CREATIVITY – FOUNDATION FOR INNOVATION

Prof. univ. dr. Popa Ion
Academia de Studii Economice din Bucureşti
Facultatea de Management

Abstract
This paper refers to the importance of creativity and that of training methods in achieving it. Also it underlines the fact that creativity is something that can be taught, even do some characteristics of those who show it are native.

Another aspect further detailed is that of certain creativity methods (e.g. brainstorming and synectics) can be used to amplify innovation in an organization, and furthermore these instruments have demonstrated its purpose having multiple advantages for trainers as well as for trainees (in dealing with different pedagogical situations and thus improving their creativity process).

Keywords
Creativity, innovation, brainstorming, synectics, training

Transition to knowledge-based economy – the most important process that takes place in these decades – has as a defining element the amplification of creativity and innovation, in dimensions never seen before, which generates strategic knowledge, ultimately decisive in achieving competitiveness.

It is highly unlikely that the creativity resources, innovational potential, original ideas, the capacity to discover and introduce the new, the novelty, the genius are being divided equally (Cicea et al., 2007). At the same time, it is known that every human being is endowed with a creative potential, to a certain extent. Under these circumstances, fostering creativity has become one of the objectives of training, even in a constantly evolving technological and social environment. Thus, with trainees, we no longer have the issue of training them to a certain level of knowledge or experience, but that of developing their ability to self-improve, their ability to adapt to change, etc.

The research results, from the technical and scientific field, show that the main shortcomings of the creative assertion of the personality are the following (Burdus E, 2003):

a. inhibiting creative imagination as a result of the influence of some factors, among which:
   - insufficient activation of the creative imagination;
   - much greater frequency of unprofessional interactions compared to that of professional ones;
   - narrow specialization of the members of a group;
   - management style, primarily, authoritative;
   - rewarding and promoting people after formal-administrative criteria.

b. preponderance of extrinsic motivation, as the interest in rewarding the activity is much stronger than that in the work content;

c. presence of anti-creative attitudes (intellectual comfort, conformism, etc.).
Stimulation of the creativity of the staff is also justified by the fact that the creative activity is teachable, even though some native elements have their importance in the creative process. To understand this it is necessary to start from the concepts of creativity and creative process and how they manifest.

**Creativity** is, in essence, a complex process, a complex mental activity that ends in a particular product; it is the human ability to make the new, under different forms: technical, theoretical, scientific, social, artistic, to underline special unknown aspects of the reality, to elaborate original ways and solutions to solve problems and to express them in an original personal way. (Mihut I, 1989)

The fact is that the defining characteristics of **creativity** as a *system for producing new information* are *novelty and originality of responses, ideas, solutions and behaviors*. Creativity is defined as "representing the highest level of human behavior, able to train and focus all the other levels of biologic and logic behavior (instincts, skills, intelligence), along with all the other attributes of an individual (thinking, memory, attention, will, emotionality) in the direction for which he is prepared and which concerns him, in order to achieve making products that are characterized by originality, innovation, value and social utility. (Feier V., 1995)

Enhancing innovation requires substantiation of all managerial work based on a set of rules (see Table 1) which reflect the need to achieve the organizational objectives as well as the specificity of the innovation process and the peculiarities that are common in people who possess at a remarkable level the ability to create. (Nicolescu O. and Verboncu I., 2005)

### Table no. 1

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<thead>
<tr>
<th>No.</th>
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<tr>
<td>1.</td>
<td>Maintaining a permanent contact between managers and other employees, especially between those that are in relations of direct hierarchical subordination;</td>
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<td>2.</td>
<td>Recognizing and encouraging people that possess an appreciable creative capacity;</td>
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<td>3.</td>
<td>Establishing an ambient atmosphere, permissive to new and flexible in the organization;</td>
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<td>4.</td>
<td>Protecting and maintaining the self-confidence of the creators.</td>
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<td>5.</td>
<td>Creating the possibility for the creators to work independently;</td>
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<td>6.</td>
<td>Tolerance towards the failure of the creators;</td>
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<td>7.</td>
<td>Abstaining oneself to pretend a total creative spirit from the components of the company;</td>
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<td>8.</td>
<td>Rapid evaluation of the new ideas by the managers;</td>
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<td>9.</td>
<td>Overlooking, by the managers and colleagues of certain strange aspects of the creative people;</td>
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<tr>
<td>10.</td>
<td>Moral and material motivation of the creators according to the generated or facilitated performance by applying innovation.</td>
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</table>

Another main direction in amplifying the innovational potential of the organizations is using stimulating and “learning” creativity methods such as: brainstorming, synectics.
Brainstorming

Alex. F. Osborn, the founder of this method, describes in his book *Constructive imagination* in 1959, a method of “liberating creativity and the art to invent”. In the author’s conception, this implies to aspects:

1. **neutralizing intellectual roadblocks**, meaning the systematical removal of the inhibiting factors of creativity: self-critic and fear of being criticized, reasoning and logic, fear of the absurd, the use of ideas already stated, the use of already known solutions, conformist attitudes, personal or socio-professional habits;

2. **stimulating new ideas**, that is achieved through certain convergent ways: group motivation (from here is also derived the importance of presenting the problem in the first faze of the formation period); inciting interactions in the group; developing a relaxed climate, which promotes freedom of expression.

*Brainstorming* (assault of ideas) has at its base the hypothesis that, *in any activity field problems can be better solved, but for this ideas need to be found, ideas that in fact are latent in any collective, but because an according climate is not created the respective ideas are lost.*

Brainstorming takes place in small group discussions (5-12 people, which have a heterogeneous training), its purpose being obtaining as many ideas as possible on how to solve problems. The optimal time to hold a meeting varies between 15 and 45 minutes.

By applying this method precisely the creation of an according climate is followed, that will allow the organized expression of the ideas and then capitalization of the best of them. To conduct a *brainstorming* meeting it is recommended that the following rules are being respected (Burdus E and Caprarescu G, 1999):

- setting the meeting at an hour when the participants are well-rested;
- conducting the meeting in a pleasant-looking place;
- creating a climate that allows the stating of any idea, no matter how fantastic it may sound;
- granting freedom to act to the participants;
- removing rigidity from conducting the meeting by maintaining a relaxed atmosphere (serving a coffee, beverage, etc.);
- encouraging the participants to state new ideas, starting from the ideas already stated;
- the proposals must be short, thus eliminating long speeches;
- eliminating any type of evaluation of the ideas during the meeting;
- complete and exact recording of the discussions and especially of the stated ideas.

In practice, brainstorming is done in three stages: (Zorlentăn T., Burduș E., Căprărescu Gh., 1994)

I. **Preparation stage.** Within it, the problem that will be brought to discussion is established and delimited; the participants for the discussion are being chosen; the group leader is chosen.

II. **Actual session,** during which the discussion take place. In this stage, the group leader shortly presents the problem set for discussion, announces the rules of interaction between participants and establishes the length of the session. Stating an idea is followed by a concise presentation and its registration by the group leader. The group leader has a double role: to eliminate interaction between participants and to stimulate “brain storm” between participants.

III. **Evaluation of ideas.** This is done after the meeting is over, by a group of experts. As evaluation basis are considered the most important five ideas stated by the participants.
The range of problems that can be solved by using this method is wide, and applying it brings spectacular results, not just in the training field, but, especially in the economic field and in the scientific research field.

**Synectics**

In his book, *Synectics, the development of creative capacity*, in 1961, William GORDON presents a theory and also a pedagogy of creativity. Before presenting them, GORDON states four judgments:

1) Creative processes are different in art, science or technique;
2) It is impossible to methodically form inspiration;
3) Knowing the creative process prevents the creation process;
4) An individual is not inventive in a group.

Experimental researches done on people that conduct creative activities in a technical field have shown that creative activity is determined by the psychological state of the person and that sometime the person can completely detach from the problem. These contradictory aspects are determined, on one hand, by the knowledge the person emerged with, its habits in time when issues of the problem are not taken into consideration, and on the other hand, by the fact that the person completely identifies with the elements of the problem.

Gordon describes four “operational mechanisms” which induce the creative state for a person:

1) *Personal analogy*, meaning identifying the person with the elements of the problem and projecting its own psychological, social and professional characteristics in the elements of the problem;
2) *Direct analogy*, meaning the closeness with the studied object, with facts or ideas that belong to another science or to a different research domain, that have a vague resembling with the analyzed problem;
3) *Symbolic analogy*, compressing the problem or its hypothesizes into global images, that have a representation value, mainly esthetical.
4) *Fantastic analogy*, picturing a solution in a magnificent, magical domain, of dreams.

These mechanisms are only used after the completion of the first stage of work, that of the analysis of the problem in all its details, to familiarize people with all data, without definitively establishing the meaning of each data.

As part of the second stage, groups of people are selected (each group has five people with a heterogeneous training) according to certain characteristics: freedom of thought, boldness, communication, etc. Synectics training of each group takes place over a year, each month a meeting takes place, under the guidance of the group coordinator.

For a period of time, each group is taught teamwork and receives a general education intended at freedom of thought, separating each person after his specialty. After this stage, begins the process of training: for each problem subject to discussion, the group work (which can take several days) is carried out in five successive phases:

- Formulation of the problem;
- Assimilation of the problem and its data;
- Systematic exploitation of the four operational mechanisms (analogies);
- Generation of creative psychological state of mind;
- Finding the solution.
The means or instruments specific to the training methods through stimulating creativity vary depending on the basic principles so (Curteanu D., Chivu I., Popa I., 2005):

a) To avoid positive-directive formation:
   • Using negative pedagogy, namely the creation of a general program, which includes chronological stages of work, which instigates the curiosity of the students;
   • Using non-directive pedagogy, focused on students, in which the trainer fulfills the role of monitoring the students’ activity, facilitating self-training.

b) To stimulate creative energy:
   • Stimulating students’ spontaneity;
   • Encouraging constructive imagination, by motivating, since the beginning of the training, the trainees. This will encourage interpersonal communication, develop the work environment and facilitate the oral expression of the students.

The advantages of creativity pedagogy for the trainers are numerous, in all fields. Among these are:
   • Effective perception of the psychological state to be adopted in different situations of the training process;
   • Creating a work climate with the students, according to the pedagogical situations addressed;
   • Managing the change of their own pedagogical behavior, to adapt to better fulfill their role in the training process.

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