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DESIGN OF FOREIGN LANGUAGE ACTIVITY OF TECHNICAL UNIVERSITY STUDENTS

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Abstract

The article suggests the implementation experience of a model for the development of the design skills of technical university students. Taking into account the fact that design skills provide a strategic focus for engineering activities and are manifested in the ability to design not only the activity process itself but its results, conditions and development prospects, we conducted a study to identify the developing resource of the Foreign Language discipline in order to develop design skills of technical university students. The work also presents the diagnostics of the development level of the students` design skills, reflects the results of the study, which revealed the positive dynamics of the development level of the students` design skills. During the developing experiment, the diagnostics of students' project development skills level was held. The results of the research work showed positive dynamics of the development of skills. The authors concluded that professional activity based on foreign language knowledge is the main goal of practical training of technical university students in a foreign language.

Keywords: Design skills, foreign language, practical training, professional activity, students, technical university.

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1. Introduction

Modern innovative activities tend to create new demands for modern engineers. These are high professional competence; functional methodological training; personal and professional improvement; the ability to navigate in non-standard conditions; professional responsibility and ethics; the ability and desire to solve creative tasks and think out of the box, using the high creative potential; the use of the system of necessary fundamental and special knowledge necessary to create competitive products; the understanding and use of innovative culture, developed communicative skills including those necessary for the work in interprofessional community (Belonovskaya & Melnikova, 2009).

The project-oriented type of culture peculiar for the modern society characterised by movability and changeability is becoming one of the most important cultural mechanisms aimed at changing reality. It includes such characteristics of project activities as a universal and synthetic character. These activities combine prognostic and research, humanitarian and technocratic, social-educational and informative-educational. This fact gives grounds for some authors to call the project-oriented culture the base of the new educational pyramid of the XXI century. It means that every professional has to be able to use project activities in all their variants (Ilin, 2001; Kravtsov, 2003; Shlenskaya, 2018).

2. Problem Statement

The basic model for teaching engineering in the high educational institution should be the “4P”-model: to “Plan - Project - Produce - Practise” the real systems, processes and products at the international market. Having rich experience in carrying out experimental and project-constructing activities both in the classrooms and in the modern training laboratories, which they get while studying at the university, the students acquire the necessary level of proficiency. The world educational paradigm puts forward the communicative educational disciplines including the foreign languages and making them of the utmost importance. The linguistic education in the sphere of foreign languages has a high educational potential and along with solving the tasks of personal development provides the resources for forming and development of communicative skills and abilities (Kiryakova et al., 2018; Kramsch et al., 1998).

3. Research Questions

In the proposed work, we described the experience in the development and implementation of a model for the development of design skills to identify the developing resource of the Foreign Language discipline. Project development as the skills necessary for future professionals were studied in the works of O.A. Abdullina, Z.I. Vasylieva, O.S. Gazman, F.N. Gonobolin, N.V. Kuzmina, V.A. Slastenina, L.S. Podymova, V.V. Guzeev, O.E. Lomakina.

Each skill in the project development training corresponds with some activities and tasks connected with these activities and included in the general concept of the project development process. It logically follows from the concept of activity viewed as containing different actions.

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4. Purpose of the Study

In our research, we define project development skills as the ways the students carry out some actions, these ways being acquired while studying the objects of foreign language reality and used to create a project in engineering. The immediate project development skills are the following:

- to plan future actions for solving some definite task using the integrated foreign-language and professional abilities and to choose the most rational and effective ways of realisation of these activities;
- to implement the valuable and profession-oriented foreign-language material, knowledge and skills into practice (in studies, everyday, professional and public activities);
- to foresee the possible difficulties in carrying out individual tasks while studying the objects of foreign-language reality and to set up the ways of overcoming these difficulties;
- to foresee and take into consideration the partner's reaction towards his/her actions while working written and oral tasks;
- to define his/her role and place in solving the tasks in some given situation and to set up the strategy and tactics used for role-playing;
- to be able to foresee and develop by him/herself, or based on some pattern, the game model of the situation using the valuable and professionally oriented foreign-language material and to correlate the model situation with the real life (Kirillova, 2014; Sakharova, 2004).

To improve project development skills of the students while learning a foreign language we consider it to be necessary to enrich the content of linguistic education with the elements of project activities according to personal and professionally important values of the students, using the educational reserves of the course "Foreign language". While learning a foreign language and doing some project-oriented tasks the students learn the peculiarities of the language of an engineer. This professional language is a special one because it serves as the means of expressing and the means of obtaining professional knowledge.

Project development activity aims to improve students' project development skills. The aim of using the project-based method in the studies is to work out some general ways of professional and public activity - general cultural and professional competencies - by the development of the different components of project development skills. Only the project development method helps to form the definite units of project development skills, which, in their turn, make the basics for the students' general and professional competencies.

Using this method is explained by the possibility it gives for students to be concentrated not on the language itself but the problem, to shift the light from linguistic aspect to the content and to study and think over the decision of the given tasks using the foreign-language knowledge and skills of different types (Gavrilova, 2010).

5. Research Methods

In this research, we have worked out the model of students' project development skills, which shows the aim, the tasks, the principles, the conditions and the possible result of the process. Realizing the

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model we can provide the integrity, purposefulness and effectiveness of students' project development skills by means of the foreign language.

The ascertaining stage of the empirical-exploratory work made it possible to define the initial level of students' project development skills by means of the foreign language using the following methods:

1. "values-based orientations" method by M. Rokich;
2. labour appeal diagnostics by V.M. Snetkov;
3. "Innovation and innovative activity test" by A.Y. Melnikova;
4. project skills importance defining tests;
5. project development method.

Having analyzed the psychological and pedagogical literature and made theoretical and practical research we have distinguished three levels of the students' project development skills: professional-familiarizing, professional-sufficient, professional-creative. The criteria and indices of students' project development skills have been defined. The system of diagnostics and evaluation has been worked out and implemented and it includes modelling, project development method, method of interviews, documents analysis, survey, written questionnaire and testing.

6. Findings

The reached results became the starting point and were later compared to the final test results. The empirical-exploratory work data were analyzed and processed using the quantitative analysis method (Table 1).

Table 01. Diagnostics of Project Skills Levels of the students in Linguistic Education (Ascertaining Experiment)

Levels Of Project Development Skills	Initial Measurement	
	Control Group (%)	Experimental Group (%)
Professional-Creative	5,2	5,6
Professional-Sufficient	59,8	58,9
Professional-Familiarizing	35	35,5

Analyzing the results obtained during the ascertaining experiment we found out that most of the students were not familiar with project development activity. During the developing experiment, the experimental group students actively participated in the project activity by means of completing different types of projects.

During the developing stage of the empirical-exploratory work the following tasks were completed: the dynamics of different types of knowledge, skills and value-based relations were defined; the content of methodological support for students' project development skills while studying the course "Foreign language" was tested and analyzed.

Creating the language environment for effective project skills development while studying in high educational institution three possible directions may be taken:

1. The development of the students' inner motivation towards a professional acquisition of a foreign language while studying professionally valuable foreign-language information is carried out

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through the changes in the value-based attitude towards the process of foreign-language objects perception. During this process, the elements imitating an engineer's professional activity were used. Using such innovative means and equipment as multimedia discs, presentations, video and audio materials and Internet resources helped to enhance students' cognitive activity, to create the conditions for the practical acquisition of a foreign language, to choose the teaching methods based on creativity and leadership. It helps to acquire general and professional vocabulary, develops self-study skills, enhances motivation and interest in learning a foreign language.

The content of linguistic education should be enriched with axiologically important information by using study situations. These situations include, for example, those of foreign-language professional communication (introduce yourself to your colleagues, discuss the principles of mechanisms work, make a contract, at the business meeting, at the working meeting, on the job interview), as well as those aimed at making a report on the technical specification of the detail, making a technical manual for the designed detail, making orders, requests, instructions, working on projects of different types and levels. As the tasks were full of special technical vocabulary and terminology it became possible to acquire the sublanguage of the job. The interest in the material under study was provided by the use of new specialized information. Learning a foreign language allows a future engineer while studying the chosen profession to dive into the corresponding area of knowledge, to read a text in the original and thus it becomes of some personal importance and motivate for studying (Kiryakova et al., 2015).

2. The enrichment of the content of professional education with the focus on professionally important values of the students while working on the engineer projects is carried out through the using the developmental resources of the "Foreign language" course. Following this direction means working out and implementing into the practice of foreign-language reality cognition such teaching manuals as "Engineering overview", "Future engineers project development skills during the English language classes" as well as finding out the potential of some technical disciplines, connected with the process under study, which made it possible to create the grounding for students' project development skills by means of the "Foreign language" course.

The aims of teaching manuals working out and testing were the following: to reveal the essence of project-based education, project-based activity, project development skills; to improve personal characteristics of the students, necessary for project activity. Completing the tasks from the manual was connected with the teamwork aimed at learning how to generate and suggest new ideas in a foreign language, to give your personal point of view and to listen to the colleague's opinion, to communicate in a foreign language following the rules of Grammar, to improve one's personal and professional characteristics. The tasks from the manual were project-oriented.

3. The implementation of interdisciplinary integration of engineering knowledge and skills of different types during the students' project development activities is aimed at teaching the students how to structurize their professional and foreign-language knowledge, find out the way they are interconnected and related to each other and to implement these structures into other related disciplines.

To form a positive attitude towards the profession of an engineer while studying the objects of foreign-language reality the personal and professionally important information concerning this profession was given to the students using the special texts in a foreign language. Besides the students were asked to

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define the positive sides of the profession themselves according to their personal and professionally important values as well as the way their personal and professional characteristics are formed (Tomin et al., 2016).

The future engineers learn the bases of project-making during the team and individual work guided by their teacher while working out and implementing interdisciplinary projects. While carrying out the project tasks of this type the students have to independently solve the problem and make a reasonable choice of decision from possible alternatives with the following reflection on this work. At the same time, the students introduce themselves to the research work on their majors, carrying out the course works on the chosen topics. Using the methods of teamwork has benefited getting the knowledge in the field of project making and project development skills (Baranov et al., 2013; Belonovskaya et al., 2019).

We put the following blocks into the structure of our project development skills model: information-cognitive, activity-based and motivation-valuable.

Information-cognitive block contains the system of practical and theoretical knowledge of a future engineer, which helps the process of students' project development skills. The knowledge development level is defined by the following: the presence of disciplinary, communicative, linguocultural, professional knowledge; the formed system of realizing oneself as a professional, understanding the peculiarities of an engineer's professional activity.

After completing the diagnostic work at the stage of the developing experiment we analyzed the developing dynamics of the students' project skills development information-cognitive block.

The comparative analysis of the first and second stages of the research allowed to find out the positive dynamics in the figures of the information-cognitive block of the students' project development skills in the experimental group. The results are given in Table 2.

Table 02. The Developing Dynamics of the Information-Cognitive Block of the Students' Project Development Skills in Linguistic Education

Development criteria	**Block development levels**	**Initial measurement**	
		Control group (%)	**Experimental group (%)**
The presence of foreign-language and professional knowledge	Creative	0,4	3,1
	Professional-sufficient	1	9,1
	Familiarizing	-1,4	-12,2
The degree of foreign-language and professional knowledge integration	High	0,2	3,9
	Average	1,6	7,8
	Low	-1,8	-11,7

The activity-based block includes the total of reproductive, productive, creative skills, professional methods and the ability to use them effectively to fulfil some definite professional tasks. The criterion of skills formedness level is correlated with the following characteristics: the presence of foreign-language and professional skills, the development of the creative cognitive activity.

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The results of the final stage of the experimental work allow us to say about the positive dynamics of activity-based block development both in the experimental and control group. The results are given in Table 3.

Table 03. The Developing Dynamics of the Activity-Based Block of the Future Engineers' Project Development Skills in Linguistic Education

Development criteria	Block development levels	Initial measurement	
		Control group (%)	Experimental group (%)
The presence of communicative foreign-language and professionally valuable skills	imitating-reproductive	-4	-10,8
	project-modelling	2	7,9
	project-creative	2	3,6
The degree of foreign-language and professional knowledge integration	High	2,3	7,7
	Average	2,3	6,4
	Low	-0,5	-1,3

The motivation-valuable block is a system of students' value-based attitudes towards social and professionally important values: professional knowledge, the system of professional and personal values, of the cultural values of the target-language countries which all help to develop project skills. Motivation can be seen both in the student's attitude towards the studies and his or her active participation in the studies.

The comparative analysis of the received data gives grounds for speaking about positive dynamics for all indices of the motivation-valuable block in the experimental group. The control group of future engineers also saw some positive changes, but not so considerable as in the experimental group. The results are given in Table 4.

Table 04. The Developing Dynamics of the Motivation-Valuable Block of the Future Engineers' Project Development Skills in Linguistic Education

Development criteria	Block development levels	Initial measurement	
		Control group (%)	Experimental group (%)
The presence of the student's personal value-based attitudes towards socially important values: - education - foreign language -project development activity	Indifferent to values	- 2	- 7,8
	Interested in values	2,3	6,5
	able for self-work on projects	0,8	4,1
The presence of value target-setting system: Target as a value	Indifferent to values	- 2,6	-15,6
	Interested in values	2	9,6
	able for self-work on projects	0,6	6

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7. Conclusion

Using the received data we can establish the students' level of project development skills proficiency. During the developing experiment, the diagnostics of students' project development skills level was held. The students participating in this experiment were the first-year students of Industrial and civil construction department of Moscow State University of Civil Engineering. The results of the research work showed positive dynamics of the development of skills.

The results of the study revealed positive dynamics of their development. This allows us to conclude that professional activity based on foreign language knowledge is the main goal of practical training of technical university students in a foreign language. In our opinion, linguistic education is the developmental and educational resource that serves to master both special terms and professional terminology, develop design skills and form the professional way of thinking of a future specialist.

References

Baranov, V. V., Belonovskaya, I. D., & Nikulina, Y. N. (2013). Student's competitive resource in a regional university. *Higher Education in Russia, 8-9*, 106-111.

Belonovskaya, I. D., & Melnikova, A. Y. (2009). Engineering games in student teaching. *Higher Education in Russia, 3,* 112-119.

Belonovskaya, I. D., Kiryakov, D. A., Shukhman, A. E., Kolga, V. V., & Ezhova, T. V. (2019). Infocommunication skills as part of universal competencies of transport engineers. *Dilemas Contemporaneous: Education, Politica y Valores, 6*(3), 9.

Gavrilova, I. K. (2010). Organizational pedagogical conditions for the development of designing skills of future engineers in linguistic education. *Vestnik of the Orenburg State University 11*(117), 154-159.

Ilin, G. (2001). Projective education and personal development. *Higher Education in Russia, 4*, 85-92.

Kirillova, I. K. (2014). Model Of Development Of Design Skills Of Bachelors Of A Technical Profile In Studying Foreign Languages. *Privolzhskiy Scientific Journal, 1*(29), 228-32.

Kiryakova, A., Olkhovaya, T., & Rodionova, T. (2015). Axiological Foundations of Media Education in Modern University. *Procedia – Social and Behavioral Sciences, 214*, 143-9.

Kiryakova, I. V., Kargapoltsev, S. M., & Kargapoltseva, N. A. (2018). Educational Integration in the Regional University Cluster. *Higher Education in Russia 2*(10), 115-124.

Kramsch, C. J., Byram, M., & Fleming, M. (Eds.) (1998). *The Privilege of the Intercultural Speaker Language Learning in Perspective: Approaches through Drama and Ethnography.* Cambridge University Press.

Kravtsov, A. O. (2003). Creative attitudes as a component of project culture of subjects of the educational process. In *Proc. Int. Conf. on Innovation and Education* (pp. 324 -330). Sankt- Peterburgskoye filosofskoye obshchestvo.

Sakharova, N. S. (2004). Foreign language competence of university students under conditions of modernization of linguistic education. *Integration of Education, 2*(35), 38-42.

Shlenskaya, N. M. (2018). Integration of technological training and project approach in teaching a foreign language at a university. *Innovation in Education, 4,* 88-98.

Tomin, V. V., Sakharova, N. S., Eremina, N. V., Kabanova, O. V., & Terekhova, G. V. (2016). Intercultural adaptation of students in the information field of cross-cultural interaction. *Global Media Journal,* 1-10.