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## **PRACTICAL EDUCATION ON A HIGHER LEVEL IN POLAND: EXAMPLE OF KATOWICE SCHOOL OF TECHNOLOGY**

### **Анотація**

У статті розглядається позитивне значення практичного навчання студентів вищих навчальних закладів у підготовці кваліфікованих фахівців. В якості прикладу автори розглядають Вищу технічну школу в Катовіцах – вищій навчальний заклад, який планує впровадити подвійне навчання за участю зовнішніх компаній різних сфер діяльності, в тому числі і механіки.

**Ключові слова:** практичне навчання, інноваційне навчання, вища освіта.

### **Summary**

The aim of the present article is to show the benefits of practical education on the level of higher education.

The authors used the Katowice School of Technology (KST) as an example, a school which is planning dual education with the participation of external companies at various fields of study, including mechatronics.

**Key words:** practical education, innovative education, higher education.

**Introduction.** Young people often believe that formal education will guarantee them professional success. Unfortunately despite good results on maturity exams and having diploma of institutions of higher education many cannot find their place on the labour market. Research has shown that in Poland, every fifth person under the age of 25 could not find work in 2016 [1]. The reasons for this also include the system of education which while emphasizing knowledge devotes too little time to practice.

Graduates, who do not possess the appropriate competencies and professional experience, cannot get the internships or apprenticeships they desire. In turn, without said practice, it is difficult to develop the practical competencies, necessary to find employment. It often turns out that a company is not interested in grades or the completed field of study, but rather the experience acquired.

**Practical education.** A solution can be found in dividing education into a general academic profile and a practical profile, which was introduced in the amendment of the Act from 11.07.2015 Law on Higher Education.

The general academic profile encompasses class modules connected with the scientific research conducted at the school and is implemented with the assumption that, more than half of the curriculum (defined in ECTS points) encompasses classes in which the student acquires enhanced knowledge.

*Practical profile*, on the other hand encompasses class modules in which the student acquires practical abilities and social competencies and is implemented with the assumption that more than half of the curriculum (defined in the ECTS points) encompasses practical classes which develop these abilities and competencies, including abilities acquired during workshop classes, which are conducted by people possessing professional experience acquired outside the school [2].

The profile of the instructor influences the requirements regarding the so-called minimum academic staff complement, as well as the amount of student internships (in case of the general academic profile, the curriculum does not have to take them into account).

The units conducting a practical profile may in addition organize education alternately in the form of didactic classes implemented at the school as well as in the form of classes in the form of internship, taking place at the company, while the studies themselves can be conducted on the basis of the appropriate agreement with the participation of economic entities [3].

**Dual system.** The formula of education at Universities at a practical profile provides new possibilities which raise the attractiveness of graduates on the labour market. One of these is conducting education in a so-called dual system.

The dual system also known as a mixed system or a two-track system is based on learning a profession, which is organized by the employer, as well as theoretical and general education in the school system. It is very common in Germany, Austria, Switzerland, Norway, and France.

In Germany „more than 2/3 of the youth, when finishing their mandatory education, chooses the dual system when continuing their education” [4], later finding employment, most often with the same employer where they were educated.

The model of professional education known as the dual system assumes the combination of practice with theoretical learning and is organized by the School or educating institution, as well as employers.

In such a system:

- the education is for a specific profession, specialization or qualifications,
- practical learning of the profession takes place at a company,
- employment is based on an employment agreement and it includes remuneration for the work performed,
- theoretical learning takes place at the school, education ends with obtaining formal qualifications – profession,
- there is a facultative possibility of obtaining additional certificates [5].

In Ukraine, employers increasingly point out that graduates do not meet the requirements of the modern labour market. Some corporations are ready to invest to the educational infrastructure and to train specialists who could work in accordance with modern standards. Unfortunately, in Ukraine the implementation of dual system is not yet planned on the government level.

**The Katowice School of Technology.** An example of implementing such a system can be seen with the planned introduction of education in the field of electric

mobility at the field of study of Mechatronics at the Katowice School of Technology. It is a concept which assumes the use of ecologic, zero-emission electric vehicles instead of vehicles powered by fossil fuels [1].

Before presenting the activities undertaken by the school in the field of dual education, the authors shall present the Reader with a general overview of the Katowice School of Technology.

KST began its activities on October 1st 2004 and it is the first private institution of higher education in Upper Silesia, which conducts technical and artistic studies, educating engineers and masters of Architecture and Constructions, engineers of Spatial Planning, Mechatronics and IT, masters of Graphics, bachelors and masters of Interior Architecture, and bachelors of Design.

In addition the School is also preparing studies at the fields of study of: Obstetrics, Nursing and a medical field.

The school's calling card is a specially developed education curriculum and a highly qualified scientific and didactic staff, which consists of outstanding specialists from the academic community of Upper Silesia, Wrocław, Łódź, and Cracow.

The rich education curriculum which is based on interdisciplinary knowledge prepares students for future work both theoretically as well as practically.

Taking into account the requirements with which graduates are faced on the contemporary labour market, during their studies the students have the possibility to familiarize themselves with modern systems of design support and computer technologies.

The school possesses laboratory facilities, which meet the highest standards as well as the Silesia Science and Technology Park which is an integral part of KST.

Recently the School Authorities have undertaken numerous steps leading to innovative education with special emphasis on electric mobility.

Students of Mechatronics can choose a new major: electric and hybrid cars. The school will educate creative engineers, who specialize in designing and improving ecological and inexpensive in maintenance vehicles.

Students with a major in electric and hybrid cars will acquire interdisciplinary knowledge necessary to design electric and hybrid cars and to service complex technical systems used by international automotive companies.

Prior to starting the education of students in the field of electric mobility on the field of study of mechatronics, KST organized an international scientific conference entitled „Electric mobility – an opportunity for the development of Polish economy”.

During the event, in which approximately 1000 people participated, experts from companies in the electric mobility industry presented a vision of the future and the opportunities which open technology provides, while also showing designs and chances for development.

Apart from the scientific and educational aspects the conference was a good pretext to broaden or commence cooperation with companies participating in the meeting, meaning a factor which is necessary in the dual education system.

The conference was supported by the top companies from the automotive industry, research institutes as well as voivodship offices and city halls such as: Toyota, Lexus, Mitsubishi, IBM, Institute of Electrical Drives and Machines “KOMEL”, Nissan Europe, Ele-DriveCo, ElektroMobility Poland, Impact Clean

Power Technology, Greenpower Polska, Fabryka Samochodów Elektrycznych, Transporters SA – project GreenGoo, Airwheel Poland, Geotrek, Tauron Distribution, Tauron Production, KZK GOP, Ensto, Polish Academy of Sciences (PAS) KEZO Research Center, PAS Institute of Fluid Flow Machinery, Uber, Polish Automotive Electrification Program, Silesian Voivodeship Board, Katowice City Hall, The City of Jaworzno.

Special guests included representatives of the electric mobility community as well as those who are implementing it in Poland: a representative of Nissan Europe, mayor of Jaworzno, representative of the Polish Automotive Electrification Program, as well as a representative of the PAS KEZO Research Center.

A great deal of success was enjoyed by the exhibition of electric and hybrid cars and test drives of the models Tesla S, Nissan LEAF, BMW i5 as well as Fiat 500 in its electric version. The conference participants were also able to use light electric vehicles from the Airwheel Poland company.

During the event an agreement was signed concerning the establishment of the Intelligent Silesian E-Mobile Zone signed by the mayor of Jaworzno, a representative of the Polish Automotive Electrification Program, the PAS KEZO Research Center, and the Rector of the Katowice School of Technology.

During the concluding remarks, the Chancellor of the Katowice School of Technology declared that in the near future KST will feature a charging station for electric cars. This will definitely have an impact on the development of a new major at the field of study of Mechatronics – Electric and Hybrid Cars [1].

The above-mentioned activities are one of the stages of preparing the School for practical education at this specific field of study. The participation in the conference of the above-mentioned firms and institutions is an indicator of their engagement in the education process, which is necessary in order to introduce the dual system.

**The benefits of practical education.** Universities which are implementing the postulates of educating the appropriate employees for the labour market are becoming schools of the third generation. The research of needs of the labour market as far as student competencies has proven, employers almost unanimously (94% of the responses) pointed to communication and interpersonal skills which are necessary to properly carry out the assigned tasks. 84% of the employers pointed to the ability of analytical thinking necessary to make good decisions. This shows that employers expect a graduate who is both a thinking practitioner and an able performer.

A graduate of studies with a practical profile of education is a competent specialist prepared to perform a whole range of tasks at a given job position, in accordance with the expectations of the employer. In addition he should possess entrepreneurial competencies in order to use the acquired knowledge in economic activity. Practical education is an opportunity to make up for the lack of experience, especially when it comes to practical skills, which in effect reduces the risk of graduates of institutions of higher education having improper competencies and qualifications for the contemporary labour market [1].

The students themselves also see the benefits of studying at a practical profile. 76% of those studying at the Katowice School of Technology, when in a survey they were asked a question: *Which of the systems of education is more attractive on the labour market, general academic or practical?*, pointed to the

second answer. Respondents who chose theoretical education are mostly people who are thinking about continuing their studies at the PhD level.

A question about the introduction of a dual study system also leaves no doubts. 81% of the survey takers favour such a system of education. The graduates of KST believe that if they had the possibility to study using a practical system approach, their attractiveness on the current labour market would greatly increase.

**Conclusion.** Today schools cannot function outside of current trends and problems of the economy. They must react to signals coming from the labour market and strictly cooperate with it.

In order to follow this rule, it is necessary to undertake numerous adaptive steps, among which there are actions connected with a gradual transition from general theoretical education on a high scientific level towards practical education.

Without a doubt this should take place without any damage to knowledge necessary to commence second-cycle studies, while becoming more practical means equipping students with reliable applied knowledge and broad practical skills.

In essence, this means, a process of newly defining the school through a gradual transformation of it, into a school of the third generation. The principal idea behind such a school is combining the scientific sphere with business as well as all kinds of institutions functioning in the community, initiating entrepreneurship and supporting local development.

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