Monika SROKA-BIZOŃ, Ewa TERCZYŃSKA
Silesian University of Technology
Geometry and Engineering Graphics Centre
Krzywoustego 7 Street, 44-100 Gliwice
phone/ fax: +48 32 237 26 58 e-mail: monika.sroka-bizon@polsl.pl, ewa.terczynska@polsl.pl

CAN IMAGINATION BE STUDIED?

Keywords: *imagination, spatial imagination, imagination studies, MTC, RP*

The development of spatial imagination is one of the educational effects, occurring in the majority of descriptive geometry curricula taught at technical universities. Adoption of specific educational effect to the curriculum needs at the same time adopting the method to check whether the effect of education was acquired, i. e whether participating in the course and getting credit of the course such as “Descriptive Geometry and Technical Drawing" actually benefited with the development of spatial imagination of students participating in classes. The problem of the studying of spatial imagination accompanies intelligence studies since 1905. [1] [11] Also, the technical university academics involved in the teaching of geometrical subjects, such as engineering geometry, geometric CAD and engineering graphics, in a wide range research issues on the development of spatial imagination and research methods to verify this development. [3] [4] [5] [6] [7] [9] [10] [12] [13] [14] [15] This paper is derived from studies related to the perception of vision and the development of spatial imagination. [16] The issue of design of the course developing spatial imagination has been preceded by an attempt to determine the level of skills to recognize and solve spatial problems in high school students. The studies were conducted using MCT test [17] and the original Rectangular Projection test developed on the basis of the tests used in the Platform for Remote Education of the Geometry and Engineering Graphics Centre of the Silesian University of Technology. [2] In this paper the authors present the results of study along with comparative analysis of test results.

References:

[1] Binet A., Simon T.: Sur la necessite d’etablir un diagnostic scientifique des etats infereurs de l’intelligence. Anne Psychologique, 11, str. 163-190

[2] Bogacki S., Terczyńska E.: The LMS Platform as the Tool of Checking Progress in the Learning Engineering Graphics. The Journal Biuletyn of Polish Society for Geometry and Engineering Graphics vol. 22, 2011, str. 17-23

[3] Górska R. A.: Spatial Imagination – An Overview of the Longitudinal Research in Poland. Journal for Geometry and Graphics, vol. 9, No 2, 2005, str. 201-2018

[4] Górska R A..: Investigation of the measures and means for the development of spatial skills. The Journal Biuletyn of Polish Society for Geometry and Engineering Graphics vol. 15, 2005, str. 35-38

[5] Górska R. A., Juscakova Z.: Spatial Abilities Test TPS – Further Development and New Results. Proceedings of The International Conference on Engineering Education (ICEE2005), vol. 2, Gliwice, 2005, str. 76-80

[6] Juscakova Z., Górska R. A.: TPS Test Development and Application into Research on Spatial Abilietes. Proceedings of The 12th International Conference on Geometry and Graphics, Salvador, Brazil, 2006, str.

[7] Kopeć B.: Rozwój wyobraźni przestrzennej uczniów szkół ogólnokształcących w zależności od ich wieku z uwzględnieniem na dziewczęta i chłopców. The Journal Biuletyn of Polish Society for Geometry and Engineering Graphics vol. 4 (1997), str. 34-39

[8] Maruszewski T.: Psychologia poznania. Gdańskie Wydawnictwo Psychologiczne, Gdańsk 2001, str. 32-72 oraz 252-293

[9] Nemeth B., Hoffmann M.: Gender differences in spatial visualization among engineering students. Annales Mathematicae et Informaticae 33 (2006), str. 169-174

[10] Nemeth B.: Measurement of the development of spatial ability by Mental Cutting Test. Annales Mathematicae et Informaticae 34 (2007), str. 123-128

[11] Quaiser-Pohl C.: The Mental Cutting Test „Schnitte" and the Picture Rotation Test – Two New Measures to Assess Spatial Ability. INTERNATIONAL JOURNAL OF TESTING, 3(3) (2003), Lawrence Earlbaum Associates Inc., str. 219-231

[12] Saito T., Suzuki K., Suzuki K.: Spatial Ability Evaluated by a Mental Cutting Test, Proceedings of 7th ICECGDG, Cracow, Poland, 1996, str. 569-573

[13] Sorby S. A.: Developing 3-D Spatial Visualization Skills. Engineering Design Graphics Journal vol. 63, No 2 (1999), str. 21-32

[14] Sorby S. A., Górska R. A.: The Effect of Various Courses and Teaching Methods on The Improvement of Spatial Ability. Proceedings of The 8th International Conference on Engineering Computer Graphics and Descriptive Geometry, Austin, USA, 1998, str. 252-256

[15] Suzuki K., Wakita S., Nagano S.: Improvement of Spatial Problem Solving Ability through Descriptive Geometry Education. Proceeding of 4th ICECGDG, Miami, USA, 1990, str. 442-448

[16] Sroka-Bizoń M., Terczyńska E.: Perception of View – How to Develop Spatial Imagination. The Journal Biuletyn of Polish Society for Geometry and Engineering Graphics vol. 25 (2013), str. 19-26

[17] CEEB, (1939), Special Aptitude Test in Spatial Relations, developed by the College Entrance Examination Board, USA