

Study of Foreign Experience in Bilingual Education: Case Study: System of Higher (Professional) Education

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Abstract. The current stage of human society development is characterised by such processes as economic and political globalisation, which indicates the significant changes in the historical and social scale of the socio-political structure of some states, technological progress and rapid development as the means of communication. Responding to the challenges of current period, the vocational education system should create conditions for the interconnected development of the cognitive and foreign language fields of future specialists. The similar technologies were named CLIL - Content and Language Integrated Learning and EMI - English as Medium for Instruction. However, in national information sources, theoretical and methodological aspects of bilingual education have not yet been adequately covered. Mastering foreign-language communicative competence becomes one of the necessary conditions for the successful career of the graduate student. This fact is recognised both by the academic community and by the students themselves. The new educational paradigm, which is currently asserted in education, reflects the modern view on the interrelationship of education and culture, in which education acts as a universal mechanism for the development of the specialist personality, free from thinking and action stereotypes, capable of intercultural communication and professional interaction in a foreign environment.

1 Introduction

The well-known phenomena exert an increasing influence on the professional activity. Professionals are working in the modern industry note a significant increase in the personal responsibility for the results, as well as the expansion of the professional activity scope at the expense of areas adjacent to the actual - economic, administrative, marketing and others. A successful modern specialist must possess excellent analytical skills, be the creative person, be able to work in a team, be ready to participate in solving interdisciplinary tasks, have developed communicative, professional competence in his native language and, at least in one foreign language, be capable of permanent training throughout the professional life. In the conditions of the international labour division, jobs are created in joint ventures in Russia and abroad, while the skills of foreign-language speech communication are the necessary qualification requirement.

There is the process of education internationalisation in universities, manifested in the academic mobility development, the educational programs developed in foreign universities, the study of various disciplines in the educational activities of foreign professors.

At the same time, the processes noted above, especially globalisation and the Internet development,

provide new opportunities for professional activities and for vocational education, including teaching a foreign language. The information revolution, which occurred with the advent of computers and the Internet, led to the jobs creation related to distance working, including in foreign companies and organisations. On the other hand, there was a breakthrough in the possibilities of obtaining information from various national and international knowledge bases and direct communication with foreign specialists in real time.

2 Literature review

Pedagogy has accumulated the experience in theoretical comprehension of various aspects of teaching students to a foreign language, taking into account their professional interests. These include the learning objectives and the socio-cultural approach to foreign-language education (N.I. Almazova, I.L. Bim, A.A. Verbitsky, I.A. Zimnyaya, V.V. Kraevsky, R.P. Milrout, J. Raven, V.V. Safonova, R. White, N. Chomsky, A.B. Khutorskaya, L. Bachman, J.F. Benito, M. Canale, D. Coste, D.H. Hymes, G. Zarate, J.A. van Ek, and others); a person-oriented approach to learning a foreign language (I.L. Bim, N.D. Gal'skova, Yu. N. Karaulov, V.V. Kraevsky, A.A. Leontiev, R.P. Mil'rud, A.A. Mirolubov, E.S. Polat, O.G. Polyakov, A.B. Khutorskaya, I.I. Khaleeva, and others); a communicative approach in teaching foreign

languages (G.I. Bogin, I.L. Bim, G.A. Kitaigorodskaya, R.P. Mil'rud, R.K. Minyar-Beloruhev, E.I. Passov, T.S. Serov, A.N. Shamov, S.F. Shatilov, and others); a contextual approach in teaching professionally oriented foreign language (A.A. Verbitsky, V.F. Tenishcheva, N.P. Khomyakova); linguo-methodical studies of the principles of teaching a foreign language (I.L. Bim, A.S. Balakhonov, N.D. Gal'skova, I.R. Maksimova, R.P. Mil'rud, A.A. Mirolubov, E.I. Passov, O.G. Polyakov, S.L. Rubinshtein, V.V. Safonova, T.S. Serova, P.V. Sysoev, A.B. Shchepilova, D. Coste, and others); the professional communication features of future engineers (E.F. Seer, E.A. Klimov, T.A. Kovaleva, N.B. Krylova, M.A. Mosina, A.M. Novikov, L.P. Raspopina, B.M. Rebus, T.S. Serov, V.A. Slastenin, A.V. Sokolov, V.D. Shadrikov, and others).

The main thing is the process of teaching a professionally oriented foreign language in a technical university when developing cognitive and professional motivation. In our opinion, as the essential methodological setting in the learning process allows stimulating the learners' activity at all its stages, it is advisable to use the theory of contextual learning developed by A. A. Verbitsky's scientific and pedagogical school. Concerning the teaching of a foreign language in non-linguistic universities, on the contextual approach basis, the integrative-contextual model for the professional competence using English as a means of carrying out professional activities was developed (V.F. Tenishcheva, 2008); a contextual model for the communicative competence (N.P. Khomyakova, 2011).

The formation of different communicative competence is considered in the state educational standards as the primary goal of teaching a foreign language at the university level. The researchers offer the communicative competence models of students-teachers of foreign languages, students-lawyers, students-economists, students-geologists (I.G. Gerasimova, Z.N. Kazhanov, T.A. Kostryukov, A.L. Morozova, N.P. Khomyakova), applied to the conditions of technical universities; models of foreign-language communicative competence of graduates and students of a technical college (A.S. Andrienko, S.A. Chichilanova) were developed. Recognizing the need to develop competency models, it should be noted that the proposed models do not sufficiently take into account the specific professional interests of future specialists. There are no communicative tasks relevant to professional activities, which makes it difficult to harmonise intercultural, communicative competence and professional competence that is different from other languages.

The forthcoming focus in the interconnected development of the professional cognitive and other communicative competencies of the future specialist is the adherence to the principle of integrative both in determining the learning objectives and in developing its content.

The professional personality formation alongside different professional competence, being ready and capable of speaking in a foreign language in the field of professional interests, is possible in the course of the educational process that provides an intrapersonal and

interpersonal (E.O. Galitskikh, A.A. Dzarasov, M.V. Tsiulina, V.Ts. Tsyrenov, N.K. Chapaev), intrasubject and interdisciplinary integration. Interpersonal integration provides the organisational and communicative readiness for activities, the experience formation in cooperation and co-creation through dialogue as the strategy of the integrative approach (E.O. Galitskikh). Intrapersonal integration is based on the idea of the integrative nature and the integrity principle of subject-activity and personal formation, creating conditions for the creation of the reflexive readiness of future specialists for professional activity. We consider the problem of intrapersonal integration in the design of the educational process from the standpoint of preparedness and the ability of the individual to self-evaluation, self-knowledge, self-improvement in the process of carrying out professional activities using a foreign language. The work of T.A. Dmitrenko, D.F. Polishchuk, Yu.N. Semin, and V.V. Shchipanov is devoted to the issues of pedagogical integration of the educational content in a technical university (at the levels of intrasubject and interdisciplinary integration). In the studies of psychologists (M.M. Zinovkina, A.K. Markova, V.D. Shadrikov and others), the importance of choosing appropriate methods and teaching technologies that positively influence the formation of the integrative thinking allows them to work with engineering objects of various nature and complexity, independently to set and solve in relation to the technical and research questions, to find and apply the actual information in native and foreign languages.

In bilingual education, the foreign language is both a subject of study and the means of teaching and studying academic disciplines. Bilingualism is an interdisciplinary phenomenon, various aspects of which have been studied by T.A. Baranovskaya, N.V. Baryshnikov, E. Bloker, L. Bloomfield, W. Weinreich, E.M. Vereshchagin, A.A. Zalewska, I.A. Zimnya, N.V. Imedadze, I.A. Kitrokskaya, H.B. Klenina, L.I. Komarova, A.A. Leontyev, R.K. Minyar-Beloruhev, N.V. Uznadze, O.F. Khudobina, L.V. Shcherba and others.

The theory and practice of bilingual education in a secondary school and the university is being revealed in the dissertational researches of K.E. Bezukladnikova, I.E. Bryksina, B.A. Kruse, E.V. Savello, L.L. Salekhova, A.G. Shirin, and other scientists.

Bilingual higher education in the foreign language (and also some other disciplines) in the context of the dialogue of cultures is considered in the works of A.G. Shirin (2007), I.E. Bryksina (2009). Much attention in these studies, as well as in the work of L.L. Salekhova (2007), is paid to the retrospective of bilingual education in the university and the bilingualism typology, from which researchers agree on the possibility of forming subordinate artificial bilingualism in the educational space of the highest school.

The pedagogical aspect of bilingualism is intimately connected with the studies of psychology and the motivational sphere. O. Khudobina (2007) summarises the types of language barriers faced in bilingual education and sets the task of developing mechanisms for overcoming such barriers. Reducing psychological

barriers and adapting students to the bilingual educational process is facilitated by the conditions for maintaining the strong motivation to acquire professional knowledge, the formation of the necessary communication skills in native and foreign languages. The motivation for mastering a foreign language in the conditions of bilingual education in the university is devoted to the thesis of S.V. Shubin (2000), which considers a general approach to this problem.

One of the few (and most complete) examples of bilingual instruction in a non-linguistic discipline in a university are L.L. Salekhova's (2007) dissertation on bilingual instruction in mathematics at a pedagogical college. Applied to the bilingual education of Bachelors and Masters in the technical major, it is possible to note the work of E.V. Savello (2010), dedicated to preparing students for professional bilingual communication. The work emphasises the importance of intrapersonal integration, including the ability and readiness for professional foreign-language communication, that is, the principle of integrative as a methodological setting is.

Thus, the study of the works of Soviet scientists shows that bilingual instruction in a foreign language was not considered as a particular kind of integrative learning. The existing elements of the methodological foundations, the theoretical base, the categorical apparatus do not allow us to speak of the systemic development of the conceptual foundations of integrative bilingual instruction in a foreign language in a non-linguistic university.

The primary research areas of foreign scientists (J. Airey, M. Met, E.B. Lorenz, P.A. Duff, C. Linder, L. Östman, J.L. Lemke, A. Gerber, J. Engelbrecht, A. Harding, J. Rogan, R. Klaassen, X. Chen, M. Plumlee, S. Patil, T. Krakatti and others) in the field of bilingual instruction in engineering subjects in a technical university are: the goal-setting problem; the language perception by trainees; the relationship between cognitive and communicative aspects of learning; mechanisms for students' adaptation; the learning strategy, different characteristics of trainees; the necessary identification of organizational and pedagogical conditions, as well as some others. The research object: the theoretical substantiation of integrative bilingual education in a foreign language in a non-linguistic university.

3 Results

In the construction of models of bilingual instruction in a foreign language, in the opinion of researchers, one should rely on anthropocentric, cognitive, functional, consciously comparative and some other principles (I.E. Bryksina). The integrity principle, which has significant potential in the stages of the educational process, has not been considered by researchers as one of the leading in bilingual education.

Regarding the motivation problem for the interconnected mastery of a foreign language and professional knowledge, several plans can be singled out:

- the transformation of the motives from educational to quasi-professional and professional (following the theory of contextual learning);
- dynamic interaction of communicative and cognitive interest;
- psychological-didactic substantiation of the content components of bilingual education, based on the detailed model of the graduate's competence in the university training.

Integral learning, due to its inherent features, provides mechanisms for updating all of these plans.

The educational process, based on the achievements in the field of profile-oriented learning a foreign language, allowing to take into account the professional needs to the maximum extent realizing the principle of integrative and providing on this basis the interrelated development of cognitive professional and communicative (in both native and foreign languages) spheres of students, is bilingual instruction in a foreign language.

In modern conditions, mastering foreign communicative competence becomes one of the necessary settings for a successful career of the university graduate. The situation develops so that in many regions of the world English becomes *lingua franca* in the academic environment and the real sector of the economy.

Thus, Swedish researcher R. Höglin notes: "The presence of only one German at a conference in which thirty Norwegians participate leads to the need to use English as a working language. The presence of one Finn at a meeting in a large Swedish company leads to the fact that everyone speaks English. If one Dutchman starts working in the department of information technology, where forty Danes work, all internal correspondence is translated into English" (quoted in [1]).

In continental Europe over the past three years, the number of training programs offered in English has tripled; with the majority of such programs (27% of the total) referring to engineering training [2]. The increase in the number of courses offered by universities in a foreign language is partly due to the involvement of international students. However, this alone can not explain, for example, the fact that at the Faculty of Science and Technology of Uppsala University (Sweden) 87% of textbooks for bachelors and masters and 100% of post-graduate grants are written in English [4].

In China, Korea, European, Arab countries, countries of Southeast Asia, government policy is being implemented to stimulate bilingual education. Before the Chinese universities, the task is set that 5% -10% of all courses should be taught on the bilingual basis. According to the instruction of the Department of Higher Education of China, issued in 2004, the availability of bilingual programs is one of the essential indicators for assessing the performance of universities. Particular attention is paid to the introduction of such programs in the teaching of such demanded disciplines as biotechnology, information technology and some others [3].

The study of the literature shows that two innovative types of training have been widely recognized in foreign university educational practice over the past 20 years: the subject-language integrated learning, which can be viewed as an interrelated study of the contents of a subject and a

foreign language (CLIL - Content and Language Integrated Learning); and teaching / learning subjects in English (non-native for learners) language (EMI - English as Medium of Instruction).

When designing the methodology and organisation of the first type of the educational process (CLIL), the goal is to develop professional competence simultaneously with foreign competence. The educational process is bilingual, based on the native language, in the practice of foreign technical universities, subject-language integrated learning is in many cases conducted by teachers of a foreign language (Table 1). At the same time in English such disciplines as mathematics, informatics, natural sciences, economics and others are taught, as a rule, not directly related to the subjects of the professional cycle. Subject teachers conduct engineering training courses in the English (non-native) language in foreign universities.

Table 1. Types of teaching in a foreign language in foreign universities.

Type of educational process	Major of Educational Process	Reliance on language	Professors
CLIL Language-integrated learning	Learning a foreign language and studying non-linguistic subjects	Native (bilingual training)	Teachers of a foreign language and subject teachers
EMI Teaching/learning subjects in English (non-native for learners) language	Studying non-linguistic (engineering) disciplines in a foreign (English) language	Foreign (English), immersion	Subject teachers

Language-based integrated learning (CLIL) originated in Canada and the United States. The relevance of this type of education (education) for Canada is since the two languages are state languages in this country. In the US, local training is used to improve the language skills of students who do not speak English well enough [8]. Teaching/learning in English (non-native learning) language (EMI) is widely used in educational institutions in South Africa and Asia.

The purpose of bilingual education (to varying degrees, CLIL and EMI refer to it) is to teach students to receive professional information in a foreign (most often English) language and use this language for training and professional communication [3]. A foreign language is a “working learning tool”, not a subject of study [1, 4].

Researchers note that many students consider the traditional study of a foreign language as a fact of school (university) life, and not as a means of communication. Often students do not have the opportunity to actively use the language, so their development stops at the stage of reading and writing. If students get a chance to use the language in a supportive environment, they can significantly improve their language achievements. Hence the usefulness of using the method of “immersion in the language” [1].

The ratio of native and foreign language in bilingual education can vary depending on the capabilities of the teacher, students and circumstances. Nevertheless, in some cases, it is regulated. For example, according to the requirements of the Department of Education of China, bilingual education should be conducted using authentic foreign textbooks and over 50% of the teaching load must be performed in a foreign language [3].

In 1999 - 2000 years. At the faculty of construction of the Polytechnic University of Hong Kong, a comprehensive study was conducted on the effectiveness of training courses read in English [5]. In the course of the survey, teachers, students studying under the bachelor's, master's programs, as well as speciality programs were interviewed. English is the primary language of instruction at the Polytechnic University, while the Cantonese dialect of the Chinese language (Cantonese), which they use for daily communication, is native to teachers and students. This situation is similar to the Russian one, unlike, for example, the situation in Singapore, where there is practically a bilingual society, whose members, from childhood, speak equally in English and the Mandarin dialect of the Chinese language.

4 Discussion

The study touched upon the following issues: the degree of use of English in class; the difficulties experienced by students and their reasons, compensation strategies and other strategies to achieve success.

When polling 22 professors, they were told that with all types of classes, most of the time they speak English. However, the results of the survey of 71 students of various forms of education revealed that the above estimate is significantly overestimated (Table 2) [5]. Thus, the educational process can be characterised as bilingual, based on the native language.

Table 2. Students' assessment of the ratio of the time of use by teachers of English and their native language.

Type of lessons	The average time the teacher uses the English language, %	The average time the teacher uses the native language, %
Lectures	51	49
Seminars/Workshops	46	54
Practical lessons	36	64
Laboratory works	18	82

As for the difficulties experienced by students in English-speaking classes, 70% of the students surveyed noted that the peculiarities of the teachers' pronunciation (accent), as well as the rapid pace of speech, often prevented understanding. At the same time, 33% of students at all levels of education stated that understanding was always tricky due to the dispersion of attention, which was facilitated by a long duration of studies. In fact, the lessons were conducted for a standard academic hour or two hours (pair), but it was foreign lessons that students perceived as being excessively long. Besides, according to

students, the too large audience of listeners encouraged teachers to use predominantly monologic speech at the expense of discussion and dialogue with listeners. For their part, the teachers pointed to the following reasons for the difficulties experienced by students: poor grammatical preparation in schools; a strategy based on the pursuit of the pattern (passive), not conducive to the formation of independent thinking; as well as a large number of handouts, the hobby of which reduces the motivation for the design and use of oral language in the course of classes, and reinforces the tendency for students to adopt passive learning strategies.

Impressive results were revealed when students were interviewed about compensation strategies, in particular, in what way they replenish the material not understood in the course of studies (Table 3) [5].

Table 3. Strategies for student compensation: “what do you do if you do not understand the teacher's speech in English?”

Options for action	The average, all respondents (separately for each line), %	Rank (degree of preference)
I will ask the classmate to explain to me in the audience.	33	2
I will ask the classmate to explain to me after class.	43	1
I read someone else's notes after class.	24	3
I will rewrite someone else's notes.	33	2
I will ask the teacher after class.	6	4

Only 6% of respondents consider the appeal to the teacher as the means of filling gaps in the teaching material.

5 Problems, implications, and limitations

The active introduction of bilingual education over the past ten years has revealed the most particular problems that accompany this process [3, 6]. These problems, which concern professors, students and administration, are summarised (Table 4).

Some of the difficulties mentioned above can be overcome by using the following didactic principles in the organization of the learning process: the consistent introduction of bilingual instruction in the curriculum - from more straightforward disciplines to complex integrated disciplines; homogeneity of study groups in terms of language proficiency; authenticity of language material; relevance of training tasks to professional interests; ensuring students' interest in texts and activities; development of communicative skills through discussions, teamwork and the creation of presentations [3, 4, 7].

Table 4. Difficulties in implementing the bilingual training, which is faced by various actors of this process.

Professors	Students	Management
Insufficient level of knowledge of foreign language teachers by subject teachers, especially concerning oral communication.	Weak knowledge of the foreign language by students. Student need not only a sufficient vocabulary and the ability to read the text, but also the perception by hearing of foreign speech and speaking in a foreign language.	Lack of administrative infrastructure and other organisational problems.
It takes not only good knowledge of a foreign language but also the experience of teaching a particular discipline.	Different level of foreign language skills.	Insufficient moral and material incentives for teachers conducting bilingual education.
The reluctance of subject teachers to be taught in a foreign language.	The unwillingness of students to participate in bilingual education due to fears of misunderstanding the subject and getting low grades.	Lack of the sufficient number of teachers ready to participate in the bilingual project.
Teachers are unfamiliar with the specifics of teaching in a foreign language.	Students do not read foreign textbooks, use only the materials of the teacher, or textbooks in their native language.	
Imaginary discrimination of the native language and domestic scientific achievements.	Difficulties in passing exams: students do not understand what is required of them, they can not answer questions.	

Researchers note that when creating teaching aids, teachers should develop their bilingual textbooks based on authentic texts, but taking into account local specifics. Textbooks should be supplemented with multimedia manuals and active use of the Internet [4], international electronic databases, such as the EI database, Elsevier SDOL, Science Online, PQDD, Pro-Quest, IEEE.

Table 5. The survey results on the criteria of the hierarchical model for assessing the quality of bilingual education.

Criterion number	Criterion	Alternatives	Points (out of 100)
I	Teacher's age	25-30	70
		31-40	80
		41-50	75
		50+	65
II	Experience in bilingual teaching	3-5 years	75
		6-10 years	80
		10 +	85
III	Position (scientific title) of the teacher	Assistant	70
		Senior Lecturer	75
		Associate Professor	80
		Full Professor	85
IV	Teachers' Education	Bachelor	70
		Master	80
		Teacher with degree	85
V	Teacher: fluency in English	Degree (title) obtained in a foreign institution	85
		More than one year of study abroad	80
		Foreign internship	75
		Language courses in native country	70
VI	Students: proficiency in English (test results)	0-30%	65
		31-50%	75
		51-70%	85
		71% +	90
VII	Student: year of study at the university	1-2	70
		3	80
		4	85
VIII	Student: motivation	High	85
		Average	70
		Low	60

Table 6. The rank and the criterion significance.

Criterion number	Rank
V	1
VIII	2
III	3
VI	4
II	5
IV	6
VII	7
I	8

Ensuring quality bilingual education is facilitated by classes with teachers both regarding improving the knowledge of a foreign language, and with the goal of

developing a methodology. It is useful for students to organise additional courses (electives) to study the basics of scientific communication, to review the texts of written sources and lecture materials. The motivation of students for bilingual education will be international internships and exchanges, the creation of an international cultural environment on campus [3, 6].

A prerequisite is the small number of students in the groups and the flexibility of the curricula, taking into account the capabilities of the students. When issuing an evaluation assessment, one should take into account work in the semester, and this will remove the severity of the problem of passing the exam [3].

It is necessary to develop a system of objective quality assessment of bilingual education. Feedback should be provided by regular student interviews [6].

In the work of Chinese researchers, Y. Li, L. Wang, X. Dong [8] presented a hierarchical model for assessing the quality of bilingual training (the model is abbreviated in English - AHP). To assess the quality criteria provided by this model, a survey of 150 teachers, students and experts were conducted (Table 5). The scores obtained correspond to the following estimates: excellent - more than 85; good - $75 \div 85$; satisfactory - $60 \div 75$; unsatisfactory - below 60. To reveal the relative importance of the criteria, they were then ranked (Table 6).

Based on the study of foreign sources on the problems of introducing bilingual training in engineering disciplines in technical universities, it can be concluded that this type of training is in demand in educational practice, it reflects the real needs of the international market of engineering labor and tends to further development. The research reveals the factors that influence the effectiveness of the bilingual educational process identifies the difficulties that arise in the course of its implementation and identifies the areas of work to overcome them [9].

Summarizing the experience of implementing bilingual training programs in engineering universities, described in the literature, we outline the necessary organisational and pedagogical conditions, the presence of which makes it possible to implement this type of educational process in the national technical university (Figure 1). These include the following:

1. the students' motivation for bilingual education;
2. the teachers' availability of engineering disciplines with professional and foreign communicative competence or the possibility of organizing work in tandem with teachers of a foreign language;
3. group homogeneity according to the level of knowledge of a foreign language;
4. the consistent introduction of bilingual education into curricula;
5. the availability of educational and methodological complexes, including bilingual teaching materials created by teachers of Russian universities and authentic foreign language materials, including multimedia;
6. implementation of multilevel control and evaluation of the degree of formation of the constituent parts of the communicative competence that is being used in another language in the professional field.

6 Conclusion

1. Variation teaching of a foreign language in a technical university and teaching in a foreign language has the formation of a future engineer in another language component of communicative competence as its primary objective. In engineering education, there are objective conditions for using the developing potential of a foreign language, which until now is not sufficiently disclosed.

2. Bilingual education, in which a foreign language is not only an object of study but, mainly as a means of teaching and studying educational disciplines, should be viewed as a promising direction of the interconnected development of the cognitive and communicative competencies of the future specialist. The primary goal of bilingual education is the achievement of students of a high level of professional, foreign-language and intercultural competencies.

3. The development of the academic system of bilingual education in a technical university should be based on the principles of approaches: integrative (the principle of integrative), personality-oriented, activity, and problem.

4. Until recently, issues of bilingual instruction in the disciplines of the actual engineering direction (for example, machine building, heat engineering, and construction) have been little covered in the scientific literature. The concept of integrative bilingual education in engineering disciplines should be defined as the activity of a teacher and a student in the study of natural sciences, general professional and particular disciplines of the engineering direction, carried out in two languages - native and foreign.

5. Integrity serves as a methodological orientation that provides a theoretical basis for the development and implementation of a bilingual educational process model by a holistic view of the development process of a bilingual professional person with a complex dynamic system of relevant competencies. The principle of integral in the bilingual educational process is realised in the interaction of four areas of integration: interdisciplinary, intrasubject, interpersonal and intrapersonal.

6. In addition to the integral principle, which is the guiding principle of the type of education under consideration, the design of the learning process is also based on the principles: harmonious development of the cognitive and communicative spheres of trainees; problems in the organization of training activities; orientation to the needs of trainees, identified in the analysis of the components of engineering in modern conditions; activity of trainees; development of the dynamic system of motivation of trainees for educational and professional activities; reliance on bilingual lexicons, terminological thesaurus-type dictionaries of disciplines; context and problems in the selection of the lexico-grammatical material.

7. The study of literature allows us to conclude that, in modern conditions, mastering foreign communicative competence becomes one of the necessary conditions for a successful professional career of a graduate of a university. In the European, Arab countries, countries of

Southeast Asia, China, government policy is being implemented to stimulate bilingual education. Before the Chinese universities, the task is set that 5% -10% of all disciplines be taught on a bilingual basis.

8. In the educational practice of foreign technical universities, CLIL has been widely used over the past 20 years in teaching/learning subjects in English (non-native for learners) (EMI - English as Medium of Instruction). Foreign researchers have determined the factors influencing the effectiveness of bilingual engineering education, and also revealed the difficulties that accompany the introduction of bilingual education in technical universities, the subjects of which are students, teachers and administration. Most of the problems noted are typical for Russian universities.

9. Based on the analysis of foreign and national sources, as well as existing experience, the organizational and pedagogical conditions for the practical implementation of integrative bilingual instruction in a foreign language of engineering disciplines in a technical university should include:

- the flexibility of the curricula, the consequent introduction of bilingual instruction in the curriculum from more simple disciplines to complex complex disciplines;
- availability of teachers of engineering disciplines with professional and foreign communicative competence or the possibility of organizing work in tandem with teachers of a foreign language;
- group homogeneity in the level of knowledge of a foreign language;
- authenticity of educational material that is not of another language;
- relevance of training tasks to professional interests;
- ensuring students' interest in working with foreign language texts and other types of activities associated with obtaining information in a foreign language;
- availability of educational and methodological complexes, including bilingual teaching materials created by teachers of Russian universities and authentic foreign language materials, including multimedia media;
- implementation of multilevel control and evaluation of the degree of formation of constituents of communicative competence that is of another language in the professional field;
- presence of a system of objective quality assessment of bilingual training; implementation of feedback from students.

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