

APPLICATION OF BYOD TECHNOLOGY IN EDUCATION ON THE EXAMPLE OF LECTURE RACING MOBILE APPLICATION

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Abstract

The article describes the use of BYOD technology (Bring Your Own Device) in educational practice using the Lecture Racing mobile application. This application provides feedback between the teacher and students both in the classroom and during distance learning, contributes to the visualization of educational material and, in general, the informatization of the educational process. The purpose of the study is to conduct a theoretical analysis of the current state and prospects for the development of BYOD technology in Russia and abroad, and to test the benefits of using this technology in educational practice using the specific mobile application. During the study, an analysis of scientific, theoretical and practical literature on BYOD technology was carried out. In the process of experimental work, test tasks were the instrument of measuring knowledge and skills of students. As a result of a theoretical analysis and study of the practical possibilities of using BYOD technology (using the Lecture Racing mobile application as an example), it was found that this technology allows you to visualize information that is displayed in real time on the screen of each student's mobile device, regardless of its location. This technology also allows both the student and the teacher to quickly work with information, provide feedback, receive an independent assessment (since the assessment is set automatically), saves time, and develops the information culture of students.

Keywords: BYOD, Bring Your Own Device, information technologies, feedback, interactive learning, innovation, Lecture Racing.

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The intensification of education associated with the reform and innovative approaches in the system as a whole, allows to find and use in teaching practice new advanced technologies that can quickly receive feedback, visualize the learning process, provide an impartial assessment of knowledge and skills. One of these technologies is BYOD — Bring Your Own Device [1–6].

Information educational environment in a higher educational institution, today, is multifaceted and diverse; it includes communication tools, ways of information, communication tools, stakeholders, etc. One of the important elements of the educational environment are the modern teaching technologies. In this paper, we will consider the technology BYOD, which implies that each student and teacher has a mobile device that allows feedback from the teacher and other students to have visual examples in a mobile device [7–13].

Technology BYOD appeared not so long ago and the ancestor of this concept is considered to be Rafael Ballagas, when he in 2004–2005 first published his work BYOD (Bring Your Own Device). Five years

later, Intel was able to implement this concept for its employees, and after the same time with the help of Unisys VMware Citrix technical implementation has become more accessible.

Today, in the era of digital technology, the rapidly growing flow of information, the globalization of social institutions while maintaining individualization and unification, technology BYOD becomes relevant. Priority is given to information technologies, which are inextricably linked with their application in various mobile applications and computer programs [14–18].

The purpose of this study is a theoretical study of BYOD technology in the modern information and educational environment and experimental proof of the effectiveness of this technology on the example of the mobile application Lecture Racing [19, 20].

To achieve this goal the following tasks are set:

- to analyze the application of BYOD technology in the world experience and Russian practice;
- to identify the features of working with this technology on the example of working with a mobile application Lecture Racing;

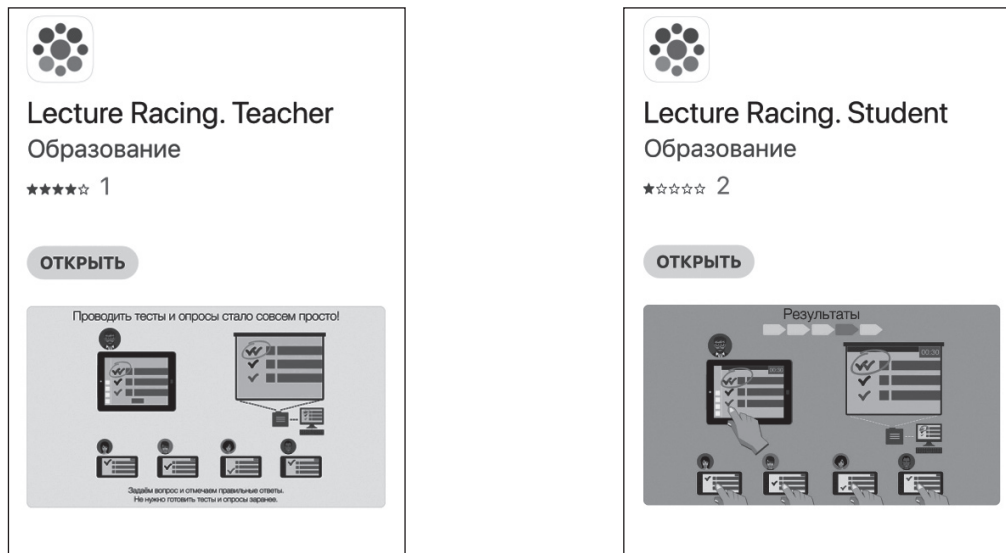


Fig. 1. Lecture Racing mobile app for students and teacher

- experimentally prove the effectiveness of the technology BYOD using the program Lecture Racing.

Methods and methodology of the work. The study is based on analytical and synthetic methods, testing, ranking, scaling, experiment, observation.

The methodological basis of the work consists of: S. G. Grigoriev, V. V. Grinshkun, A. A. Kuznetsov, M. N. Morozov, J. Voogt, K. W. Lai [21, 22].

Description of the main results of the study.

At present, the problem of BYOD technology is not studied enough, there is no theoretical description of the application of this technology. Researches of S. G. Grigoriev, M. N. Morozov allow us to consider this technology in theoretical aspect.

The development and distribution of mobile applications with an affordable choice of technical means, the transition to cloud resources, the socialization of corporate and social Internet portals contributes to the development of the digital information age on a global scale [23–27].

In the last decade in Russia and developed foreign countries there has been a tendency to present information technology from your own mobile device in parallel with corporate, because it is quite convenient, the information is stored on the same device from which it is presented. In this case, there is no need to download special programs, save information on removable media, just save it on your mobile device. Technology BYOD in education allows you to quickly plan the learning process and work with information, mobile implement conceived in educational practice and visualize the results. Students perform tasks on-line individually on their mobile device, which ensures the efficiency of results processing and time saving [28–30].

Experimental study of the BYOD model was conducted with undergraduate, graduate and postgraduate students of the Russian State Agrarian University — Timiryazev Agricultural Academy from 2016–2019 using the Lecture Racing mobile application.

To use this mobile application, students and teachers need to download it to their device, which is available in the Android and iOS operating system (Figure 1).

After downloading the mobile app on their device, the teacher using the site must download the required information in the format of ppt, pptx, pdf, jpg through the website: <http://lectureracing.com/> on the computer or mobile device (Figure 2).

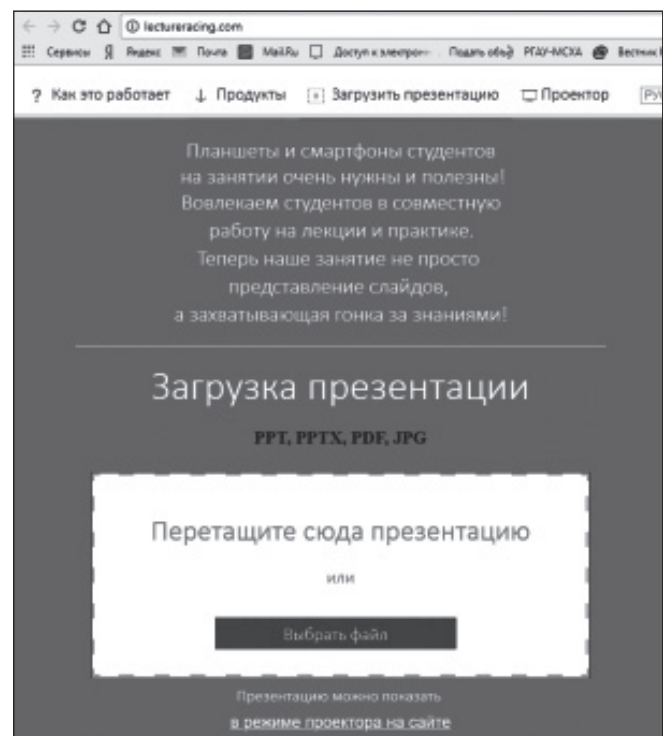


Fig. 2. Download the presentation on the website <http://lectureracing.com> on the stage of preparation for the lesson

When loading a presentation, consider the following:

- the presentation should be prepared and used in the lecture as a demonstration, with each

student will see this presentation from your device, and the teacher using wi-fi connects your mobile device to the projector, which displays the information on the screen. All information is synchronized on students' mobile devices and on the screen;

- the presentation can be used in practical classes to test knowledge. In this case, it is necessary to place the information on each slide in the form of a separate question. It is necessary to present several answers, one of which the student must choose. From practice it became known that several answers are not suitable for this technology.

Lecture Racing allows the teacher to conduct interactive surveys in real time. With instant assessment and visualization of the results, the teacher can assess the current level of performance of the entire group.

Lecture Racing allows you to apply a variety of quizzes in the classroom. Teachers do not need to prepare quizzes in advance, as they can do it in real time. The educational process turns into a competition, which attracts students and makes them become more active participants of educational practice.

This program is applicable to almost any type of distance learning, as students can give answers at a distance, while in the subway, train or at home. This is a very convenient way, because students are required to enter the program at a certain time, enter the code and answer questions, while being on the road, at home, at work.

At the beginning, you must enter the key issued by the teacher, which he receives at the time of entering the presentation on the site (Figure 3).

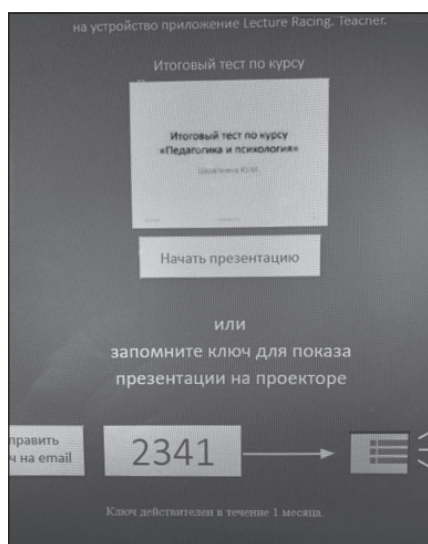


Fig. 3. Entering the key into the Lecture Racing program

The process of using the program is as follows: the teacher asks a question that is presented on a slide on the projector, and students mark their answers on the same slide on their device. The teacher then circles the correct answers using their tablet or smartphone. The app then analyzes the results and creates a student

grade that can be transferred back to the projector or personal device. Students and teachers can use a variety of devices, including tablets, smartphones, laptops and personal computers. It is important to note that the questions are broadcast on the students' mobile device and on the projector at the same time, i.e. if someone is absent from the class, he can go to the online broadcast on his mobile device, from anywhere in the world, and participate in the survey on a par with his own. To do this, you only need to enter the same code that you entered at this time in the lesson.

The system Lecture Racing includes an application for students Lecture Racing.student, projector application Lecture Racing.projector and support website.

After entering the key, the downloaded presentation appears on the screen of the mobile device. Slides can be flipped only by the teacher, synchronously they will be flipped on students' devices. The teacher sets a timer for the task, which is displayed in the upper right corner during the survey. After the teacher clicks on "start the survey", the students' question is displayed on the screen and several answers are offered. At the end of the specified time, students must select one of the answer options and click on the button — "send answer". If the time is not up and the student doubts the answer, he can change it by clicking on the cross in the left column and choose another answer by sending it. The version of the question and the proposed answers are presented in Figure 4.

After the specified time has elapsed and students have submitted their answer choices, all the answer choices that students have submitted are displayed on the teacher's device screen (Figure 5).

The teacher then circles the correct answer on the screen of his/her mobile device (Figure 6).

After displaying the correct answer, the teacher presses the button — "results", then "rating". On the screen of all mobile devices and the teacher and the students displayed the overall rating (Figure 7).

From Figure 7 we can see that one student scored the maximum number of points — 6 out of 8 questions. On two occasions, this student was first in sending the correct answer, as evidenced by the running man and the index 2 in the lower right corner. Two students scored 5 points out of 8 while one of them twice sent the first correct answer, which is confirmed by the running man and the index 2 at the bottom of the lower right corner. Next, three people scored 4 points out of 8, two of which were the first to send the correct answer once. One student scored 3 out of 8 points, one 2 out of 8.

Thus, we can conclude that this technology clearly shows specifically for each question gaps in knowledge, clearly highlighting the data immediately on the screen for each question passed. Response time is limited, which excludes the possibility of cheating by the student. The teacher does not need to check the questions, the program itself does it.

The experimental study covered 300 students of the Russian State Agrarian University named after K. A. Timiryazev, Faculty of Horticulture and Landscape Architecture, Animal Science and Biology,

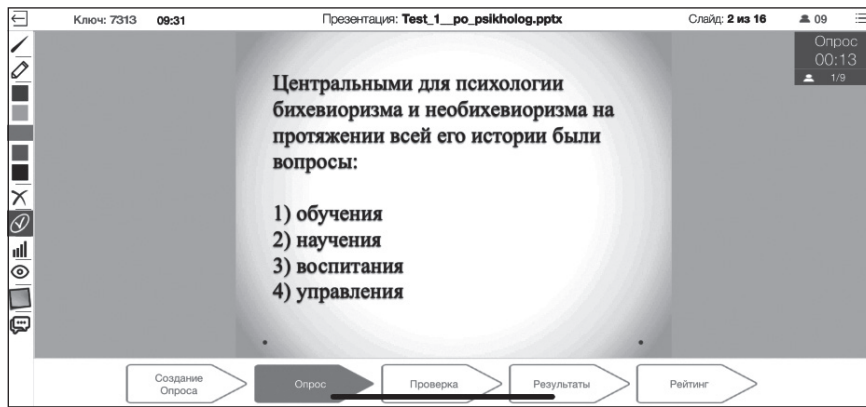


Fig. 4. Student survey

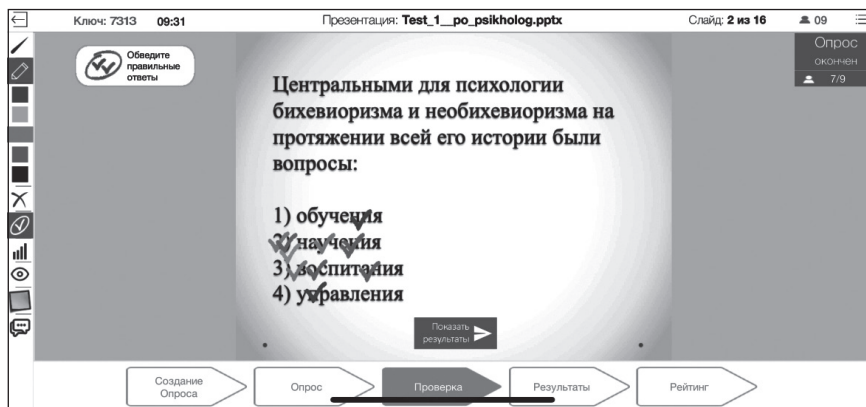


Fig. 5. All answers sent by students at the end of the specified time

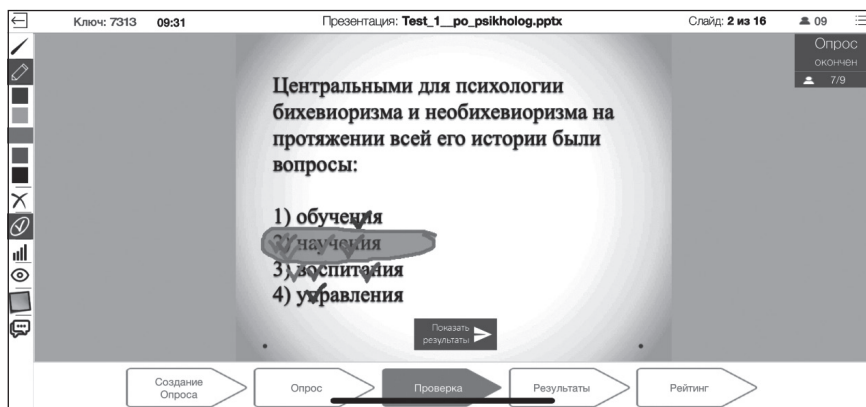


Fig. 6. Displays the correct answer

Faculty of Humanities and Education, Institute of Economics. The experiment involved students of 2–4 undergraduate courses, 1–2 master courses, 1 postgraduate course. The experiment was conducted under natural conditions. The control group consisted of 149 people, the experimental group of 151. The groups were chosen at random.

At the ascertaining stage, input testing was conducted to identify the level of progress in the control and experimental groups. The results of the study are presented in Figures 8 and 9.

From the diagram we can see that the level of progress is almost the same in the control and experimental groups.

Then levels of motives of educational activity in control and experimental group were revealed. The results are shown in Figures 10 and 11.

At the formative stage of experimental work in the control group, classes were conducted in the usual way, without the use of BYOD technology, and in the experimental with the use of a mobile application of the Lecture Racing program.

With the help of the program Lecture Racing in the classroom carried out the following technologies and techniques:

- conducting tests and quizzes in lectures and classes without preparation in real time;
- race who's the best;

Ключ: 4682

12:22

Презентация: пед технолоо тест 1.ppt

Слайд: 9 из 13

11

Рейтинг

Гонка

Общий

Последний

Ответы

Место	Имя	Баллы	Награды	1	2	3	4	5	6	7	8
1	марина	6									
2	ольга	5									
3	Полина	5									
4	Елена	4									
5	Евгений	4									
6	СКЮ	4									
7	МАРИЯ	3									
8	Иван	2									

Создание
Опроса

Опрос

Проверка

Результаты

Рейтинг

Вернуться
к лекции

Fig. 7. Rating students on eight submitted questions

- students receive badges on the results of tests and quizzes (if the answers are given faster, the student gets a higher score);
- presentation management tools — laser pointer and drawing;
- conducting tests, analyzing responses and presenting results;
- three types of student rankings;
- presentation slides can be downloaded in advance from the Lecture Racing website;
- support for PPT, PPTX and PDF presentation formats;
- gamification of education.

Then, at the end of the work with this program was re-tested to identify the level of progress and verification of the motives of educational activities. The results are presented in Figures 12–15.

From these diagrams we can see that in the control group, academic performance has increased to a greater extent and the motives of educational activity have shifted towards the acquisition of deeper knowledge in mastering the future profession.

Thus, it can be concluded that byod technology is a progressive technology that opens up opportunities for development. Significant advantages were identified:

- byod technology allows you to quickly work with information and visualize the results of their work;
- execution of tasks in on-line mode allows you to quickly process information, providing time savings;
- allows the teacher to implement a differentiated approach to different levels of motivation;
- allows the teacher to store the right information on your mobile device and at the right time to take advantage of the teaching process.

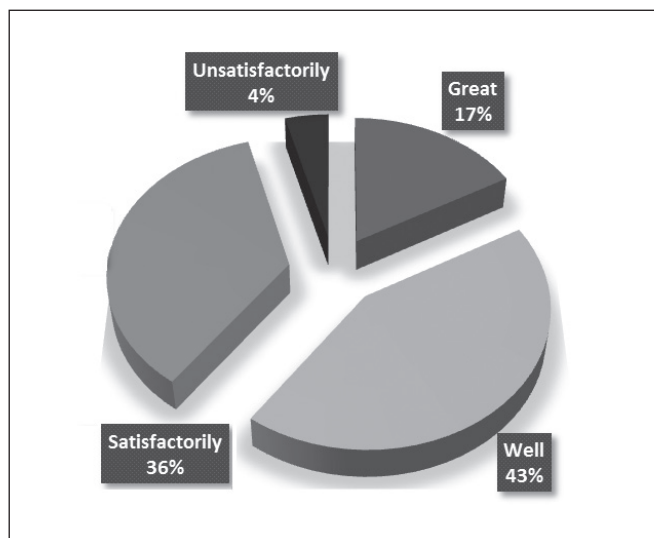


Fig. 8. Test results to determine the level of knowledge in the experimental group

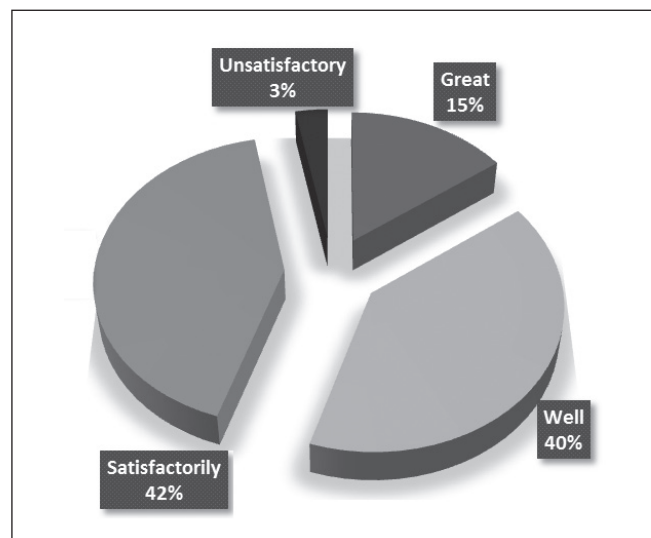


Fig. 9. Test results to determine the level of knowledge in the control group

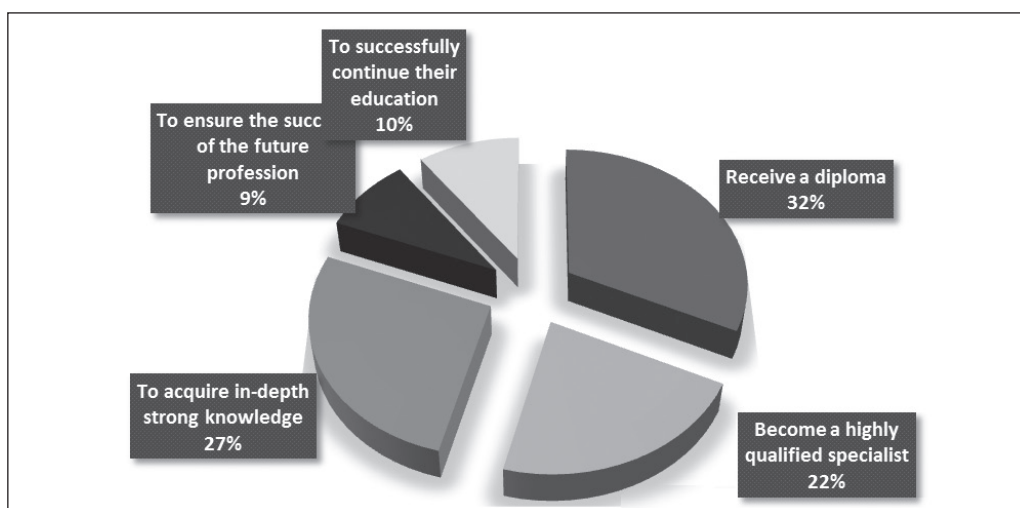


Fig. 10. Motives of educational activity in the experimental group

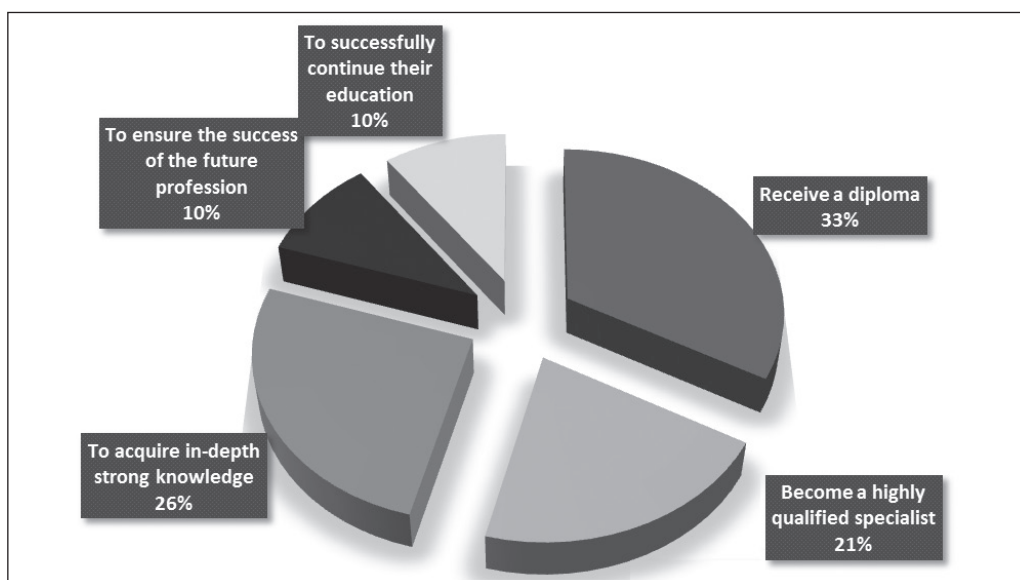


Fig. 11. Motives of educational activity in the control group

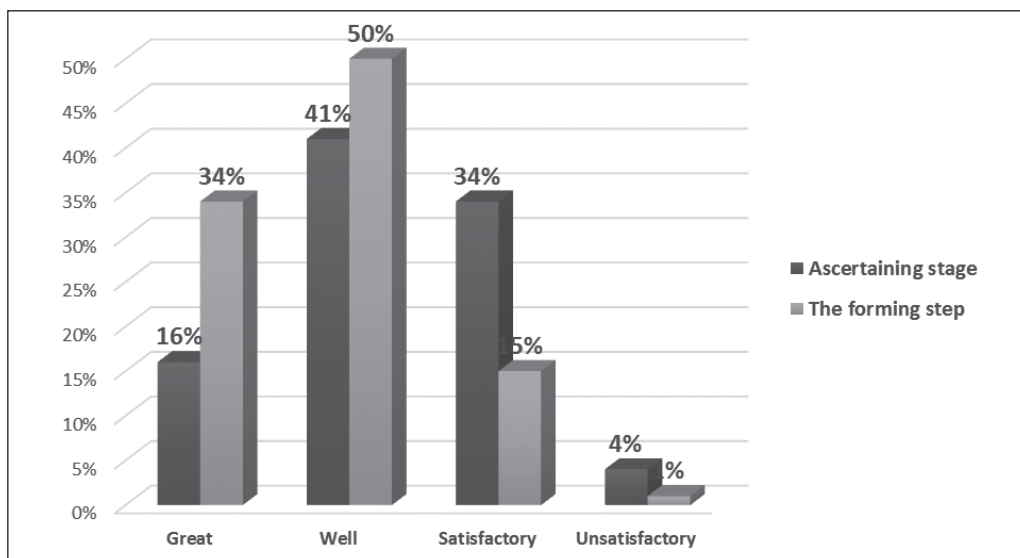


Fig. 12. Comparative analysis of the level of knowledge of the experimental group

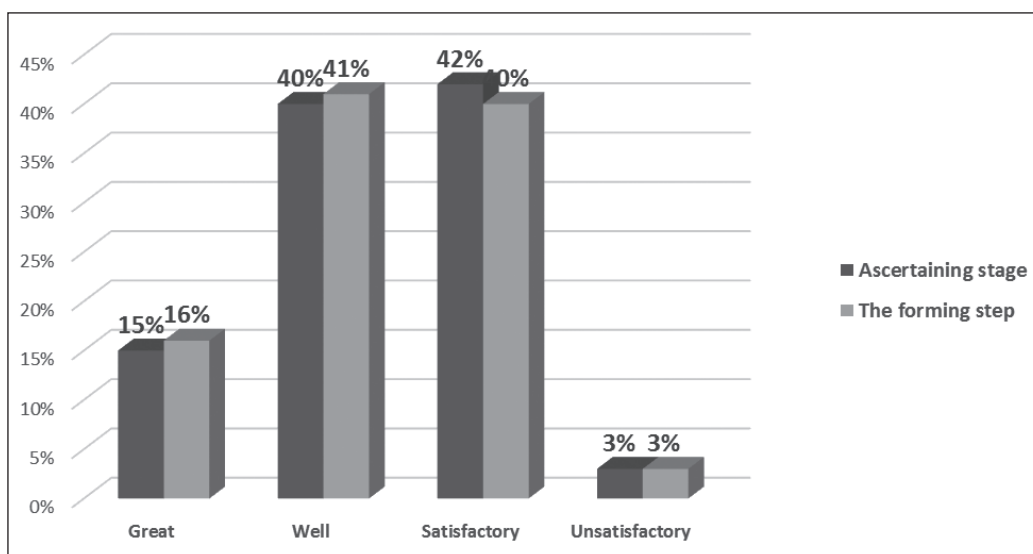


Fig. 13. Comparative analysis of the level of knowledge of the control group

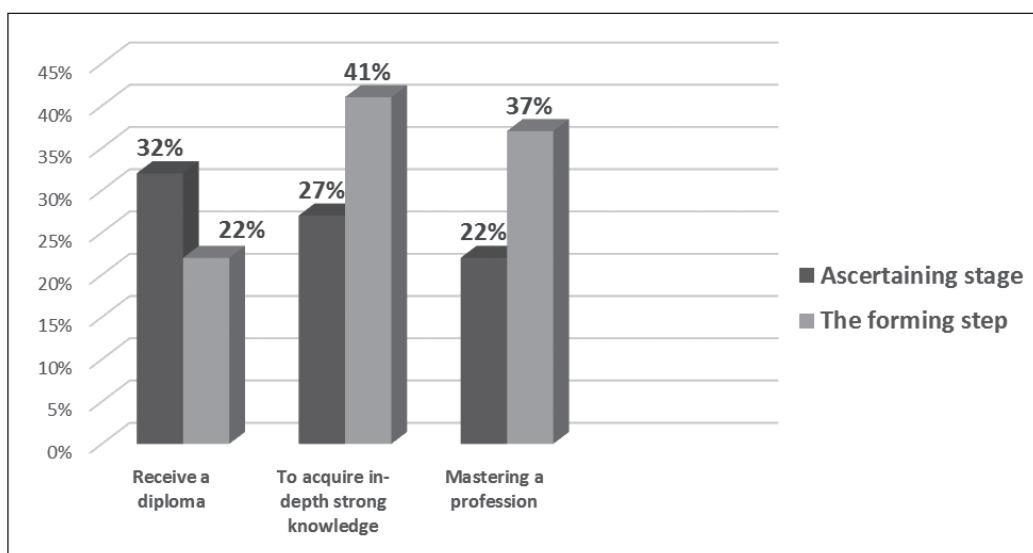


Fig. 14. Comparative analysis of the method "Study of motives of educational activity of students" in the experimental group

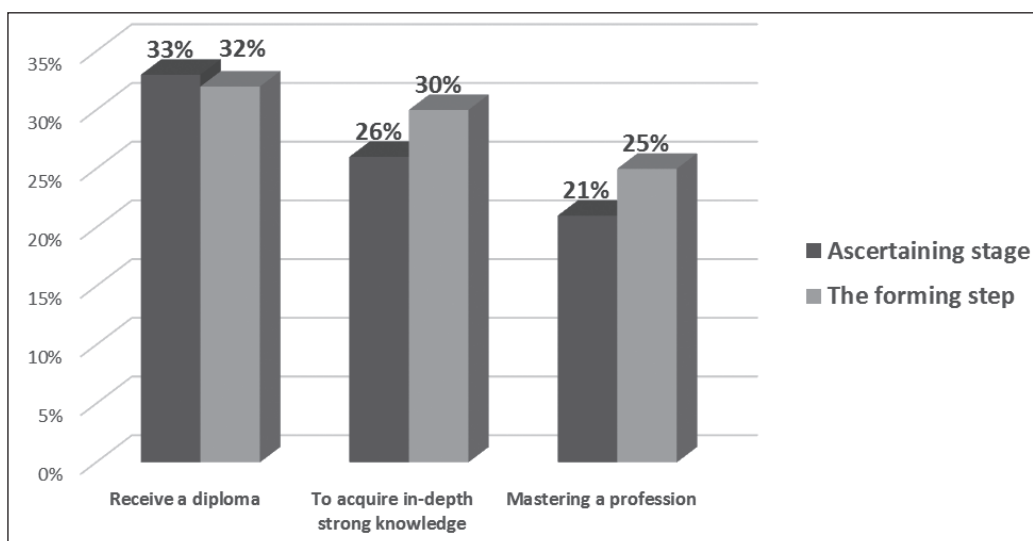


Fig. 15. Comparative analysis of the method "Study of motives of educational activity of students" in the control group

However, in addition to these, a number of shortcomings were identified:

- the probability of disconnection due to the complete discharge of the mobile device;
- projector connectivity because not every projector is equipped with wi-fi access;
- there is a possibility that there is a student who does not have a mobile device.

However, all these disadvantages do not exceed the positive aspects of this technology, which has a positive impact on the learning process and contributes to its effectiveness.

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ПРИМЕНЕНИЕ ТЕХНОЛОГИИ BYOD В ОБРАЗОВАНИИ НА ПРИМЕРЕ МОБИЛЬНОГО ПРИЛОЖЕНИЯ LECTURE RACING

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Аннотация

В статье рассматривается применение технологии BYOD (Bring Your Own Device — «принеси свое устройство») в образовательной практике при использовании мобильного приложения Lecture Racing. Это приложение обеспечивает обратную связь преподавателя и студентов как на занятии, так и при дистанционном обучении, способствует визуализации учебного материала и в целом информатизации учебного процесса. Цель исследования состоит в том, чтобы провести теоретический анализ текущего состояния и перспектив развития технологии BYOD в России и за рубежом и опытно-экспериментальным путем на примере конкретного мобильного приложения подтвердить преимущества использования данной технологии в образовательной практике. В ходе исследования был проведен анализ научно-теоретической и практической литературы, посвященной технологии BYOD. В процессе опытно-экспериментальной работы измерительным инструментом знаний, умений и навыков обучающихся выступали тестовые задания. В результате теоретического анализа и изучения практических возможностей применения технологии BYOD (на примере мобильного приложения Lecture Racing) было выяснено, что данная технология позволяет наглядно представить информацию, которая в режиме реального времени отражается на экране мобильного устройства каждого обучающегося независимо от места его расположения. Также эта технология позволяет как студенту, так и преподавателю оперативно работать с информацией, обеспечивать обратную связь, получать независимую оценку (так как оценка выставляется автоматически), дает экономию времени, развивает информационную культуру студентов.

Ключевые слова: BYOD, Bring Your Own Device, информационные технологии, обратная связь, интерактивность обучения, инновации, Lecture Racing.

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