners, who "should engage in developing a common vision of future learning for innovation, as a tool to guide their joint effort".

4. CONCLUSIONS

The implementation of the concept of *"education for creativity and innovation"* seems to require a clear vision and convergent efforts of the researchers, decision makers and teachers in order to adapt the educational environment to the requirements of the knowledge society, and to create dedicated content aimed to foster creativity.

Though intensely criticized for blocking the innate creativity of the children, a reformed School, with specially trained teachers, seems to remain the most important social instrument for promoting creativity of the students on a large scale.

In this context, the Information and Computer Technology appears to be a promising instrument to deliver the educational content, to promote creative interactions between learners, and to measure the progress.

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