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TIPS technology in English lessons at technical universities as a means of developing technical thinking and language competence

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Abstract: The article deals with the TIPS technology in English lessons at technical universities as a means of developing technical thinking and language competence. The use of **TIPS** technology in English lessons broadens students' horizons, promotes a culture of communication, contributes to the speech and language development of students, while revealing creative abilities and developing technical thinking.

Keywords: TIPS technology, competence, professional, growth, specialists, increasing, ability, field, methods, decisions, process, specific, activity.

INTRODUCTION

At all times, the success of a person's professional training and activity is largely determined by the level of his mental development, the development of certain abilities in the field of his future profession. The degree of development and the nature of the combination of the properties of mental activity determine individual differences in learning ability, which are its qualitative indicators that play a significant role in the assimilation of knowledge. So learning affects the level of educational achievements of students and the professional growth of specialists. The relevance of the problem under study is also increasing due to the fact that in modern conditions the process of moral depreciation and obsolescence of knowledge and skills of a specialist is accelerating. Learning is understood as a system of intellectual properties of the individual, formed qualities of the mind, on which the productivity of the educational and professional activities of the individual depends and technical thinking in the context of this is of undeniable importance.

There are various theoretical approaches to the study of this type of thinking, both in domestic and foreign psychology: T.V. Kudryavtsev, O.F. Fedorov, V.D. Shadrikov (within the framework of the concepts of professional development), B.M. Teplov, V.I. Andreev, I.A. Mamaeva, D.B. Bogoyavlenskaya (development of abilities in the aspect of theories of creativity in professional activity), A.V. Brushlinsky, V.S. Lazarev (concepts of psychological mechanisms for the development of thinking), R. Halman (negative factors in the development of abilities), J. Gilford (types of abilities) and others.

At the same time, according to A.V. Brushlinsky and V.S. Lazarev, the psychological mechanisms of the development of human thinking are interconnected and characterize qualitatively different levels of development - the level of the mental individual as the subject of individual actions and the level of the subject of holistic activity. Hence, theoretical thinking forms the basis of a person's intellectual development, but does not limit it. The formation of professional thinking occurs in line with the formation of a professional type of personality, and is carried out through internal mechanisms for the development of thinking from individual actions to holistic activities.

The concept of professional thinking is understood as a generalized reflection in the mind of a specialist of significant facts, phenomena, processes in their

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necessary, essential connections and relationships characteristic of this type of professional activity, implemented at two levels: situational and supra-situational.

Professional thinking consists of several components, each of which plays a role in the professional activity of a specialist: theoretical, practical, reproductive, productive creative, visual-figurative, verbal-logical, visual-effective, analytical, logical and intuitive. The product of such thinking is the removal of professionally significant contradictions and the resolution of a problem situation, which carries with it a certain generalized mode of action or technique that can be applied in such situations.

MATERIALS AND METHODS

Technical thinking has two aspects: as a professional quality of a person and as an integral structural component of students' educational and cognitive activity. It is inextricably linked with technical abilities, which must be sufficiently developed for a technical specialist and allow him to successfully work with special equipment. Some researchers propose to distinguish three components in technical abilities:

➢ ability to quickly and accurately assimilate the structure and mechanism of operation of technical devices;

➢ ability to handle tools and machines for the manufacture of technical products according to drawings and technical maps;

➢ ability to improve and create new technical designs and products.

Other researchers believe that technical ability includes independent factors: spatial representations and technical understanding. A characteristic feature of technical thinking is a kind of synthesis of logical and figurative thinking (polar styles of the hemispheres), which is explained by the specifics of technical modeling. Thus, not only the importance of the basic, natural science disciplines, but also the model ideas formed by them, is emphasized here.

Some researchers single out the operational area of research activities of a mid-level technical specialist, which includes such concepts as creativity, abilities, creative abilities, creativity and professional thinking as productive creative thinking. Hence, the professional type of thinking is the predominant use of the methods of solving problematic problems adopted specifically in this professional field, methods of analyzing professional situations, making professional decisions, which is formed in the process of obtaining professional education, in the process of specific activity and implies the presence of generalized concepts about the objects being studied, the ability to produce their mental analysis and synthesis, the construction of judgments, conclusions, evidence, etc.

With the development of students' technical thinking in English lessons, the material is considered learned when the necessary understanding is achieved, the ability to create an integral, meaningful idea of the object or phenomenon being studied is formed.

Most researchers believe that the formation of technical thinking occurs in the process of solving problems of an arbitrary and polytechnical nature, reflecting the characteristics of the profession being studied. It is important that the tasks not only reproduce the acquired knowledge, but also encourage students to actively search

creatively, that is, from tasks of a reproductive nature to problematic to productive ones.

The combination of forms of educational work in English lessons should depend on the individual characteristics of students, learning objectives, complexity and volume of educational material and contribute to the development of the student's personality, his formation as a future specialist by achieving the complex goals of the educational process. A particularly urgent problem for the education system is to ensure the optimal amount of information and knowledge to be transferred.

RESULT AND DISCUSSION

Language is the most important means of communication, without which the existence and development of human society is impossible.

The ongoing changes in social relations, means of communication (the use of new information technologies) require an increase in the communicative competence of students, the development of language competence and technical thinking.

Today, there are many different teaching technologies, methods, forms and types of work that contribute to the development of technical thinking in English lessons.

According to the state educational standard for a foreign language, the study of a foreign language is aimed at achieving the following goals:

➢ development of foreign language communicative competence in the aggregate of its components - speech, language, socio-cultural, compensatory, educational and cognitive;

➢ development of students' personality through the realization of the educational potential of a foreign language.

To achieve these goals, I use **TIPS** (*Theory of inventive problem solving*) technology. The creation of conditions for practical knowledge of the language, the choice of such teaching methods and techniques that would allow all students to show their creative activity, as well as to intensify the educational and cognitive activity of students in the learning process, is the main task of the teacher. Students should be able to freely navigate in the information space and make non-standard decisions in any situation. This technology allows a completely new look at the educational tasks facing the teacher and ways to solve them, offers methods for non-standard solutions to standard life issues, requires a creative and critical approach to learning, and therefore brings novelty to it.

TIPS is the theory of inventive problem solving, developed by G. S. Altshuller, a field of knowledge that studies the mechanisms of development of technical systems in order to create practical methods for solving inventive problems. The purpose of **TIPS** is to identify and use the laws, patterns and trends in the development of technical systems. **TIPS** is used in pedagogy for the development of the qualities of a creative personality, the development of creative imagination and thinking. The development of technical thinking of students on the basis of **TIPS** technology is carried out according to a triune algorithm: find a contradiction in a problem situation - accurately formulate a contradiction - resolve a contradiction in English. As a result, students receive a new quality, find an extraordinary approach to

the problem being studied, which contributes to the implementation of the creative aspect in teaching English.

The main stages of the lesson according to **TIPS** technology are:

1. Motivation is a specially selected system of original surprise objects capable of arousing student's surprise. This stage ensures the student's motivation for the lesson and develops his/her curiosity.

2. The content part contains the program material of the training course and ensures the formation of systemic thinking and the development of creative abilities.

3. Psychological unloading is a system of tasks for psychological unloading. Psychological relief is implemented through exercises to harmonize the development of the cerebral hemispheres, through auto-training, through a system of sports and emotional games, and theatricalization.

3. Psychological relaxation is a system of psychological relaxation tasks. Mental relaxation is implemented through exercises to harmonise the development of the cerebral hemispheres, through auto-training, through a system of sports and emotional games, and through theatre.

4. The puzzle is a system of progressively more complex puzzles embodied in real objects, the design of which implements an original witty idea.

4. A puzzle is a system of complicating puzzles, embodied in real objects, in the construction of which an original witty idea is implemented.

5. Intellectual warm-up is a system of increasingly complex tasks aimed at developing motivation, divergent thinking and creative abilities.

6. Computer-based intellectual support provides motivation and development of thinking, provides a system of increasingly complex computer games and puzzles, adapted to the age of students.

7. The summary provides feedback to students in the lesson and provides for a qualitative and emotional assessment by students of the lesson itself.

CONCLUSION

The use of **TIPS** technology in English lessons broadens students' horizons, promotes a culture of communication, contributes to the speech and language development of students, while revealing creative abilities and developing technical thinking.

The use of **TIPS** technology in an English lesson allows for a methodologically correct lesson and the achievement of high learning outcomes, as well as solving practical, developmental and educational problems. When working with this technology, everything depends on the creativity and will of the teacher. **TIPS** makes the lesson more productive, colourful and creative.

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