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## POTENTIAL OF FOREIGN LANGUAGES IN FORMING PROFESSIONAL COMPETENCY

**Abstract:** Higher engineering education aimed at training competitive professionals, intelligent, having an inquiring mind, willing to fulfill their potential, being able to meet the requirements of modern production and society, presupposes formation of future engineers' professional competency. Learning foreign languages at technical universities is mostly regarded as a means of developing students' soft skills. The particular interest of this research lay in considering the potential of foreign languages in forming future engineers' professional competency. The interrelations between professional competency and foreign language professional communicative competence are analyzed in the article. To consider the structure of foreign language professional communicative competence, an activity-and-reflexive approach was applied instead of a traditionally used linguo-didactic one. Great attention was paid to the assessment criteria of students' work. The research involved theoretical analysis, questioning, qualitative and quantitative research methods. The article describes the results revealing conditions of successful formation of professional competency while teaching foreign languages.

**Keywords:** engineering education; professional competency; professional communicative competence in foreign language; activity-and-reflexive approach; foreign languages

### 1. Introduction

A threefold goal of education (and it is not a present-day discovery but a very significant point to be mentioned in our research) concerns learners' teaching that is formation of knowledge, skills and abilities, learners' education considered as formation of moral values and standards, and their development understood as quantitative and qualitative personality changes. These directions should not be prioritized since the essence of education lies in creating conditions for

reaching the goal in the whole.

Higher professional education presupposes occupation-oriented training of students in accordance with all the purposes listed above. Considering it in the context of a competency-based approach and in terms of technical education, students should become competent professionals obtaining soft (core) and hard (job-specific) skills, knowledge and attributes to perform a professional task. Traditionally, technical universities realize their training by offering two groups of courses: technical and humanitarian ones and

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engineering degree programs include general-educational subjects intended for developing students' soft skills and forming general cultural competences, and specialty courses created to form their hard skills and professional competences. Future engineers are expected to be knowledgeable experts who have not only professional expertise but professional pride, social awareness, environmental consciousness (Harris et al., 2009). They are inventors and creative problem solvers, so researchers point at necessity of developing creativity and critical thinking (Silva & Yarlalagadda, 2014), cooperative and practice-oriented education (Manyonge, 2015).

Moreover, in a globalized world, people are expected to have practical knowledge of foreign languages (Aytzhanova et al., 2016). Interaction at a global level presupposes that engineers are able to work with people from other cultures who solve engineering problems differently (Downey et al., 2006). In this connection, a foreign language (English mostly) is considered in European countries as a means of cross-cultural communication and providing openness to other cultures, developing tolerance towards other nations (Kovacevic V. et al., 2018), and it is the development of communicative competence that is regarded the keystone of language teaching in any educational organization.

## 2. Body of the paper

Developing interpersonal and international communication has been a subject of considerable interest during recent years (Morgado, Regio & Gaspar, 2017, Manyonge, 2015, O'Sullivan et al., 2018, Silva & Yarlalagadda, 2014, Nikitina, 2015). Pursuing the goal of forming communicative language competence, higher education instructors pay attention to authentic use of English and apply content and language integrated approaches, with content, language and intercultural competence being

developed (Morgado et al., 2017). Others speak for project-based learning (Manyonge, 2015, O'Sullivan et al., 2018), carrying out collaborative engineering tasks using Wikis (Gaspar et al., 2017), coaching approach (P Silva & Yarlalagadda, 2014), active learning (Nikitina, 2015).

However, the problem of learning languages at technical universities is still acute. Students do not want to distract from acquiring professional skills and study foreign languages. For example, Turkish students have low motivation in learning English (Gökçe, 2013). High percent of Jiangsu University of Science and Technology students who are not very successful in studies do not like English and learn it only to pass their examinations (Yue, 2012).

If there is no sustained language environment, students do not see the prospects of studying a foreign language. Russian technical university students, especially in provincial cities, are not highly motivated to studying a second language (Antipyev, 2009) since there is no natural need to speak with foreigners; there are few opportunities for everyday use of a foreign language in real-life situations, if any, except international online games having a specific set of words, abbreviations and phrases.

According to our data obtained while questioning 59 freshmen of the Siberian State Automobile and Highway University, Russia, we found out that 36% of the students did not see interrelation between a foreign language as an academic discipline and their future profession. 41% of the mechanical and construction engineering students understood that English could help them to find a job abroad, to communicate with colleagues from other countries, 17% of the interviewees (all of them are IT students) needed English for programming, 3% studied it for self-development. 1 student pointed out that English could help "to get a promotion" and another student needed a foreign language "to learn new words".

In spite of the fact that there were 76% of students who gave a positive answer to the question “Do you need a foreign language at the technical university?”, it looked like a cliché that students were used to pronounce automatically when being asked. 66% of the students explained they had no desire to study foreign languages at the technical university, with 45% of them studying a second language as they had no choice and the subject was obligatory, and 14% of the respondents regarding English classes as an opportunity to have fun and relax after higher mathematics, drawing geometry or chemistry.

It would be better for 3% of students if there were no English in their curriculum and they had free time instead. Some students offered to replace English by physical training (5%), painting (3%), Russian (3%), Chinese (2%), mathematics (2%), psychology (2%), several languages (2%), introduction into profession (2%).

To the question “What exercise/assignment do you hate?” we got the following answers: retelling (46%), memorizing (10%), grammar exercises (8%), asking questions (3%), creating texts (3%), test (3%), submitting reports (2%), rendering (3%), oral tasks (3%), written tasks (3%), independent work (2%), all the assignments (3%). 10% of the students could not choose such a task.

Hence, all the efforts made by language teachers to improve cross-cultural communication skills are not fruitful. Being of little interest to students or even sometimes ignored by them, foreign languages do not realize their full potential. Experience shows that the majority of engineering university graduates cannot speak English, write essays and translate even technical information at the expected level because phone applications, easy and ready to use at any time, provoke students into online translating, and thus depriving them of a chance to think, to analyze, compare, synthesize information. Thus, all

the attempts of the language teachers to select the content of their courses even with regard to special terminology are not successful. In this regard, the present work focuses on the problem of identifying conditions for teaching foreign languages in such a way that it could contribute to forming the professional competency, the main aim of higher professional education.

There is an extensive literature on competency, competent engineer training and Professional Engineer licensure where engineer professional competency is defined and structured. Engineers Australia, Australia’s principal engineering association ([www.engineersaustralia.org.au/](http://www.engineersaustralia.org.au/)), considers engineer professional competency as being a set of knowledge, skills, engineering application abilities, professional skills, values and attitudes. According to the International Engineering Alliance ([www.ieagreements.org/](http://www.ieagreements.org/)), this competency consists of knowledge, skills, and generic competencies. Regional Office for Asia and the Pacific ([www.ilo.org/asia/](http://www.ilo.org/asia/)) and American Association of Engineering Societies (AAES) ([www.aaes.org](http://www.aaes.org)) say about three main components: knowledge – skills – attitudes and knowledge – skills – abilities, respectively. Therefore, engineer professional competency is mainly presented as a three-element structure: knowledge, skills, and attitudes. It is a competence-based approach that is used to define the essence of engineer professional competency.

Communicative language competence is supposed to be one of the expected results that engineering graduates should demonstrate at the end of their undergraduate program. According to the Common European Framework of Reference (CEFR), this competence is broken down into linguistic (grammatical, phonological and orthographic, lexical competences), sociolinguistic (knowledge and skills for language use in a social context) and pragmatic (discourse, functional and design competences) components (*Competency*

assessment guide, 2018). For Russian researchers (Tayurskaya, 2015, Nikitina, 2015), they state that foreign language communicative competence is a set of linguistic (language), speech (discourse), sociocultural, compensatory (strategic) and learning and cognitive components, based on van Ek's model (Coperías-Aguilar, 2002).

The studies reviewed show that if the main focus of improving teaching languages is a linguistic or sociolinguistic function of the language, communicative language competence is considered within a linguo-

didactic approach (Bagramyants, 2013). But if its pragmatic function is highlighted, a competence-based approach is used to develop the competence in question while teaching languages.

As it was scientifically substantiated in our previous research (Tsyguleva, 2016), engineer professional competency can be considered from the point of view of a reflexive-and-activity approach, with all the university courses contributing to the process of its formation (Figure 1).

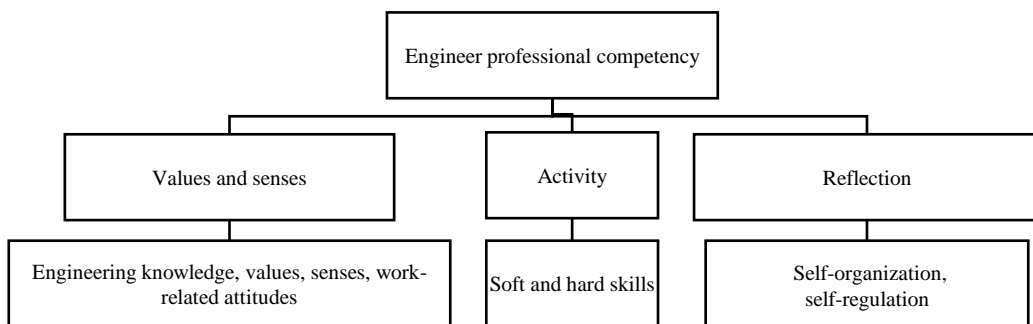


Figure 1. Structure of engineer professional competency (reflexive-and-activity approach)

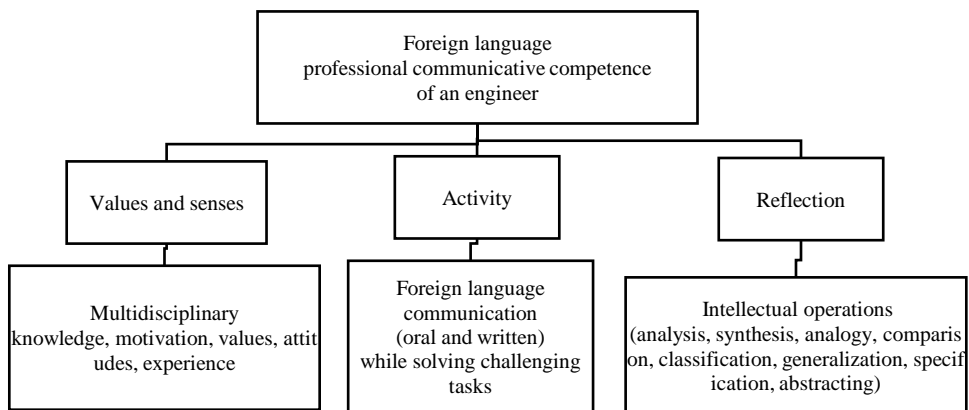


Figure 2. Structure of foreign language professional communicative competence of an engineer (reflexive-and-activity approach)

As can be seen from Figure 2, teaching foreign languages at engineering universities can be organized in three directions: aimed at developing a values-and-senses, activity and reflection components. Ideally, all the

three directions should be in a focus of higher education providers; in this case, all the components of the engineer professional competency will be worked out.

Humanities are unique and changeable by

nature; they produce new notions and concepts. Liberal arts help students find numerous solutions to one problem and look for exceptions. Comprehension, interpretation, comparison, introspection, empathy, rethinking in different contexts are their methods which are oriented at searching of values and senses, variety of decisions. Humanities operate with means of informal logic that are based on analyzing, evaluating, critiquing, giving arguments. Foreign languages, belonging as it does to humanities, possess all these methods of developing innovative thinkers and self-organizing personalities.

The analysis of English course books for technical students written by British and Russian authors (Evans et al., 2012, Evans et al., 2016, Polyakova et al., 2016) showed that they are aimed at improving English communication in the engineering environment. The learning material is organized according to the four types of speech activity, with the linguistic (career-specific vocabulary and grammar), sociolinguistic (engineering context) and pragmatic (listening and producing career-specific dialogues, writing documents) components of communicative language competence being developed. This does not

detract from the value of these books but if we apply a reflexive-and-activity approach to the process of teaching a foreign language, the following assignments can be set for the students to do (Topic “Your friend is your mirror”):

1. ( $T$  (teacher)  $\rightarrow$   $Ss$  (students)) *Do you have friends? What is friendship? Can friendship last forever? Give your arguments and examples.*
2. ( $S_1, S_2, S_3$ ) + ( $Gr$  (group)) *Do you quarrel with your friends? Can best friends betray each other? Why? Do you have such an experience? Try to recall and write down situations when your friends made you feel nervous. Discuss them in your group.*
3. ( $S_1 \rightarrow S_2 \rightarrow S_3$ ) *Did you go anywhere in summer? Did you meet new people? How many of them became your friends? Is it easy to make friends, why?*
4. ( $Gr$ ) *Share information with your groupmates about your besties, about the circumstances you met them. You have 5 – 7 minutes. Make notes while listening to each other.*
5. ( $S_1, S_2, S_3$ ) *Agree or disagree? Write your comments in the appropriate column (Table 1). Please, do not write anything in the last two columns.*

**Table 1.** Agree or disagree?

		Yes	No	Not sure	Notes	Author
1.	Relationships are given for granted.					
2.	Close friends never quarrel.					
3.	Friendship changes people.					
4.	Only true friends criticize you when you make mistakes in life.					
5.	It is not always good to be honest with your friends, you may offend them.					
6.	Jealousy is natural, so it is not bad if you are envious of your friend's success, you are just getting better.					
7.	Your friend is your mirror.					
8.	Never forgive your friend if he/she hurts you, find a new friend.					
9.	Friendship can't be without conflicts.					

6. ( $S_1, S_2, S_3$ ) + (Gr) Look through the tasks you have done by now and complete the following logic chains explaining what operations you did. The words in italics must be used. Study the example and add something if you need it. Discuss the results.

Example: I *carefully* read the task → translated it into Russian for better understanding → *analyzed* the situation → read the first statement → translated it into Russian → found the *keywords* → *analyzed the meaning* of the keywords → *remembered* the situation in my life → *compared* the statement with it → *made a decision* → filled in the appropriate column of the table → read the second statement → did the same operations with the rest sentences → *discussed* the results with the group mates → *made corrections*.

7. ( $S_1, S_2, S_3$ ) Listen to the text given below and think over the ideas in Task 5 once again. You may use a felt marker while working with the text. What ideas are new for you or unexpected? Discuss them in the group. After reading the text, think over the ideas in Task 6 once again. Has anything changed in your opinion?

(Students listen to a text “10 Significant Ways to Keep Your Friends Forever”. Student texts should have problems, different opinions.)

8. ( $S_1 \leftrightarrow S_2$ ) Present the text in the form of a chart and add some empty bubbles or even clusters for extra information to be found. Let your partner fill in the bubbles. Compare and discuss the ideas.

9. (Gr of 3 – 4) Look through the text again and write out about 7 psychological and philosophical terms and interesting phrases into your exercise book. Give the definition to each term and the translation to the phrases using the dictionary. ( $S_1 \leftrightarrow S_2$ ) Discuss the terms by asking and answering questions like “What do you know about....?” or “What does ... mean?”. Correct each other if it is necessary.

10. ( $S_1, S_2, S_3$ ) Using Internet resources, find and read information about friendship as a

philosophical notion. What can you say about true friendship? Make a list of 7 – 10 ideas that explain what draws people together as friends.

11. ( $S_1 \leftrightarrow S_2$ ) Exchange your exercise books and comment on each statement in Task 5. Fill them in column “Notes”. You may use the following phrases: I (quite/totally) agree. That’s a very good point. I can see the point, but ..

I think that’s debatable. I agree to some extent, but .... It seems to me .... I’m not so sure about that. I don’t agree at all.

Yes, but on the other hand .... I wouldn’t say that. As I see it, .... I think .... I consider ....

Personally, I believe ...

12. ( $S_1, S_2, S_3$ ) Re-read the text and comment on the ideas in Task 5 from the author’s point of view. Write your ideas in column “Author”.

13. (Gr of 3) Student 1 – a psychologist; Student 2 – the author; Student 3 – your friend. Go to Task 9, choose any statement you like and interpret it. Remember about the role you are playing.

Example:

Statement: *Common interests draw people together as friends.*

Psychologist: I think that ...

Author: I am sure that ...

Friend: As for me, I know that ...

14. ( $S_1 \leftrightarrow S_2$ ) Find out the following information from your partner. Make sure you use the correct tense and word order in your questions (ask your teacher if you forgot something). Using the ideas below, imagine a situation and role play the dialogue.

- Friends (how many);
- character traits (what);
- forever friends (how many);
- cheese off (when and why);
- quarrels (why);
- help (when);
- awkward moments (what);
- important (what).

15. ( $S_1 \leftrightarrow S_2$ ) Choose any situation you like and let your partner listen to you. Ask him



for advice if you need it.

1. You are at the restaurant with a new friend. Tell him about yourself.
2. You want to buy a birthday present for your friend. Tell a salesman about the birthday boy.
3. You are at the 4-year class reunion. Tell your classmates about your life.
4. You are visiting your favourite school teacher. Tell her/him about yourself.

5. You need a dorm room for your best friend. Tell the dormitory supervisor about him/her.

16. ( $S_1, S_2, S_3$ ) Write your ideas on the statement: "A friend in happiness is a friend indeed" (about 100 words). Discuss them in your group. Pay attention to the assessment criteria (Table 2).

**Table 2.** Assessment criteria for a piece of writing.

No	Criterion	Excellent	Good	Satisfactory	Bad
1	plot	intricate	interesting	simple	no
2	structure	clear and logical, arguments, conclusion	logical, some arguments, conclusion	some arguments but no conclusion	illogical, no conclusion
3	analysis and opinion	yes	some elements	not evident	no
4	vocabulary	many new words and phrases, many synonyms	some new words and phrases, synonyms	mainly old vocabulary, no synonyms	poor
5	grammar	1-2 mistakes	4-5 mistakes	5-7 mistakes	> 7 mistakes

In the context of our research, monitoring the formation of foreign language professional communicative competence should be viewed through the lens of the activity-and-reflexive approach and the assessment criteria should be chosen in accordance with the constituents of this competence. Thus, it is necessary for students to be aware that their classroom and individual work assessment will be based not only on language (vocabulary, grammar) and speech (monologue, dialogue, written task) skills but also on such criteria as follows:

- motivation (enthusiasm, diligence),
- using personal experience (independence, responsibility, immediacy),
- application of multidisciplinary knowledge,
- ability to analyze information,
- ability to comparison information,
- ability to generalize information,
- ability to draw an analogy,
- ability to classify information,

- ability to synthesize information,
- ability to abstract,
- ability to specify information,
- ability to give arguments.

In this case, control will perform its learning function; future engineers can consciously develop their cognitive skills, reflection, professionally important qualities.

### 3. Paper submission

Submission ID: 10110

### 4. Conclusion

Summing up, we can conclude that all the components of foreign language teaching at technical universities are traditionally oriented at raising the level of students' culture, broadening their mind, developing creative and flexible thinking, moral education. Use of innovative technologies, new forms and teaching methods increases

students' motivation to studying languages and makes learning conditions closer to real communication, but potential of foreign languages for forming professional competency is not fully realized.

It is likely that formation of professional competency while teaching foreign languages will be successful if the following conditions are fulfilled:

- 1) the objective of studying foreign languages at technical universities is formation of engineer professional competency;
- 2) foreign language professional communicative competence is structured within the reflexive-and-activity approach and comprises a reflection, activity and values-and-senses components;

3) students' assignments include those aimed at developing intellectual operations while solving challenging tasks based on personal experience;

4) assessment criteria reflect, along with linguoculturological and multidisciplinary knowledge, students' motivation, personal experience, abilities to consciously perform intellectual operations.

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