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CONTENT AND METHODS OF FORMING THE CREATIVITY OF FUTURE TEACHERS ABOUT ENERGY

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ABSTRACT

The article provides information on the content and methods of forming creative thinking in future energy engineers. The PISA (The Program for International Student Assessment) international assessment program outlines the basic concepts of the direction of creative thinking assessment, important aspects to be focused on and assessment approaches.

KEYWORDS

PISA, The Program for International Student Assessment assessment, approaches, ability, competence, research, analysis, creative assignments.

Introduction

Creative approaches and achievements have advanced human civilization worldwide in fields ranging from science and technology to the natural and natural sciences. Creative thinking is more than just coming up with random ideas.It is a real skill based on knowledge and experience that allows a person to achieve better results in sometimes difficult situations. Societies and organizations around the world increasingly need innovative knowledge and creativity to solve problems, which in turn increases the importance of innovation and creative thinking.It is true that the impact of creative thinking on the whole society is behind significant types of innovation, but it is also a universal and equalizing phenomenon, that is, any person has the ability to think creatively to one degree or another.

Analysis of literature on the topic

I.N.Kupriyanov is a person in the scientific works of A.V.Krasilnikova, A.G.Krasnova, I.M.Belyaev, V.A.Solovov, V.A.Osin, S.E.Polat, Yu.M.Bukharina, A.V.Starodubsev, A.Cropley, M.Sukhomlinova, E.Emmanuel among the scientists of the Independent Commonwealth of Nations. the theoretical foundations of the development of creative abilities have been studied.In the works of foreign scientists such as E.P.Torrance, N.Rogers, J.Purnell, P.Roberts, A.M.Galligan, Sh.Tatsuno, the issues of individual abilities and creative potential of a person are disclosed.In fact, according to experts in the field of education and psychologists, creative thinking, which is understood as being engaged in thought processes related to creative activity, leads to the development of a number of other personal skills.These include metacognitive skills, interpersonal skills, self-awareness, and problem-solving

skills.At the same time, personal growth, educational success, future professional success, and public reputation also depend on a person's creative thinking skills.

Discussion

The development of an international program for the assessment of creative thinking can lead to positive changes in educational policy and pedagogy.The PISA Assessment of Creative Thinking in Research provides a clear, reliable, and actionable assessment tool to help policymakers make evidence-based decisions.The results also fuel debates in society about the importance and methods of developing this important skill through education.This activity in the international assessment program PISA is related to another project of the Organization for Economic Co-operation and Development aimed at supporting a new pedagogy for the development of creative thinking.In creative thinking, the main task of education is to form the skills that students need today and in the future to live successfully in society. Creative thinking is an important skill that today's youth must have, and this skill will help them adapt to a constantly and rapidly changing environment that requires personnel with up-to-date skills beyond simple literacy. In general, today's energy engineer will work in fields that do not even exist in the future, building new skills for new problems will allow them to solve increasingly complex local and global problems through an unusual approach.

The importance of developing creative thinking in institutions of higher education is not limited only to the labor market.Education is important for young people in the process of discovering their abilities and skills, including creative talents.Creative thinking also supports student learning by interpreting events, experiences, and behaviors in new and personally meaningful ways.Students' curiosity is captured in the learning process, creative thinking thus becomes a means of mutual agreement, even in the context of pre-defined learning objectives.In order to increase the motivation and interest of higher education students, it is necessary to establish new forms of education that take into account the creative potential and enthusiasm of all students. This can especially help students who are not very interested in the educational process, and it will help them express their opinions and develop their potential.Like other skills, creative thinking can be developed through a practical and focused approach.To some students, developing student creative thinking seems to come at the expense of other subjects in the curriculum. In fact, students can think creatively in all subjects.Creative thinking is especially important as it is developed through approaches that support research and invention instead of blind memorization during lectures aimed at imparting knowledge.Students need to be able to distinguish creative thinking, to know the conditions suitable for such thinking, and to be able to help students to think more creatively.A better understanding of how creative thinking occurs, in turn, requires a certain amount of time for students to have creative ideas during their education.Assessment of creative thinking skills is based on evidence-based evidence, linking what students do, learn, and create on a computer platform to multidimensional competencies.Assessment of creativity is the analysis of specific claims about a student's abilities in an evidence-based reasoning process.In general, student responses to assessment tasks provide evidence for this reasoning process, while psychometric analysis determines whether the evidence is sufficient to analyze each claim. The PISA assessment program can be used as the main framework for assessing creative thinking.PISA uses a description of creative thinking relevant to students. In the PISA study, creative thinking is defined as the ability to effectively participate in the development, evaluation and improvement of ideas that lead to original

and effective solutions, achievements and imagination in the field of knowledge. This description emphasizes that students need to learn to participate effectively in ideation practices at different contexts and levels of education, to reflect on an idea while evaluating its originality and validity, and to refine the idea until it is ready for implementation.The development of this description also took into account the advice of experts in various fields and the results of an extensive literature review on creativity. While creative thinking is a nascent interpretation, the construct of creativity has a broad and strong research tradition. Creativity, then, is the interplay between ability, process, and environment through which an individual or group creates a meaningful product that is both new and useful for that social context.Achieving creative goals requires creative thinking. For example, great creativity related to the creation of engineers or technological discoveries requires, in addition to creative thinking, considerable talent, deep knowledge, tireless work in a specific field, and recognition by society that this product has value. On the contrary, little or creativity is necessary for almost all people who are capable of creative thinking. In order to de-emphasize innate talent and place more emphasis on an individual's ability to think creatively, which can be improved, the PISA assessment of creative thinking focusses on this sub-task of creativity. This type of creative thinking applies not only to the context of education, but also to broader areas related to the analysis of problems of ideation and solving problems in society.

Results

As the first generation of creative thinking tests were based on the idea of domain generality, i.e., the existence of common characteristics of creativity in any field, researchers assumed that the results of a person in tests assessing creativity can be generalized, and that creativity in one field can be transferred to another field. These studies either emphasize that the abilities and skills required for creativity are domain-specific and differ from domain to domain, or present models of creativity that partially combine the two approaches. "Domain" means a set of representations underlying and supporting a specific field of science. The researchers listed the following domains of creative approach: everyday, educational, action, and science domains. Creative activity is divided into "scientific" fields. Creative activity can be divided into three general domains: verbal, artistic, and problem solving. According to a detailed analysis of case studies that have studied the fields of creativity, the scientific field of mathematics is always clearly distinguished from other fields of creativity. Four necessary parts for creative activity of any person are listed: skills related to the field; processes related to creativity; enthusiasm for the task (motivation) suitable favorable conditions.

Conclusion

Creative productivity is the basic resource or domain-specific skills, including knowledge and technical skills, and the ability to combine them in new ways requires the necessary motivation to move away from ready-made manuals. These four components consist of both static, improvement, and environment-susceptible components. It is also appropriate to analyze how the indicators of creative thinking of students depend on their research skills. Similar to the method used to measure a student's motivation, his or her research ability can be analyzed based on data obtained from monitoring (telemetry) his behavior on a computerized test.

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