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PRELIMINARY ASSUMPTIONS FOR TESTS VERIFYING GEOMETRIC PREDISPOSITIONS

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Systemic, social and most of all civilizational changes taking place cause changes in education and teaching. Analysing the definition of education in terms in encyclopedic approach as a collection of processes aimed at changing people, especially children and adolescents, according to the ideals and educational objectives prevailing in a given society, force us to think in a different way and to seek new methods for passing knowledge with the use of modern methods for the education of young people. In practice, all over the world, educational systems are changing and are subject to continuous evaluation with the aim at increasingly better preparation of the younger generation to take up the challenges it faces. As a result, thanks to the insights and observations, we are shaping the ability to imagine not only what we see in the real picture, but also imagine anything we think about.

Spatial imagination is the ability that combines the ability of innovative thinking in order to search for new solutions with the ability to combine existing facts and phenomena. Active involvement of imagination while learning about shapes makes us to automatically learn to manipulate them, simultaneously developing our ability to handle and rotate in space, and its proper development requires very precisely selected didactic treatments and exercises. Numerous scientific studies[5],[6] prove that all people have the imagination, but they use it in various degrees. The matter of logical thinking skills, through which we can understand the meaning of speech, we understand the books read, we can associate the facts and combine them together, is a part of human mental abilities, which are closely related to the development and deepening of imagination, as well as creativity as the basis of human creativity. One of the characteristics of creative thinking is the ability to construct and solve problems in a number of ways using knowledge, with the possibility to risk and to liberate from schematic thinking. Analysing the previous studies conducted by the authors during exercises in student groups[1], as well as observing the studies conducted by other academic centres[2],[3],[4], there was noted the relationship between the degree of developed spatial imagination and the capacity of its use and understanding. Working with students we often wonder

what do they think when solving the tasks given by us and we mostly expect such an answer we would like to give ourselves. We wonder whether a student is able to analyse, to think logically, to solve the task step by step using the known structures, and finally whether they can control and look critically at what they solved.

The present paper concerns the authors' own reflections on a new concept tests to verify and develop geometric predisposition – including spatial imagination – not only in students of technical studies, but also persons, the knowledge of geometry of which is at the secondary school level. The authors of the development search for new didactic methods enabling self-evaluation of the level of spatial imagination by logical recognition of relationships in the three-dimensional solids mapped in a flat drawing with the possibility of manipulating these elements. A sample test consists of an axonometric drawing of the block with the elements on the wall marked and four variants of the solution (in this example it is a net of a cube), only one of which is correct. The solution comes down to observing the drawings with the solutions and comparing to the output solid so that components corresponded to a given figure.

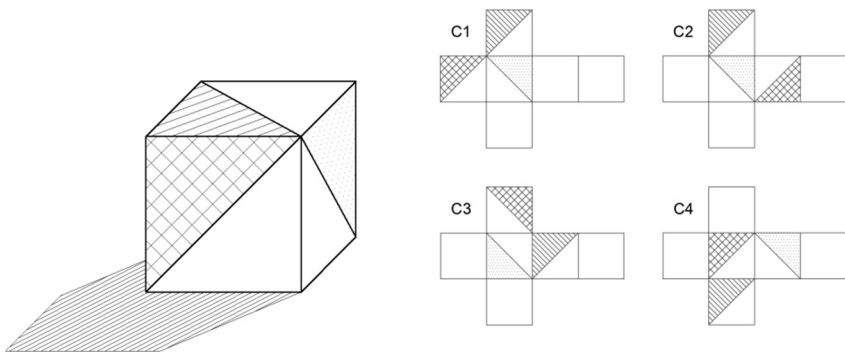


Fig.1. Examples test task

In the proposed tests, few degrees of difficulty are planned, initially the feature in tasks that differs various solutions is promptly noticed, and the scheme of movement of the elements is obvious, in time the differing feature is increasingly difficult to notice, and the newly formed solution requires greater skill.

Authors of the development hope that tests supporting development of spatial imagination significantly enrich the existing development and will be useful not only to students of engineering studies.

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