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EDUCATING GLOBALLY COMPETENT ENGINEERING STUDENTS IN UKRAINE

T. A. Anoshkova

Kyiv, National Technical University of Ukraine "Kyiv Polytechnic Institute"

t.anoshkova@mail.ru

The article presents the possible strategies in educating globally competent students in Ukraine analyzing the experience of other countries. The author explains what the term "global competence" is, determining such notions as competence, intercultural and general competencies. On the basis of the analyzed research works of native and foreign scholars the main components of the global competence are distinguished. The article also describes the necessity for young engineers to be globally-oriented. The research reflects the tendencies of modern economy and business. The author also indicates the problems Ukrainian higher education may face while implementing global competence in university program. The author underlines the possibility of teaching global awareness through the already existing subjects at universities or colleges. In the current article the achievements in the global education policy of such countries as the US, Japan and Singapore are discussed. The article also underlines the key role of teaching foreign languages in the education of the 21st century. The ways of implementing global competence into higher education during English lessons are described by the author. The emphasis is made upon the classroom activities as well as exchange programs which contribute the most to the development of global competency in Ukrainian students.

Key words: global competence, engineer, globally-oriented education, cultural awareness, communication, international program.

Introduction. The 21st century globalization tendencies and technological progress renovated the popularity of engineering professions. However, the success and professional development of future engineers are tightly linked with the understanding of the world economy, global technological changes, and public policy issues around the world. This fact affected the necessity to reconsider Ukrainian higher education system.

Whereas all leading countries of Europe, South and North America, and Asia have already understood the importance of globally-oriented education and started to develop new education programs with the emphasis on global competence, Ukrainian higher education is still left behind. That's why, researching the development of global competence in engineering students is of current interest for Ukrainian higher education system.

Needless to say, that the concept of global competence is more thoroughly studied by European and American scholars. Among them we can distinguish such outstanding professors as D. K. Deardorff, W. D. Hunter, A. Parkinson, A. Khutorskoy etc.

The critical changes such as environmental problems, migration, epidemics which the humanity is currently facing provide additional and perhaps even more compelling reasons for engineers to be globally competent. Considering all the above mentioned, the **purpose** of the article is to analyze the concept of global competence and to present the basic ideas of its implementation into educating of Ukrainian engineering specialists.

Defining global competence and its basic components. As there is no commonly accepted definition of global competence we find it reasonable to determine such entailed concepts as "competence", "general competence" and "intercultural competence" with the help of which it is easier to explore the meaning of the term "global competence".

According to the Russian scholar A. Khutorskoi we can define competence as a combination of personal qualities of the student (orientation on values, knowledge, skills, and abilities) due to his/her experience in a particular socially and personally meaningful area [6, p.137].

While analyzing the works of English and American scholars the notion "competence" can be determined as the capability to apply or use a set of related knowledge, skills, and abilities required to successfully perform "critical work functions" or tasks in a defined work setting [5, p. 6].

If we are talking about general competencies these are fundamental knowledge, abilities and skills which are applied in every area not depending on the subject. So we can stand out the most important competencies which are similar in such fields as education, business, medicine,

engineering etc. They can be divided into three types: instrumental (cognitive, methodological, technological and linguistic abilities), interpersonal (social interaction and cooperation) and system competencies (the combination of understanding, perception and knowledge).

Defining intercultural competence it is necessary to note that some scholars identify it with global competence. In some sources these two terms are used as equal but Dr. Darla K. Deardorff and Dr. William D. Hunter differentiate these notions in their research works. Intercultural competence is denoted as a narrower concept which is included into the definition of global competence. D. Deardorff [1, p.243] characterizes intercultural competence as a cultural learning process in which one receives knowledge by “observing, listening, and asking those who are from different backgrounds to teach, to share, to enter into dialogue together about relevant needs and issues.” On the other hand, becoming globally competent, by W. Hunter [2, p.268], is to develop a thorough understanding of one’s own cultural norms and traditions. Once a person has established this self-awareness, the next step is to explore social, cultural, and linguistic diversity, to accept the uniqueness of every culture and to respect it. Further, to become globally competent, one must develop a firm understanding of the concept of globalization and world history.

Summarizing all the given information we can define global competence as core knowledge, skills, values and attitudes necessary for individual to understand basic international issues, appreciate an ability to learn and work with people from diverse linguistic and cultural backgrounds, be proficient in a foreign language and function productively in an interdependent world community.

There is no unified list of components which make up a globally competent person. However, there are several competences which are distinguished by every researcher not depending on the field of study or nationality. According to the given definitions we can distinguish main components which help to make a person globally-oriented. They are the following: cultural awareness (which includes understanding of other cultures as well as knowing and appreciating of our own culture); communication (learning of a second language for individual and professional needs); creativity and critical thinking.

Hence, the definition of the following concept is a collective term which includes such notions as “general” and “intercultural competence”. Global competence is a complex notion which comprises knowledge of different social, culture and linguistic norms.

Training globally-competent engineers. We have already heard about global education and different studies which are launching globally-oriented programs into education of such highly developed countries as the USA, Japan, and Singapore etc. But for Ukraine it seems as something new and distant. However, what we take as global education the rest of the world takes as ordinary education process.

It is needed to be understood that we’ve already approached global competence in different spheres of our lives. It is used by foreign language teachers and it is implemented during intercultural education, professional collaboration through Internet, hiring people for some transnational companies, preparing military staff or missionaries for some international programs. Therefore, global competence is already an integral part of our life. Unfortunately, our students do not understand their global awareness and subsequently they do not meet the requirements of the modern labor market.

Global competence or a strong interest in becoming globally competent is a clear differentiator in an engineer’s ability to progress in their career. Thus, it is very important to make students understand how they can use global competence in their future profession. First of all, they have to be aware that globalization is an integral part of the world trade. Almost every branch of engineering is oriented on export. For example, Electrical Engineering focuses on designing of all computer and communication devices as well as electronics for industrial, medical and military using.

It is also important to remember that today it is hard to find a company with a homonational staff. The borders are open and even distance is not a problem anymore. Modern engineers have to find a common language in a cross-cultural cooperation with their coworkers using their communication skills.

Here are some examples of how global competence can influence engineering sphere. Such key components of global competence as cultural awareness and learning of foreign language will help engineering graduates in [3, p.11-12]:

- 1) Understanding how cultural differences relate to product manufacture, design and consumption.
- 2) Understanding of the economy processes and tendencies at the world trade market.
- 3) The necessity to work in the multicultural teams, taking into account ethical issues of every culture.
- 4) Understanding of public policy issues around the world and in the country in which one is working
- 5) The ability to share planetary changes or in other words to be “citizens of the world”, facing such challenges as global warming, disease spreading, pollution problems etc. and finding solutions.

Apart from learning the basics of communication and cultural awareness, global education develops critical thinking and creativity. These are the key competences for successful career in engineering. They have to generate new ideas which meet the requirements of a modern constantly-changing world. Then, they have to be able to communicate these ideas effectively with diverse audiences, breaking geographic, linguistic, ideological and cultural barriers. And, finally, they have to estimate their perspectives and perspectives of others realistically and explain such perspectives thoughtfully and respectfully [5, p.8].

Thus, global competence is an integral part of the career of professional engineer. In the modern world it is impossible to deal with the competition on the world labor market without possessing such knowledge and skills as cultural awareness, communication, creativity and critical thinking.

Implementation of global competence in Ukrainian education. If we look closely at our education system we can notice that our students have all the necessary subjects in their curricula to be globally competent and furthermore, they are highly motivated. Our students are learning language starting from primary school; at university they have such subjects as history and culturology. As a result, we can conclude that we are teaching content but not teaching students how to use it creatively.

Certainly, there are several problems which prevent globally-oriented policy from being introduced into Ukrainian higher education system, they are: insufficient capital and technical resources. However, fifteen years ago when the United States started to implement their global education policy in reality, they faced even greater problems. As English is accepted worldwide, it is the language of business, politics and media, young Americans merely didn't feel the need to learn second language. And, as far as we know, it is language that gives us a cultural awareness, ability to communicate, understanding of history and traditions of another country. The other problem involved the fact that the US citizens acknowledged America as a superior country. As a consequence the US students had lack of knowledge in the world history and geography. And, what is worse, they didn't have the motivation to study and to immerge into the global processes because they considered themselves the center of the world.

Ukraine, on the contrary, understands the necessity of learning foreign languages and other subjects which cover the world history, culture and traditions. Such position of our government and educators is a key to success.

The other part of the problem is insufficient capital. Our government and private companies have to realize that it is very hard to survive in the modern business world unless you are globally competent. When such problem emerged in the US, American employers rapidly understood that their graduates were unprepared to join the global workforce and spent millions of dollars on intercourse and language training for their future employees as they realized that this would be beneficial first of all for their own business. It would make their company and their staff globally competitive.

Since the abovementioned problems of our higher education can't be solved in a month or a year time, we have to use the available methods to make our students globally-competent.

As foreign language knowledge or communication is one of the key components of global competence, we can use language lessons at Ukrainian universities to implement this concept into higher education.

There are several possible ways to develop the global competence during English lessons. Among the classroom activities we can distinguish the following:

- 1) Using role plays (imagining that people are from different countries and different cultures, for example, will develop students' cultural awareness, ability to conduct a dialogue and intercultural collaboration);
- 2) Using a video or a written situation and to write a response for the given topic (it won't only allow developing the students' written skills but it will also make them familiar with cultural and policy issues of other countries);
- 3) Involving topics from various spheres of our lives while preparing foreign language education programs (educating of future engineers doesn't mean to focus only on professionally-oriented themes but it should also include focuses on economy, business, culture and history).

In addition to all classroom accomplishments, teachers should encourage their students to participate into different extracurricular activities, such as international conferences and contests which provide the unique experience of intercultural communication.

Studying all the available sources of global education implementation we should not forget about one of the most efficient ways for students to become globally competent. It is studying abroad. There are a lot of international programs available to Ukrainian students. Here are some of them: Academic Exchange Programs FLEX, UGRAD and Muskie (USA), Fulbright Graduate Student Exchange Program (USA), Erasmus Mundus Program (Europe), Chevening Scholarships Program (Great Britain). All these programs are sponsored by the hosting countries in case a student wins the grant.

As a result we can say that Ukraine has everything necessary for a successful implementation of global competence in modern engineering specialties. Certainly there are some obstacles in global education development but they can be easily overcome engaging numerous governmental and private companies. However, one of the most efficient ways to implement the concept of global competence into Ukrainian higher education is through learning foreign languages.

Conclusion. In this article we have discussed the expediency of global competence development in future engineers of Ukraine. We looked at this from several perspectives.

First of all, we defined what global competence is and what set of skills, knowledge and abilities make up this concept. Secondly, we have analyzed the advantages of a globally-oriented engineering career, stating what problems Ukrainian higher education can face while implementing global competence program. And, finally, we distinguished the best ways to educate globally competent graduates via foreign language.

In conclusion, it can be said that young engineers can't meet the requirements of modern labor market without global awareness. There are a lot of world countries with upgraded education systems in which global competence occupies a prominent place. Ukrainian teachers and university administration have to take into account the experience of others and consider their difficulties in order to educate globally-oriented and highly-qualified engineers. Communication skills, knowing of foreign language, cultural awareness and critical thinking should be developed in students of all specialties as part of Ukrainian education policy. Such goal can be received during English lessons.

As a result, the article offers the basic ideas of educating globally-competent engineers and gives perspectives for the further research in the current field. Continuing the current research we will study the possible methods of implementing global competence into Ukrainian higher education and suggest the practical recommendations in changing the existing university curricula.

REFERENCES

1. Deardorff D. The Identification and Assessment of Intercultural Competence as a Student Outcome of Internationalization at Institutions of Higher Education in the United States / D. Deardorff // Journal of Studies in International Education. – 2006. – №10. – P. 241–266.
2. Hunter B. What Does It Mean to Be Globally Competent? / B. Hunter, G. White, G. Godbey // Journal of Studies in International Education. – 2006. – №10. – P. 267–285.

3. Parkinson A. The Rationale for Developing Global Competence / A. Parkinson // Online Journal for Global Engineering Education. – 2009. – №2. – P. 1–16.
4. Van Eyck M. Deliberating about the meaning of “global competence” in a public US university [Електронний ресурс] / M. Van Eyck. – 2009. – Режим доступу до ресурсу: <https://globalhighered.wordpress.com/2009/06/18/deliberating-about-the-meaning-of-global-competence/>.
5. West C. Toward Globally Competent Pedagogy / C. West., 2012. – 18 p.
6. Хуторський А. В. Ключові компетенції як компонент особистісно-орієнтованої парадигми освіти / А. В. Хуторський // Учень в загальноосвітній школі. – М. : ІОСО РАО, 2002. – С. 135–157.

REFERENCES

1. Deardorff, D. (2006). The Identification and Assessment of Intercultural Competence as a Student Outcome of Internationalization at Institutions of Higher Education in the United States. *Journal of Studies in International Education*, 10(3), 241-266. doi: 10.1177/1028315306287002
2. Hunter, B., White, G., & Godbey, G. (2006). What Does It Mean to Be Globally Competent? *Journal of Studies in International Education*, 10(3), 267-285. doi:10.1177/1028315306286930
3. Parkinson, A. (2009). The Rationale for Developing Global Competence. *Online Journal for Global Engineering Education*, 2(2), 1-16.
4. Van Eyck, M. (2009, June 18). *Deliberating about the meaning of “global competence” in a public US university*. Retrieved from <https://globalhighered.wordpress.com/2009/06/18/deliberating-about-the-meaning-of-global-competence/>
5. West, C. (2012). *Toward Globally Competent Pedagogy* (p. 18). NAFSA: Association of International Education.
6. Khutorskoy, A.V. (2002). *A. Key Competences as a Component of Personality-oriented Educational Paradigm*. Moscow: IOSO RAO, 135-157. [In Ukrainian]

Т. А. Аношкова. Підготовка глобально компетентних студентів інженерних спеціальностей в Україні.

У статті представлені можливі стратегії у вихованні студентів з глобальною компетентністю в українських вищих навчальних закладах на основі аналізу досвіду інших країн. Автор дає визначення терміну «глобальна компетентність» через дефініцію таких понять як компетентність, міжкультурна та загальна компетентність. На основі проаналізованих дослідницьких робіт вітчизняних і зарубіжних вчених виділяються основні глобальні компетентності, актуальні для всіх професій, а також ті, які необхідні саме для інженерної галузі. У статті також описується, чому молоді інженери повинні бути глобально-орієнтованими. Стаття відображає тенденції сучасної економіки та бізнесу. Автор також вказує на проблеми, з якими може зіткнутися українська вища освіта під час реалізації глобальної компетентності в університетській програмі. Автор підкреслює можливість впровадження глобального усвідомлення через вже існуючі предмети в університетах або коледжах. Стаття висвітлює досягнення таких країн, як США та Сінгапур в глобальній освітній політиці. У статті також підкреслюється ключова роль викладання іноземних мов в освіті 21-го століття. Автором описані шляхи реалізації глобальної компетентності в галузі вищої освіти на заняттях з англійської мови. Акцент ставиться на роботу в аудиторії та на програми обміну, які дають основний внесок у розвиток глобальної компетентності в українських студентів.

Ключові слова: глобальна компетентність, інженер, глобально-орієнтована освіта, культурна свідомість, спілкування, міжнародна програма.

Т. А. Аношкова. Подготовка глобально компетентных студентов инженерных специальностей в Украине.

В статье представлены возможные стратегии воспитания студентов с глобальной компетентностью в украинских вузах на основе анализа опыта других стран. Автор дает определение термина «глобальная компетентность» через дефиницию таких понятий, как компетентность, межкультурная и общая компетентность. На основе проанализированных исследовательских работ отечественных и зарубежных ученых выделяются основные глобальные компетентности, актуальные для всех профессий, а также те, которые необходимы именно для инженерной отрасли. В статье также описывается, почему молодые инженеры должны быть глобально-ориентированными. Статья отражает тенденции современной экономики и бизнеса. Автор также указывает на проблемы, с которыми может столкнуться украинское высшее образование при реализации глобальной компетентности в университетской программе. Автор подчеркивает возможность внедрения глобального осознания через уже существующие предметы в университетах или колледжах. Из данной статьи можно, также, узнать о достижениях таких стран, как США или Сингапуре в глобальной образовательной политике. В статье также подчеркивается ключевая роль преподавания иностранных языков в образовании 21-го века. Автором описаны пути реализации глобальной компетентности в области высшего образования на занятиях по английскому языку. Акцент ставится на работу в классе и на программы обмена, которые делают основной вклад в развитие глобальной компетентности у украинских студентов.

Ключевые слова: глобальная компетентность, инженер, глобально-ориентированное образование, культурное сознание, общение, международная программа.