The Study of the Creativity Phenomenon in the Education of Midchildhood

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Abstract

An original intelligent IT-system for the formation and development of the individual creative thinking, as well as team skills of innovative project work of schooolchildren, is outlined in the paper. The article presents the results of a sociological survey of 100 teachers, 50 students and 300 parents - entrepreneurs about their attitudes to the possibility of teaching and using of creative technologies. The survey results show that the teachers are rather conservative, while business people generally recognize the effectiveness of creativity in their work. The article argues that it is necessary to use new forms of training and teaching, based on non-linear thinking and creativity and popularize the use of creative technologies in educational field.

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1. Introduction

One of the system problems of the modern school education system is the personality basis formation problem of a graduate, which will allow a student to socialize successfully in a dynamic society, independently develop and choose his life and career, work hard and use his creative potential most efficiently. This is especially important for children with elevated educational needs. System-creative, innovative thinking allows to introduce innovative methods of education actively. The most important question last years in modern pedagogical psychology, psychology of personality becomes in the question of early identification and development of the ability to creativity, from which the dependence of the success of a person in the future has no doubts.

The problems faced by people in the twentieth century made scholars speak of the ‘collapse’ of solutions (Ralston and Nadler [1]; Nadler et al. [2]), the system crisis of culture (Hösle [3], Habermas [4], Adorno

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and Horkheimer [5] etc.), the anthropogenic crisis (Arseniev [6] and Semenov [7]), the crisis of an ‘imperfect society’ (Peccei [8]; Giddens [9]; Beck [10]; Safiullin M.R. et al. [11], Safiullin L.N. et al. [12]). Virtualized relationships, economic globalization, the development of information technologies are changing the speed of decision-making, the risk of running business, but they are opening up new possibilities in the use of modern technology as well. The state of a managed object has varied, whereas the methods of learning and management remain the same. We are trying to open a ‘new door’ with ‘old keys’ (Shevyrev [13]). The key element of the sustainable development of society is a continuous creative development. In this situation the educational field has a mission of effective and fast training of innovators and skilled innovation explorers, to develop new forms of ‘intellectual industry’.

The research of creativity (mainly in the context of psychological and cognitological approaches (neurolinguistics, cognitive psychology, and pragmatic models of thinking) has been actively conducted since the early 70s (de Bono [14], Wujec [15], Buzan [16], Dilts [17]). Russian scholars emphasize evolutionistic and technological interpretations of thinking: Vygotsky’s cultural-historical approach (Vygotsky [18]), evolutionary epistemology (Ruzavin [19]), technological orientation (Yulov [20], Altshuller’s algorithmic approach (Altshuller [21]). Today Russia needs the synthesis of various cognitive practices within the creativity management system. Its methodology is based on the application of the technology of generating creative solutions. As opposed to linear thinking, creativity management system operates with hypotheses and paradoxes, and in contrast to lateral thinking, it aims to find a solution for a specific problem. Creative management allows uniting the theory of cognitive processes and the theory of practical activities together and integrating the thinking process into the reproduction process.

2. Methodology

2.1. Design

This work is based on the method of applied sociological research. The investigation aims to study the phenomenon of creativity among teachers, students and entrepreneurs, which allows monitoring empirically the current social processes, and drawing conclusions about the prospects and the need to promote creative teaching methods in each of these three groups. The researchers did not interfere with the situation, condition and variables and did not control or tamper with them; they simply studied, described and examined the results.

2.2. Sample

The statistical sample of this study is 100 teachers, 50 practice teachers of the primary school and 300 parents - entrepreneurs and managers of Kazan (Russia) who were selected by using a cluster method. The cluster method of sampling is a technique which divides individuals based on their in-group characteristics into various groups. In this study, the participants were rated on the basis of their geographical location and field of activity.

2.3. Instruments

In order to estimate the statistical sample size, Chertsey and Morgan table was used. The following questionnaire has been employed to collect the data required for the purpose of the study.

The correspondents were asked to agree or disagree with the following statements and questions:

1. Is there a creativity as a phenomenon?
2. Creativity is a ‘God-given talent’, a ‘gift’, and one cannot develop it as a skill.
3. One can develop creativity only on his/her own.
4. Creativity is not essential for making efficient managerial decisions (consistency and logic are required).
5. Intentional task-oriented generation of creativity is impossible.
6. There are no intentional development and generation of creativity.
7. Techniques of generation and development of creativity exist, but they are ineffective.
8. The results of creative decisions are unstable and ineffective.
9. Can I (after attending a special educational course) effectively teach creativity techniques to anybody?
10. Can I efficiently apply creative techniques to my work?

2.4. Administration method

The survey was carried out after obtaining the necessary permissions from the senior students of educational sciences, who had already been trained fully. Carrying out the survey took 15 - 20 minutes (per person), and it took 25 days to analyze and interpret the results. 450 questionnaires were filled in and returned.

3. Findings

The analysis showed that:
- Almost all the respondents recognize the existence of creativity, but the number of teachers who believe in creativity is less than that among students and entrepreneurs (question 1).
- 39% of teachers believe that creativity is a ‘God given talent’, a ‘gift’ and one cannot develop it (question 2), whereas 77% are still willing to teach creativity techniques, after taking a special training course (question 9).
- Percent of those who believe that creativity is not necessary for making efficient decisions (question 4) and that technologies of intentional development of creativity do not exist (question 6) is twice higher among teachers than among entrepreneurs.
- There are more practice teachers who are ready, after special training to teach creativity and creative use of technology in their work than among mature teachers.

The survey results show that teachers are rather conservative, while business people generally recognize the effectiveness of creativity in their work (question 10), and, thus, it is necessary to popularize the use of creative technologies in educational field.

4. Discussion and conclusion

System-creative and innovative thinking allows to implement innovative educational methods aimed at the creating the capacity for knowledge generation and replenishment, as well as a quick orientation in highly organized databases and branched systems of knowledge. They help to create the conditions under which an active productive creativity of students is possible in an open dialogue with the teacher, in a joint problem-solving process. Education becomes interactive – not just the teacher teaches the student, but the student teaches the teacher – which can be called a cooperative, coherent behavior. It is easier for the teacher to understand the student in this situation, and vice versa. Education becomes awakening – the use of system-creative thinking technology in education can overcome the disorganized student aspirations, making them creative, innovative. Also the process of education becomes adaptive - accelerated transition to the new, modified structures of knowledge and behavior, as a result of learning the identity of the student is rebuilt, the process of studying not only strengthens memory traces and existing synaptic connections, but also radically restructures the entire configuration of consciousness. The process of learning, communication and training allows the student to discover the hidden opportunities of their own development. Gestalt-education can be interpreted as the transfer
of complete sets of information, a qualitative shift, innovative restructuring of the learning situation. To teach nonlinear, system-creative thinking means to teach thinking in alternatives, offering the ability to change the tempo of a problem situation, its qualitative logic.

The authors proposed methods, techniques, software, and organizational forms (educational creative command centers, studios, classrooms, workshops, etc.) of teaching technology of creativity in schools. This is an efficient instrument of innovation and training schoolchildren in accordance with the requirements of the knowledge economy, which implies not only the possession of a set of necessary knowledge, but also the ability to generate and apply it in real life situations.

In educational process we use the original applied intelligent IT-system ‘Technology of Creative Problem Solving’ in order to form and develop individual system creative and innovative thinking, as well as team skills of innovative project work of schoolchildren. It includes four modules:

- effective team building and managing team creativity on a real-time basis;
- educational command center for team work on projects in classrooms;
- individual program for a system creative generation of solutions in any academic field of study (especially management) at universities;
- virtual workplace out-of-class (for all students to work in any academic field of study).

The program works by sequentially passing the modules that make up the logic of educational tasks.

The software module "EUREKA School" is a part of the "TTRP Eureka" product (certificate of official registration of the Federal Service for Intellectual Property, Patents and Trademarks number 2006610693 , www.ewrikasmc.ru) and is a virtual individual student's workplace.

"EUREKA School" can be used as an innovative component for each subject, there are 2 options:

1) For the development of individual innovative project in one or more disciplines (e.g. "Environment");
2) To develop a creative presentation (a simpler version that is not designed to generate new knowledge by a student, but only for system-creative presentation of already given) on the themes of various disciplines.

"EUREKA School" includes "Braintrack", a system of creativity, including a set of puzzles and problems of varying degrees of complexity, concentration tests. It also includes mandalas, which is a visual and musical accompaniment of a meditative process of creative thinking.

The "Analysis" module contains a brief description of the project, the fundamentals of the project (presentation), a graphical editor for visual display system domain (card problem), including files of any extension and Internet links. The "Objectives" module is a graphical editor for the formation of problem-target area of the project. The "Solutions" module provides a graphical editor for visual display system domain (problem card) to prioritize key issues included in the problem situation).

As a model of thinking this version uses the simplest model called Analysis of the force fields by T.Byuzan, which includes also a system of more than forty heuristic methods (procedures): scheme of thought and the system of mental operations by G. Polya, the algorithm is effective communication for the development of optimal communication interactions etc.

The "Assessment" module includes a procedure for constructing the optimum solutions, cost efficiency solutions in the project, Ishikawa's diagram for the qualitative evaluation of the developed solutions.

The "Implementation" module includes the "Personal Planner" program, a personal electronic organizer to plan the work and student's personal time.

The program software ‘Technology of creative problem solving’ is unique. It allows:

- Connecting and coordinating users’ (schoolchildren’s) knowledge in various academic fields in an integrated, constantly evolving system of knowledge that helps to intensify the process of education;
- To develop and improve the skills of solving specific problems;
- Greatly facilitating the teachers’ and schoolchildren’s practical work in computer classes, transforming it into the research mode; making this work interesting and exciting, increasing teachers’ productivity, enabling schoolchildren to work independently;
- Increasing the users’ ‘sensitivity’ to problems;
- Developing users’ culture of analytical work;
- Increasing the quality and intensity of studying of other disciplines by including the elements of the system creative thinking;
- Minimizing the cost of software used for training students (one integrated educational system is appropriate for a variety of academic disciplines: economic, legal, social, psychological, technical, etc.);

People have to overcome many stereotypes related to creativity. There is much to be done in studying creativity and applying the theory to practical needs. But creativity can be managed with the help of special cognitive technologies included in the software package ‘Technology of Creative Problem Solving’. This gives grounds for optimism in dealing with the challenges of our time.

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