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**E-EDUCATION: ORGANIZATIONAL AND PEDAGOGICAL
CONDITIONS OF ITS EFFICIENCY**

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Abstract

The relevance of this problem is due to the high dependence of the usage of electronic educational resources in educational processes on the level of a teacher's competence on information technologies awareness. Underdeveloped skills of a teacher leads to low efficiency in using electronic educational resources in the process of disciplinary study. Analysis of the electronic educational resources peculiarities in educational process allows us to conclude that its usage contributes to obtaining high results, to improving the quality of the educational process, to expanding the boundaries of possibilities for individual and distance e-learning. However, the introduction of electronic educational resources into educational process does not guarantee their optimal implementation as a means of improving the quality of education. In this regard, this article is aimed at investigating the reasons of low effectiveness of electronic educational resources usage in educational processes. The following leading methods were chosen to be used for analyzing the experience of electronic educational resources (EERs) usage and determining its effectiveness: comparative analysis, enquiry, interviewing conducted among 20 teachers and 50 students. The data presented in the article shows that at this stage of introduction of EERs into the university's educational process, the expected growth in educational results quality has not occurred, and the level of individualization has not increased. Perhaps, this is determined by inadequacy of participants of educational process to use EERs..

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1. Introduction

Modernization of the educational system, and growth of competitive relations on the market of educational services, actualize the problem of improving the process of professional training of qualified specialists capable of self-training and self-development, ready to increase their competitive advantages (Khuziakhmetov et al., 2016). This process is largely determined by an increase of the level of informatization on educational processes. Informatization of education is facilitated by creating and using electronic educational resources that promote formation and development of students' autonomy and ensure the differentiation and individualization of the educational process.

Electronic educational resource is an educational resource presented in electronic-digital form and includes structure, subject content and data about it. Electronic educational resource can include data, information, and software necessary for its effective usage in educational processes.

Electronic educational resources include pools of various information resources intended to be used in educational process, presented in digital form and functioning based on information and communication technologies (Sakhaeva, 2016).

By nature of information representation, electronic educational resources are divided into multimedia, software products, visual, audio, text, and electronic analogues of printed publications.

The use of electronic educational resources in learning processes provides great opportunities and prospects for independent and creative research activities of students (Kosmodemyanskaya, 2014). In accordance with Russian educational standards, the goals of education include personal development of the learner. Teachers, using electronic educational resources, are aimed at a comprehensive review of information and provision of all components of the educational process: practical exercises, individual works, monitoring the achievements of students while mastering educational materials. Such an extensive use of educational active forms determines one of the advantages of electronic educational resources - interactivity of learning. Another advantage is the possibility of distance learning. Using EERs, students can independently master educational materials and perform practical tasks, analyzing their current academic performance ratings.

Thus, the use of electronic educational resources can lead to high results such as; the improvement in the quality of educational processes, and the expansion of margins of capacities for individual and distance learning. However, as practice shows, even considering all the above advantages, the introduction of electronic educational resources into educational process does not guarantee their full implementation as a means of improving the quality of education (Kuklev, 2007).

2. Problem Statement

In pedagogical literature, there are various approaches to the definition of the concept of "electronic educational resources" which indicates its versatility and integrated representation.

Having analyzed pedagogical practice of university teachers, we can identify two main ways of understanding the idea of electronic educational resources. The starting point for the first definition is the concept of "electronic resource", which provides an opportunity for researchers of this problem to define electronic educational resources as any kind of educational material in electronic form. Electronic educational resources can include any computer-generated information product (Osetrova, 2003).

The basis of the second way to define the term "electronic educational resources" is the consideration of EERs as a complex phenomenon, i.e., it is a complex of thematically arranged educational material presented in a computer network. Electronic educational resource means an entire system of ordered educational material (in the format of texts, graphic images, audio, video, etc.), represented by means of computer technology, which assumes its active learning by trainees to form a set of knowledge and practical skills in a certain scientific field (Telegin, 2006).

If we analyze the concepts of "resource", "educational resource", we can conclude that both approaches concerning electronic educational resources (the source of educational material for classroom and individual work of students) and the way they are presented (computer technologies), are valid.

EER as a single educational material in electronic form is currently difficult to attribute to innovations, since teachers in all educational institutions work with texts, textbooks, electronic manuals, audio and video files, and computer presentations. Such educational resources constitute a well-mastered stage of informatization of the educational process (Sharipova et al., 2017). A new step in this direction is complex EER, which is an integral system of educational materials of different kind, format (including a logically constructed set of tasks for both teacher-students' cooperation, and individual work of students), and control which accompanies learning processes. (Borodina, 2014). Complex EER is also called multimedia EER or open educational resources.

If we analyze the benefits of EERs, it should be noted that EERs are aimed at a comprehensive review of education material and provide all the components of educational processes. This is confirmed by the fact that in addition to receiving information, EERs suggest the practical application of knowledge (practical lessons) and assessment, that is, monitoring achievements of students while they are mastering educational material.

EERs assume not only teacher-students' cooperation, but also individual work of trainees. The application of a wide range of dynamic and active forms of teaching ensures interactive learning and contributes to the formation of the subjective position of a student.

An important innovative quality of EERs is the possibility of distance e-learning. In this case, we are not talking about a disparate search and retrieval of information from an electronic source. EERs help to make distance e-learning full and complete, which implies their comprehensive content and content systematization. Outside the classroom, a student independently studies new educational material consistently, performs practical and laboratory tasks, monitors his own achievements, analyzes current academic performance rating (with estimates and feedback), conducts virtual experiments, etc.

Analyzing the content and features of electronic educational resources, it can be concluded that the use of EERs in pedagogical activity should result in high academic results, improving quality of education, and expanding the margins of capacities for individual and distance e-learning. However, the presence of a certain number of advantages, discussed at a theoretical level, does not yet guarantee their full implementation in practice. To confirm the necessity and expediency of introducing EERs in educational processes as a means of improving quality of education and modernizing education in general, it is also necessary to analyze the experience of applying EERs in university teachers practice, determining their effectiveness.

According to most teachers, the use of electronic educational resources does not lead to a reduction of the time spent for lessons preparation, however time for processing of assessment results is reduced and objectivity of evaluation is increased due to automation.

Creation of any EER itself can take even more time than traditional educational materials. When preparing EERs, a teacher needs to carefully select the material. Experience has proven that at present EERs are used mainly in addition to a main course, as an auxiliary material or as a system for individual work of students. Hence, the task of a teacher is to determine the combination of material to be presented in EERs and main educational material that will be presented in a traditional form of direct teacher - student communication. While implementing EERs, a teacher should control this process, analyzing findings about students' academic achievements, maintaining bilateral feedback, and constantly updating the EER content.

The analysis of teachers' opinion on quality of EERs and effectiveness of their application in educational process attests to the great interest of teachers in using EERs in classrooms. But since in most cases, teachers themselves makes a choice of educational resources for organization of educational processes, much depends on their competence in the field of information technology. Dependence of the effective EERs use on the level of teacher's ICT proficiency is traced. Inadequacy of the necessary skills leads to a low effectiveness of EERs.

Such interdependence can be determined from teachers' responses to the question of what leads to decrease in the effectiveness of EERs: most teachers refer to the insufficient level of computer technologies proficiency and lack of professional assistance. In addition, teachers attribute inadequate use of EERs to; dissonance between EERs and syllabus or needs of students, "exorbitant EERs usage", lack of time to develop effective EERs, psychological barriers of teachers and inadequacy of the audience to work using EERs, as well as insufficient technical provision. Comparing views of teachers with different experience of the EERs usage suggests that evaluation of the effectiveness of EERs varies depending on experience: the more experience with EERs teachers have, the higher, their effectiveness is. This can be explained by the formation and gradual improvement of skills of teachers to see shortcomings of the developed EER, optimally apply it in work, timely adjust EER, adapt it to features and needs of the audience, competently select information to create EER, and determine the ratio of its components.

3. Research Questions

The use of electronic educational resources in pedagogical process should result in high academic results, improving the quality of education, expanding the margins of capacities for individual and distance e-learning. Our task was to determine the optimal pedagogical conditions for the use of EERs in educational process, which contribute to improving quality of educational outcomes and optimizing a learning process.

4. Purpose of the Study

This study is aimed at finding conditions for confirming the necessity and expediency of introducing EERs into educational process as a means of improving quality of education. Modernization of education sets a goal to analyze the experience of the usage of EERs by university teachers, and

determine the effectiveness of the implementation EERs in educational process. Also, the research task was to determine the reasons for low effectiveness of electronic educational resources usage in educational process.

5. Research Methods

In the research the following complex methods were used: study and analysis of psychological and pedagogical literature, comparative analysis of the experience of using the electronic educational resources, sociological surveys, and interview of teachers and students. These methods allow to determine the effectiveness of EER's usage and reasons for its low effectiveness in educational processes.

The study began on September 1, 2015 (Institute of Psychology and Education, Kazan Federal University). The study involved 20 teachers and 50 master students of the specialization "Pedagogical Education". The study is still being conducted at the moment.

6. Findings

When processing data obtained with the help of the survey "Assessing the effectiveness of the use of EERs in educational process" among master students of the Institute of Psychology and Education of KFU the following results were revealed.

Based on presented results, it is possible to determine the attitude of the correspondents to the use of EERs in educational process (Table 01).

Table 01. Developed competencies of students after applying EERs in educational activities

№	Developed competencies	Number of students of the total number (%)
1	Educational activities planning	90
2	Organization of educational activity according to the planed syllabus	100
3	Evaluation of educational activity	90
4	Ability to adjust educational activity	80

After the survey on the use of EERs in educational process, most students demonstrate the development of such competencies as: educational activities planning; organization of educational activity according to the planed syllabus; evaluation of educational activity, and the ability to adjust educational activities. When applying EERs in the process of training, the student's autonomy is formed, which relates to the development of readiness and a habit to work out information independently, making independent decisions and taking responsibility for personal educational result during training. This is due to students' focus on the activation of their learning and cognitive activity, including planning of this activity, its evaluation and correction.

Enquiry and teachers' opinions analysis make it possible to establish factors for the effectiveness of the use of EERs in educational process and barriers which block the use of EERs in university educational process. The results of the enquiry and teachers' opinions are presented in a table in percentage ratio (table 02).

Table 02. Factors determining the effectiveness and ineffectiveness of the use of EERs in educational process.

Factors determining effectiveness of EERs in educational process	Number of interviewed teachers of the total number (%)	Factors determining the reduction of EERs effectiveness in educational process	Number of interviewed teachers of the total number (%)
Reduction of time in the process of assessing results	95	Increase in time of preparation for lessons	90
Increase in the objectivity of evaluating results of students' work due to automation	100	Great dependence of effectiveness of the developed and applied EERs on the level of ICT proficiency	80
Interactivity of training by providing two-way communication support	90	Lack of time to prepare effective EERs	80
Possibility for extra educational material provision	85	Inadequacy of audience to work with EERs	20
Increasing students' interest in a trained subject	80	Psychological barriers of teachers	10

According to results of the survey and analysis of the opinions of most of the teachers, the following conclusions can be drawn: the use of electronic educational resources does not lead to a reduction in the time spent for preparing lessons, however the time for processing assessment results is reduced and objectivity of evaluation is increased due to automation. Creation of any EER itself can take even more time than traditional educational materials. Hence, the task of a teacher is to determine the set of materials to be presented in EERs, and main educational materials that will be presented in a traditional form of direct teacher - student communication.

While implementing EERs, a teacher should control this process, analyzing findings about students' academic achievements, maintaining bilateral feedback, and constantly updating EER content.

The analysis of teachers' opinion on quality of EERs and effectiveness of their application in educational process attests to the great interest of teachers to use EERs in classrooms. But, since in most cases teachers themselves make the choice of educational resources for organization of educational processes, much depends on their competence in the field of information technology. Dependence of the effective EERs use on the level of teacher's ICT proficiency is traced. Inadequacy of the necessary skills leads to a low effectiveness of EERs. Such interdependence can be traced to teachers' responses to the question of what leads to decrease in the effectiveness of EERs: most teachers refer to the insufficient level of computer technologies proficiency and lack of professional assistance. In addition, teachers attribute lack of time to develop effective EERs, psychological barriers of teachers and inadequacy of the audience to work with EERs, as well as insufficient technical provision.

Comparing views of teachers with different experience of the EERs usage suggests that evaluation of the effectiveness of EERs varies depending on experience: the more experience with EERs a teacher has, the higher, in his opinion, their effectiveness is. This can be explained by the formation and gradual improvement of skills of a teacher to see the shortcomings of the developed EER, optimally apply it in

work, timely adjust the EER, adapt it to the features and needs of the audience, competently select information to create EER, and determine the ratio of its components.

7. Conclusion

The information and survey results presented in the article make it possible to conclude that at this stage of the process of introducing EERs into educational processes, there is no distinctive growth in quality of the educational process and no increase in the level of individualization. Perhaps this is determined by inadequacy of participants to apply EERs in the educational process.

Effectiveness of the use of the electronic educational resources in real educational processes will increase with them being gradually implemented: the more teachers develop and apply electronic educational resources, the higher their effectiveness is. This can be explained by the formation and gradual improvement of skills of a teacher to see shortcomings of the developed EER, optimally apply it in work, timely adjust EER, adapt it to features and needs of the audience, competently select information to create EER, and determine the ratio of its components.

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