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Factors Of Students' Technical Thinking Development In English Lessons At Technical Universities

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Abstract: The article deals with the factors of technical thinking development at English lessons in technical universities. The article also points out and analyzes the necessity of forming technical thinking by means of the project method, which develops technical thinking, provides a holistic approach to the perception of technical problems and tasks, ability to work in a team.

Key words: technical thinking, project, method, development, material production, technical knowledge, available condition.

INTODUCTION

Informatization and technologization of modern society impose ever higher requirements to the technical component of professional training of university graduates. Nowadays, for young people entering an independent working life, deep knowledge of scientific and technical, economic and ecological bases of techniques and technologies is necessary irrespective of the received specialty.

At the same time, it turns out in practice that many university graduates experience difficulties in applying technical knowledge in their professional activity, which is due to insufficient coordination of the subject and professional components of students' training. This underlines the problem of developing students' technical thinking in the higher education system. Its solution, on the one hand, makes it possible to integrate subject training into the general system of specialist training and, on the other hand, creates conditions for students' mental development.

A number of fundamental, experimental and applied psychological studies (A.V. Antonov, B.A. Dushkov, E.A. Klimov, T.V. Kudryavtsev, B.F. Lomov, V.A. Molyako, V.V.) are devoted to the problems of technical thinking

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development. Chebysheva, M.L. Shubas, A.F. Esaulov, I.S. Yakimanskaya, etc.). The research data testify to the urgency of the problem of technical thinking development in the system of higher education and allow us to highlight the main approaches to its development.

One of the most promising directions is the development of technical thinking in English language lessons.

MATERIALS AND METHODS

Since T.V. Kudryavtsev, one of the first researchers of this problem, notes that technical thinking has a three-component structure, as conceptual-image-practical thinking, where each of the components takes an equal place, and all together they constitute an inseparable unity [1], the main function of technical thinking in English lessons is teaching technical terms in English.

Technical thinking means that thinking evolves not only under the influence of social conditions, but also under the influence of the development of social needs, demands of developing material production and social and historical perspectives of society's development, but also has internal conditions of its development. Thinking always represents a developing system of knowledge about an object.

For a technical university student to be a highly qualified specialist, you need to know a foreign language. The meaning of technical thinking is to solve problems, a modern specialist should know how to solve these problems in English. In the process of solving them, the necessary qualities of technical thinking are formed.

To solve the technological problem it is necessary:

- to have an established goal and seek a specific answer;

- to take into account the conditions and background data needed to achieve the objective;

- to apply the methods of problem solving that correspond to the available conditions.

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Technological problems are characterized by the following three points: first, a certain goal, the desire to get an answer "and the question posed; secondly, the need to take into account the available conditions, the initial data associated with the achievement of the goal; thirdly, the application of methods for solving problems that correspond to the available conditions.

Each of these three points has a number of features. In the course of their work, the student should be able, independently or with the help of the instructor, to clearly and competently pose questions to be answered when solving a technological problem. This should be specifically taught. Further, the conditions and background data are not always ready-made; many of them must be found on their own and determined whether they are sufficient to solve the technological problem. However, the greatest difficulties are related to the ways of solving the problem. As is known, the ways of solving any problem are based on the application of general principles in concrete conditions, on bringing a given private case under a certain general rule.

At the decision of design or technological problems there are the features: in the course of work the person should be able independently, clearly and competently to put questions to which it is necessary to answer.

This understanding of features comes in the process of special training. Conditions and initial data often have to be found independently, studying additional materials, while determining how suitable they are for solving assigned design or technological problems.

When solving a problem, a person has several ways (methods) of solution. As a rule, methods for solving any problem, not only design or technological, are based on the application of general principles in these conditions, bringing a given particular case under the established general rule.

RESULTS AND DISCUSSION

Students of technical universities should have knowledge of the English language, because modern society needs highly qualified specialists. Technical

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thinking skills in English lessons are acquired by students as a result of practice. As a result of repeated repetitions of terms, students gain experience and develop technical thinking skills.

The development of technical thinking in English classes is a complex process, it usually proceeds rather slowly and depends on general intelligence, practical skills, a person's ability to technical thinking and other factors.

One of the most important methods for developing technical thinking is the "project method" in English classes. This is a training task, as a result of which a product is created that has subjective, and sometimes objective, novelty.

The design method comes into life as a requirement of the time. The project method is one of the interactive methods of modern learning. It is an integral part of the pedagogical process. The project method is a set of consistent educational and cognitive methods that allow students to acquire knowledge and skills in the process of planning and independent performance of certain practical tasks with the compulsory presentation of results.

A project is a teaching method that can be used in the study of any topic; it is always focused on the independent activities of students - individual, paired, group and the real end result - a product.

The main goal of the project method is to create students' creative and technical thinking. There are many classifications of teaching methods, but almost every class has a research method, when students are given a cognitive task that they solve on their own, choosing the necessary methods for this and using the help of a teacher. The project method can be attributed to the research type, in which students individually deal with any posed problem.

At the core of the learning process is the cooperation and productive communication of students, aimed at joint problem solving, the formation of the ability to highlight the important, set goals, plan activities, assign functions and responsibilities, technically think, achieve meaningful results. In pedagogy, this approach involves the use of teaching methods such as problem solving and

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project-based learning. Learning activities in this case are focused on successful activities in the real society. The result of training is no longer the acquisition of knowledge, skills and abilities, but the formation of key competencies that ensure the success of practical activities.

An important feature of the project approach is humanism, attention and respect for the personality of the student, a positive charge, aimed not only at learning, but also at developing the personality of students.

CONCLUSION

As a rule, educational projects contain a problem that needs to be solved, which means they formulate one or more tasks. This task should be attractive in its wording and should stimulate increased motivation for project activities. Using the design method of training, students comprehend the entire technology of problem solving - from raising the question to presenting the result, which in turn develops the technical thinking of students.

And the most important thing is that project research activities form an integral system of universal knowledge, skills and experience of independent activity and responsibility for students, which ensures the modern quality of education and improves the quality of teaching the subject. Projects allow the formation of communicative skills (communicative competence) - the ability to collaborate, interact, the ability to substantiate statements and perceive criticism, to take initiative, which is very important, since communicative skills are in demand on the labor market today and are necessary in all areas of activity.

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