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Active Methods of Teaching a Foreign Language as a Means of Developing the Students' Team Competence in Technical Specialities of Higher Educational Institutions

Métodos activos de enseñanza de un idioma extranjero como medio para las competencias de equipo en estudiantes de especialidades técnicas de instituciones educativas superiores

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Contents

ABSTRACT:

The relevance of this study is predetermined by the processes of globalization and the internationalization of Russian higher education as well as the emergence of new demands of society and the labor market on the results of university studies. The team competence refers to general cultural competences and is an indicator of a high level of a graduate's communicative competence and personal development. Active methods of teaching are recognized as the most effective ones for developing this competence. In this study, the authors look into the methods of a case-study and a project in terms of their potential for the development of the team competence. The objective of the study: The study of active teaching methods used in foreign language classes with students of technical specialities at university, as a means of developing the team competence. The study methods: The leading

RESUMEN:

La relevancia de este estudio está predeterminada por los procesos de globalización e internacionalización de la educación superior rusa, así como por el surgimiento de nuevas demandas de la sociedad y el mercado laboral sobre los resultados de los estudios universitarios. La competencia del equipo se refiere a las competencias culturales generales y es un indicador del alto nivel de competencia comunicativa y desarrollo personal de un graduado. Los métodos activos de enseñanza son reconocidos como los más efectivos para desarrollar esta competencia. En este estudio, los autores analizan los métodos de un estudio de caso y un proyecto en términos de su potencial para el desarrollo de la competencia del equipo. El objetivo del estudio: El estudio de los métodos de enseñanza activos utilizados en las clases de lengua extranjera con estudiantes de especialidades técnicas en la universidad, como un

methods of studying this question are the pedagogical experiment, questionnaires, testing, and the method of statistical processing of quantitative and qualitative results of the study. The results of the study: The most effective active teaching methods, such as a case study and a project method have been identified in this article. The criteria for assessing the students' performance have been determined. The significance of the study: the possibilities of using active forms and methods of teaching a foreign language have been substantiated by the authors and a diagnostic toolkit for determining the level of team competence has been structured. The materials of the article can be used in the development of teaching materials in the system of higher education as well as for increasing the effectiveness of developing the team competence among students of technical specialities in the university.
Keywords: foreign language, team, competence, active methods of teaching.

medio para desarrollar la competencia del equipo. Los métodos de estudio: los métodos principales para estudiar esta cuestión son el experimento pedagógico, los cuestionarios, las pruebas y el método de procesamiento estadístico de los resultados cuantitativos y cualitativos del estudio. Los resultados del estudio: los métodos de enseñanza activos más efectivos, como un estudio de caso y un método de proyecto, se han identificado en este artículo. Los criterios para evaluar el rendimiento de los estudiantes han sido determinados. La importancia del estudio: las posibilidades de utilizar formas activas y métodos de enseñanza de un idioma extranjero han sido fundamentadas por los autores y se ha estructurado un conjunto de herramientas de diagnóstico para determinar el nivel de competencia del equipo. Los materiales del artículo se pueden utilizar en el desarrollo de materiales de enseñanza en el sistema de educación superior, así como para aumentar la eficacia del desarrollo de la competencia del equipo entre los estudiantes de especialidades técnicas en la universidad.
Palabras clave: idioma extranjero, equipo, competencia, métodos activos de enseñanza.

1. Introduction

In the modern world, an actual problem is the formation of a person with professional knowledge, skills and general cultural competences, who can adapt to the changing conditions of life and society; who has not only knowledge, but also the ability to solve specific life and professional problems with the help of this knowledge; a creative person, independent in decision-making, having good communication skills, able not only to work individually, but also to cooperate effectively with colleagues and to work in a team in order to solve complex professional tasks. The most important task under these conditions is the provision of knowledge and competences that solve the problems of social and scientific progress, and each person is assisted in finding their place in life, in the face of ever-increasing and renewing qualification requirements (Nikolaeva A.D., Barakhsanova E.A., Golikov A.I. [13]. A decisive role in this case is played by such phenomena of modern reality as the changes in the socioeconomic situation in Russia, the transition to market relations, and reforms in higher professional education. The study was based on the hypothesis that the process of developing the students' team competence in the university will be effective if the students' individual psychological characteristics are taken into account, if active methods are used in the process of teaching a foreign language, ensuring an effective interaction of students and their inclusion in the relations of partnership (motivation, proactivity, joint activity, mutual assistance, team responsibility, etc.). In this study, the authors understand the team competence as "the ability to carry out a team activity, recognizing and accepting the principles of working in a team, performing a certain team role." The use of active forms, methods and communicative educational technologies in the process of teaching a foreign language ensures an effective interaction between students and their inclusion in the relations of partnership and is one of the main factors in the formation of the team competence. The active methods of teaching are recognized by many authors as the most effective ones for the formation of interpersonal competences; they contribute to the development of creativity, intuition, and the relations of partnership in a team (Kopylova N.A.) [9].

The introduction of active methods for the development of the team competence in foreign language classes was done in stages according to the generally accepted stages of team building: formation, discussion, establishment of friendly relations (working atmosphere) and task performance.

Objectives of the study:

1. on the basis of a pedagogical experiment, to determine the effective active methods of teaching a foreign language that promote the development of the team competence;

2. to experimentally check the effectiveness of using the active methods that promote the development of the students' team competence in technical specialities at the university.

2. Literature review

This study was premised on the research done by Estey, A., Collins N. (individual psychological characteristics of technical university students); Cohen E. J. (formation of a team, distribution of roles and criteria for the efficiency of team work); P.H., Katz N.H., Lowe A., Mischenko P. (application of active methods of teaching a foreign language).

3. Methods

M.K. Amosov North-Eastern Federal University, Institute of Mathematics and Information Technology was an experimental base of the study. The experiment covered 100 students of the experimental group (EG), majoring in: "Fundamental Informatics and Information Technologies", "Computer Science and Computer Engineering", "Mathematics" and 50 students of the control group (CG)majoring in: "Applied Informatics", "Pedagogical Education (Computer Science)". The students of the 1st, 2nd and 3rd year of the bachelor's degree took part in the experiment. They were aged between 17 and 23 years old.

The pedagogical experiment included three stages: summative, forming and controlling. At the summative stage, a complex of diagnostic measures was carried out in order to determine the initial level of competence formation. This stage included an oral survey of students with the purpose of determining their knowledge of the nature and principles of teamwork, the differences between teamwork and individual work as well as filling out the questionnaire called "Are you a team player?", developed by MBC Business Improvement Solutions, a company specializing in business development and support (teamwork training is one of the company's priorities). The questionnaire includes the statements which need to be marked according to the following scale: 1 - Strongly agree, 2- Agree, 3- Neither agree nor disagree, 4- Disagree, 5- Strongly disagree. Here are some sample questions from the questionnaire: "For the most part I believe that my team members do not work as hard as I do", "I understand that the value of teamwork is the emergence of new ideas and creative solutions as well as the sharing of the workload", etc.

The following answer options were displayed:

40-50 points: You're a great team player! You understand the value and importance of collaboration. You can be a great inspiration for other members of your team.

30-39 points: You're a good team player. You recognize the value and importance of teamwork, but have not quite mastered being a great team player. Find opportunities to develop your team skills more.

20-29 points: You're just a 'so-so' team player. With the importance that most organizations place on teams, however, think carefully about finding ways to develop team skills.

Less than 20 points: You may not like working in teams. So you have two choices, firstly, you could invest a lot of time and effort in improving your teamwork skills or secondly, you may decide to set up an enterprise on your own.

To determine the appropriate team roles, the authors used Belbin's test, based on the generally accepted theory proposed by Raymond Meredith Belbin, a doctor of psychological sciences, a well-known author of the theory and model "Roles in the Management Team". His model for determining a person's role in a team based on their personal qualities is widely used by leading world companies in the selection of personnel and the creation of effective teams. Note that Belbin's model assesses a person's "behavior" under certain conditions, but not their "personality". Apart from this, one person can play several roles depending on the specific situation (Belbin R.) [1]. The students of the EG took Belbin's test in order to find out their strengths and weaknesses, to determine what team role was more suitable for them and to further develop themselves as team players.

The test consists of 7 blocks, containing 8 different statements. The students needed to tick 1, 2 or 3 statements that are most suitable for them and give points from 1 to 10 for each

statement.

Here are some sample statements from the test: Section A - when involved in a project with other people: I pick up slips and omissions that others fail to notice, I produce original suggestions, etc. Section C - when the team is trying to solve a particular complex problem: I keep a watchful eye on areas where difficulty may arise, I can co-ordinate and use productively other people's abilities and talents, etc.

100 EG students of 1, 2 and 3 years of university studies took part in the diagnostic test; they were of the following specialities "Fundamental Informatics and Information Technologies", "Computer Science and Computer Engineering", and "Mathematics" aged between 17 and 23 years old. Based on the results of the above testing and questionnaires, the authors found that 63% of EG students are "introverts" and do not see themselves as "team players", preferring an individual type of work. Psychological aspects of oral communication problems, noted by the students are the following: embarrassment, uncertainty in their knowledge, fear of making a mistake, inability to reach out to classmates. For this reason, in order to solve these problems the authors chose active methods of teaching, a case-study and a project method, which allow students to interact with each other, representing a "subject-subject" form of relations, which develops a person's communicative qualities necessary for successful work in the team.

The method of case study has proved itself to be a means of developing communicative competence, since in the course of discussions while solving the case, such important skills for the team competence, as defending one's point of view, listening to criticism, giving counterarguments, acquiring experience of communication and settlement of disputable situations are developed (Cohen E.) [2]. In addition, this method leads to the formation of such necessary team skills as initiative, ability to listen to others, ability to negotiate, ability to criticize and self-criticize, mobility, ability to take responsibility, give your reasoned conclusion, analyze the proposed problems and make decisions in these situations. The case-study method focuses on cooperation and partnership in the team; it presupposes both individual and group activities of students (Popova S.Y., Pronina I.V.) [15]. Unlike traditional forms of learning while working with the case, students are equal members of the team with the teacher and other students. There is no fear of making a mistake, since there is no single right decision in the solution of cases, several versions of the answer are discussed and accepted.

The project method was also chosen by the authors because it is communicatively oriented. This method allows students to express their own thoughts and ideas and to present them in a creative form which is convenient for them. At the same time, this leads to the development of such skills as goal setting, searching for the necessary information, cooperation with classmates, conducting discussions, making a common decision. In connection with the fact that projects are creative tasks, students have the opportunity to show their best sides, to apply their abilities in a free form, which increases motivation for work and stimulates their interest in the final result of the activity (Collins N.) [3].

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4. Results

At the controlling stage, the authors analyzed the results of applying active teaching methods within the dynamics of the team competence development. Analysis of the experimental data allowed the authors to draw conclusions that the use of active teaching methods in foreign language classes ensured an increase in the effectiveness of the team competence formation, which is confirmed by the following data. The authors compared the data in the control group, whose members were trained according to the traditional method with those of the experimental group. The students of EG and CG were asked the question "Do you believe that working in a team is better than working on your own?" The data are presented in the following diagrams.

Analysis of the respondents' answers showed that the EG students are more motivated to work in a team (55%) than the students of the CG (30%), which confirms the effectiveness of using active teaching methods in foreign language classes and increasing motivation for team activities.

The results of the study can be used to optimize and increase the effectiveness of developing the team competence of university students of technical specialities.

4.1. Discussion

In evaluating the results of teamwork, the development of evaluation criteria is the most complicated process, since it is necessary to identify both an individual team member's contribution and an overall result of the whole team. The criteria reflect the objectives of implementing the competence-based approach and are developed in accordance with the methodological recommendations proposed by the authors of the project called Tuning Russia (Gorylev A.I.) [5]. Analysis of the scientific literature showed that the authors use a method of assessment such as an overall rating (score) of the team, which in itself is a certain motivation for achieving the best result. In addition, it is difficult to assess the team competence because of the fact that, apart from the result of the work, it is necessary to take into account the factors related to collaboration within a team, such as being active in the discussion of issues, meeting the deadlines or effective cooperation. At the same time, the performance of the team should be broken down into individual components, i.e., it is necessary to single out the personal contribution of each team member (Katz N.) [7]. In the context of a competence-based approach, Russian and foreign teachers widely use evaluation in the form of "feedback" during the course. This type of assessment is called formative assessment, as students learn, doing the work, receiving the teacher's comments on their performance success, problems and ways of eliminating them (Estey A.) [4]. Also, within the framework of any training program or its individual parts, there arises a need for final evaluation. In this case, the mark is the final result of the student's work within the specific part of the training program, and the teacher's feedback provides the formative component. Any form of evaluation has a diagnostic function for both the student and the teacher. Having seen what has not been learned yet, what has been learned without difficulty, etc., both the teacher and the student understand what else needs to be worked on, and what requires less attention.

Teamwork was assessed by the authors within a 5-point scale according to the following criteria:

Motivational criterion – the presence of internal stimuli to carry out teamwork activities, a steady desire to develop personal skills, self-assertion in the team, an interest in teamwork, an understanding of its importance for personal and professional growth.

Personal criterion – the presence of such character traits as poise, openness, tolerance, self-control, flexibility of thinking, stress-resistance, initiative, tolerance, ability to work, self-sacrifice and social activity).

Cognitive criterion – the ability to set a goal of your own activity, the ability to analyze, summarize information, the ability to be aware of your activity and to foresee its result, the ability to reflect on your own activity.

Communicative criterion – operating the necessary vocabulary in a foreign language, having a developed oral and written speech, the ability to observe the etiquette of communication, the ability to resolve conflicts, the ability to appreciate the interests of another person, the ability to communicate in a multicultural society, the ability to negotiate, as well as having public speaking skills.

Functional criterion – the ability to work within the team dynamics, knowledge of the ways of working together, the ability to play your role and to perform your functions successfully and in time.

The criteria presented in this study allow the authors to assess not only the theoretical and practical levels of competence, but also the quality of the competence being formed.

Here is an example of the case the authors used at the controlling phase of the experiment. The students of the EG were invited to divide themselves into teams of 4-5 people and solve the following case: The computer store "Bit", which opened a year ago, sells modern high-quality equipment and spare parts. However, the sales analysis for the year showed that the

store does not fulfill the sales plan and it cannot compete with other well-known stores on the market. In addition, it turned out that the buyers had several complaints about the quality of service in the store. Find out the main reasons and mistakes of the store management and offer various solutions to the problems. The teams of students had to independently set goals, distribute roles in the team, determine the functions of each team member, brainstorm the problems, suggest several solutions for each problem and make a public presentation in class. The case was considered by the 1st and 2nd year students of the EG. According to the first criterion of evaluation – motivational – the following conclusions were drawn: the students were interested in the task, since the topic was connected with computers and modern gadgets. They were familiar with the vocabulary, for example, "the assortment of the store", which did not create any problems with translation. However, the situation in the case was unfamiliar to them and required great efforts to identify all the reasons, which required communication and exchange of information with classmates, and thus, there appeared sufficient motivation for teamwork. Evaluation according to the second criterion – the personal one – made it possible to draw the following conclusions: at the initial stage of the work the students showed an insufficient ability to listen to each other, as well as reluctance to openly express their ideas, to give arguments, but in the course of further work significant progress was achieved in improving the relationships in the team, the students began to respect the opinions of others, even if they did not coincide with their own ones, as they realized the need for cooperation to achieve the ultimate goal. In terms of the third criterion – cognitive – the authors noted the students' ability to set a common goal, to analyze information received during the discussion and draw conclusions. It was most difficult to assess the students according to the communicative criterion. The students had difficulty translating their ideas into a foreign language, and they also lacked sufficient vocabulary to conduct the discussion. After correcting the errors in the intermediate forming stage of the evaluation, the final mark was significantly higher.

When evaluating the students in terms of the functional criterion, the authors noted the following: after the experiment, the teams coped with the resolution of the case. The problems were identified, the solutions were given, all the team members performed their functions, and thus, the aim of the case was achieved.

Consider one of the project assignments "Electronic device development". The aim of the project was to come up with and create a new electronic device in the team, which does not exist on the market of computer products. The project was the test task for the covered topic "Human-computer interaction", during which the students learned the stages of creation and composition of a professional team of programmers, the functions of each specialist, the basic concepts of the topic and the current problems existing in the professional sphere. Using the information received from the lesson and taking into account all the factors, the students were supposed to develop a device in a team of 4-5 people, describing its design, functions, features and technical characteristics. The development of the project took a month, and then the students presented the project in class in the form of a presentation and answering the questions. All the teams completed the team work on the projects on time.

As a result of working on the cases and projects, the students learned how to formulate a goal independently, set tasks, discuss the details of work, offer their opinions and ideas, and share roles in the team based on their skills. The abovementioned made it possible to draw a conclusion about the validity of using active methods of teaching in foreign language classes with students of technical specialties at the university.

Evaluating the dynamics of the team competence development was carried out in terms of a five-point scale according to five criteria (motivational, personal, cognitive, communicative and functional) and included the forming and final stages of evaluation. The levels of competence are defined as high, medium, threshold and low. The effectiveness of using the active teaching methods was tested using the method of statistical processing of Student's t-criterion data, the authors present a comparative analysis of EG and CG after the experiment in the following table.

Table 1
Comparative data on the level of the students' team competence formation

Criteria	Levels			
	High (5) CG/EG (%) beginning-end	**Medium (4) CG/EG (%) beginning-end**	**Threshold (3) CG/EG (%) beginning-end**	**Low(2) CG/EG (%) beginning-end**
Motivational	0/0-0/32	8/13-10/45	17/25-26/18	41/62-31/5
Personal	0/0-1/57	7/7-10/31	20/27-22/13	80/65-30/0
Cognitive	0/0-0/27	17/20-16/49	25/30-31/24	25/50-20/0
Communicative	3/0-6/28	13/19-12/55	21/32-28/17	29/49-21/0
Functional	0/0-3/70	13/15-20/25	23/43-19/5	30/42-25/0
Average value for all criteria	3/0 — 10/49.2	11.6/14.8 — 13.6/41	21.2/31.4 — 25.2/1.4	41/53.6 — 25.4/5

The table shows an increase in the number of students with a high (49.2%) and medium (26.2%) level of team competence in the EG, and a lowering of the threshold (16%) and a low (48.6%) level of competence at the end experimental work, while in the CG there are no significant changes. Thus, the given data on the results of experimental work prove the validity of using active teaching methods, in particular a case study and a project, for developing the team competence of university students. The use of active teaching methods that orient students towards communication and cooperation contributes to the formation of team competence among students of technical specialties, since these methods are aimed at developing communication skills, expressing their opinion, arguing, getting out of the problem situation, analyzing the interlocutor's behavior, and resolving conflicts.

5. Conclusion

Thus, at the initial stage of the experiment, in order to determine the most effective methods of teaching, surveys and testing of students were carried out by the authors, the degree of the students' psychological readiness for teamwork as well as difficulties in communicating with the team were revealed. A quantitative analysis of the obtained results showed that 63% of the students in the experimental group are introverts, which is why communicative technologies for teaching were chosen by the authors. A special place in communicative technologies is occupied by active teaching methods, recognized by many researchers as an effective means of developing the students' personal qualities and speech activity for carrying out oral communication. So, such active methods of teaching as a case-study and a project method were chosen by the authors as the most effective means, contributing to the development of the team competence.

Thus, on the basis of the above, it can be stated that the positive dynamics of the results obtained in the course of the experimental work has been confirmed, the tasks have been solved, the study goal has been achieved. The conclusions do not claim to be an exhaustive solution to the studied problem; the study can be continued in the direction of identifying other forms and means of developing the students' team competence in technical specialties at the university. The authors' developments can be used not only in foreign language classes in the university, but also in other humanities subjects as they are characterized by common forms of educational process organization, and within the framework of humanitarian disciplines for students, it is possible to apply the same methods and methods

of forming the team competence.

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