

AUGMENTED REALITY TECHNOLOGIES [AR] AND COLLAGING IN FOREIGN LANGUAGE TEACHING

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ABSTRACT

The article describes the use of augmented reality technology in language learning, which allows educational organizations to switch from traditional methods to interactive ones, which is especially important in the situation of forced distance learning. The article considers the implementation of new technological methods in teaching the Russian language – the use of interactive graphic collage as a means of organizing augmented reality. We have put forward and successfully proved the hypothesis that the use of interactive graphic collages in textbooks of Russian as a foreign language increases the motivation of students, makes the educational process interactive, more exciting, and enhances academic performance. We have developed interactive graphic collages that were included in the textbook of Russian as a foreign language. The study concluded that the use of augmented reality tools in the process of teaching Russian as a foreign language is a system created with the help of digital means for the purpose of emotional impact, through the use of "augmented" elements in the learning process. The use of interactive graphic collages in this case is a technological method that allows the teacher to involve emotionally the student in the educational process, boost the desire to gain new knowledge, thereby improving academic performance.

Index Terms: Augmented reality, digitalization of learning, e-learning, interactive graphic collage.

1. INTRODUCTION

The year 2020 has become a challenging year for the education systems of almost all countries of the world. It was necessary in the shortest possible time not only to master digital tools, but also to saturate them with interesting content, make the learning process active, "do not lose" the students, and organize online training in the conditions of the maximum possible pedagogical impact. At the same time, all of us in the scientific field and even in our daily life have long used the concepts of "information society", "digitalization of knowledge", "IT-country", "digital economy", etc. However, the readiness to learn Russian as a foreign language using online systems was usually assessed as rather negative and rejected by specialists.

Life always makes its own adjustments to our ideas, and most importantly makes us look for ways to actively influence even in the conditions of distance or online learning.

The most powerful evolutionary process that determines the prospects of modern education, however, is digitalization. Indeed, new technologies have long transformed the financial sector, trade, mass media, public administration, healthcare, industrial production, and other spheres of public activity.

A. Research Problem

It is obvious that the education system in modern conditions also cannot remain on the sidelines, and, despite the traditional conservatism of the sphere, it should not just follow the trends, but become the head of the digital transformation – the process of forming a modern person.

Any language training, especially Russian in the absence of a language environment, is an energy-consuming and difficult process that requires individualization of training, taking into account both the interests and the peculiarities of the psychophysical development of students. Russian as a foreign language training is being modified today in line with digital linguodidactics. This leads to the need to change approaches and search for new methods of presentation of the material, accessible and high-quality, especially in the situation of forced distance learning.

B. Research Focus

Today, the use of technologically new interactive and culturally oriented educational materials that involve students in the learning process is becoming the main and necessary elements of the learning process. Augmented reality technology in the form of infographics claims a niche that belongs to the hologram in science fiction. The prospect of seeing virtual interactive illustrations that can be viewed from all sides, with which you can interact and immediately see the result of your experiments (remember Harry Potter movies), is still a distant prospect, but the day will come when they will become a standard image of the textbook.

In our opinion, it is especially important to master the use of digital technologies in the education of modern children, because for them it is already a clear and familiar form. Remote access to resources allows you to effectively use modern methods and techniques of educational work, including applying them in the context of teaching Russian in the family. The use of digital resources in the educational process opens up huge opportunities for students, but the problems associated with digital and artificial intelligence today are increasingly not so much technological as humanitarian in nature.

Collage is the addition of specially organized additional materials to the pages of textbooks, the connection of different-style objects or themes to enhance the overall ideological and aesthetic impact. The purpose of creating a collage can be a graphic illustration with a pronounced surprise effect or a sudden combination of heterogeneous materials, styles, and resources. Graphic collages use more infographic techniques, while illustrative collages become the basis for meta-subject individual projects that are solved with the help of media capabilities (including and recording your own videos that complement the material, cutting audio or video fragments to support visual ideas, etc.).

The program for including collages in the pages of Russian as a Foreign language textbook can also be supplemented with the idea of scanning QR codes that implement the video format. Collage in this case is used as a way to improvise, to get the sharpness of the image by combining known and new information and complementing the standard content. In this aspect, collage should be understood as an element of artistic creativity that promotes the development of imagination, thinking, the formation of aesthetic culture and emotional inclusion.

C. Research Aim and Research Questions

So far, augmented reality technologies in the education system are at the stage of their formation, so it is necessary to analyze the foreign experience and conduct educational experiments with augmented reality in the Russian education system.

Augmented reality is the result of the introduction of reactions using technical devices and to complement information about the environment to improve the perception of information, then perhaps the idea of superimposing additional information on an image of the real world already in the books. Thus, augmented reality technology implements a fundamentally new type of user interface that can respond to the environment. Any illustration, diagram, or photo can be used as a static image, and you can add links to a website, videos, pictures, and slide shows, and much more, as virtual content. The use of such tools will allow the teacher to create and expand the learning environment, to form students' learning activities for the selection, arrangement and creation of information of an educational and creative nature.

Therefore, in this study, the authors aim to solve the following research questions:

- analyze modern digital technologies in the process of teaching Russian as a foreign language;
- develop, test and implement an "interactive tool" in the process of teaching Russian as a foreign language, presented in the form of a graphic interactive collage;
- check the effectiveness of the inclusion of graphic collage in the educational process as a means of recreating additional reality.

2. RESEARCH METHODOLOGY

In the course of our research, we used theoretical methods such as the method of perspective modeling of educational situations, deductive, methods of analysis and synthesis. In addition, the work is based on the following practical methods: monitoring the work of students in a virtual educational environment, interviewing students, as well as summarizing personal practical experience in the educational process.

A. Literature Review

In order to methodically correct the use of interactive methods in Russian as a Foreign Language teaching process, it is necessary to understand their nature and essence. The analysis of the works of researchers (Yakubovskaya, 2012; Dvilichanskaya, 2011;

Gushchin, 2012) on this problem allows us to say that the term "interactive teaching methods" are considered as ways of joint cognitive activity of students with the teacher, with each other, as well as with educational material. Interactive methods can include the following: method of educational projects, "brainstorming", role-playing and "business" games, discussion, case method, quest, etc.

The classic definition, which is already more applicable to the education system, belongs to Ronald Azuma, who in 1997 described augmented reality [AR] as an idea that combines the virtual and the real, allows interaction in real-time and is able to work in 3D for educational purposes (Azuma, 1997).

In works of Russian linguists in the field of teaching methods, collage is a means of visualization, which is a figurative, schematically fixed with the help of linguistic and extralinguistic means (pictures) display of a certain part of the subject content, united by a key concept – reality. The main feature of this technique is the creation of visual semantic chains with a clear structure, in order to consistently reveal the key concept of the topic under study (Gushchin, 2012).

Thus, one of the key findings in teaching Russian as a Foreign Language, which many creative teachers intuitively began to apply, was the method of "augmented reality" (AR), which is well-known in the digital world, based on the introduction of sensory data into the educational process in order to supplement information about the environment and improve the perception of information. This method has already been widely used in creating interactive textbooks for teaching Russian as a foreign language, for example, by including QR codes that allow you to listen to prepared listening activity or listen to a live speech of a native speaker. So, augmented reality in Russian as a Foreign Language educational process is a system created with the help of digital means for the purpose of emotional impact, by using "augmented" elements in the learning process, and especially distance learning, when it is necessary to emotionally involve the student in the material, to arouse the desire to learn new things.

Among the most common examples of using augmented reality today are, for example, a parallel color line showing the location of the nearest fielder to the goal during the broadcast of football matches, as well as arrows indicating the distance from the place of the free-kick to the goal, "drawn" flight paths of the puck during a hockey match, mixing real and fictional objects in movies and computer or gadget games, etc.

The term "augmented reality" was proposed by the engineer-Boeing aircraft building company, Tom Caudell in 1992, which used the combination of words, describing a digital display that allows seeing the drawings and instructions using helmets with the translucent display panel (Caudell, 1995).

This method is used today by many online schools or teachers conducting creative distance classes with bilingual children (Traveling by train, flying to the moon, descend to the bottom of Lake Baikal in a submersible, etc.).

Quite often, augmented reality is also included in the museum practice, where it becomes a promising means of adapting the museum to modern realities. This method has become widely used in museums, where it is important to influence not

only the memory and intelligence of the visitor, but also his emotional and sensory sphere. Thanks to information technologies, visitors can not only imagine, but also see events and exhibits in 3D dimensions. From a passive spectator, the student becomes a participant in a certain action. Such inclusions are very common in the practice of teaching Russian as a foreign language. For example, a traditional excursion for foreign students to the Cosmonautics Museum in Moscow or to the museum complex on Poklonnaya Mountain dedicated to the Great Patriotic War is organized. On the other hand, the virtual tour allows students from all over the world to visit the museum, get acquainted with the exhibits, even without a guide. The integration of subject areas allows to effectively simulate classic objects for local history using QR codes. This method is extremely promising in language education, where, for example, chatbots are already used in teaching speaking, or Siri and Alice to work out the correct questions and intonations. AR glasses, which are still bulky in size, are appearing and are already being used in intensive language training, but they are already being replaced by simple glasses for a wide audience, which is cheaper and more common (for example, Google Glass). Special videos, for example, prepared by Cambridge University Press on the topics of supermarket, food, at the airport, in a restaurant, etc. are known and already popular in English teaching (Zhang, 2020). Pointing your smartphone at a bookstore in a book brings the page to life and creates an atmosphere of reality. Everything together organizes the language environment, and the development of new environments and the bright motivation of language learning, including virtual reality and 3D, becomes the most effective element of modern education. That is why the teachers of the Russian Academy of Sciences intuitively began to carry out a methodical search in the field of visual expansion of reality and "bring to life" the textbooks.

B. Sample and Data Collection

Thus, one of the most progressive means of developing the creative abilities of students during an online Russian language course was the creation of a graphic collage using IT-technologies. This method is the basis for many face-to-face and online classes, as well as a fundamental principle in the creation of textbooks "Native Russian Language" series for grades 5-6, created by us in alliance with the creative team of the Russian school "Gramota" (Montreal, Canada), which included 25 years of experience in teaching Russian as a Foreign Language. The collages were created using a meta-subject approach, where Russian language learners gain knowledge in other disciplines (history (Fig. 1, 2), music (Fig. 2, 3), geography (Fig. 4), literature (Fig. 8), astronomy (Fig.5), the world around us (Fig. 6), etc.). In addition, the collages were created using a linguocultural approach, which allows students to get acquainted with the traditions and customs of the country of the language being studied (Fig. 7). Below are examples of interactive collages. Collages from series of textbooks by Aizatullina G. N., Khamraeva E. A. "The native Russian language" for grade 6.

Fig. 1. Collage "History of transport».





Fig. 2. Collage "Music of Ancient Greece".



Fig. 3. Collage «Classical music. Musical instruments».



Fig. 4. Collage "Geography of Russia».



Fig. 5. Collage «People in space».



Fig. 6. Collage «Water».



Fig. 7. Collage «Russian customs and traditions».

Of course, collages organize emotional memorization of the material, which makes them related to augmented reality. For example, the text from the novel of A. Grin, used in the lesson of this textbook, is supplemented by a bright photo collage on a separate page and in its pdf version, and in the online version it is expanded with fragments from the film "Scarlet Sails", a story about the tradition of the prom in St. Petersburg, a video sequence where a ship under scarlet sails enters the water area of the city (Fig. 8).



Fig. 8. Collage A. Grin. "Scarlet Sails».

D. Instrument and Procedures

To identify the personal results, the students were offered a questionnaire, which they filled out based on introspection. Metasubject results were determined using an observation form that the teacher filled out. The verification of the subject results was carried out by calculating the average score on academic performance in the 6th grade, which took part in the experiment.

The initial stage of the experimental work was to develop the experimental plan, and to choose the experimental group. The next step was selecting the section of the educational program and defining the topics of the lessons that would use interactive teaching methods. The development of methodological materials for the lessons using interactive technologies was also carried out. The next stage of the experiment involved testing the developed lessons in the educational process, including tasks with interactive teaching methods. During the first half of the year, the tasks we developed were used in the lessons of Russian as a foreign language. At the stages of applying interactive tasks, the teacher had a less active position than the students, since he acted as a consultant or tutor.

The final stage was the final diagnosis using the same questionnaires that were used at the initial stage. At this stage, the students marked the data in relation to the lessons conducted in interactive mode. To determine the achievement of intersubject results, the teacher filled out an observation form. The final stage involved a comparison and analysis of the results obtained, allowing us to conclude about the effectiveness of

lessons using interactive teaching methods.

To identify the effectiveness of using interactive methods in the lessons of Russian as a foreign language, we conducted an experiment, the purpose of which was to experimentally confirm the effectiveness of interactive teaching methods in achieving students' learning outcomes. The effectiveness of using collages in the educational process was tested at the Russian school "Gramota" in Montreal, Canada in 2020. Students of grade 6 took part in the experiment. A total of 41 students were involved. We have compiled a questionnaire for students based on the research of Dombrovskaya I. S., to identify the effectiveness of the use of collages in the educational process and the level of motivation of students.

The methodological development of the types and levels of motivation for learning activities is based on the research of Rozhkov M. I. (Rozhkov, 2018), in which questions are regularly alternated, and the answers are entered in a structured answer form.

D. Data Analysis

When determining the effectiveness, the data of the teacher's observations were taken into account. Analyzing the calculated average academic performance score at the beginning (4.0) and the end of the experiment (4.4), we concluded that the use of interactive methods is quite effective for achieving metasubject results. (Fig. 9)

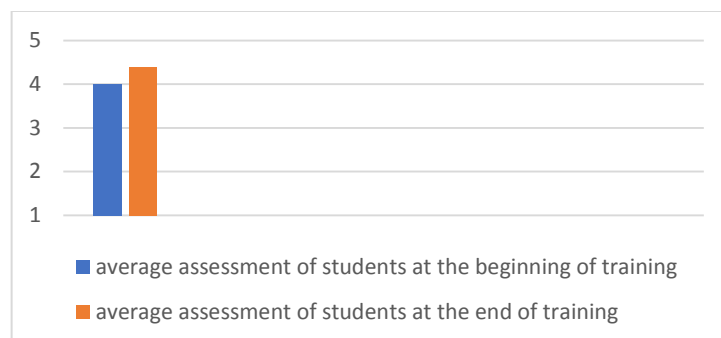


Fig. 9. Average student performance score based on augmented reality technologies.

The analysis of the results obtained from the survey of students suggests that in almost all parameters at the end of the experiment, the student's assessment of their own skills is higher when using interactive teaching methods (AR).

If we take the average result for the parameters of independent planning of educational activities when using interactive teaching methods (AR), we got the following results: at the beginning of the experiment – 80%, and at the end - 85% (Fig. 10).

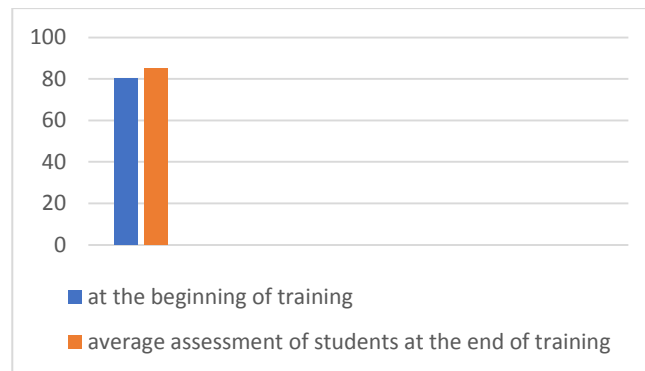


Fig. 10. The average percentage of the parameters of independent planning of educational activities based on augmented reality technologies.

The ability to work in groups is also formed more effectively: at the beginning of the experiment – 79 %, at the end - 94%. We consider group projects to be the most important methodological tool for creating a favorable microclimate in the team, especially in the conditions of forced distance learning (Fig. 11).

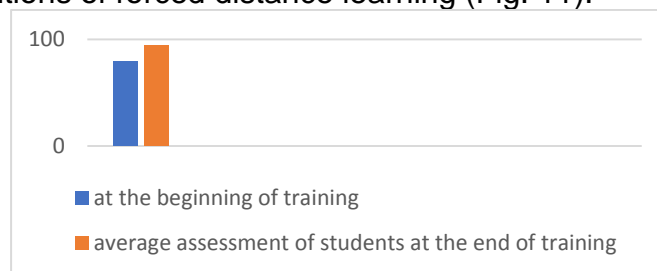


Fig. 11. The average result of group work with the use of augmented reality technologies.

3. RESEARCH RESULTS

As a result of the study in the experimental groups, it was possible to increase the motivation for learning and, as a result, the level of academic performance of the subject. Using the interactive tasks and working in groups also improved the interaction and relationship in the team. Interactive methods contribute to the development of students' ability to work in groups by listening to the partner's opinion and compromising, arouse interest in the topic being studied, thereby increasing the cognitive activity of students. The conclusion about the effectiveness of the methods used in the lessons involves an assessment of the reduction in the teacher's time. We observed that the teacher spends less time working directly with the students. Students work independently during a certain time of the lesson, and in this case we can talk about the effectiveness of using interactive teaching methods in terms of the time spent by the teacher. At the same time, the teacher cannot reduce the amount of time allocated for the training session, so we can only talk about reducing the teacher's load during the lesson. With the positive results obtained, interactive methods in no way replace explanatory-illustrative and practical methods in conducting classes. This once again confirms that interactive teaching methods can be used in educational

practice only if the expediency and effectiveness of their use in individual lessons or topics of the subject are determined.

In general, according to the pedagogical experiment, it can be concluded that in the classroom using interactive methods (AR), the formation of skills that ensure the effectiveness of cognitive and independent learning activities is more effective.

Thus, the use of augmented reality in teaching is an opportunity to add new often graphic or multimedia objects to real educational materials, usually for the purpose of emotional or visual support, or as auxiliary information. The marker can be images, logos, photos, sounds, as well as launching animation by clicking or even conducting a dialogue with a character, switching to third-party web resources, etc.

4. DISCUSSION

It is important to note that working on a graphic collage using IT-technologies does not require special drawing skills, which even allows you to reveal the creative abilities of a person who was previously unknown to him.

The use of collages in the methodology of teaching foreign languages is no longer new, but the use of them as augmented reality in the content of an educational book is a completely original product in the methodology of teaching Russian as a foreign language to both children and adults. Modern students are well acquainted with the possibilities of computer technologies, software, and the means of virtual communication. In fact, they have formed a screen-type of culture, that is, aesthetics, which is based on the video series. That is why augmented reality in the Russian language lesson, organized through a colorful collage, serves as a way to attract attention and often becomes the beginning of a new project work of the student.

Collage as a learning technology in Russian language lessons in schools of additional education abroad implements the most important pedagogical functions:

- Development of aesthetic taste and artistic imagination;
- Development of design thinking;
- understanding the "technology" as a way to step-by-step task execution;
- Ability to create aesthetically competent compositions;
- Ability to process and present information in a concise, concise form;
- Activity planning skills;
- The ability to anticipate the end result and evaluate the results of work.

5. CONCLUSIONS AND IMPLICATIONS

The user demand for augmented reality capabilities is very high, and there will be even more demand in the future. Even today, mobile augmented reality applications are widely used in many areas: advertising, marketing, medicine, printing, culture, etc. The intensification of AR applications in the field of education is due to the use of mobile devices (tablets, smartphones) among students, and the general global trends in the

use of mobile applications. Modern interactive technologies, including mobile ones, bring vivid three-dimensional images to the learning process, add interaction and a game element, develop creativity, spatial imagination and project activity skills. Augmented reality technology allows to visualize the learning material as much as possible, thereby increasing the motivation of students to the learning process. But until 2020, we were little aware of the fact that the established forms of presentation of educational material do not fully use the possibilities of computer visualization. And only the situation of forced transition to distance learning forced to include these opportunities in personal teaching practice.

Of course, innovative methods of linguodidactics today are closely interrelated with information technologies. Today, a sufficient number of ready-made educational applications have been developed that operate using augmented reality (map of the starry sky and astronomy, entertaining physics, etc.). Currently, augmented reality technologies are also used in textbooks on physics, biology, and medicine. But other previously well-known creative methods, which were also empirically included in the Russian language course in the context of the forced transition to distance education in 2020, have also become forms of supplementing and organizing classes.

Collage uses the principle of combining different ideas. Its tasks are the emotional richness and sharpness of the works, causing the desire to supplement their own knowledge or the pages of an educational book. One of the factors that activate the cognitive and research work of students in Russian language lessons is the process of using new technologies, whether it is creating electronic materials on a computer or participating in a telecommunications project. Thus, collaging as a reflection of the augmented reality method allows to implement:

- The possibility of a comprehensive presentation of the material;
- Ability to create context and provide cognitive interest;
- Interactive nature;
- Quickly make changes to the data in accordance with the topic being studied.

All of the above points to the need for new developments in linguodidactics of Russian as a foreign language teaching, using the technologies that complement reality and integrate cognitive, emotional and technological potential, such as, for example, collage. So, augmented reality technology, as well as the ideas of collage, are the ways of a new organization of Russian language teaching. The use of augmented reality technologies in teaching Russian as a foreign language adds more interactivity and game element to the usual teaching process, ensures the quality of online communication and enhances the immersion effect, which ultimately contributes to improving the perception of information and the formation of interest to the Russian language.

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