EXPERIENCES AND OPPORTUNITIES IN TEACHING UKRAINIAN STUDENTS AT THE FACULTY OF MINING AND GEOENGINEERING IN AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY

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The paper presents the influence of various factors on the process of internationalisation of higher education in Poland, and particularly in AGH University of Science and Technology from the perspective of the Faculty of Mining and Geoengineering. It lays out educational opportunities for learners at mining and geology study courses, and the benefits stemming therefrom for international students, including students from Ukraine. Possibilities of academic exchange were discussed and that of international cooperation, in particular with Ukraine, in order to support the potential of science and higher education in both countries. Lastly, factors were indicated in favour of taking education with AGH.

Internationalisation is one of the key strategic challenges the universities face at the turn of the 21st century. In order to tackle issues involved in internationalisation processes, attractive educational programmes and strategies have to be created, which would be decidedly market-oriented and which would provide high quality paid educational services in English. Generally speaking, the internationalisation of universities constitutes "an inclusion process of international, intercultural and global dimension into the educational services offered at academic level". It promotes development of academic units, meliorates quality of education and stimulates innovation.

In recent years, a significant rise has been recorded in the role that external factors play in generating changes in the educational market. These changes are linked to the processes of globalisation, and the employers' need for students to be accustomed to the character of international market. Foreign graduates of higher education institutions are not only consumers of educational services, they can also be seen as catalyst of trade between their home country and the country of their university. Moreover, educational exchange constitutes a unique investment in the future, whose economic and cultural effects are delayed in time. One may regard various models for promotion of international education established among others in Japan (The Japan Foundation) and in South Korea (The Korea Foundation). All of them benefit from experiences of Western institutions, such as: British Council, Alliance Française, and Goethe-Institut.

State policy as regards internationalisation in the recent period has been predominantly based on the EU Erasmus programme. Lately, the Polish educational market has become extremely competitive, even though Poland still lacks clear-cut policy towards students from outside of the EU, while internationalisation of higher education institutions is obstructed by immigration and visa regulations, limiting the influx of foreigners. Apart from the above, another weakness of Polish internationalisation processes results from a too limited number of courses offered in English and the shortage of international educational agreements and foreign lecturers. There are also no internationalisation strategies at the respective universities that would be incorporated into their development strategies. Hence, we are dealing with a twofold deficit of international orientation both at the level of colleges and of the central institutions. Nevertheless, we are currently observing a growth in synergy, involving image creation of universities and their respective faculties. For the purposes of that, the marketing campaign *"Ready, Study, Go! Poland"* was created at the www.go-poland.pl portal — addressed to strategic educational markets (the countries within the Eastern Partnership, China, India, Vietnam, Indonesia, Brazil, Turkey, Saudi Arabia, Qatar). Social media and European Commission's website *Study in Europe* are also used.

Poland has only just begun to open for foreign students. The influx of foreign students to the country commenced in the 1950s. It was the effect of educational programmes devised for the so-called Third World countries. The breakthrough came in the year 1989, and later when Poland joined the EU in 2004. Poland's introduction to the global system and educational space forced Polish universities to face the "outside world". Poland's accession to the EU marked a major leap. In the academic year of

2016/17, ca. 65 thousand foreign students from 166 countries studied in Poland. Since 2005, Polish universities have recorded a stable growth in the number of foreign students, who at present amount to 4,9% of the total number of students in Poland. This increase in the number of foreign students in Poland is caused predominantly by the influx of Ukrainian students, who account for slightly over 50% of all nonnative students in Poland. It results from many years of consistent marketing and promotional activity of Polish universities in the Ukrainian market (especially within the framework of the "Study in Poland" programme) and other activity both at the level of central government, as well as marketing campaigns by universities. Additionally, the cultural, geographic and language proximity between Poland and Ukraine has to be strongly emphasised. Another advantage of studying in Poland is its financial reasonability, i.e. the competitive pricing, especially comparing with the developed countries of the old EU. For Ukrainian students Poland is the nearest EU country. Its allure as the place to study can also be regarded in terms of safety, cultural closeness, EU-honoured diplomas, as well as promising relation between the quality of studies and the tuition and living costs.

The main factor responsible for the growth in the number of foreign students can be identified as globalisation or internationalisation of higher education worldwide. As is the case of free movement across the borders of goods, assets, information, tourism and labour, so too students more and more often decide to learn in another country. This is an instance of global educational market, which is expanding its reach. Higher dynamics of foreigner influx into universities could be regarded as a result of:

- better students' mobility (due to the establishment of EU),
- setting up European educational programmes (such as Erasmus+),
- change in attitude of the governments, who now see foreign students as a chance for economic growth of their countries,
- change of approach at the universities, actively recruiting foreign students, who are considered an element raising the prestige of the school.

On the basis of data concerning the number of foreign students in Poland, it can be pointed out that the accession to EU in 2004 was the turning point, enabling a rapid growth in the number of foreign students in Polish universities. Moreover, thanks to the Erasmus+ programme, Poland not only became one of the receiving countries, but also a considerable number of Polish students was able to study in foreign universities. Besides, because of the introduction of Erasmus programme by the Polish government, Ukrainian students are eligible for scholarships and can complete a single-term study courses in educational units in Poland. Another factor entails absorption of human assets, which enhances the innovation of the economy. Western European countries apply such policy with considerable success, this way acquiring specialists, who happen to be missing in their labour markets. The final factor is also of major significance, as attracting foreign students benefits the university's ranking position, making it potentially a more sough for destination also for Polish students. It should also be mentioned that development of internationalisation lies in the economic interest of schools. It is estimated that the global educational market provides the countries hosting foreign students with 85 billion dollars annually. In Poland, it is estimated that the contribution of foreign students to the country's economy amounts to almost 100 million Euro per annum.

In recent years, the global economy is undergoing massive transformations, which creates new challenges to companies and educational institutions that cater to the needs of industry. The expansion of business enterprises is largely dependent on their employees' expertise, skills and levels of competence. Certified engineers are provided by universities. Therefore, the qualifications of their graduates are determined by the curriculum and teaching methods, as well as the available educational and research facilities. Of equal importance is the qualified academic staff. The paramount importance of those issues results from the challenges and transitions that are taking place worldwide. It is possible to identify the following key factors:

– technological advances, meaning that without ongoing education of engineers the economy will lose its competitive edge. For this reason, it is vital to bear in mind that knowledge becomes outdated and new fields appear, which calls for an interdisciplinary approach. Consequently,

engineers are expected to be proficient not only in their chosen specialization, but also in a range of other fields.

– globalization of markets, which removes limitations to communication and trade, allowing businesses to expand their activities. New markets and new ways to exchange information and acquire knowledge emerge. For this reason, it is necessary to have a knowledge of various cultures and to adjust the strategies of human resources management accordingly, as well as educational opportunities.

– the dissemination and recording of information in today's world takes place electronically. As a result, a huge amount of information has become easily accessible. In the myriad of information, however, it is extremely difficult to identify the useful bits and to verify, select and integrate information.

– threats to the natural environment caused by the exploitation of limited natural resources, pollution and the resulting degradation of the ecosystem. Therefore, human activity should employ methods that protect the environment.

– increasing awareness and social responsibility means that apart from improving the standards of living, technology has a detrimental effect on human health because of pollution, its impact is revealed in environmental disasters, it causes the depletion of non-renewable resources, and facilitates the spreading of diseases and epidemics.

– the pace of changes caused by technological advances accelerates the evolution of tastes and consumer needs. In fact, the requirements of the industry are shaped by consumers.

Moreover, any company – regardless of the technological solutions it employs – is only as efficient and effective as its employees. It is believed that the crucial asset of every organization, which determines its strategic potential, are its intellectual resources, i.e. the knowledge, skills, experience, culture, hierarchy of values, and a will to cooperate and share expertise. At our university, we strive to foster the awareness of the above in our students. It can generally be stated that intellectual capital is a vital factor that affects the ability to stay competitive, win over new customers, or increase one's share of the market. The key element of the intellectual capital is knowledge, which becomes useless unless it is continuously updated. What follows is that effective management of an organization that is expected to develop provides opportunities to revise, update and expand knowledge.

Aware of the above conditions, AGH strives to accommodate to the needs resulting from internationalisation of education. Within the structure of AGH University of Science and Technology there are faculties whose research activity focuses not only on traditional branches of industry, with the fields of geo- and technical sciences, but also with areas of key importance for the development of modern economy such as: new materials, renewable energy sources, biomedical engineering and information technologies. The school carries out over 100 projects run in cooperation with foreign partners, including programmes such as: EU Framework Programmes for example Horizon 2020, KIC InnoEnergy, KIC RawMaterials, European Space Agency, International Visegrad Fund, Research Fund for Coal and Steel, EUREKA, COST, ERA, Bilateral cooperation programmes, Erasmus+, European Social Fund PO WER. AGH entered into over 250 general agreements with foreign universities, polytechnic schools and research institutes in Europe, North and South America, as well as in Asia, with the view of multidirectional educational and research activity; AGH also cooperates with over 450 higher education institutions within the Erasmus+ programme. The most current success for AGH was being awarded "International Student Satisfaction Awards 2016" as a part of a satisfaction survey among students of the Erasmus programme, performed by European portal – StudyPortals.

AGH University of Science and Technology provides education within all types of studies, offering educational profile adjusted to the emerging trends in the labour market. In the academic year 2008/2008, AGH implemented the three-cycle educational system (known as the Bologna Process):

- I cycle (6-7 terms) usually awarding professional degree of Bachelor or Engineer,
- II cycle (3-4 terms) awarding a Master's degree,
- III cycle — doctoral studies — preparing students to their independent research and teaching activity, awarding an academic degree of Doctor.

In the Syllabus you can find detailed descriptions of all the courses and modules offered at the AGH University of Science and Technology in Krakow. It provides you with the details of the form of classes, learning outcomes, and the methods of student progress verification. Apart from the above, you can also find information about the number of hours assigned to particular courses, as well as their ECTS credits. Currently, AGH University of Science and Technology offers education within 16 study courses provided entirely in English (I and II cycle of studies) https://www.international.agh.edu.pl/eng/centre-for-international-students/. Additionally, our school runs AGH UST International Courses programme, which integrates tens of courses offered in English, https://esa.agh.edu.pl/offer/international.

AGH is one of the forerunners of the 2018 Ranking of Engineering Studies in a report prepared by the Perspektywy Education Foundation. According to the findings of the Polish Graduate Tracking System (ELA) regarding the year 2016, the graduates of AGH earn the highest salaries in Lesser Poland Voivodeship. In an international list provided in the Global Ranking of Academic Subjects 2018, compiled by the team of ShanghaiRanking Consultancy, AGH University of Science and Technology, as the only Polish entity, found its way to the top fifty of universities within the subject of Mining & Mineral Engineering (ranked 28. in the world).

AGH is a party to 26 agreements on double degree programmes with renown universities in Germany, France, Japan, Ukraine and Finland, within the framework of which students acquire knowledge in two higher education institutions in parallel. Once an agreement between the universities is signed, students get an opportunity to receive a double diploma of graduation from studies of the II cycle, which provides them with a unique combination of interconnected subject fields in both schools. Thanks to that, students acquire valuable experience in an international environment, making them more competitive actors in the labour market.

The educational offer of the Faculty of Mining and Geoengineering at AGH among others includes the course of: Mining and Geology: Mining Engineering. Students of Mining Engineering deal with modern subjects within the scope of mining technology (coal and ore underground, open pit and salt mining), mechanization, geomechanics, blasting techniques, natural threats (rock bursting, roof falls, underground fire prevention, methane control etc.) and geological background. With the access to the latest software and state of the art computers students can simulate mining conditions by the means of numerical modeling. Students are also provided with knowledge in the field of mining economics, as well as organization and management in the mining industry. Learning modern mining technologies, they can use computer techniques and visit Polish mines. Course duration: 3 semesters - 1,5 years (800 hours, including the writing of Master thesis). Requirements: BSc in mining, geology, underground construction or mining engineering. This study course was established three years ago and to date has been completed by several dozens of students from China, Mongolia, Ukraine, Vietnam, and Africa. High level of education in the field of "mining and geosciences" resulted in the fact that a large group of engineers from Vinacomin, the largest producer of coal in Vietnam, received their education on the II cycle studies at our faculty. Such model of teaching may also be offered to students coming from Ukraine providing a Ukrainian company decided to support it and reimburse at least a part of the costs of the education of its prospective employees.

Apart from the above, the Faculty of Mining and Geoengineering offers and carries out:

- single semester trainings, comprising 320 hours of classes and 8 technical field trips, several students from Chile benefitted from this form of education in the previous term,
- a 5-week course "Mining Engineering for Engineers". The course comprises 120 hours of lectures and 8 technical field trips to mining companies and the producers of mining machinery and equipment. Within this framework, the largest mining company in India, to wit: Coal India Limited, completely financed a five-week course of coal mining engineering for their engineers and managers.
- 2 weeks' Summer School, the offer is addressed to students and doctoral students with profile of mining or related as well as to employees of companies / enterprises involved in the mining industry who wish to improve their professional qualifications through participation in the Summer School. We work closely with the mining industry, so we have the opportunity to combine knowledge

with practice. The course comprises 30 hours of lectures and 4 technical field trips. To date, the faculty has carried out 10 editions of the summer school, which was directed mainly at students coming from Chinese universities,

- five day courses on underground and surface mining, geotechnical engineering, mineral processing. Offers for such short courses were prepared with engineers from Algieria and Iran in mind.

We are fully aware that education process of a good engineering does not only entail educational syllabi. An engineer's work consists in the design, construction, modification and maintainance of useful devices, processes and systems, using scientific and technical knowledge. In order to design complex engineering solutions, an engineer uses his imagination, experience, analytical skills, and logical reasoning, and makes conscious use of his or her knowledge. An engineer's knowledge comprises theory and relevant information, regarded as appropriate qualifications:

– factual knowledge - “know-that", or facts, principles and rules,

– procedural knowledge - “know-how", or algorithms and methods enabling us to apply theoretical knowledge,

– conceptual knowledge, gained through understanding, reflecting, and reflective learning,

– metacognitive knowledge, i.e. knowledge about one's own cognitive processes and our ability to control them.

The key problem of knowledge transmission is to decide which type of knowledge should be emphasised for the education to be effective while maintaining a high quality of education.

The definitions of competence vary. The traditional notion of competence as a combination of knowledge, skills and capabilities seems to be outdated. Currently, a broader interpretation is preferred and the term is defined as 'all the qualities of an employee which are applied and developed during work, and are conducive to achieving results consistent with the strategic objectives of the organization'.

During the process of education, it is possible to develop: the competences of an employee or a group regarded as professional competences, or the competences of a team of employees, taking into account the needs of the company. As a rule, an engineer's curriculum focuses on professional competences, especially in the field of engineering.

Also, it should be observed that an engineer's professional profile is not limited to knowledge. Apart from providing would-be engineers with the necessary qualifications, the AGH UST makes efforts to teach its students to observe ethical standards and to develop a correct attitude towards their work, the community and the environment. These qualities are in a way hidden and are instilled from birth by educators and other people. It should be emphasised that engineers from Vietnam are characterized by high standards of behaviour in their approach to work, studying, collaborators and teachers. Fig. 1 presents the qualities of a professional engineer, including knowledge and other aspects.

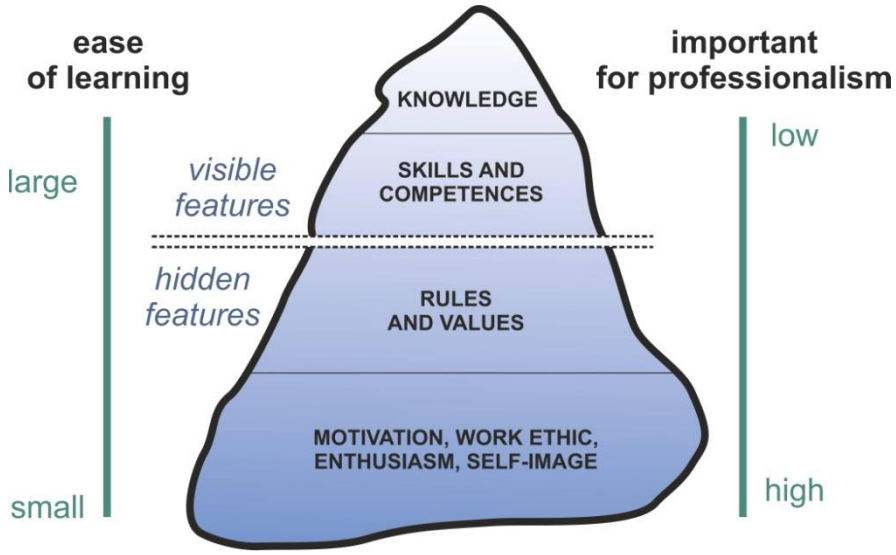

Fig. 1. The characteristics of a professional engineer

Nevertheless, it is primarily the quality of education in the field of engineering that is decisive for an engineer's level of competence. Therefore, global organizations define educational standards for various fields, including of course engineering studies. The most widely known include ABET (Accreditation Board for Engineering and Technology), EUR-ACE (EURopean ACcredited Engineer project), IEA (International Engineering Alliance), or JABEE (Japan Accreditation Board for Engineering Education).

In Poland, there are standards for every field of study that are supposed to be met by the authors of curricula. Educational standards are based on the Bologna process, which in turn was largely based on the EUR-ACE system. The standards specify the minimum number of semesters, classes, core curriculum classes or majors, and the number of ECTS points. However, universities and faculties have sufficient autonomy to design unique curricula for their Master's courses.

The biggest issue are the educational and social costs. That is why a year ago the Polish National Agency for Academic Exchange (NAWA) was established, aimed to support academic exchange and international cooperation in order to boost the potential of science and higher education. The Agency's task is to build a long-term policy towards the support of academic mobility and quality-focused internationalisation of the academic offer by running programmes targeted at students and academic staff both in Poland and from abroad. Additionally, on 1 February 2018 Polish National Agency for Academic Exchange assumed the competency as regards the authentication of documents issued by the Polish higher education institutions subordinate to the respective ministers, before they receive legalisation from the Ministry of Foreign Affairs. On the same day, NAWA also assumed from the Ministry of Foreign Affairs the competency as regards issuing of Apostille on the Polish diplomas of graduation from higher education institutions, diplomas of postgraduate studies, certificates of graduation, as well as diplomas of academic and art degrees.

Below, an in-detail description is provided about three programmes aimed among others at Ukrainian students.

The first of them is the Stefan Banach Scholarship Programme, carried out within the framework of the Polish development cooperation programme, addressed to foreigners from the countries of the Eastern Partnership (Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine), as well as the countries of Central Asia (Kazakhstan, Uzbekistan, Turkmenistan, Kirgistan and Tajikistan). The Stefan Banach Programme enables its beneficiaries to complete the second cycle studies in the universities supervised by the Ministry of Science and Higher Education within the fields of science, as well as natural, technical, and agricultural sciences. Eligible for the scholarship are the citizens of the countries of the Eastern Partnership and Central Asia who: are students in the final year of the first cycle studies in the field of science, as well as natural, technical, and agricultural sciences, or have graduated from the first cycle studies in these fields — however not before the academic year 2015/16 — and have a command of the Polish language at least at B1 level. If there are no first cycle studies in a country eligible for the programme, students and graduates of single-cycle Master studies or their equivalent are granted permission to participate. The second cycle studies are preceded by a monthly adaptation and language course, also carried out on scholarship terms, aimed at familiarising scholarship recipients with the Polish culture, and improving their command of the Polish language, as well as their knowledge on the course subjects within their future studies. The candidates are qualified during a competition procedure, based on the results of an interview hosted by the Exam Commission, appointed by Director General of NAWA, comprising academic staff from Polish universities. The candidates themselves chose the university and the study course they want to complete within the educational offer provided by the Polish public higher education institutions. A complete list of public universities supervised by the Minister of Higher Education is available on this link: http://www.go-poland.pl/pl/system-szkolnictwa-wyzszego.

NAWA carries out academic exchange programmes within agreements of bilateral cooperation entered upon with, among other countries, Ukraine. The purpose of mobility scholarships within bilateral agreements and the already existing bilateral cooperation between Poland and foreign partners is to establish or further develop existing cooperation between academic centres in Poland and abroad. Having an invitation or a confirmation of an existing cooperation proves in many cases

prerequisite of receiving the scholarship. That does not apply to summer courses. Scholarships for summer language courses are allocated, as a priority, to students and academic staff of foreign philologies, wishing to further develop the language of their studies. https://nawa.gov.pl/naukowcy/oferta-wyjazdowa.

Apart from the above, there exists a scholarship programme for the Polish diaspora, addressed to foreigners of Polish origins, citizens of the following countries: Belarus, Ukraine, Bulgaria, Czech Republic, Croatia, Macedonia, Republic of Moldova, Lithuania, Latvia, Estonia, Romania, Serbia, Slovakia, Hungary, Albania, Armenia, Azerbaijan, Georgia, Kazakhstan, Kirgistan, Russia, Uzbekistan, Tajikistan, Turkmenistan who: in the case of the II cycle studies and single-cycle Master studies — no more than two year prior graduated from the I cycle studies. It enables the youth of Polish origin (of Polish nationality) and the holders of Karta Polaka to complete their higher education in Poland and improve their command of the Polish language as well as raise the level of qualification in Polish diaspora where they came from. The programme offers an opportunity to compete higher education in the Polish language on a university in Poland and provides a monthly NAWA scholarship to cover the costs of living. The first cycle studies and single-cycle Master studies may be preceded by a yearly preparatory course for studies in Poland (also on scholarship terms). The purpose of the preparatory course is to further develop the command of the Polish language, as well as the knowledge in course subjects connected with the curriculum of the prospective studies. The list of study courses, the levels of education, professional degrees granted, forms of teaching, as well as universities running each particular course can be found within the Pol-on system, on its website: www.polon.nauka.gov.pl.

Summarising, it has to be emphasised that in the recent period AGH University of Science and Technology was able to establish a set of best practices improving the university's adaptability to the requirements of the international labour market thanks to its ability to create unique, interdisciplinary, English-language programmes lectured by top academic teachers. Based on that, the university, as well as the faculty develop a strong international brand, thus gaining distinct positioning in international environment, as indicated by its national and international rankings.

For a long time the Faculty of Mining and Geoengineering has worked on developing recognition through perfecting its educational offer, adjusted to the expectations of foreign students. That purpose was also supported when our study course Mining and Geologyof received an international accreditation of EUR-ACE Label ENAEE (European Network for Accreditation of Engineering Education).

The crucial challenge was to build a team of teaching staff who fully identify with the strategy and support English-language study courses. International recognition of the course stems from the involvement of all workers, no only of the project leader.

A strategic solution, implemented both in AGH and in the Faculty, entails an individual approach to foreign students, facilitating improvement of mutual system of communication.

Within the educational services rendered, the challenges we face result from cultural diversification of an international study group, as well as tangible differences in students' levels of education.

Against the backdrop of standardisation and uniform treatment of the study curricula, internationalisation strategies at AGH are connected with personalisation of the approach to foreign students, which is based on an individual mentoring system. We believe it to be an important factor, as it provides a unique competitive advantage, unavailable within the tuition at public universities of the Western world.

Additionally, AGH is aware of and develops within its study programs the so-called added value of educational service, based on its relationship with the environment. Relations with the international business, as well as with local and regional authorities are especially underscored, as these are potential allies of the process of internationalisation. That follows from the more and more unstable external surroundings, which require the university to constantly improve its adaptability to market shifts.

The conclusion may by the right moment to pose the question why it is a good idea to study in Poland. The answer being that the system of higher education is in the process of rapid growth and that as a country Poland is ranked fourth in Europe (behind Great Britain, Germany and France) as regards the number of higher education students. The number of students learning in over 400 higher education institutions totals ca. 1.5 million. Thanks to the implementation of a three-cycle higher education system, based on the division into Bachelor, Master and Doctoral studies, as well as of the European Credit Transfer and Accumulation System (ECTS) both Polish students and foreigners studying in Poland maintain their complete mobility and may without obstructions continue their education in another EU country. The education level is constantly monitored, and regularly assessed by the Polish Accreditation Committee. Compared with other EU countries, the tuition in Poland is very competitive, while living costs are much lower than what a foreign student would have to spend in other European countries.

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