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WHY IS IT WORTH TO BECOME AN ENGINEER? - PROMOTIONAL ACTIVITIES OF SCIENTIFIC AND RESEARCH INSTITUTIONS AND COMMERCIAL ENTITIES

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Introduction

For a few years we have observed growing demand for people with technical and scientific education on the European labour markets. There has been a similar trend in Poland and for this reason more and more institutions decide to support campaigns encouraging young people to study exact sciences.

In 1990 in Poland there were 400,000 students, ten years later already 1.5 million people were studying at universities. In 2002 the most popular areas of study were: management and marketing, pedagogy, economics, administration, law, finances and banking, political sciences and social sciences. Ten years ago every seventh student studied marketing and management and every tenth studied pedagogy. As a result, the market is saturated with graduates specialized in humanities. At the same time, there is a shortage of graduates of technical studies.

The Ministry of Science and Higher Education, as well as Polish technology universities take various actions to make young people realize that over the coming decades the demand for engineers in countries of the European union will be growing. Such areas of study as: automation and robotics, biotechnology, energy, technical physics, informatics, structural engineering, environmental engineering, mechatronics and mathematics, chemistry, material science, mechanics and machine engineering, environment protection and industrial design are among the so-called ordered specializations. This means that they are supposed to provide a sufficient number of appropriately qualified employees with education in technology, mathematics and natural sciences. The pilot program "Zamawianie kształcenia na kierunkach technicznych, matematycznych i przyrodniczych" (ed. Ordering education in the areas of technology, mathematics and natural sciences) was launched on October 1, 2008. The main assumptions of the program include introduction of motivational scholarships for the best students, additional courses on particular subjects in order to equalize the level of education, additional courses in foreign languages, the opportunity to gain additional qualifications and professional qualifications, consultations and e-learning, consultations with experts from international corporations. Some universities also invite lecturers from foreign universities, organize scientific camps and finance the participation of students in scientific conferences. In 2012 the

Ministry of Science and Higher Education started the implementation of the fourth cycle of promotional meetings in course of the project titled "Kampania promocyjna na rzecz kierunków matematycznych, przyrodniczych, technicznych działania 4.1 poddziałania 4.1.3 Programu Operacyjnego Kapitał Ludzki" (ed. Promotional campaign for the benefit of education in the area of mathematical, natural and technical sciences, action 4.1 sub-action 4.1.3 of the Operational Program Human Resources Development). All high schools, which expressed interest in participation in the program received microscopes for their biology workshops, as well as materials informing about the opportunities for starting studies in the area of mathematical, natural and technical sciences – including the so-called ordered specializations. The goal of the campaign is to promote exact sciences among future students.

Universities of technology in Poland launch individually and jointly various campaigns, which are supposed to attract new students. One of the programs which promotes the profession of engineer and exact sciences is "Era Inżyniera" (ed. Age of Engineer). This is a program launched in 2008. Numerous universities (eg. AGH University of Science and Technology, Rzeszów University of Technology, Poznań University of Technology), scientific institutes (eg. Institute of Aviation, Air Force Institute of Technology, corporations (among others, General Electric, Volkswagen Motor Polska), associations (Stowarzyszenie Inżynierów Mechaników i Techników Polskich, Oddział Warszawski), high schools and junior high school are involved in the campaign. The main goals of the program are: raising the number of students at engineering faculties, popularization of the profession of engineer and raising the quality of teaching of exact sciences by referring to real needs of the economy. In course of the "Era Inżyniera" program, young people can participate in practical workshops eg. in laboratories of research institutes, in "open door" meetings at technology universities. They can also visit the headquarters of innovative companies. Nation-wide contests concerning issues of technology, as well as meetings of pupils' parents and their teachers, who have a major impact on the choice of studies made by their pupils, are being held. An important tool of the program is the website www.erainzyniera.pl. Its users (among others, students and teachers) can influence its visual appearance, improve functionality, play and at the same time learn. They can comment, discuss, share knowledge. Above all, the website gives the opportunity to create a community fascinated with exact sciences. The program covers 17000 high schools and junior high schools. It is a long-term project co-financed with funds from the European Union.

Poznań University of Technology is also trying to fight the stereotype that exact sciences are difficult and boring. Within the subject titled Computer System Architecture the University organized a contest for a "line follower" robot – a robot which goes along a previously defined line. The contest was accompanied by a robot competition and lectures on the subject conducted by students of the University for pupils of high schools in whole Poland.

Numerous projects associated with the promotion of technical areas of study and the profession of engineer are focused on attracting female high school graduates to study exact sciences at universities and universities of technology. In the academic year 2007/2008 Education Foundation Perspektywy launched the program titled „Dziewczyny na politechniki!” (ed. Girls, go to universities of technology!).

Two years ago another module was created. The program titled "Dziewczyny do komputerów!" (ed. Girls at computers), encourages female pupils to study computer sciences. In course of this program meetings, campaigns and fairs only for girls are being held – eg. Technical University of Łódź in April 2012 organized "Bieg w kasku" (ed. Running in helmets). The event was targeted mainly at pupils of final grades of high schools, but it could be supported by all women who wanted to fight the stereotypes about female engineers. Similar runs were organized in other big cities in Poland, among others, in Warsaw and Poznań. Apart from the run at the end of April 2012, there was also Ogólnopolski Dzień Otwarty Tylko Dla Dziewczyn (ed. National Open Day Only For Girls). During the event participants had the opportunity to visit 16 universities of technology, talk to graduates and scientific employees about career and visit laboratories.

Also commercial entities organize job fairs, as well as educational fairs for high school graduates. The managers of many companies actively support both the promotion of the profession of engineer and changing the image of women as engineers. In the past women used to hear that exact sciences are very difficult and that it is better to study friendlier subjects associated with more "feminine areas" like political sciences, sociology and pedagogy. There has also been a stereotype that studies and later the work of an engineer require physical strength and for this reason women are in a worse position from the very start. However, research conducted by sociologists has shown that women's technical education isn't any worse than men's and women's predispositions for the profession of engineer or IT specialist are equal to the predispositions of men. For this reason many companies are eager to employ women.

An example of such a company is General Electric, which as Engineering Design Centre together with the Institute of Aviation encourages high school graduates to choose the technical course of education and shows them opportunities for professional development in its structures. At fairs for high school graduates the company is represented not only by male engineers, but also by women managing teams of engineers. It is them who answer the questions of female and male high school graduates. They talk about the work of an engineer and the opportunities for development at Engineering Design Center. A numerous group of women within the framework of GE Women's Network conduct in their free time trainings for their colleagues and share their professional experience at fairs. GE noticed already a long time ago that mixed teams work more efficiently.

Motorola is proud of its educational program titled Diversity, which it has been running for a few years. The program encourages girls to study computer sciences through participation in a contest involving the creation of a thematic website. According to the rules, women have to constitute at least a half of every group.

Companies are trying to reach not only students, high school and junior high school pupils, but also children. They direct some of their programs and products to small children to stimulate fascination with the world of science and technology in early childhood. They encourage children to play with technology. One of such products is the set from American company Roominate (for children aged 6 to 10) which makes it possible to not only build traditional elements of a doll house, but also takes into consideration planning an electric line in the construction. Such play can influence later choices concerning scientific

career, work etc.

Another good example of a company promoting technical areas of study is Astor – a company dealing with introducing automation and production management products to the market. As a socially responsible company it organizes contests for students and pupils of high schools with a technical profile in the area of automation, robotics and industrial software. The jury of the contest to a large extent assesses the innovative potential and handling of the project. The contest was distinguished in the report titled „Odpowiedzialny biznes w Polsce 2010. Dobre praktyki” (ed. Responsible business in Poland in 2010. Good practices).

The above-mentioned actions of both scientific and research institutions, as well as commercial entities will contribute to growth of interest in technical areas of study and exact sciences among both sexes. They fight against the dominant stereotypes and help change the way of thinking of the young generation. We can hope that in a few years universities and companies won't have to argue that investing in technical education is profitable, but that they will only be promoting their brands in a rapidly developing Polish economy.

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