



Н. А. СЕРГЕЕВА, А. Н. ЗАХАРОВА, С. И. ТЮТЮННИК, О. С. РУБЛЕВА

Особенности применения методов и средств технологии дополненной реальности в обучении иностранному языку

Проблема и цель. Интегрирование цифровых технологий в современные учебные программы по иностранному языку поддерживает решение задач высшего профессионального образования в плане подготовки востребованного и конкурентоспособного специалиста. *Цель работы* – исследовать особенности применения методов и средств технологии дополненной реальности в процессе формирования профессиональной иноязычной компетенции студентов.

Методы исследования. Для получения теоретических обобщений применялся анализ научных работ по проблемам и перспективам использования технологии дополненной реальности (AR) в процессе обучения иностранному языку, формированию профессиональной иноязычной компетентности. Средства AR (Google Объектив, браузеры дополненной реальности, сервис WallaMe) были освоены в рамках курса «Технологии виртуальной и дополненной реальности» платформы Stepik (<https://stepik.org/course/62107/syllabus>). В исследовании задействованы 40 студентов первого курса Вятского государственного университета по направлению подготовки «Педагогическое образование». Для статистической обработки данных применен критерий χ^2 -Пирсона.

Результаты. В экспериментальной группе при изучении научных терминов, лексики и грамматики иностранного языка, для коммуникации и культурного обмена применялись методы и средства AR-технологии. Произведена оценка сформированности профессиональной иноязычной компетентности и выявлены статистически достоверные различия о качественных изменениях, произошедших в педагогической системе, $\chi^2_{\text{набл. 2}} > \chi^2_{\text{крит0.05}} (7,14 > 5,99)$.

В заключение обобщаются факторы, позволяющие эффективно использовать технологию «Augmented Reality» на занятиях по иностранному языку (регламентирования времени; чередования видов деятельности, традиционных методов и средств с инновационными; включение физкультминутки и элементов нейрогимнастики; инструктаж по безопасной работе в сети).

Ключевые слова: цифровизация, виртуальное образовательное пространство, программное средство, профессиональная иноязычная компетентность, коммуникация, информационное взаимодействие

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N. A. SERGEEVA, A. N. ZAKHAROVA, S. I. TYUTYUNNIK, O. S. RUBLEVA

Features of using methods and means of the augmented reality technology when teaching a foreign language

The problem and the aim of the study. The integration of digital technologies into modern curricula in a foreign language supports the solution of tasks of higher professional education in terms of training a demanded and competitive specialist. *The purpose of the work* is to study the features of using methods and means of the augmented reality technology in the process of forming students' professional foreign language competence.

Research methods. To obtain theoretical generalizations the analysis of scientific works on problems and prospects of using the augmented reality (AR) technology in the process of teaching a foreign language and on formation of the professional foreign language competence was used. AR tools (Google Lens, augmented reality browsers, WallaMe service) were mastered as part of the course "Virtual and Augmented Reality Technologies" Stepik platform (<https://stepik.org/course/62107/syllabus>). The study involved 40 first-year students of Vyatka State University of the training program "Teacher education". In the experiment, the Pearson χ^2 (chi-square) criterion was applied.

Results. In the experimental group, when studying scientific terms, vocabulary and grammar of the foreign language, for communication and cultural exchange, the methods and means of the AR technology were used. Assessment of formation of the professional foreign language competence was carried out and statistically significant differences in the qualitative changes that occurred in the pedagogical system were revealed, $\chi^2_{\text{obs. 2}} > \chi^2_{\text{crit0.05}}$ ($7,14 > 5,99$).

In conclusion factors that make it possible to effectively use the augmented reality technology in foreign language classes (time regulation; alternation of activities, traditional methods and means with innovative ones; inclusion of physical activity breaks and elements of neuro-gymnastics; instruction on safe networking) are summarized.

Keywords: digitalization, virtual educational space, software, professional foreign language competence, communication, information interaction

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Introduction

The relevance of the presented study is due to the following factors:

1. Augmented reality (AR), as an innovative technology in the context of digitalization of society, strives to become widespread in education and to become a technology of social significance [1]. This follows from the passport of the federal project of the national program "Digital Economy", one of which goals is formation of a network of centers for digital transformation of universities and development of students on personal paths using innovative technologies [2].
2. The information educational space, as noted by E. V. Soboleva, N. L. Karavaev [3], in the context of challenges of the future and professional training of a demanded graduate, is focused on ensuring that students can immediately check their theoretical knowledge in the course of active practical, experimental activity. There are virtual classrooms and three-dimensional laboratories, where, according to G.A. Kamenev, T.A. Bondarenko [4], high-quality visualization of simulated objects and phenomena is required. For example, after receiving theoretical information on the sights of London, students go on a "virtual" tour of the Tower, participate in a knight tournament, decrypt symbols of the Templars in English castles. In addition, a network of guided virtual excursions is developed, where robots and 3D models are guides [5].
3. In this regard maximum didactic possibilities, as noted by A. V. Grinshkun [6], are provided by the augmented reality technology. Indeed, the education system, as revealed in the work of A. Vidal-Balea, O. Blanco-Novoa, P. Fraga-Lamas, M. Vilar-Montesinos, T.M. Fernández-Caramés [7], gets unique chances to make a relatively safe historical journey into time and space, to implement a chemical experiment, dive, to make a space discovery, etc. In addition, the prospects for visualizing processes based on fundamental theoretical data, enhancing knowledge, supporting the implementation of the principles of visibility and understanding are expanding [8].
4. The qualitative formation of professional foreign language competence, as O. Putistina emphasizes [9], is difficult to reconstruct in conditions of an educational institution. However, according to the conclusions of V. V. Kotenko [10], the use of methods and means of augmented reality in teaching a foreign language makes it possible to model interaction with native speakers of foreign languages or to get acquainted with the culture and history of another state.
5. At the same time, this digital technology, with all its undoubted advantages and positive impact on scientific and technological development and didactic process, have additional educational risks. As E. M. Bonsignore rightly noted [11], it is impossible to deny the influence of information interaction in the virtual augmented environment on the psychological formation of the personality. Trolling, outing and fraping are all new ways to negatively influence the consciousness of the person. Each of these psychological phenomena, according to A. S. Williams, F. R. Ortega [12], requires additional study in science and pedagogical theory. For example, the constant appeal to modern technologies and their inclusion in the educational process can lead to oversaturation: students get used to everything interactive, and traditional educational tools become uninteresting to them.

When teaching a foreign language at the stage of professional training, balance and feasibility of using innovative technologies to support the practice of speaking and writing, gain experience, formulate thoughts in a foreign language, establish contact with speakers of a different culture, and achieve mutual understanding with foreign colleagues working in the same field are important. Thus, there is a need for additional study of the didactic potential of the augmented reality technology, taking into account the peculiarities of teaching a foreign language, specifics of the educational space of the university.

The purpose of the work is to study the features of using methods and means of the augmented reality technology in the process of forming students' professional foreign language competence. Achieving this goal becomes possible through the use of such teaching methods as excursions, computer games and simulators, lectures and seminars, independent work, demonstration, etc. Google Lens, augmented reality browsers, online fitting rooms, WallaMe application were used as training tools.

Research objectives:

- to reveal the essence of the phenomenon of "augmented reality" in the context of new requirements for the higher education system and guidelines of the digital economy;
- to analyze the experience of using augmented reality resources when teaching a foreign language and compare corresponding educational applications;
- to identify advantages and disadvantages of augmented reality both from the standpoint of formation of the student's professional foreign language competence, and from the standpoint of cognition, personality development.

Materials and methods

The main provisions of the system-activity approach are the methodological basis for studying effectiveness of using methods and means of the augmented reality technology in teaching a foreign language. The system-activity approach makes it possible to implement the methodological ideas formulated in the work of A. V. Grinshkun [6] that the augmented reality technology helps to solve problems of supporting motivation and involvement of students, enhancing cognition, engaging in conversation, etc. The system of activity is considered in the environment of virtual communication, supported by means of augmented reality: use of digital service tools by the teacher to provide material; use of functionality of technology in cognitive activity by students; organization of interaction between teachers and students.

The communicative approach, as a research method, allows:

- to determine directions and intensity of communication between participants of the didactic process, which is supported by means of the augmented reality technology (Google Lens, augmented reality browser, virtual excursions, three-dimensional audiences);
- to describe conditions for implementing information interaction in the space of augmented reality. The use of appropriate software when forming professional foreign language competence changes not only forms of presentation and processing of information, but also, as noted by F. K. M. Arif, N. Z. Zubir, M. Mohamad, M. M. Yunus [13], the very way, style of interaction between participants of the information process.

The cognitive activity in the presented study is a condition for general cultural training of a highly qualified modern specialist of any training program. The purpose of any type of speech activity, which is justified by L. M. Kalyanova [8] when training should be included in the structure of simulated, imitated professional activity. Cognitive activity in foreign language classes, supported by methods and means of the augmented reality technology, manifests in the development of communicative skills of professionally oriented reading and speaking in virtual and special simulated situations of professional communication. The cognitive activity is formed and developed within the framework of electronic language courses when organizing various training programs, using online platforms, libraries with audio and video materials for solving professional and practice-oriented tasks [14].

To obtain up-to-date information on changes in the level of skills and abilities that make up the essence of professional foreign language competence, empirical methods were used (observation, analysis of the results of work in the educational environment supported by means of the augmented reality technology). A special test was developed and carried out, which included 5 tasks (the maximum of points is three). The use of methods and means of the augmented reality technology for teaching a foreign language was implemented within the framework of the discipline "Foreign language" for the training program "Teacher education" for students of Vyatka State University. In total, 40 first-year students (45% of boys and 55% of girls) took part in the experiment. The control and experimental groups were formed, each involved 20 people. The average age of the students was 19.

The statistical analysis of reliability of the results of the pedagogical experiment was assessed on the basis of the analysis of arbitrary contingency tables using the Pearson χ^2 (chi-square) criterion.

The experimental verification was carried out within the framework of the use of virtual excursions, computer games and simulators, lectures and practical classes, in the course of independent extracurricular work. For software support we used Google Lens, augmented reality browsers, online fitting rooms, and the WallaMe service. The organization of the educational space, contributing to the formation of professional foreign language competence, using the indicated augmented reality means does not impose special requirements on software and hardware. Teachers who are focused on the use of augmented reality when teaching a foreign language studied the materials of the course "Technologies of virtual and augmented reality" on the Stepik platform (<https://stepik.org/course/62107/syllabus>) to master relevant methods and tools.

Literature review

The ongoing process of digitalization of education, as E. V. Soboleva, N. L. Karavaev [3] substantiate, makes special requirements for improving the methodological system of a higher educational institution and supporting the formation of professional competencies. O. I. Vaganova et al. highlight the following as vectors for development of the digital educational environment, maximally focused on supporting formation of professional competences of a competitive and in-demand graduate: improving the quality of education, formation of a mobile, diversified personality, capable of adapting to the rapidly changing realities of the surrounding world, including in the software and technical sphere [2]. In the

arsenal of mentors, which is described in detail by E. A. Plakhova, E. N. Kharapudko, R. R. Nurmieva [15], not only interactive resources, gaming educational platforms, cloud services, but also technologies of augmented and virtual reality appear. At the same time, the use of appropriate software in the digital educational space of the university, according to A. S. Williams, F. R. Ortega [12], changes not only the forms of presentation and processing of information, but also the very way, style of interaction between participants in the information process.

New means of augmented and virtual reality, as argued by R. Günday, Y. T. Çamlıoğlu [16], can and should be used to develop communicative qualities of the person. This means that development of the information environment of educational institutions should involve the use of new developments in the field of digital technologies, such as VR Thrills: Roller Coaster 360 (Cardboard Game), VR Cosmos, Second Life, PhysicsPlayground, etc. [17]. Their use, according to U. O. Maksudov [18], contributes to solving problems of supporting motivation and involvement of students, enhancing cognition, engaging in collaborative work and monitoring attendance rate.

The teaching methodologists I. V. Leushina, I. O. Leushin [19] emphasize that formation of foreign language competence necessarily includes development of communicative qualities of the person by means of modern information technologies. The latter is especially relevant for teaching a foreign language at a university. As V. V. Kotenko substantiates [10], the process of mastering the skills of professional foreign language communication in the digital educational environment of a university can be optimized by using augmented reality applications along with traditional learning technologies. For students, the process of learning a language can often be a tedious routine, so, with the goal of preparing a graduate who best suits the challenges of the future, educators-innovators first of all try to instill in the student a love for a foreign language, a desire to master it at a professional level [9]. In this context, the use of modern technologies, that is proved by E. A. Plakhova, E. N. Kharapudko, R. R. Nurmieva [15], allows diversifying the process of learning a foreign language with non-standard activities and elements of the game, which captivates the student, concentrates attention on learning. If students understand benefits of English proficiency, they can motivate themselves to learn it. Augmented reality in teaching a foreign language is considered by O. A. Obdalova, O. V. Odegova [20], as an element of the pedagogy of surprise. From the teaching practice of L. A. Milovanova [21], we can note that augmented reality makes it possible to organize the study of theoretical material, which is rather “boring” for a student (rules, norms of vocabulary and grammar) in a fascinating way.

In the work of B. S. Yakovlev [22], various means of the augmented reality technology are analyzed. Further, V. V. Kotenko [10] singles out exactly those that have the didactic potential for teaching a foreign language. G. V. Semyonova continues these studies and highlights problems and prospects for implementation of VR and AR in teaching a foreign language in higher educational institutions of Russia [23]. In particular, M. Rumyantsev, I. Rudov [24] note that at present Russian higher educational institutions use AR and VR mainly when teaching natural sciences.

In order to warn teachers who actively seek to enrich their software and hardware arsenal, A. L. Zhuravlev, T. A. Nestik [25] draws attention to psychological factors and risks of using new digital tools in terms of supporting personality development. Indeed, along with the undoubted didactic potential of information technologies for teaching, upbringing, and personal development, it is necessary to highlight the impending danger that the teacher of a digital school must see and understand [21]. The student's active immersion in the space

of computer games, the value of rating in virtual interaction can become a more weighty argument for the student's personality than the advice of teachers, parents, friends from the real world. Analysis of the literature allows us to reasonably assert that the teacher of a digital school should have a clear understanding of the need to adapt the applicable rules for ensuring information security into new digital technologies, including on the basis of augmented reality [20].

So, despite the wide range of didactic capabilities of the augmented reality technology for teaching a foreign language, there are a number of objective factors that should be taken into account when selecting appropriate methods and means. In addition, students should be passionate about the very process of learning culture, language in order to obtain a profession in demand, and not only the external emotional attractiveness of innovative technologies. In addition, the key feature of professionally oriented teaching of a foreign language to students of all training programs is the maximum consideration of specifics of the professional sphere of communication: its concepts and terminology, lexico-syntactic and grammatical features, the format of oral and written texts, situational features.

Due to the fact that formation of the foreign language competence of a highly qualified and competitive specialist is a priority of the modern educational space [10], there is an objective need to study the didactic potential of the augmented reality technology, taking into account the characteristics of professionally oriented learning.

Research program

Assessment of effectiveness of the proposed educational and cognitive activity, supported by methods and means of the augmented reality technology, for formation of the professional foreign language competence was carried out during the pedagogical experiment. 40 first-year students of the training program "Tourism" studying the module "Professional sphere of communication" were involved.

At the preparatory stage of the experiment, the didactic potential of methods and means of the augmented reality technology for professionally oriented teaching of a foreign language to students was studied. Materials of specially organized testing were used to assess the input conditions, taking into account priorities of the digital society, specifics of the professional sphere of communication. All questions and tasks were developed by the authors in accordance with requirements of state federal educational standards. When testing, students were asked to solve 5 tasks. For the correct and complete solution of each problem, the student received 3 points.

1. Open the brackets, changing the form of the word if necessary. Translate the sentences into Russian.

2. Read the text and determine if the following statements are true or false.

3. Simulation of an informative educational-speech situation for the exchange of factual information, which is offered in advance. Information exchange includes establishing contact when communicating with a partner, transferring and requesting information, correct phonetic, lexical and grammatical design of speech in English. For example, a dialogue when visiting a museum.

4. Simulation of an alternative educational-speech situation, when it is necessary to make a choice after discussing the proposed options and conditions for a certain action. To achieve this goal, dialog partners must exchange proposals (some of information may be

offered in advance, and some of information received during communication), express their attitude to the proposed options for solving the problem and reach an agreement with each other. For example, after visiting a museum, you need to determine with a friend the further travel route depending on finances, weather, etc.

5. Modeling a problem educational speech situation when it is necessary to find a way out of the current problem situation. It requires the search for new knowledge, new ways of acting, as well as willingness to take risks. For example, simulating the actions of travelers lost in the suburbs of London.

Thus, the maximum possible points was 15. If the student received more than 13 points, then the level of the professional foreign language competence was defined as "high"; the range from 6 to 12 (inclusive) corresponded to the "average" level, the "low" level was recorded for the rest results.

The second stage of the research was devoted to determining the directions of educational and cognitive activities, supported by methods and means of the augmented reality technology, maximally supporting conscious active development of terminology, lexical, syntactic and grammatical characteristics, and format of oral and written texts, communication situations. The relevant activities were accompanied by work in virtual educational spaces, using mobile applications, augmented reality browsers and QR codes.

The third stage of the research covers the experienced teaching and application of methods, means of the augmented reality technology for formation of the professional foreign language competence of students.

Research results

By Augmented Reality (AR) we mean an environment with direct or indirect addition of physical space with digital information in real time through computer devices (tablets, smartphones, gadgets and software for them) [7].

An advanced training course on the Stepik platform (<https://stepik.org/course/62107/syllabus>), which is aimed at users who are just starting to use augmented reality elements in the educational process, is completed. The course was implemented within the framework of the federal project "Human Resources for the Digital Economy". The materials presented in the course include historical background, basic terms, examples of applications for augmented reality. As the main advantages of the course, we will single out free training, structuredness and fullness of sections, practice-orientedness, feedback from organizers and access to all methodological developments of learners.

Summarizing the experience studied, we conclude that:

1. Augmented reality is including of audio and video components into the real world through computer simulation.
2. Augmented reality allows replacing a flat image in teaching materials with a 3D model.
3. Augmented reality integrates new data directly into real physical space.

Examples of augmented reality: a parallel color line showing the location of the object; arrows indicating the distance from the place to the object; the "drawn" path of the object; mixing of real and fictional objects in computer virtual worlds, etc. By means of augmented reality, you can read information about the environment. For example, using QR codes to receive information about a point of interest (historical information, photos and audio guides).

As the carried out earlier analysis of the literature has shown, in the spectrum of advantages that realize the educational potential of the augmented reality technology for teaching a foreign language, it is necessary to highlight the enrichment of the didactic process with the help of multimedia information; adaptation to the specific learning needs of each student; supporting the ability to prepare communicative practice through the immediacy and interactive nature of technology; supporting practical learning, solving problems and situations of communication; assisting in transforming the role of teachers and trainees; opportunities for learning outside the classroom.

The problems limiting the use of methods and means of the augmented reality technology for teaching a foreign language are the following: the lack of holistic educational programs on the use of AR and VR in teaching foreign languages. Most of them are used in natural sciences (biology, medicine). The high cost of developing training materials and equipment for demonstrating AR should be noted. The average retail price of a set of augmented reality devices reaches 40-50 thousand rubles. At the same time, it is possible to demonstrate educational materials in augmented reality mode on laptops, tablets and other devices. In addition, there are costs connected with the retraining of specialists, as well as making changes in training programs for future teachers of educational institutions.

Further, the essence of the concept "professional foreign language competence" was concretized in the context of enriching the educational environment with the augmented reality technology.

A low level of the professional foreign language competence is determined if the student can take part in a dialogue only when the partner helps to conduct the conversation (repeats the statement and helps to formulate a reply); can ask and answer simple questions; participates insufficiently in group discussion, understands certain familiar words and very simple phrases; knows how to write simple texts (for example, congratulations, fill out forms); does not understand the lack of information or uses the proposed method to obtain information from one source; finds a Russian source of information and translates it with an automatic translator; does not process the information received.

The average level of the professional foreign language competence is determined if the student can prepare a monologue related to the situation of professional communication; is able to briefly explain intentions; knows how to make up simple statements not on the studied topics and communicate in many situations; can (without prior preparation) participate in dialogues on a familiar topic; understands the main points of clearly pronounced statements; is able to write simple coherent texts on familiar topics or topics related to professional communication, including elements of a business letter; describes the desired and real situation; extracts information from one or more sources and organizes it; interprets information in the context of his/her activities, gives arguments, draws conclusions, evaluates.

A high level of the professional foreign language competence is determined if the student is able to clearly and thoroughly present complex topics, develop certain ideas and draw appropriate conclusions; speech is distinguished by a variety of linguistic means and the accuracy of their use in situations of professional and everyday communication; understands expanded messages, even if they have a fuzzy logical structure; knows how to clearly and logically express thoughts in writing and to highlight views on complex problems in detail; uses a suitable language style; formulates and analyzes the problem, determines the strategy for solving the problem; selects information sources that are adequate to

the goals of the project, taking into account the maximum efficiency of communication; proposes and implements a method for checking the accuracy of information.

To achieve the goal of this study, it was proposed to expand the traditional methods of teaching a foreign language through the capabilities of augmented reality applications, that is, the inclusion of the student in the process of independent interaction with visually vivid and three-dimensionally presented models.

Thus, the control group studied the module "Professional sphere of communication" using traditional methods and software (presentations, teaching materials, audio recordings, etc.). For the experimental group, the methods and means of the augmented reality technology were used. The following were used as augmented reality software for teaching a foreign language in the experimental group:

1. ligSpace. With the help of this application, each model can be turned over, brought closer, disassembled into parts. Such activities allowed students to examine in detail the construction of Big Ben, the schemes of castles and palaces.

2. Google Lens – this application scans everything that the smartphone camera looks at. With the help of it, students traveled through the Tower.

3. The [AR]t Walk project, which includes augmented reality art tours in six major cities of the world – London, San Francisco, New York, Paris, Hong Kong and Tokyo. During the excursion, a smartphone where the application is installed, thanks to which virtual tourists see and hear how fabulous worlds capture London's Trafalgar Square, how colorful "clouds" are streaming near the skyscrapers near Central Park in New York, how alien creatures dance on buildings, as they float in the air letters connecting into inspirational phrases. The entire art tour can be photographed or filmed.

4. The augmented reality browser Layer, which allows «seeing through walls» and showing the selected points of interest, regardless of whether they are in the line of sight. Students adjusted the degree of "range" of the layer in its settings. For example, by introducing a limit of 1 kilometer instead of 5. The number of objects became smaller. In another case, on the contrary, it was necessary to show that there are already enough of them now so that one could experiment with all this augmented reality.

5. Online fitting rooms. For example, the Ecco website, which supports the goal of finding the perfect shoes for the user online. To do this, the students downloaded the Ecco Fitting Room application on their smartphones and followed a short video instruction. The leg scan process takes only a few minutes. After that, the application creates a visual 3D model of the leg, taking into account the fullness, the height of the rise and other measurements. The app is available on IOS and Android and supports family sharing, i.e. it can be used by up to 6 people at a time.

6. The WallaMe application. For example, quests and games were held repeatedly, which consisted of looking for answers on the wall using this mobile application. During the game, augmented reality was "superimposed" on the walls, which contained images and symbols that the students were looking for and decrypting. Thus, the playful nature of the study contributed to the memorization of new words, solving communication situations, the activation of cognition.

At the fixing stage of the experiment, repeated measurement was carried out – questioning the participants of the experiment in accordance with the criteria described above. Assessment of the level of the professional foreign language competence formed was made. The results of the control task which consisted of 5 tasks were used for the statistical analysis of the obtained experimental data as indicated in the research program; they are shown in Table 1. Further, the criterion χ^2 (chi-square) Pearsen was used.

Table 1**Assessment results**

Level	The number of tested (people)			
	Experimental group (20 students)		Control group (20 students)	
	Before	After	Before	After
High	1	6	1	1
Average	7	13	12	13
Low	12	1	7	6

The following hypotheses were accepted: H_0 : the level of the professional foreign language competence of students in the experimental group is statistically equal to the level of the professional foreign language competence of students in the control group; hypothesis H_1 : the level of the professional foreign language competence of students in the experimental group is higher than the level of students in the control group.

We calculate the value of the criterion statistics before ($\chi^2_{\text{obs.1}}$) and after ($\chi^2_{\text{obs.2}}$) the experiment using the online resource <http://medstatistic.ru/calculators/calchit.html>. Let's choose the significance level $\alpha = 0,05$. In this case, $c = 3$, which means that the number of degrees of $v = c - 1 = 2$. According to the distribution tables χ^2 for $v = 2$ and $\alpha = 0,05$, the critical value of the statistics is 5.99. Thus, we obtain: $\chi^2_{\text{obs.1}} < \chi^2_{\text{crit}}$ ($2,63 < 5,99$), and $\chi^2_{\text{obs.2}} > \chi^2_{\text{crit}}$ ($7,14 > 5,99$). According to the decision-making rule, this means that before the experiment, hypothesis H_0 is correct, and after the experiment, hypothesis H_1 is correct. So, the increase in the level of professional foreign language competence of students of the experimental group confirms the importance of the methods and means of the augmented reality technology for teaching a foreign language.

The obtained results allowed us to draw the following conclusions regarding the features of the using methods and means of augmented reality in teaching a foreign language:

- a comprehensive study and analysis of the concept of augmented reality is necessary to understand the essence, didactic advantages of the AR technology for the digital educational space;
- in the modern system of the foreign language education, it is possible and necessary to widely use such didactic capabilities of the augmented reality technology as 3D visualization, adaptation to the specific learning needs of each student, interactivity, transformation of the role of teachers and trainees, etc.;
- the AR technology should be used along with traditional ones when teaching a foreign language to students;
- using the AR technology does not require the study of highly specialized advanced training courses, expensive equipment, programming skills, etc.

In the course of the study, the features of the using AR methods and tools, which affect the psychological development of the student's personality, and the risks in terms of security and confidentiality, were taken into account.

Discussion

As practice has shown, at present there is an opportunity to work with ready-made developments and AR applications, which does not require any additional knowledge,

time and money to create them. Most of free applications have a simple and user-friendly interface that even a beginner can easily use (without any instructions). AR applications can be used to study various topics of regional and professional orientation, intensifying the educational process and increasing the efficiency of the process of forming the student's socio-cultural and professional competence.

The general analysis of data received from freshmen of the training program "Tourism" of Vyatka State University studying the discipline "Foreign language", obtained during the control stage of the experiment, showed that the dynamics of formation of the professional foreign language competence of the students of the experimental group was the following: high level – 30%, average – 25% and low – 55%. In the control group, the results are different: there is no dynamics at the high level – 0%, the average and low levels – 5% both. As can be seen from the experimental data, formation of the professional foreign language competence of the students in the course of learning a foreign language, supported by methods and means of the augmented reality technology, has a positive trend. For students of the digital generation, the attractiveness of the process of studying a foreign language has significantly increased, the sphere of communication has expanded, cognitive activity has intensified, and motivation for learning a professional foreign language has increased.

Teachers who use methods and means of augmented reality in teaching a foreign language have identified the following objective advantages:

- it is a new form for motivation, development of cognitive interest, improvement of the quality of professional training by increasing information flows;
- is a technology for supporting the principles of visibility, accessibility, completeness and interactivity for formation of figurative thinking and spatial imagination;
- it is an environment for interactive interaction with the studied phenomenon.

In all simulated virtual educational spaces, augmented reality imposed computer-generated visual, audio, and tactile signals on the person's natural field of view, auditory and tactile backgrounds. Examples were navigation data, remote projection when performing complex manipulations.

The mentors identified the negative factors of the impact of augmented reality:

- distracting character. For example, a large amount of various information in the student's field of view overloaded perception and nervous system;
- threats of data theft. The use of programs implementing augmented reality, on the one hand, increases speed of information processing and activates interaction of network users. On the other hand, information transmitted over the network reveals details of the IP address, location, device type, user access rights, and more. Augmented reality must gain access to some personal data - geolocation, purchase history, financial details, so if an attacker uses such a channel, the consequences will be immediate;
- not every student or teacher can afford the means that implement the augmented reality technology.

So, the technology of augmented reality in teaching a foreign language can and should be used as an auxiliary means to increase the visibility and interactivity of the studied subject, deeper immersion in the language environment and culture, and conduct virtual excursions. However, the negative factors of the impact of new digital media should be understood and minimized.

Conclusion

The modern educational environment of a higher educational institution is full of digital technologies, including those based on augmented reality technologies, which are close to mass distribution and are supported by the program of the federal project "Human Resources for the Digital Economy".

The conducted pedagogical experiment confirmed the undoubted advantages of the augmented reality technology for enhancing learning and increasing interest when studying a foreign language. However, negative factors of influence on the psychological component of the student's personality (increased excitability, emotional burnout, headaches), increased risks of violation of confidentiality and data integrity also appeared. For many, augmented reality means were perceived as opportunities to manipulate another object, to realize aggression.

As guidelines for teachers planning to include technology in the process of teaching foreign languages we note: the need to regulate the use of AR resources; alternation of activities, traditional methods and teaching aids with innovative; inclusion of physical activity breaks and elements of neuro-gymnastics; instructing students on safe work with network and virtual resources. Thus, it is important not only to form professional foreign language competence. It is necessary to teach students objective analytics and assessment of information coming to them from the AR space; analysis of possible threats arising from the use of the augmented reality technology.

The proposed methods and tools make it possible to widely use the augmented reality technology in foreign language classes at university, which helps to optimize the educational process, informatively fills it, involves students in it and effectively influences the process of forming the foreign language competence of the student.

The obtained results expand and supplement the conclusions of A. V. Grinshkun [6] in relation to organization of information interaction in the digital educational environment. In addition, it was possible to confirm the position of the works of R. Günday, Y. T. Çamlıoğlu [16] regarding the didactic possibilities of AR resources for teaching a foreign language.

The results of the research can be used in scientific and methodological work for development of didactic traditions in the field of formation not only the professional foreign language competence, but also for development of the information culture of the individual, digital literacy in general.

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Информация об авторах
Сергеева Наталья Анатольевна

(Россия, г. Москва)
Старший преподаватель кафедры иностранных и
русского языков
Российский государственный аграрный университет
— МСХА им. К. А. Тимирязева
E-mail: kukulenok72@mail.ru
ORCID ID: 0000-0001-7116-3526

Захарова Анна Николаевна
(Россия, г. Москва)

Доцент, кандидат филологических наук,
доцент кафедры И-11 "Иностранный язык для
аэрокосмических специальностей"
Московский авиационный институт (национальный
исследовательский университет)
E-mail: anna-fedulowa@yandex.ru
ORCID ID: 0000-0001-9778-8217

Рублёва Ольга Сергеевна
(Россия, г. Киров)

Кандидат филологических наук, доцент кафедры
иностранных языков неязыковых направлений
Вятский государственный университет
E-mail: olgarue@mail.ru
ORCID ID: 0000-0001-7346-025X

Тютюнник Светлана Ивановна
(Россия, г. Киров)

Доцент, кандидат филологических наук, доцент
кафедры иностранных языков неязыковых
направлений
Вятский государственный университет
E-mail: svetyut@rambler.ru
ORCID ID: 0000-0003-0778-8657

Information about the authors

Natalia A. Sergeeva
(Russia, Moscow)

Senior Lecturer of the Department of Foreign and
Russian Languages
Russian State Agrarian University – Moscow Timiryazev
Agricultural Academy
E-mail: kukulenok72@mail.ru
ORCID ID: 0000-0001-7116-3526

Anna N. Zakharova
(Russia, Moscow)

Associate Professor, PhD in Philology, Associate
Professor of the Department I-11 "Foreign Language for
Aerospace Specialties"
Moscow Aviation Institute
(National Research University)
E-mail: anna-fedulowa@yandex.ru
ORCID ID: 0000-0001-9778-8217

Olga S. Rubleva
(Russia, Kirov)

PhD in Philology, Associate Professor of the Department
of Foreign Languages of Non-Linguistic Directions
Vyatka State University
E-mail: olgarue@mail.ru
ORCID ID: 0000-0001-7346-025X

Svetlana I. Tyutyunnik
(Russia, Kirov)

Associate Professor, PhD in Philology, Associate
Professor of the Department of Foreign Languages of
Non-Linguistic Directions
Vyatka State University
E-mail: svetyut@rambler.ru
ORCID ID: 0000-0003-0778-8657