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## **GRAPHICACY CAPABILITY AS A FACTOR ENHANCING SUCCESS IN ENGINEERING DISCIPLINES**

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Research conducted in the field of perception and recognition of graphic images and their correct interpretation have been carried out by psychologists SINCE ABOUT . Just as literacy plays a very important role in the development process of each individual, graphicacy provides the students of engineering specialties the tool helpful in gaining success in their professional life as designers and practicing engineers. Individual predisposition to understand and to be able to recognize and to correctly interpret graphic images is becoming a major trait of the future engineers. Theory of perception, image analysis, research on the signal detection and/or interpretation, recognition of the so-called optical illusions have always been the domain of developmental psychology (Rużyczka, 2014).

In recent years, major changes have been introduced into the system of higher education in the common European Higher Education Area (EHAEA). The National Qualifications Framework (NFQ) has assumed that the national curricula will develop and/or reconstruct the curricula by defining and taking into account the so called “learning outcomes”. Development of curricula at engineering studies resulted in limitation of teaching hours assigned to particular subjects and to the so-called “graphical” subjects into common modules. When creating new programs and their contents the educators should take into account the element of potential development of graphicacy ability. It is important that the future engineers should be to correctly recognize graphic images, to interpret two- dimensional plans and views in a three-dimensional space, to be able to correctly orient the spatial objects and perform manipulation on the object (e.g. rotation, mirror imaging) of a three-dimensional object manipulation. Thus, when planning on the content of lectures at engineering studies the educators must undertake a systematic and intentional action which complies with the research results in the field of spatial perception and recognition of graphical images that have been conducted in foreign countries (Danos, Norman) and Poland (Gorska, 1998).

Systematic research on graphicacy will result in creating a framework for the subjects that belong to a group which has been defined as the “visual science” (Bertoline, 1998). The term of “visual science” has never been introduced into the classification list of research areas specified by

the Polish Ministry of Science and Higher Education. The group of subjects within the graphics area at technical universities include: Descriptive Geometry, Computer Graphics, Fundamentals of Computer Aided Design, Technical Drawing, Design Visualization and Rendering, Visualization in Construction and Road Design. Creating a framework for programs addressing the needs of engineering students is extremely important in the context of finding a common denominator for the research, which is the development of the skills in recognition of graphic images. The subject has been known to researchers in many countries (Barr et al., 1994; Bertoline, 1998; Danos, et al., 2014; Wilmot, 1999) and is also known within Polish environment (Żakowska, 2001). However, in Poland the research field of “graphicacy” area has been primarily recognized only by the psychologists.

The aim of this part of research has been a systematic analysis of literature in Polish environment in order to recognize the contemporary level of awareness of the importance of visual literacy development in the frame of engineering studies (RQ1), the development of relative curricula for the subjects included in the area of “visual science” (RQ2) and finally the possibility of taking a continuum approach for lifelong learning (RQ3).

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