



ТЕХНОЛОГИИ ИНТЕРАКТИВНОГО ОБУЧЕНИЯ АНГЛИЙСКОМУ ЯЗЫКУ СТУДЕНТОВ ТЕХНИЧЕСКИХ ВУЗОВ

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Аннотация. Интерактивное обучение является обязательным требованием ФГОС ВО. Знание языков необходимо для высококвалифицированных специалистов в различных областях, в том числе и в технической сфере. Поэтому необходимо разрабатывать новые интерактивные методы обучения иностранному языку. Целью исследования было теоретически обосновать и экспериментально проверить педагогические условия и формы реализации интерактивного обучения иностранному языку студентов технического вуза. В качестве инструментов исследования использовались такие методы, как литературный обзор, теоретический анализ педагогической литературы, обобщение научных данных. Делается вывод о том, что в образовательной практике кафедры используются такие формы интерактивного обучения, как творческие задания, развивающие игры, работа в группах, проекты и электронное обучение. В результате исследования предложены педагогические условия для реализации интерактивного обучения иностранному языку; изучены образовательные ресурсы форм интерактивного обучения иностранному языку; созданные и апробированные авторские учебно-методические материалы на базе платформ Quizlet и Worldwall.net были предназначены для эффективной организации самостоятельной работы студентов в интерактивном режиме. В результате исследования сделан вывод о том, что интерактивные методы и приемы развивают языковые навыки, но при обучении иностранному языку в современных условиях требуется грамотное сочетание традиционных академических форм и интерактивных, в том числе электронных форм.

Ключевые слова: образовательная система, электронное обучение, интерактивное обучение, студенты технических вузов, университет.



TECHNOLOGIES OF INTERACTIVE ENGLISH TEACHING AT TECHNICAL UNIVERSITIES

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Abstract. The interactive learning is the mandatory requirement in the Federal State Educational Standard of Higher Education. Language skills are necessary for high-qualified specialists in different fields including the technical sphere. Therefore, the new interactive methods of teaching a foreign language should be developed. The goal of the study was to theoretically substantiate and experimentally test the pedagogical conditions and implementation forms of interactive teaching a foreign language at technical university. As research tools, we used methods of literature review, theoretical analysis of pedagogical literature, and generalization of scientific data. It is concluded that in the educational practice such forms of interactive learning as creative tasks, educational games, work in groups, projects and e-Learning are used. As a result of the study, there have been proposed pedagogical conditions for implementing interactive language teaching; besides, there have been studied the educational resources of the interactive forms; the created and tested author's educational and methodological materials based on the platforms Quizlet and Worldwall.net were intended for the effective organization of students' independent work in an interactive mode. The study concluded that interactive methods and techniques develop language skills, but by teaching a foreign language in modern conditions, a competent combination of traditional academic forms and interactive, including electronic forms, is required.

Keywords: educational system, e-Learning, interactive learning, technical students, university.

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Introduction

The educational system in the Russian Federation nowadays needs to review pedagogical approaches to prepare graduates for successful social and professional life and solving actual problems. The modern world demands not only to improve the quality of knowledge and ability to apply it in practice, but to create something new. These goals are to be achieved by using teaching methods that involve students in the learning process. Such an opportunity gives various interactive teaching technologies.

The use of interactive teaching forms as part of the competence approach is one of the mandatory requirements of the Federal State Educational Standard of Higher Education. Language skills are nowadays an important requirement for high-qualified specialists in different fields including also technical sphere. In the technical universities, the discipline «Foreign language» is one the basic elements of the education system, one of the effective means of achieving the professional goals. Modern vocational training is aimed at developing students' competencies that go beyond the narrowly technical focus, and includes students' professional self-development, which involves, among other things, mastering a foreign language communicative competence. Therefore, it is necessary to develop interactive forms of teaching a foreign language that contribute to the formation of skills in professional and sociocultural communication, as well as the ability to operate with its forms and means.

The analysis of both national (I. L. Kolesnikova [1], B. Ts. Badmaev [2], D. A. Makhotin [3], E. V. Korotaeva [4], A. A. Ostapenko [5], O. G. Filatova [6], E. V. Kondratenko [7] and others) and foreign works (L. Lier [8], C. Burns and D. Myhill [9], S. Kennewell [10]) allows us to highlight the following characteristics of interactive learning: internal motivation of the participants, which is an important factor in activating educational and cognitive activity; actualization of previously acquired knowledge and experience of students in the mode of communication; equal relationships between the teacher and students, positive non-didactic interaction between them in the educational process, improving communication and subject competencies.

The pedagogical theory and practice of organizing interactive training of technical students has identified the following gaps:

- between modern requirements for the level of mastery of foreign language communicative competence by students of a technical university and a lack of an interactive approach study;
- between students' desire to use interactive learning methods in the classroom and teachers' reluctance or inability to apply these forms of teaching;
- between the need to use an interactive approach as an innovative direction in teaching a foreign language and insufficient knowledge of pedagogical conditions and forms of its implementation in a technical university.

Thus, the goal of the study is to substantiate theoretically and test experimentally the pedagogical conditions and implementation forms of interactive foreign (English) language teaching at technical universities.

The objectives of the study are to research the concept "interactive learning"; monitor the work of engineering students doing interactive tasks; find out the trends and problems by using interactive methods; create new electronic methodological materials for the course.

Literature review

Scientific and scientifically-methodical works of both foreign and Russian scientists are devoted to the research in the field of interactive learning. N. I. Almazova [11], B. Ts. Badmaev [2], A. V. Barybin [12], M. G. Evdokimova [13], L. M. Ermolaeva [14], E. V. Korotaeva [4], A. K. Krupchenko [15], D. A. Makhotin [3], I. L. Kolesnikova [1], O. G. Filatova [6] studied such aspects of interactive training as communication, psychology of teacher-student relations, dialogue, polylogue, students' involvement in learning activities and its reflection. The authors explored the possibilities of integrating interactive methods with traditional methods, and also considered the issues of the influence of interactive teaching on students' creative abilities.

Among foreign scientists, the following can be distinguished: C. Burns and D. Myhill [9], N. Fleming and D. Baume [16], J. K. Hall and L. S. Verplaetse [17], J. D. Bransford [18], M. G. Jones [19], W. M. Rivers [20]. They considered the problem of interactive teaching in relation to language acts; analyzed the teacher's role in the interactive training; dealt with the problem of motivating students to joint projects and paid attention to developing competencies; considered interactive training as a process in which a teacher encourages students to be more active; and also focused on the methods of interactive teaching.

However, in spite of such a large number of works devoted to interactive teaching, such issues as the roles of participants, the influence of interactive training on technical students' motivation and new educational technologies using by language training have not been sufficiently studied in Russian and foreign pedagogy.

Materials and Methods

The study was conducted at the Department of Foreign Languages of Samara State Technical University and involved first- and second year engineering students. A comprehensive study of the concept "interactive learning" was carried out. The monitoring activities of engineering students and the analysis of the course "English for technical students" helped to find out the trends and problems by using interactive methods. The literature review contributed to deeper understanding of existing opinions on the interactive teaching. To solve the objectives of the study, the methods of pedagogical literature analysis, and scientific data summarizing were used.

Results

The analysis of both Russian and foreign works shows that interactive learning is understood as the internal motivation of the participants, one of the important factors in activating educational and cognitive activity. It also helps to actualize the acquired knowledge and experience of students. What's more, interactive learning means an equal teacher-student interaction.

Interactive teaching in this study is considered in terms of the joint activity pedagogy concept (G. N. Prozumentova [21], S. I. Pozdeeva [22], I. Yu. Malkova [23]) and is understood as a joint educational activity of all participants, in which students are significant and influential participants, whereas a teacher acts as an organizer-participant of interaction and communication. Thus, we can distinguish between interactive learning and traditional, in which a teacher plays a leader's role, and students are in the position of performers. Interactive learning is implemented through appropriate methods and forms.

In our opinion, interactive methods, unlike active ones, focus on the collaboration of teacher and students. Active methods are also possible within the framework of an authoritarian model (it will be reproductive or performing activity), while interactive methods can only be used in leadership and partnership models (constructive and creative activity). Unlike interactive methods and forms of learning can be considered as frontal, individual, pair or group interaction, and as a type of lesson, i.e. a form of organization of learning [24, c. 11].

In the educational practice of the Department "Foreign Languages" of Samara State Technical University many interactive forms and methods are put into practice. Distance learning system (LMS Moodle) and learning support system (AIS) are widely used.

In the course "English for Technical Students" [25] such interactive teaching methods are used as creative tasks, educational games (role-playing games, educational games, language games etc.), project methodology, group work, E-learning.

Creative tasks are learning tasks that require students to perform creative activity. Students should not only present information, but also approach it from a creative point of view. Interactive methods are based on creative tasks, which are practice-focused. Completing such tasks students are looking for their own solutions, drawing on their personal experience. In this way, they develop communication and social skills. Creative tasks must meet the following requirements:

- the submitted assignment must have several solutions;
- the task should be useful for students so that they can use the acquired knowledge not only within the lesson;
- the task should be interesting for students so that they can talk about a given topic;
- the assignment must be related to the topic being studied [26].

As for examples of creative tasks in the course "English for technical students", the following can be mentioned:

- Guess the profession (students read in turn the descriptions of different jobs and try to name them, e.g.: someone who works in a laboratory is ...; someone who works with a machine in a production line is ...; someone who puts together, adjusts or installs machinery or equipment is [25, p. 36].
- Decide who can say it (students read the quotes and determine the profession of people who can say it), e.g.: "Would you like to deposit this into your checking or savings account?"; "The problem is that the power cord from the monitor is not working."; "Sir, you were going 10 mph over the limit. May I see your license?" [25, p. 37].
- Fill out the Questionnaire (the results should be discussed), e.g.: Fill out the Time Management Questionnaire and evaluate yourself. Answer "Yes" or "No" to the following questions: Have you estimated how many hours you need to study this semester?; Do you tend to complete your assignments on time?; Have you estimated how long it takes to read one chapter in each of your textbooks? etc [25, p. 44].
- Discussion, e.g.: Discuss the questions with your partner: How well can you manage your time?; What are your most popular time eaters? How often do you accomplish all your plans for a given day? [25, p. 45].

As a rule, students enjoy doing creative tasks because they can speak about themselves, communicate with others and show their purview not only in engineering.

Students who are usually not very active during the lesson forget about the fear of public speaking cooperating with group mates. A teacher should not be afraid to joke and encourage students to be more open and sociable by completing such tasks.

There are different types of educational games. Role-playing games are spontaneous. Intellectual games test students' additional knowledges. In a foreign language class «warming-up activity», vocabulary games and games elements are usually used. To choose the right game a teacher should take into account the number of students, the duration of training session, and so on. It is very simple to arrange an educational game; the special equipment is not required. The most important thing is that educational games should correspond to the teaching goals. [27].

A very interesting educational game is offered in the Unit «Inventors of the Past». Students should correlate the inventors with their inventions using the verbs: to discover, to open, to invent, to establish, to launch, to introduce, to split, to formulate, e.g. "Newton opened the laws of motion" [25, p. 60]. The game can be more interesting, when the right answers are scored and according to the results of the game, the winner is determined.

Teaching experience shows that students like the competitive element in games and actively interact with their team members.

A project is a form of work, which is planned and completed by students. It usually include communication, intellectual and emotional activity. The project method includes the use of a wide range of problematic, research, search methods that are clearly focused on a real practical result that is significant for the student.

The project methodology provides a student-centered education and training, as it practically incorporates other modern technologies, for example, such as collaborative learning [28, c. 5]. Projects develop imagination, creativity, memory and also critical thinking, planning, practical and problem solving skills.

In addition, students can advance their organizational skills and talents. Joint projects are an important part of modern education model, which is focused on research. [29, c. 17-19]. Working on a project is a teamwork and requires being responsible for the completing of a particular task and evaluation the results of their own work and the work of group mates [30, c. 6].

Project tasks in the course "English for technical students" usually encourage to cooperate with relatives and friends, e.g.: "Write the story of your family and the professional background of your family members" [25, p. 109]. Projects develop imagination and motivation, e.g. making a leaflet for a course you are interested in. A lot of projects are aimed at introducing students to university life, which is very important for the first-year students: "Refer to the site of your department and write a review on the following: general information about the department, teaching staff, your own study place, characteristics, curriculum, future job opportunities, additional education opportunities" [25, p. 156]. At the end of the course students are supposed to prepare a project "Making a career choice" [25, p. 240-243], which is based on all the material studied. The goal of the project is to develop a well-considered decision about the career choice.

Team working technology is one of the most popular educational strategies, as it provides an opportunity for all participants to plasticize cooperation, social and interpersonal skills, which difficult to do in a large team. Team working technology is often combined with other interactive methods such as mosaics, debates, public

hearings and simulations. There are at least five pedagogical arguments in favour of group work while learning a foreign language. Group work allows you to increase the speaking time of students, improves quality of speech, individualizes learning, creates a positive emotional climate in the group, increases learning motivation [31].

In the course “English for technical students” group work usually involves a problematic question, e.g. students should be divided into 2 groups; the first group has to find the consequences of bad time management and the second group – the consequences of good time management [25, p. 42].

The goal of many group tasks is to encourage students to analyze their own personal traits, e.g.: What are your partner’s talents and abilities? Interview your partner, and tell other group mates about your partner’s personality. Based on your partner’s answers, in what profession do you think your partner could best use his or her talents? [25, p. 44].

The Internet tasks are a part of E-learning, the most useful interactive technology. In education, it is widely used to collect information and to complete research in different areas. The Internet has become a major learning and effective teaching tool. Teachers can post tutorial videos and notes on the school website, which makes learning process more interesting and diverse. They can also use animation, Power-Point presentations, and images to draw students’ attention [32, p. 10].

To improve efficiency of the innovative pedagogical technologies by teaching English at technical universities distance learning (Skype, Viber, WhatsApp, e-mail, Internet chat) is recommended together with computer learning (electronic textbooks, virtual libraries, educational portals) and multimedia resources.

There are many interactive tasks that are connected with searching in the Internet, e.g. in the Unit “Plans for the Future” students should find the information about the jobs of the future. By discussing the topic “Education Abroad” they are offered to make the Internet search on five leading USA universities, their missions, mottos, emblems and famous graduates. In the second year students are offered to find vacancies on <https://www.monster.com/> or <https://www.dice.com/>, related to their professional sphere, point out the main requirements and decide whether they meet them or not.

During the course students make presentations, which are discussed in the lessons, e.g. “Invention that changed the world”, “My Passion is my Profession”, “My Personality and Future Profession Choice”, “Essential Features of Education Abroad”, “The Importance of Engineering Education”.

At the end of each Unit you can find the tasks that are connected with watching and discussing videos in the Internet e.g. about work-life balance, company history, living on the moon, etc.

In addition to the course many interactive games based on the Internet resources were developed. A very useful is Quizlet [33], a free service that helps memorize new words presented in the form of study cards. You can make your own cards with new words, add images, audio and play games to learn vocabulary.

Using Quizlet, you can send students a link to a module. They also can search for a particular course by the tutor’s name.

The creation of learning material for memorization begins with the compilation of a new learning module. You must enter the name of the module, then enter the terms and definitions. You can also change the visibility (visible to all Quizlet users/

certain courses/password members/module creator only) and editing (only editable by module creator/certain courses/password members). Conveniently, you can import data by simply copying and pasting it from Word, Excel, Google Docs, etc. Also, a definition and a corresponding picture are automatically suggested for each term (BTW in the free version it is not possible to upload your own pictures).

The modules were created according the Units in the textbook. As an example the module “Getting higher education” consists of 47 words. Students can chose different ways of working – learning, test or selection. The regime “learning” means that you choose the right English definition, e.g.:

be good at seeing thigs that others don't notice

- a) relevant;
- b) an enquiring mind;
- c) have an eye for detail;
- d) reflect.

After finishing the exercise students can see and analyze all mistakes and do the task many times to learn all the terms. It is important that every time the phrases and options are different.

The test regime consists of two different types of tasks. The first one is to answer if the definition is correct:

Fully focused on= head buried in

True

False.

In the other tasks students have to write the definitions on their own:

Take for granted

_____ .

The selection regime means a vocabulary game. There are 12 cards on the screen and a half of them are synonyms to the other half. A player should correlate them correctly by touching the cards with similar meaning. There is a timer and after finishing the game you can see your result that can be improved next time. By every game the synonyms are mixed differently.

The service Worldwall.net [34] is a very popular platform for creating interactive tasks. It allows you to create interactive exercises and mini-games. There are 33 interactive and 21 printable templates.

Interactive tasks are played on any device with a web interface, such as a computer, laptop, cellphone, or interactive whiteboard. Students can play themselves, or under the guidance of a teacher taking turns in front of the class. Interactive tasks can be presented in various themes. Each theme changes its look with different graphics, fonts and sound.

Printables can simply be printed or downloaded and then used as supporting material for interactive tasks or as independent learning tasks.

Wordwall classes are based on templates that include familiar classics such as Quiz and Crossword but also have arcade games like Maze Chase, Airplane and classroom management tools like Seating Plan.

For creation a new activity, first, a template should be chosen and then the content defined. It's so simple that you can create a fully interactive activity in just a couple of minutes.

After creating an activity, you can switch it to another template with one click, which saves you time and is well suited for specializing and buffing. For example, if you have created a Match activity based on shape names, you can turn it into a Crossword with the exact same shape names. In a similar way, the resource can be turned into a Quiz or Word Search and there are many other possibilities.

Wordwall activities can be used as assignments for students to complete. When a teacher gives a task, students are directed to that particular lesson without being distracted by visiting the main page of the lessons. This feature is used in class when students have their own devices with, or as homework. The results of each student are recorded and provided to the teacher.

On the platform Worldwall.net there was created the interactive lesson "The ways of getting education and professional skills" for the second-year students. The lesson includes 20 words and can be found by the link <https://wordwall.net/ru/resource/25414175/english/лексика-the-ways-of-getting-education-and>.

The interactive tasks on the base of Quizlet and Worldwall.net were not only used by distant learning at the pandemic time, but are also used in the classroom. The teaching experience shows that students become much more motivated and interested in learning vocabulary by means of interactive tasks that can be completed on electronic devices. According to students' profiles in these Internet services they study at home a lot. The most popular interactive task by Quizlet is "Selection", whereas by Worldwall.net the arcades are in the greatest demand. The most favorite students' game is a maze chase, where a player should choose the right translation of a word and find the way to it avoiding collisions with green monsters.

Thus, interactive tasks created using the Wordwall and Quizlet services help make lessons interesting, involve all students in the learning process, increase motivation for learning activities and create conditions for improving the quality of learning.

Discussion and conclusions

Therefore, we can conclude that in modern conditions it is required to intensify the educational activities of technical students by increasing their motivation for professional foreign language learning. It is possible by the connection of the studied subject with practical tasks; choosing the topics for discussion related to students' professional field (science and technology); meeting the interests of students; developing independence and responsibility for the results and using both external and internal motivation.

A modern teacher should act as an organizer-participant in educational activities being completed with students, establish a democratic and trusting style of communication and regulate the educational process, taking into account the interests, initiatives of students, as well as their difficulties. Such a model allows the student to move from the position of a performer to the position of a co-executor and partner.

Thus, the role of a language teacher has been changed. Nowadays a teacher should involve students in educational process, use interactive methods increasing activity, independence and motivation. An interactive method is considered as a way of organizing joint activities between a teacher and students, and a form is an

external expression of joint activities, which is characterized by: venue (classroom, extracurricular); the time period of its implementation; the type of the interaction between the teacher and students (real, virtual); positions of participants in joint activities.

Interactive methods of teaching the academic discipline «Foreign language» allow you to concentrate on the development of general cultural and foreign language communicative competencies. Traditional education is focused on learning vocabulary and grammar that means developing writing, reading and translating abilities. Interactive learning is related to language and communication skills. Therefore, teachers who practice the interactive technologies try to teach students how to navigate in a foreign culture, search for needed information themselves, and develop sociocultural competencies. They also have a goal to master their social, professional and business communication skills, to teach students speaking at conferences and exchanging opinions.

In this way the interactive teaching method can be very useful helping students to find their own interests by learning process, to overcome the fear of communication, to improve public speaking skills and cooperation skills. Additionally the interactive electronic technologies in different fields of study that have existed in the language classroom can be used by improving such technical skills like memorizing the words and practicing the grammar. Thereby English teachers should make use of it as a medium to support the learning process. Students are usually more enthusiastic and excited to learn things while using electronic devices. Due to this teachers have to engage students in language learning and encourage them to acquire language skills through modern technology, when students are directed to communication. It is clear that multimedia are crucial for the process of teaching English. It means that teaching quality would benefit from electronic technologies.

Hereby all interactive methods and techniques develop language skills. Although we must not forget that the educational process cannot be reduced to entertainment. Interactive exercises should have a clear pedagogical task, acting as additional forms of learning. When teaching a foreign language in modern conditions, a competent combination of traditional academic forms and interactive, including electronic forms, is required.

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