The Development of Innovative Activities in High Edsucation

J.S. Volkova, S.K. Peteraitis, Z. V. Smirnova, O.I. Vaganova, M.M. Kutepov, L.I. Kutepova, S.M. Markova

Abstract: ***Changes in modern high education of the Russian Federation have occurred within recent years. They were caused by new demands of the state and society as well as innovations in economy. In modern higher education there is a need for the development of innovation and its continuous improvement. In modern realities, each higher education institution faced a task that is extremely difficult to solve. It consists in the development and implementation of the latest innovative information and educational environment. The electronic environment of a high educational institution expands educational opportunities, raises the level of educational services, therefore today the issue of the development of electronic activities in an educational institution is so urgent. The purpose of the article is to develop a question concerning introduction of e-learning in high education. For this purpose, a model of methodological support of innovation activity in electronic environment was developed. It allows increasing the level of electronic environment development and the quality of students' education in general. Based on it, we have developed recommendations for the introduction of e-education in high education.Experimental verification of the model methodological support of innovative activities in electronic environment showed that the willingness of teachers to use electronic environment has increased significantly. The research can be used in the further development of higher education electronic environment.***

Index Terms**: teacher, high education institution, innovative technologies, educational process, innovative activity, electronic environment.***

I. INTRODUCTION

Activities related to the application of innovations are gradually becoming more and more significant in Russian professional education. Thus, this activity is aimed at ensuring that students fully master methods of applying various kinds of pedagogical and other innovations, technologies for obtaining constantly updated information. [2] In this regard, it should also be noted that transformation of educational activities through the emergence of new educational subsystems and their structural elements is rather significant. [1]

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J.S. Volkova, Penza State Technological University, Penza, Russian Federation.

S.K. Peteraitis, Federal State Budget Educational Institution of Higher Education «Togliatti State University», Togliatti, Russian Federation.

Z. V. Smirnova, Minin Nizhny Novgorod State Pedagogical University, Nizhny Novgorod, Russian Federation.

O.I. Vaganova, Minin Nizhny Novgorod State Pedagogical University, Nizhny Novgorod, Russian Federation.

M.M. Kutepov, Minin Nizhny Novgorod State Pedagogical University, Nizhny Novgorod, Russian Federation.

L.I. Kutepova, Minin Nizhny Novgorod State Pedagogical University, Nizhny Novgorod, Russian Federation.

S.M. Markova, Minin Nizhny Novgorod State Pedagogical University, Nizhny Novgorod, Russian Federation.

At present, high education has the need for strategic planning to be carried out within it, because it provides an opportunity to realistically establish a high level of performance results related to innovation, as well as to determine the resources necessary for high education that will guarantee its ability compete with other high education institutions and improve learning outcomes. [3]

In order to successfully implement an e-learning system in high education activities, it is necessary to see implementation of all subjects of educational activities into electronic format. [4] The first subject is the administration of high education, the second is teachers, the third is students. [5] A key factor in the successful implementation of e-courses is to train teachers to aquire necessary skills to conduct this type of activity. [6], [7] So, teachers need not only to be prepared, but also to be taught how to use the most effective methods of organizing work with students and interacting with them. [10] One of the positive aspects of introduction of e-learning courses for students is the opportunity to study remotely. However, the flip side is the extremely high degree of student autonomy in educational activities which increases the load on the teacher. [8] Consequently, in order for a teacher to adequately carry out his activities, it is necessary to develop standards that will correlate with the costs of a teacher's workforce and also pay him decent wages, which can be monitored through monitoring. [9] The difficulty also lies in the fact that technical support in the framework of e-courses should be carried out almost day and night, as well as during holidays. [10] The next factor affecting the effectiveness of introducing an e-learning system is whether high-quality methodological support and content of the appropriate type have already been developed. [11] Various solutions to the problem are also suitable for this. Thus, a higher school can purchase ready-made courses, study materials with relevant content, or develop the necessary courses through its teaching staff. [12] Content, in turn, is all the educational materials that are needed to conduct educational activities between the teacher and the student. [13] The development of the system of electronic courses in an educational organization should be carried out not immediately, but gradually. The choice of the solution to the problem depends on the field of science and practice, that is, on the specific case. [14] The gradual development of the e-learning system implies that the higher school will step by step fulfill its goals and objectives. [15] These include: initiation and planning; design and engineering;

monitoring and control. The first step of working on the system of electronic courses in an educational organization is: highlighting the problems facing the institution of higher education, goal-setting and setting tasks, which also implies the choice of a category of students in higher education; implementation of the forecast in the framework of the implementation of the development of the electronic course system the possibility and time to achieve the desired results, the choice of technologies to achieve the goal. [16] The second step determines the content of the curriculum, as well as the methods allowing it to be presented. The content of the curriculum, in turn, is of the highest priority. The content of electronic courses is the form of sections and the mode of functioning, which enables educational activities to be interactive and distant.

II. LITERATURE REVIEW

The problems of creation, development and distribution of pedagogical innovations were engaged in works of such scientists as K. Angelovski, V.P. Mayboroda, N.L. Ponomareva, B.M. Smirnova, A.A. Kharin, A.V. Khutorskoy, O.G. Khomeriki et al. They identified various aspects of the study of the problems of education as a social institution in collaboration with other social institutions of society. Researchers J. Allak, R. Ackoff, Yu.S. Bortsov, B.S. Gershunsky, E. Durkheim, E.D. Dneprov, Yu.S. Kolesnikov, F. Coombs, V.T. Lisovsky, M.N. Rutkevich, B. Simon, N. Smelser, J.T. Toshchenko, V.N. Turchenko, V.N. Shubkin and others devoted a lot of work to innovation in connection with the development of standards and the content of education in general. A number of important aspects of the innovative development of education are disclosed in the works of I.V. Bestuzhev-Lada, D.R. Vakhitova, S.Yu. Glazyev, V.S. Dudchenko, V.I. Kondratieff. N.I. Lapina. V.Ya. Lyaudis, A.I. Prigogine, B. Twiss, Y. Postalyuk and others.

Activities related to innovation, has as its goal the development of education system. The concept of innovative learning in the second half of the twentieth century, namely in the 70s. was finally added to scientific circulation in the Report to the Rome Club "There are no educational limits." This concept in the report was defined as a type of educational activity that contributes to the emergence of innovative type changes in modern culture as well as society.

In pedagogy as a scientific field, such a problem became the most urgent, entered the subject of its study in the 80s of the twentieth century. The meaning of the concepts of innovation in learning and educational innovation was used synonymously. These concepts were substantiated in the scientific community, added to the categorical apparatus of scientific discipline. [17] Innovation in pedagogy in this regard is a special independent sphere of pedagogical sciences. She has her own inherent research methodology. There are neological, axiological and praxeological features of the term “innovation in pedagogy”. Neological characteristics are inextricably linked to the receipt of something new, the development of indicators, stages and criteria for the level of novelty of innovative technologies. The axiological innovation trait is associated with values in aspects of the methodology for evaluating pedagogical processes. [18] The praxeological attribute is expressed in adaptation of innovations in pedagogical system. In studies on social and cultural anthropology, the concepts of tradition and innovation, their structural interconnection were considered. The tradition in this regard is a kind of activity in the use of some particular cultural experience.

In modern reality in the Russian Federation a new education system is developing. It aims at entering international information space of education. Pedagogical theory and practice vary greatly, which accompanies this process. Information technologies are necessary for the education system as part of the educational and educational process, as they greatly increase the efficiency of its passage. [19] Academicians in the field of pedagogical theory, of which L. L. Bosovu, V.A. Krasilnikov, E.I. Mashbitsa, I.V. Robert cites aspects that reveal the positive impact of information technologies on the education system: in the education system, there are opportunities to transfer, collect, store, and transform data necessary for the educational process, which are diverse in nature; increasing accessibility of education, which is also associated with its diversification; the learning becomes learner-centered; organizational support of the learning process is greatly expanded and undergoes improvement; subjects of learning become most active in the process of organizing training; the information environment, which is so important for the education system, is becoming available not only within regional limits, but also within international ones; the educational process becomes gradually sovereign from the place of education, as well as from time to time; methodical, and also the software extremely quickly improved by means of information technologies; there is a choice of an individual way of getting education for students; the student’s independent activity related to the search for the necessary information is increasingly developed using information technologies; The level of motivation of students of educational institutions increases. [21], [22]

I.N. Andreev sees the concept of innovation as follows: innovations that can be effectively applied in an educational organization. M.S. Burgin says that educational process is innovation, since it is a transfer from teachers to students who are new to them. I. Nine believes that innovation is a revolutionary idea that is extremely changing educational technology.

Bulgarian academician K. Angelovski says that educational innovations are changes that are aimed at improving the educational process. In turn, N.R. Yusufbekova gives the following definition of the concept of pedagogical innovation: various kinds of possible changes in the educational reality that contribute to the progress in theoretical pedagogy and the practice of educational activities. From the definition given by Yusufbekova, it can be concluded that pedagogical innovation is not something made, but is only a possible change. V.A. Slastenin and JI.C. Podymova emphasizes that innovation is a means, and innovation is a process that is progressively progressive.

Innovative activity in vocational education system is an activity that has the

result in the form of effective transformation through the development and adaptation of innovations, which should qualitatively develop educational system and its structural elements. [20] Innovation in vocational education system is the result of practical and theoretical research, various kinds of developments in the field of vocational training, which leads to increase in its effectiveness. The following innovations exist: managerial, methodological, public, financial, technical and educational.

III. METHODOLOGY

In our work, we marked the stages and deadlines for implementing the introduction of e-learning courses in the educational activities of a higher educational institution: 2019-2021: 2019 - the first stage (introductory); 2020 - the second stage (control); 2021 - the third stage (the last and final). We also developed a model of methodological support of innovation in the electronic environment. Among the teachers, a survey was conducted. It allowed us to determine how they relate to innovation. The study involved 60 people.

We also analyzed test scores. In 2018, we introduced a model into the activities of the university, and the average score of students increased significantly compared with previous years. After the introduction of the model developed by us in 2018, we again surveyed teachers (the number of respondents did not change). And to the question "Are you ready to introduce an electronic environment into your professional activity?" 85% of respondents answered positively. That is, the introduction of the model developed by us has a positive effect on the development of innovation activity in Nizhny Novgorod State Pedagogical University named after Kozma Minin.

IV. ANALYSIS AND DISCUSSION

Electronic courses are complex multimedia developments. These courses provide training in all existing types of speech activity. Developing recommendations for the development of an e-learning program, we can identify the following learning objectives: the ability to use techniques and methods of using e-courses in educational activities, as well as information in the Internet; increasing the level of electronic communication and interaction between students; the creation of a new type of specialists who know a certain foreign language and can use it in the process of implementing various types of activities.

The material and technical base of a higher educational institution is a significant aspect for the introduction of electronic courses into the university's education system. [24] It is necessary that the material and technical base creates such an educational environment, which had in itself all the relevant components that will be presented below. The activity component is a complex of various types of activities that are needed to ensure a high level of education of students. [23] Key types of activity: research, project creation, active creativity. In the activity component, it is also important to create individual training plans for correlating remote and intra-university training, the formation of an effective system for evaluating the results which should include an assessment of its activities by students. The communicative component is a combination of direct and indirect interaction between students in various forms. Significant aspects of the communicative component are: the implementation of both independent work and joint training with the help of a teacher; communicative interaction of teacher and student; interaction and communication of all subjects of the educational process. Spatial-objective component is a complex that implements those actions and the behavior of the subjects of the process of formation of the environment. The most significant in terms of the organization of the process of mediated education are the following: an educational environment using information technologies; joint activities of students on educational material; podcasts as a method of conveying educational content to the student also for his creative expression.

For successful functioning of electronic environment, we developed a model of methodological support of innovation activities in it.

It is built on such principles as complexity, optimality, information, socialization, takes into account the principle of individuality of distance learning systems. Includes goal setting, informative block, procedural block, reflects methods (motivating, stimulating innovation, organizing and implementing innovation activities, self-education methods, distance projects) means (test and diagnostic material, trainings, scientific and methodological literature, methodological developments and recommendations) and forms (seminar-game, business game, conferences, project defense, problem seminar, round table) due to which activity in the electronic environment becomes more its diverse and helps to increase the effectiveness of student learning.

Organizational and pedagogical conditions include creation of a new type of methodological service and a new regulatory framework. E-learning allows you to organize effective interaction of participants in the educational process. Types of methodological support: diagnostic, informational, activity, technological. Functions: educational process management; distribution of access rights to electronic educational resources; delimiting the interaction of participants in the educational process; training and assessment of knowledge in the Internet environment, in corporate and local networks. The effective component reflects the improvement in the quality of student learning.

Based on the model, we developed recommendations for the introduction of e-learning in Nizhny Novgorod State Pedagogical University named after Kozma Minin. The requirements for the material base are most in relation with the applied education models. Nevertheless, regardless of which model is used, it is necessary to provide opportunities for ensuring high bandwidth of connecting channels. The electronic system of mediated education should support the display of all types of electronic content such as Microsoft Office, OpenOffice, flash, video recordings, and sound recordings, which can be stored in completely different ways. It should also provide opportunities for the application of a wide range of educational technologies, including a lecture and a glossary, their various variations.

The electronic system of mediated education should also support quite traditional services for learning: a test with the use of an integral database of test questions used in tests of individual courses, the possibility of remote evaluation and selection of various types of parameters for passing test tasks: the beginning of the text, the time of its completion, the total number attempts, password-limited access by others; a task that allows the learner to give his answers in a text version, file format, such as Word or several such files; a seminar that provides an opportunity to evaluate the work on a variety of individual positions and many criteria; a webinar that allows you to conduct a training pair in the form of video lectures and video conferencing online, as well as effectively manage server roles, use a whiteboard during online lectures. It is also necessary that the mentioned e-learning system supports: news and standard news discussion forums; chat with the presence of a certain moderation; a poll used to vote on a point or me, or to get points of view on a particular training issue; a wiki page that allows for editing by each student and teacher; A blog used by all subjects of education process for keeping closed diaries and, at their discretion, publishing this diary for open viewing by the study group and teacher.

Stages and deadlines for implementing the implementation of e-learning courses in the educational activities of Nizhny Novgorod State Pedagogical University after Kozma Minin: 2019-2021: 2019 - the first stage (introductory); 2020 - the second stage (control); 2021 - the third stage (the last and final).

What is required from the introduction and application of the e-learning system is a high level of e-learning, which ensures its ability to compete in the market of educational services, the level of one of the leading centers of the Russian Federation, which are capable of training qualified personnel. Key results in this aspect: the use of electronic courses in more than a quarter of the basic educational programs of higher education, which contributes to active education and increase the efficiency of independent work of students of the university; the use of electronic courses in more than a quarter of the basic educational programs of higher education in order to control knowledge and skills in academic disciplines and educational courses; the presence of additional educational programs at the university, which can be completed without being on the territory of a higher school, but remotely; the presence of higher professional education programs at the university, the study of which requires being in higher education no more than once a year; the presence of university programs of higher vocational education, the study of which does not require a presence on the territory of a higher school; presence at the university of higher professional education programs that are fully adapted for students with disabilities; e-learning system should be used and contribute to improving the effectiveness of control and assessment activities; conducting regular monitoring of educational activities using e-learning; in e-courses the system of score-rating assessment of students' academic performance is used everywhere; presence in the high school of contracts related to the receipt and transfer of rights to use e-courses by other universities; presence in high school of contracts related to the network form of application of curricula with other universities or educational organizations.

Thus, for the implementation of e-education in high school it is necessary to have material, technical, educational, regulatory and program conditions for the implementation of the requirements of the Federal State Educational Standard of Higher Education; providing access to open databases and electronic resources of publishing houses, to professional databases and information reference systems through the E-learning service; providing the learner with the possibility of creating individual educational routes for mastering the main professional educational program, including the ability to choose a profile or variable modules (disciplines) with recording in the individual curriculum from a private office; the development of the development of electronic educational resources at the university from a poorly organized to a highly organized and regulated field of activity with the ability to conduct assessment procedures for learning outcomes (electronic journal) through LMS Moodle; expansion of open forms of interaction to all participants of the educational process; providing opportunities for the formation of an electronic student portfolio.

We conducted a study on the implementation of model methodological support of innovation in the electronic environment.

The most important direction of educational organization's policy which implements electronic interactive education system is the development of an effective information educational environment that will be used in the organization's educational space.

The creation of such an environment should meet the requirements of the modern Federal State Educational Standard, according to which the entire learning process should be carried out in the information environment and recorded in the information electronic environment of the educational organization. The development of information electronic environment is carried out through a distance learning system. Within the framework of this system, various specialists jointly carry out the development of the necessary content and its publication in electronic courses.

Among the teachers, a survey was conducted. It allowed us to determine how they relate to innovation. The study involved 60 people. Respondents answered the questions presented in the questionnaire.

Table 1 Questionnaire To Identify Students' Understanding Of The Essence Of Innovation In The Electronic Environment

Question	Answer
1. Are you ready to introduce an electronic environment into your professional activity?	− more likely than not - 59% − rather no than yes - 41%

2. What will foster the development of electronic environment in high school?	− development of the administrative and regulatory framework and the definition of policies in the implementation of the e-learning strategy - 5% − availability of effective, qualified specialists in the field of IT - 10% − availability of technical and software e-learning - 20% − availability of certified e-learning courses in all educational programs implemented through the e-learning system - 30% − organization of support for the work of teachers, staff and students in the information and educational e-learning environment - 35%

Figure 1 Shows The Results Of The Respondents' Answers To 1 Question.

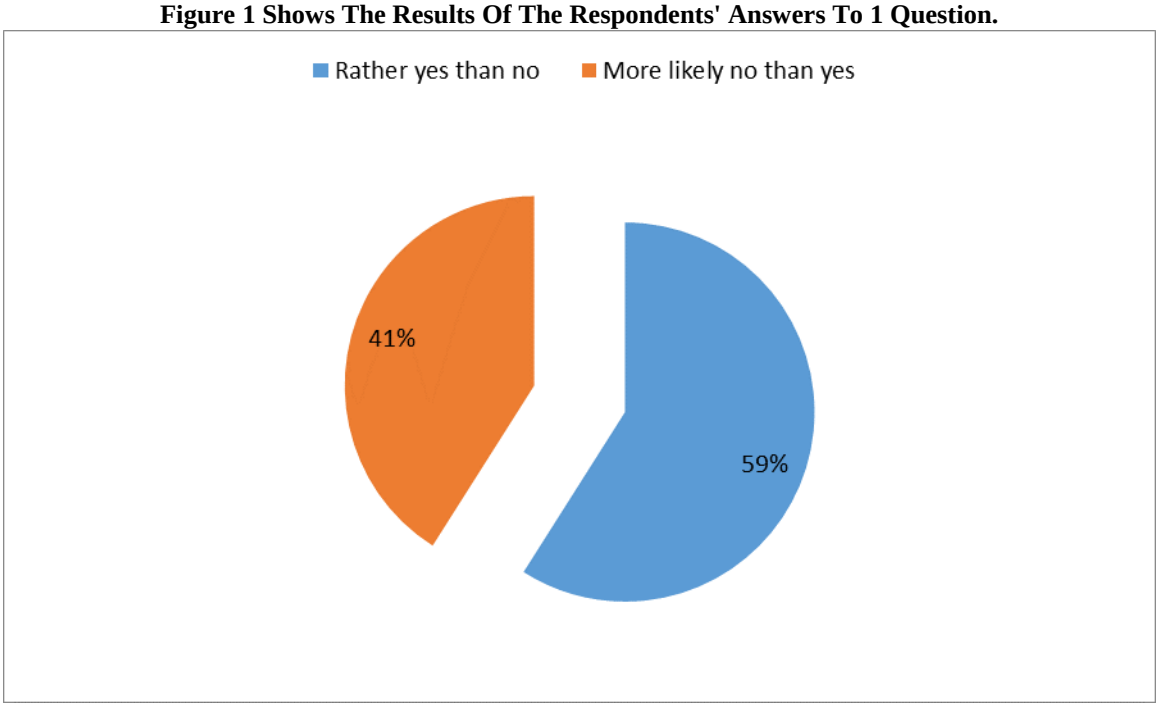

Figure 1 The Results Of Answering The Question "Are You Ready To Introduce Electronic Environment Into Your Professional Activities?"

Most teachers are ready to introduce electronic environment. However, this percentage is relatively low.

59% of the surveyed teachers are ready to introduce electronic environment into their own activities, and are ready to actively use its tools for teaching students. 41% of respondents are inclined to answer "rather no", because they are more accustomed to navigate in traditional conditions.

To the question "What do you think will contribute to the development of electronic environment in higher education?", The majority noted such indicators as: readiness of technical and software e-learning - 20%; availability of certified e-learning courses in all educational programs implemented through the e-learning system - 30%; organization of support for the work of teachers, staff and students in the information and educational e-learning environment - 35%. That is, teachers consider it necessary in their work to use e-courses that allow students to perform tasks remotely, making them more mobile. At the same time they need the support of specialists.

Note that the following options are possible for the inclusion of online courses in the main educational program of higher education.

Option 1. The online course is introduced as a mandatory element of the educational program for mastering in accordance with the curriculum or the individual curriculum.

Option 2. The online course is offered to students as a module / discipline for an alternative module / discipline, which is mastered by choice, using both classical and mixed technologies, including workload in the audience.

Option 3. At the initiative of the student, according to the precedent of presenting the student a document confirming successful completion of the online course, the HIGH SCHOOL sets a test for a specific discipline / module of the curriculum. The results of the study of the curriculum should coincide with the results achieved by the precedent of learning the online course.

Option 4. An electronic course on the precedent of presenting students with a document confirming successful completion of an online course, the higher school enters into the document on education as an auxiliary optional course.

The implementation of the online course is likely to be one of the proper methods:

Method 1. The implementation of the online course by the higher schools themselves, which implements the leading educational program in which the online course is applied.

Method 2. Higher school use of the online course, which is implemented by another educational organization, when applying the contract between them.

Method 3. Implementation of courses outside the educational program with the likelihood of further credit as a result of their development.

To implement an online course, a higher school is obliged to introduce an electronic environment into its system, which should, in turn, include electronic information resources.

This environment is obliged to ensure that students fully master the discipline or module autonomously from the location of the students and without conducting classes in high school auditoriums.

When implementing an online course, high school guarantees indirect contact work of teachers with students through the electronic environment in the information and educational space in the form of consultations, analysis of the course of study and adoption of conclusions about changing the curriculum, and major events as necessary, and also when connecting additional training materials as part of an online course. We also analyzed test scores. Indicators were as follows.

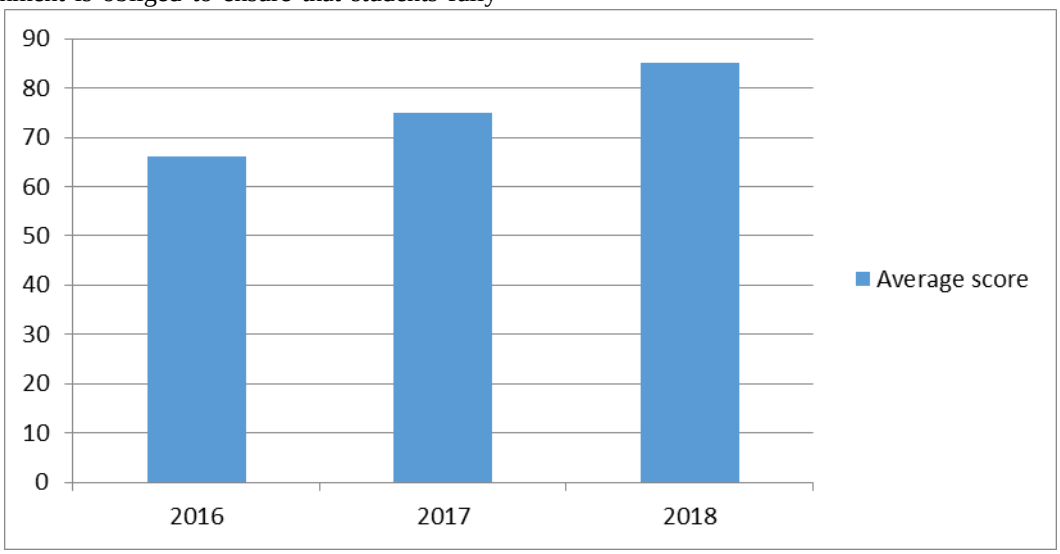

Figure 2 The Average Score Of Students In The Period From 2016 To 2018.

In 2018, we introduced the model into the activities of the university, and, as we can see, the average grade of students increased significantly compared with previous years.

After the introduction of the model developed by us in 2018, we again surveyed teachers (the number of respondents did not change). And the question "Are you ready to introduce electronic environment into your professional activity?" Received the following answers.

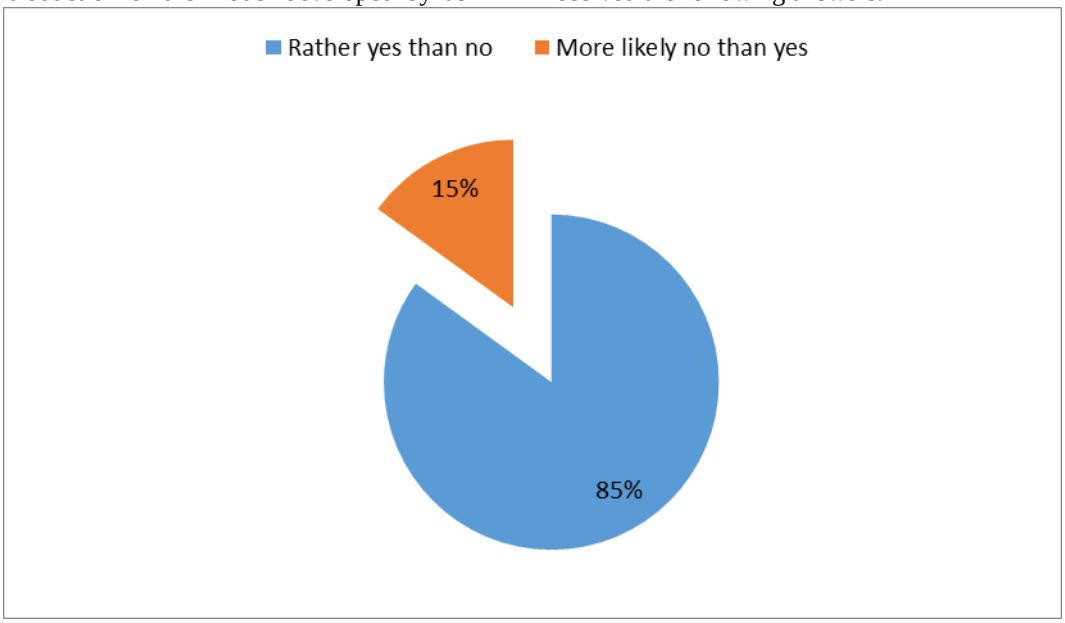

Figure 3 The Results Of Answering The Question "Are You Ready To Introduce An Electronic Environment Into Your Professional Activities?"

After the introduction of the model, teachers show the greatest willingness to use electronic tools in their own activities, they have become

more loyal to developing electronic courses.

V. CONCLUSION

We have developed a question on the introduction of e-learning in the activities of Nizhny Novgorod State Pedagogical University. The model we have developed for the methodological support of innovation activities in the electronic environment allows us to increase the level of development of the electronic environment and the quality of student learning in general. A study on the implementation of the model made it possible to determine that before the introduction of the model a large proportion of teachers was not ready for the introduction and development of the electronic environment. However, after the model was implemented at the university, teachers became more loyal to innovative activities in this area. The percentage of positive responses has increased significantly. In addition, after analyzing the test scores for the period from 2016 to 2018, we found out that students' performance in 2018 (after the introduction of the model) increased, and hence their level of education increased.

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