

## PEDAGOGICAL AGENTS IN TEACHING LANGUAGE: TYPES AND IMPLEMENTATION OPPORTUNITIES

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### Abstract

Researchers and educators traditionally consider pedagogical agents as animated talking "heads" embedded in the educational computer programs that help to deliver the multimedia content or engage students in the learning process. However, the authors of this research define the pedagogical agent as a character of any kind (video-, cartoon-character, or even a non-interactive book-character) that helps students to learn. The educational function is the crucial feature of any pedagogical agent, according to authors. Thus, in this article, they describe the different types of pedagogical agents they have created and used in teaching language, particularly Russian as a foreign language for the last 15 years of their work. Any teacher can quickly implement most of these pedagogical agents' types in his/her lessons since they do not require the knowledge of programming and computer design. The pedagogical agents described by authors in this research have proven their efficiency during the experimental training in multinational and diverse level groups of international students who studied the Russian language at RUDN University (Moscow, Russia).

**Keywords:** Teaching foreign languages, teaching Russian as a foreign language, teaching and learning tools, and pedagogical agents.

### 1 INTRODUCTION

The term "pedagogical agent" is defined by scientists around the world as an animated interface agent in the interactive learning environment (Johnson, W. L., Rickel, W. J., Lester, C. J., 2000, p. 47) that instructs and navigates users via face-to-face dialogue.

Such interpretation of "pedagogical agents," as we believe, significantly narrows the range of their educational potential. It also makes that educational tool an exclusive one, inaccessible to teachers who cannot create and use pedagogical agents in their daily teaching practice without the skills in building computer graphics and programming knowledge.

In this regard, the goal of our study is to prove the accessibility and simplicity of the pedagogical agents' development to general teachers' public. Thus, we are going to consider pedagogical agents as characters acting for educational purposes, being able to provide a sufficiently high level of interactivity, communication and becoming efficient assistants in mastering the subject, in particular, the language.

As is well known, the achievement of high-level communicative skills is the most crucial goal in teaching a foreign language. Therefore, we have decided to demonstrate the use of pedagogical agents in teaching a foreign language (in our case, the Russian language) in order to prove not only the simplicity of their development and use but also their high didactic potential.

However, first, we turn to the history of pedagogical agents in their wildly spread meaning.

## **2 METHODOLOGY**

### **2.1 Literature Review**

The history of the pedagogical agent is closely connected with the history of computer animation's emergence and development, which had started from the 1960s when Ivan Sutherland invented the technology for creating drawings directly on the computer screen (Oakes, H. E., 2007, p. 701). Over time, as we know, such images have acquired shape, color, volume, and dynamics. Already in 1968, the first cartoon "Kitty" was shot in the USSR (Konstantinov, N. N., Minahin, V. V., Ponomarenko, V. Yu., 1974), showing the cat's walk created with the help of computer animation. Since about the beginning of the 1970s, computer animation has begun to penetrate the film industry (see "Westworld" of 1973, the "Futureworld" movie of 1976), where today it occupies the most influential position and is mostly required.

The teachers and researches drew their attention to the educational potential of the animated characters in the early 1990s. For instance, one of the first Russian educational game simulators - "Case Detective" (Vasilyeva, T. V., Vlasov, E. A., Rudenko-Morgun, O. I., 1991) was created with the pedagogical agents – animated characters in the game that set the learning tasks for students provided them help or the right answer.

In 1997, the "Microsoft" company introduced the first most widely known animated agent - "Microsoft's Clippy." (Watters, A., 2016) Those of us who remember the animated Paper Clip assisting in working with documents in the corner of the screen, became, in fact, students of one of the first pedagogical agents. Such agent embedded in the interface of "Word," "Publisher" and "Project" programs, not only showed some useful tips to users, but also instructed them and searched through the document according to a given criterion.

The most productive years in the field of the pedagogical agents' development were 1998-2000. In this period, several universities of the USA have developed their pedagogical agents imbedded into programs that were designed to train specialists in specific areas of knowledge. All of them were humanlike or cartoon characters who could perform simple tasks: instruct users (by telling or demonstrating them what to do), provide tips, answer the simple questions: "What should I do next?", "What is this?", "Why? ".

For example, the Information Sciences Institute at the University of Southern California has developed two pedagogical agents (Johnson, W. L., Rickel, W. J., Lester, C. J., 2000, p. 48-49): Steve (Soar Training Expert for Virtual Environment) and Adele (Agent for Distance Learning: Light Edition). Steve was "born" in 1998 as a 3D animated character in an interactive training program developed for the future engineers of the Navy (the agent helped to perform tasks on the example of a ship's motor computer model). Adele was introduced in 1999 and was a more simple 2D pedagogical agent, embedded in the web browser interface of medical students and designed to integrate Internet content with user's training materials.

North Carolina State University developed three pedagogical agents in 1999: Herman-the-Bug, COSMO, and WIZLOW (Johnson, W. L., Rickel, W. J., Lester, C. J., 2000, p. 50-52). The first one takes place into an interactive educational program created for botanical students. The other two agents (COSMO and WIZLOW) were designed for students studying computer science: the basics of network types and routing mechanisms, the structure of motherboards, etc.

In 2006, the Russian company "1C" presented an electronic study book – "Russian language. Morphology. Spelling" (Rudenko-Morgun, O. I., 2006). It was designed for comprehensive school students of 5-6 grades. The interface of the multimedia lessons in the study book included a group of pedagogical agents, that formed a virtual class: a teacher and three students who were able to interact not only with each other but with the real users. They were animated cartoon avatars, differed with their characters and voices. During the multimedia lessons, these agents not only explained theoretical material in an accessible way but also engaged real students in the discussion of the topic, set problematic tasks for them, organized discussions and helped to systematize the gained knowledge.

Educational programs with pedagogical agents quickly proved their effectiveness (Lester, J. S. et al., 2007; Baylor, A. L., 2000, Conati, C., Zhao, X., 2004). Such agents simulate the types of educational communications and user interactions that are necessary for the learning process, and that occur in real-life situations. Among the additional advantages of pedagogical agents, researchers distinguish the following:

- Agents contribute to increasing the motivation of students during learning (because of students' increasing interest to the communicative capabilities this tool);
- The knowledge passed by the agents has a higher "credit of trust" among students (in contrast to the knowledge taught by a teacher - a person whose appearance, voice, mimicry, and character largely

determine the attitude to the information he or she gives);

- A real teacher plays a more "profitable" role of an intermediary between a learners' audience and pedagogical agents, the role of a student's partner on the path to the knowledge, which is why the attitude of students to a real teacher is changing positively.

Due to the identified advantages, the development, and implementation of pedagogical agents are the educational trend of current interest of the scientist and teachers around the world.

Since the beginning of the 2010s, however, the requirements for the pedagogical agents' quality and functions have increased significantly. In addition to high-quality realistic graphics and the ability to effectively coordinate user's actions in the educational program, modern Z-generation students also expect the highest level of interactivity. In particular, the requirements for the communication skills of pedagogical agents have grown since the "artificial intelligence" programs occurred and showed the ability to "consciously" communicate with users (Dormehl, L., 2017). We all know these programs, embedded in personal devices and smart-speakers as intelligent voice assistants, capable of solving a variety of everyday tasks (from finding a route and calling a taxi to reading a bedtime story). We believe such programs are also capable of being pedagogical agents because they can successfully help learners practice their conversations.

So nowadays the animated pedagogical agents' development is tightly connected with the computer animation' and artificial intelligence' developments, which is why this educational tool quickly acquired the status of an expensive and inaccessible one. However, is this true? We suggest looking at pedagogical agents from a broader point of view, relying primarily on their functions, rather than form.

## 2.2 Materials and Methods

Pedagogical agent, as we believe, is a concept that can go beyond the framework of computer science and work as a full-fledged educational tool, which is not necessarily to be integrated into the interface of an electronic training course with a complex structure. We have to admit that characters acting for educational purposes could have completely different shapes (and capabilities, respectively).

It is also important to note that ready-made animated pedagogical agents embedded in interactive learning course are not always convenient for a teacher, since the content of their replicas, for example, may not correspond to the topic that has been studied. Working with such a ready agent may not be suitable for the student's needs. Here the other opportunities for creating and implementing the pedagogical agents come to the rescue.

Let us consider three types of pedagogical agents that we used in our practice of teaching the Russian language at the Peoples' Friendship University of Russia. We pay attention to the simplicity of their implementation and their capabilities.

### 2.2.1 Pedagogical Agents in the Presentations (PowerPoint or Key Note).

The interactive graphics editor such as "Microsoft PowerPoint" can help the teacher to create a unique pedagogical agent. Any confident user of that program will be able to find appropriate images, type the replicas, record the voice (if it is necessary), animate the "clouds" with replicas and thereby give "life" to a new pedagogical agent. Such an agent can become a "partner" of a teacher in any learners' audience (from beginner to advanced) because precisely a teacher sets and controls the level of knowledge. Moreover, such a "partner" could have the same interactivity level as many agents created in special graphical programs.



Fig. 1, 2. Pedagogical Agent «Anri» in the presentation

Meet Anri (see Figure 1-2). Anri is a two-dimensional, not animated character, but he has a voice (recorded by a teacher). Animation works only when the "clouds" of his speech appears or disappears). Anri asks students questions about the meaning of this or that Russian idiom. Anri says his remarks according to a particular sequence (which was thought out by the authors of the presentation), helping to engage real students into the topic's discussion, in communication, and setting communication tasks. Anri's replicas could be activated (like any animation in presentations) either automatically (which is inconvenient during the dialogues with the real audience), or by a click. Besides, the facial expressions of Anri, as it is shown in Figures 1-2, may vary.

Certainly, it is difficult to use this pedagogical agent as an evaluation tool. It is almost impossible as well to engage this agent into the dialogue tree (complex dialogue where users can make choices for their answer, and these choices influence the next replicas of the agent). However, this simple pedagogical agent can be useful during the polling or repeating the topics and consolidation of the previous material, before writing a test. At the beginning of a language learning, when the principal teacher's task is the formation of necessary speech skills, an agent such as Anri helps students to overcome their language barrier. Among the educational functions carried out by an agent of the Anri type, we can also distinguish the following:

- 1) The explanation of new material (for example, our Anri tells students the meaning of several French idioms and compares them with Russians);
- 2) Setting the educational tasks (for instance, Anri asks about the meaning of several particular Russian idioms);
- 3) Setting the problematic questions (Anri asks the audience questions that require discussion);
- 4) Leading simple dialogues (not dialogue tree) with the audience (if a teacher receives the correct audience's answer to Anri's question, he or she activates further animation, which is the next Anri's replica);
- 5) Engaging students in cross-cultural communication, creating an atmosphere of cooperation, and a tolerant attitude of students to each other.

As demonstrated in the list, this very-simple-to-implement agent can "take over" a rather impressive set of real teacher's responsibilities, which significantly helps a teacher and vary the communication in the lessons.

### 2.2.2 Pedagogical Agents in the Video Lectures.

A video lecture is a popular format for presenting educational material nowadays. Pedagogical agents can be included in it as well as in a regular presentation since they can be actors performing their roles for educational purposes.

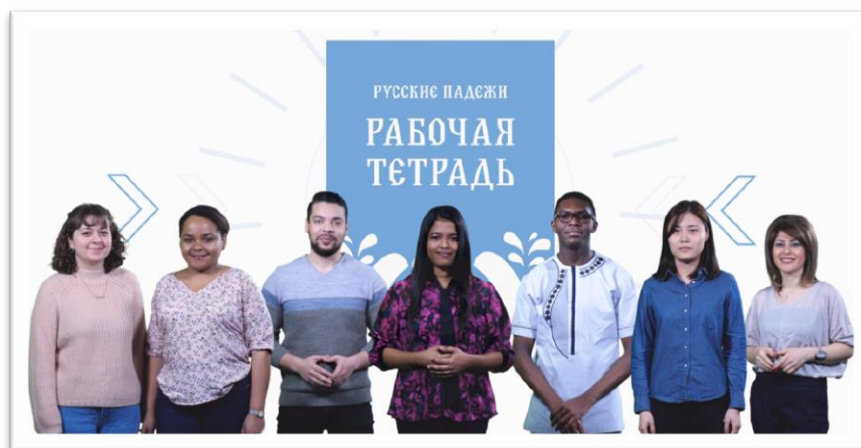


Fig. 3. Pedagogical agents in the video lecture

Meet our international students (see Figure 3). These are actors of our video lectures developed for foreigners who study Russian at the pre-intermediate or intermediate level. These video lectures reveal one of the most challenging aspects of Russian grammar – Russian cases.

Along with the narrator, whose primary function is to explain the grammatical material, these video lectures have pedagogical agents as performers of the additional educational functions, which are:

- 1) To check students' work by showing the correct answers for the tasks (see Figure 4);
- 2) To provide additional explanations while showing the correct answers;
- 3) To demonstrate the examples (scenes) of the educational communication (see Figure 5), during which they find answers to problematic questions of grammar;
- 4) To demonstrate the examples (scenes) of the educational communication in the classroom with a teacher (see Figure 6), when the actors solve the educational tasks and explain new material;
- 5) To engage the audience into communication, asking them problematic questions, and offering to discuss them via the forum or in the lesson.

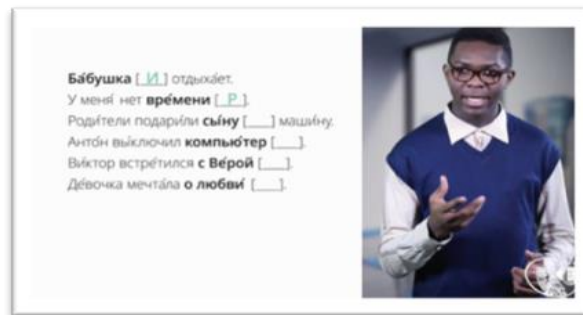


Fig. 4. Pedagogical agent demonstrates the correct answers for the task in the video lecture

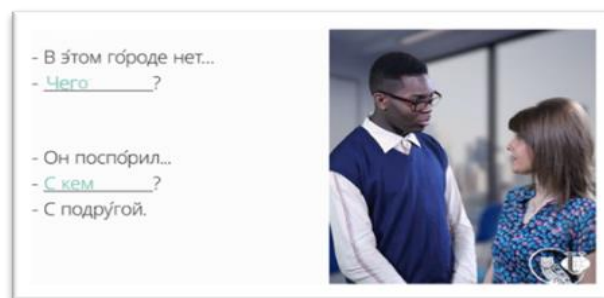


Fig. 5. Pedagogical agents demonstrate the educational communication in the video lecture



Fig. 6. Pedagogical agents demonstrate the educational communication in class

Such video agents, of course, do not provide interactivity in the meaning of computer science. However, they can be considered as interactive (from the pedagogical point of view) since they provide users with the necessary feedback. They help students; they show the answers to assignments and the examples of communicative interaction in those "places" where it is most needed. The authors of the scripts for these video lectures took into account the possible students' difficulties and tried to develop lectures accordingly to

the problem-based learning and activity approach. Along with the video, students can download the "Workbook," which assignments and texts are done and analyzed by pedagogical agents in the video. The materials attached to video lectures also include the final tests, with which students can evaluate their skill level growth and gained knowledge.

### 2.2.3 Teaching Agents Online

a) *Voice assistants.* In the section "Literature Review," we briefly mentioned the capabilities of the intelligent voice assistants to act as pedagogical agents. Now we are going to write in detail about this.

Virtual assistants, intelligent personal assistants, or voice assistants – these are the most common names for the software agents embedded in users' devices that operate online when they respond to a user's voice request. The names of such assistants are world-famous: they are Siri, Cortana, Google Assistant, Alexa. In 2017 the famous Russian company Yandex presented the Russian voice assistant Alice who became very popular in the country.

The main goal of all voice assistants is to provide some help in solving everyday tasks: to check the weather; find the necessary city objects; call a taxi and others. At the same time, many voice assistants have an additional set of functions: they can play educational games with users, tell the fairy tales or even sing. It is important to note that the developers of such software sought to make their voice assistants the most unique, individual, assigning them a particular model of communicative behavior. So, for example, the creators of the Russian "Alice" emphasize that they had tried to create a holistic character with personality traits and sense of humor, "You can contact her not only for solving problems but also when you want to talk," because "Alice" knows how to improvise during the interaction with users and often she "turns on her imagination." Such communicative abilities and multifunctionality turn "Alice" and other similar voice assistants into the powerful pedagogical agents. Although they do not have a graphical form, they have undeniable personal qualities and can be understood as "characters," especially since the level of their communicative interactivity is the highest of possible.

In one of our previous studies (Al-Kaisi, A. N., Arkhangelskaya, A. L., Rudenko-Morgun, O. I., 2019), we conducted an experiment using the communicative abilities of Alice in teaching Russian as a foreign language the beginner students. We have developed and offered the system of communicative exercises with the Russian voice assistant embedded into the Yandex browser interface. Students were supposed to ask Alice questions and receive answers from her on specific topics (weather, route, ruble course, daily conversations). This system of exercises was designed to help beginner students in the following learning activities:

- 1) Improving pronunciation (as the Russian voice assistant correctly recognizes only the properly pronounced sounds or the speech with an accent that does not affect the meaning of the statement);
- 2) Increasing the expressiveness of speech (since the Russian voice assistant is sensitive to the intonation of the statement);
- 3) Remembering the basic speech constructions and etiquette phrases (Здравствуйте! – "Hello!", «Скажите, пожалуйста, где...?» – "Could you tell me, please, where is...?", «Сколько сейчас времени?» – "What time is it?", etc.);
- 4) Forming the skill of grammatically correct speech (since grammatical errors often entailed the incorrect recognition of user's speech);
- 5) Overcoming the "language barrier" and psychological students' restraint.

The results of our experiment, presented in the study mentioned above (Al-Kaisi, A. N., Arkhangelskaya, A. L., Rudenko-Morgun, O. I., 2019), proved the high efficiency of the voice assistant's use. This "character" performed the training educational function (serving as a kind of "communicative simulator") during the language lessons. Due to this, we can conclude that voice assistants should be considered as possible pedagogical agents since they can successfully serve for educational purposes in the lessons. In this case, the teacher will only need to think through scenarios of learners' interaction with such a powerful communicative tool.

b) *Characters of the online learning courses.* Among the pedagogical agents, we should consider those that are available online in some modern online learning platforms or online course editors. As users of the "iSpring Suite" course editor (developed by the Russian company "iSpring"), we give here an example of such pedagogical agents embedded in the interface of this editor.



Fig. 7. Pedagogical agent in the online course

The "iSpring Suite" editor program has been designed for teachers who want to create their own interactive courses. The extensive functionality of the program (creating an interactive textbook, tests, educational games, etc.) provides teachers with the opportunity to include ready-made interactive characters in their course. In particular, that opportunity appears when a teacher creates a dialogue tree for learners. The ready-made pedagogical agents in this program are 2D images of people, each of whom has a few pictures with the different facial expressions (sadness, joy, attention, etc.). Thus, if the replica of such agent changes, their "emotion" can also change. Users communicate with similar characters not by voice, but by selecting an appropriate replica from the list (see Figure 7, there is the list of two answer options in the bottom left corner). All the teacher needs to do is to write replicas and pick the facial expressions for the pedagogical agent, then to write the user's response options for different scenarios of the dialogue. Thus, the teacher brings the pedagogical agent "in life."

Such a pedagogical agent, included in a foreign language training course, can perform the following educational functions:

- 1) Explain the new material;
- 2) Serve as a simulator to consolidate the vocabulary, grammar and speech patterns;
- 3) Evaluate user's responses ("You are right/wrong!");
- 4) Serve as a simulator to overcome the "language barrier" and psychological students' stiffness.

Obviously, the online course editors and online learning platforms that provide such opportunities can hardly be called commonly available. Often the use of these programs requires payment. However, the agents offered for use in the interface of these programs do not require graphic development. They are nothing but a "blank sheet" opened for the teacher's creative ideas: dialogues with these agents can be filled with any training material suitable for your course. For this reason, we see a particular "flexibility" and ease of these pedagogical agents' use.

Let us emphasize the fact that all the types of pedagogical agents described above are not animated interactive characters that were created using the graphic editors. Exactly that definition of the term "pedagogical agent" is widespread. All the types of agents presented here were created using static images or videos. However, this does not prevent them from carrying out the educational functions and even providing interactivity.

In order to prove the simplicity of using these three types of pedagogical agents, as well as their efficiency in teaching Russian as a foreign language, we invited two groups of teachers to participate in the educational experiment at the Peoples' Friendship University of Russia (Moscow). None of these teachers had previously used the pedagogical agents in their practice before the experiment started.

The experiment went from March to May 2019, and 18 teachers and 182 students took part in it. The teachers who participated in the experiment (together with the students entrusted to them: approximately ten students from each teacher) were divided into two groups: experimental (A group) and control (B group).

The experimental group of teachers faced the following task: to develop and use the teaching tools (presentations, video lectures and parts of the online course) in their practice on three topics students do not know using three types of pedagogical agents described above.

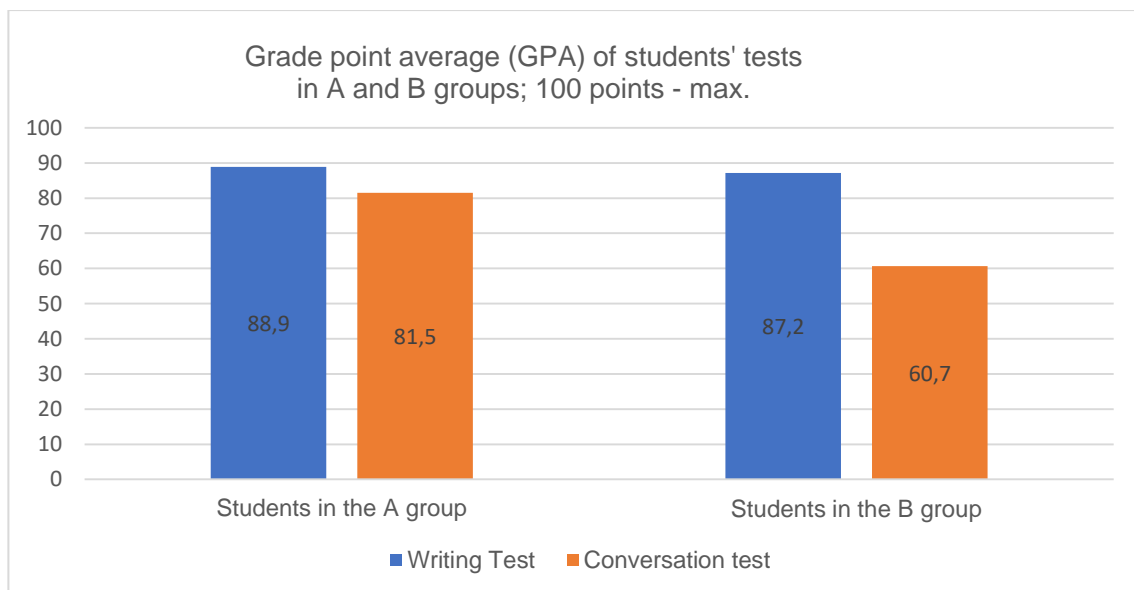
Therefore, for teaching students the first topic, teachers were given the task to develop a presentation with a pedagogical agent included. For teaching the second topic, teachers were asked to prepare a video lecture with the pedagogical agents – actors. For teaching the third topic, teachers were instructed:

- a) Either to develop a part of an online course (in the “iSpring Suite” editor program) using the pedagogical agents offered in the interface,
- b) Or to use the voice assistant “Alice” (developed by “Yandex”) during the communicative work in the lessons.

All developed materials were used by each of the teachers in their study group. The control group of teachers – B group – performed the same tasks, but without the inclusion of pedagogical agents. Thus, this group developed the same training materials (presentation, video lecture and the parts of the online course) for the same three (students do not know) topics that were covered by A group, but without using such a tool as a “pedagogical agent.” This teacher group’s presentations were simple presentations with animation of text objects and sound (recall that this is important for language learning). Video lectures were a classical video with one actor (usually the teacher himself/herself) explaining the material. The parts of the online course developed in the “iSpring Suite” editor program were the interactive textbook pages that included training and final tests. All teaching materials were also used by each of the teachers in their study groups.

Once the training finished, we conducted the written final tests and the oral exam for all students, evaluating their knowledge and communicative skill level on the three studied topics. After training, we also conducted a written survey on the process of creating pedagogical agents for A group of teachers.

### 3 RESULTS



Graph 1. Grade point average (GPA) of students' tests in A and B groups

The results of the students' final written tests showed almost the same level of knowledge for all students in the three topics they had studied during the experiment (see Graph 1). The students, whose teachers were included in the experimental A group, and students, whose teachers were in control B group, demonstrated equally strong knowledge of vocabulary and grammar on the subject. A significant indicator was the oral exam. During that exam, students had to talk for 10 minutes with a Russian native speaker who evaluated the communicative skill level in the framework of the three topics that students had studied. It is interesting that students who worked with pedagogical agents demonstrated a higher level of communicative competence during this exam (see Graph 1).

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included in the experimental A group, and students, whose teachers were in the control B group, demonstrated equally strong knowledge of vocabulary and grammar on the subject. A significant indicator was the oral exam. During that exam, students had to talk for 20 minutes with a Russian native speaker who evaluated the communicative skill level on the three topics that students had studied. Interestingly, students who worked with pedagogical agents showed a higher communicative skill level during that exam (see Graph 1).

The difference in the average scores evaluating the communicative competence of the students from the A and B groups reaches almost 20 points (81.5 is the average score of the A group compared to 60.7 average points of the B group). Moreover, according to the notes of the oral examiners, the students of B group showed the hesitant, shyness, slowness, and worriedness during their speech. The teachers of A group themselves were not surprised by such results of the oral exam. At the meeting after the experiment, they noted that pedagogical agents (according to their observations) have an extremely positive effect on overcoming the "language barrier" and on the formation of higher students' communicative skill level. Particularly useful, in their opinion, was training with the voice assistant "Alice" in the lessons.

Teachers of A group were asked to undertake a survey and share their impressions on the creation and use the pedagogical agents in their teaching practice. For this, we developed four evaluating criteria for each of the pedagogical agents, and for the assessment, we offered a scale from one to ten, where one is the negative and minimum indicator of criteria. Tables 1, 2, 3 show these criteria and the average score that teachers gave on each of them.

Table 1. Please rate the pedagogical agents in presentations by each of the following criteria on a rating scale of 1-10, where 1 is the minimum and negative evaluation point.

<i>Criteria</i>	<i>Average points:</i>
how easy to develop	9,6
how easy to use	7,2
how easy to teach using it	7,5
how efficient for the students	7,3

Table 2. Please rate the pedagogical agents in video lectures by each of the following criteria on a rating scale of 1-10, where 1 is the minimum and negative evaluation point.

<i>Criteria</i>	<i>Average points:</i>
how easy to develop	3,5
how easy to use	9,5
how easy to teach using it	9
how efficient for the students	8,1

Table 3. Please rate the pedagogical agents online (voice assistants and agents of the "iSpirg Suite") by each of the following criteria on a rating scale of 1-10, where 1 is the minimum and negative evaluation point.

<i>Criteria</i>	<i>Average points:</i>
how easy to develop	8,7
how easy to use	9,5
how easy to teach using it	8,3
how efficient for the students	9,4

Note that one of the simplest to develop teachers rated the pedagogical agents in the presentations. As we noted earlier, its creating does not require special skills: a teacher needs to be just a confident user of the well-known programs (Microsoft PowerPoint or Key Notes).

The most difficult to develop is the pedagogical agents in video lectures. We agree that writing a script, preparing actors, shooting, and editing videos is a very time-consuming process. Nevertheless, such agents lead by the criterion of "how easy to teach using it" (9 points on average), which indicates the convenience and preference of teachers to use the video format in the learning process.

Equally easy to use, teachers noted, video lecture agents and online agents. In this regard, we can assume that the difficulties in using presentation agents are related to the need to correctly pre-configure the

animation and the need to properly manage replicas of such agents using a mouse or remote control. For "beginners," working with such pedagogical agents, indeed, at first may cause difficulties.

In conclusion, we should note that the teachers evaluated online agents (voice assistants and agents of the "iSpring Suite" editor, capable of conducting the dialogues trees) as the record holders on the criteria "how efficient for the students." The teachers explained this by the high interactivity level of these educational tools and their extreme communicative significance for the educational process (in comparison with two other types of agents).

## 4 CONCLUSIONS

In modern science, the pedagogical agents are valued for their high level of interactivity and the ability to communicate face-to-face with the users. That is why, as the authors suggest, such agents must be used in the process of teaching foreign languages. According to popular belief, the creation of pedagogical agents involves the need to involve computer animation specialists, programmers, and other computer science professionals.

The purpose of this study was to prove the possibility of developing efficient pedagogical agents by means available to average users of computers or other personal devices.

In this regard, the study described three of the easiest to implement and use types of pedagogical agents:

- 1) Pedagogical agent in a presentation;
- 2) Pedagogical agent in a video lecture;
- 3) Pedagogical agent in an online course.

The study also describes the methods of developing these types of agents, their educational functions and examples of their implementation in the electronic resources developed for students who study the Russian language at Peoples' Friendship University of Russia (presentations, video lectures, and an interactive online course).

The results of the experiment described in the study have proved:

- 1) The developmental simplicity of the three types of pedagogical agents;
- 2) The absence of difficulties in using these agents in the language learning process (on the example of teaching Russian to students at the Peoples' Friendship University of Russia);
- 3) The efficiency of all three pedagogical agents' types, in particular: their great didactic potential for developing students' communicative competence.

We see the prospects for further researches in creating scenarios of educational communication with each of the pedagogical agent's type, describing the systems of communicative exercises with these agents, as well as in a more detailed analysis of their educational functions and in creating a model of the Russian language blended learning using pedagogical agents.

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