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INTENSIFICATION OF PRACTICAL ORIENTATION OF FUTURE TEACHERS' TRAINING THROUGH INTEGRATION OF INTERACTIVE TECHNOLOGIES

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A b s t r a c t

The article discusses the conditions of implementation of intensification of practical orientation of future teachers' training through integration of interactive technologies into the learning process. It is supposed that the organization of training based on the proposed mechanisms of the platform of distance e-learning system for integration of interactive technologies contributes to strengthening the practical orientation of training of Bachelors of Pedagogical education. The theoretical basis for integration of interactivity in the learning process is defined. In this article, the authors describe the sequence of actions of students while using interactive teaching methods with a distance learning course developed on the platform of distance learning system. In accordance with the resources of Moodle distance e-learning system the activities undertaken by a teacher and a student are presented. The results of approbation of the implementation of integration mechanisms are shown in the article.

ПОДГОТОВКА БУДУЩИХ УЧИТЕЛЕЙ НА ОСНОВЕ ИНТЕГРАЦИИ ИНТЕРАКТИВНЫХ ТЕХНОЛОГИЙ

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АННОТАЦИЯ

В статье рассматриваются условия реализации усиления практической направленности подготовки будущих педагогов посредством интеграции интерактивных технологий в процесс обучения. Предполагается, что организация обучения на основе

предложенных механизмов платформы дистанционного электронного обучения, системы для интеграции интерактивных технологий способствует усилению практической направленности подготовки бакалавров педагогического образования. Теоретической основой для интеграции интерактивности в процессе обучения определяется. В этой статье описана последовательность действий студентов при использовании интерактивных методов обучения с использованием курсов дистанционного обучения, разработанных на платформе системы дистанционного обучения. В соответствии с ресурсами дистанционного Moodle в системе электронного обучения представлена деятельность учителя и ученика. Результаты апробации внедрения механизмов интеграции показаны в статье.

КЛЮЧЕВЫЕ СЛОВА: интерактивная технология**,** дистанционное обучение, интеграция интерактивной технологии, система дистанционного обучения Moodle, интерактивные элементы, дистанционное обучение

1. INTRODUCTION

Development and confirmation of the new professional standard of a teacher (PST) inevitably entails the revision of training of Bachelors of Pedagogical education. [1]. Currently in Russia one can observe modernization of the main professional educational programs, the purpose of which is bringing the teacher training programs in line with the PST [2]. It is being noted that the implementation of the new professional standard is aimed at training the teachers who are competent not only in his/her subject, but also in the category of general knowledge of other disciplines, creatively treating his/her work and ready to respond to changing requirements, to apply modern information and communication technologies, to interact freely with the participants of the educational environment, including the Internet [3].

Modernization of educational programs supports the professionalization of teachers training, i.e. such a model of practice-based learning in which the main result is the ability to organize the future professional activity [2]. This implies an increase of the practical employment of students by modifying the form of delivering theoretical material. Such a model should be based on the use of interactivity in all its forms and will allow the bachelors of pedagogical education to exercise their professional development. The introduction of interactive forms of education in the modern educational institution is one of the most important directions of improvement of training of specialists' ready to carry out their professional activities in practice. The main methodological innovations are directly related to the use of interactive technologies and teaching methods [4]. The use of distance learning which has a powerful organization of independent individual learning is very significant. A key characteristic of distance learning as well as of interactive one is interactivity. Consequently, there is the need of introducing new forms and methods of organization of educational process including integration of interactivity with distance learning technologies [5].

We assume that integration of interactive technologies and teaching methods in the process of preparation of Bachelors of Pedagogical Education with the use of distance courses will contribute to intensification of practical orientation of the educational process. The aim of this study is to identify the mechanisms for integration of interactive forms and methods in the process of preparation of Bachelors of Pedagogical

Education in the conditions of intensification of practical orientation based on distance learning. We made an assumption that integration of interactive technologies in the process of preparation of bachelors of pedagogical education using distance learning technologies will be effective under the following conditions:

- if to determine the theoretical basis for integration of interactivity into the learning process based on distance learning;
- if to identify the mechanisms for integration of interactive technologies in the process of preparation of bachelors of pedagogical education;
- if to analyze the possibilities of distance learning system (DLS) for integration of interactive technologies in the learning process;
- if to identify elements and resources of DLS required to implement the mechanisms of interactive learning on the platform of distance training systems;
- if to develop methodical recommendations for teachers on the integration of interactive technologies in the educational process using DLS.

2. METHODS AND OBSERVATION

Rapidly improving means of informatization and telecommunications firmly entrenched in all spheres of human activity. The interest in the implementation of distance learning technologies in the educational process has appeared long ago. This form of getting knowledge was as well in demand in previous years, and now in the era of rapid development of telecommunication technologies, distance learning as a new form is given special attention. In the organization of such training, systems of distance learning are most frequently used, and the most popular of which is Moodle. It should be noted that many distance learning courses in the DLS do not take into account the interactive element of learning and in fact are courses for self-education. It is therefore necessary to focus on the active use of interactivity in all its forms.

The concept of "interactive" is derived from the English "interact" ("inter" – "mutual", "act" "act"). Interactivity is a way of interaction in the dialogue in real or virtual (using a PC) space on the basis of the subjective position of participants in the interaction [6].

The training process based on the use of interactive teaching methods is organized with respect to the inclusion all students without exception into the learning process. Joint activity means that each makes his own particular contribution, students share knowledge, ideas and ways of working. Interactive methods are based on the principles of interaction, active position of learners, basing on group experience, binding feedback. This creates an environment of educational communication which is characterized by openness, interaction between participants, the equality of their arguments, the accumulation of shared knowledge, mutual evaluation and control [4].

In distance learning, interactivity is implemented at two levels: at the level of interaction between the teacher and students and students among themselves and at the level of interaction of students with their use of learning tools, mainly by electronic means. These forms of interaction are typical for interactive learning [7]. Therefore, it can be argued that learning has become truly "interactive" after the creation of the Internet and the first web browser. From this moment, the use of the term "interactive learning" starts.

The Internet is a communication tool that provides a virtual learning environment, its information space. Applied services of the Internet and the ability to provide access to educational content from any corner of the world allowed to make a major breakthrough in the development of the use of information technologies in the educational sphere.

Integration of interactivity in the educational process on the basis of distance technologies has the following advantages:

- increasing the level of motivation of cognitive activity;
- development of methods of activities undertaken in the group;
- the development of critical thinking and imitativeness;
- improvement of self-reflection of students' activity through regular use of self-control and mutual control;
- a consequent increase of the effectiveness of training process.

The Department of Education and Science of the Russian Federation is implementing the project on development of new modules of the basic professional educational programs of undergraduate and graduate programs to gain practical and research-oriented training, in the framework of the project of modernization of pedagogical education and the Federal Target Program of education development for 2011-2015. One of the participants of the project is Kazan Federal University (KFU). The teachers of Yelabuga Institute of KFU developed modules of the basic professional educational program of teachers' training, one of which is "Disciplines of mathematical and natural sciences: scientific and mathematical knowledge in educational practice". The program of the module is intended for bachelors who start getting pedagogical education that will allow them to exercise their professional development and actively use interactivity in all its forms [8].

The knowledge gained in the learning process using interactive methods acquire new forms. On the one hand, they represent some information about the surrounding world, the peculiarity of which is that the student receives it in the course of his/her own activity, but not from the teacher in the form of a ready system. On the other hand, in the process of interaction in class with other students and the teacher, the student masters a system of proven ways of activity in relation to him/herself and to the group, and learns various ways of getting knowledge. Therefore, the available knowledge is a tool of independent obtaining of new information [5]. These are the advantages of interactive learning, which will strengthen the practical orientation of bachelors' training.

Powerful capabilities in the organization of interactive learning are available in the systems of distance learning, for example, of Moodle. The main principle of organization in Moodle LMS is social constructionism, which aims to facilitate not only the identification and construction of new knowledge but also the acquisition of tools for obtaining new knowledge and ways of action [9].

In this regard, on the platform of distance learning teachers of Kazan Federal University have elaborated a distance learning course for students specializing in Pedagogical education (44.03.05) in the conditions of intensification of practice-oriented learning process. In this e-course the students' work is constructed in such a way that the can potentially refuse the monologue oral presentation of training material by the teacher, which is characteristic of traditional lectures. Instead of them there are introductory, installation and final classes, which have an informational and explanatory function. At such classes the teacher outlines to the perspective and purpose of the course, a plan and a logical sequence of learning the material, explains methods of work with the network resource, and recommends the basic and additional literature.

Thus, here arises the problem of developing the mechanisms for integration of interactive technologies into the learning process with the purpose of intensification of the practical orientation of future teachers' training and guidelines to their implementation.

3. DISCUSSION

Let us consider the mechanisms of successful integration of interactive technologies in the process of training of bachelors of pedagogical education using distance courses with the purpose of intensification of the practical orientation.

1. The identification of the theoretical basis for integration of interactivity into the learning process based on e-learning.

We distinguish such types of interaction in distance-learning as [10]:

teacher ↔ group;
teacher ↔ student;
student ↔ interactive content;
student ↔ student;
group ↔ student.

Basing on these interactions, let us analyze one of the main methods of interactive learning whether it is possible to project it on a distance course. Let us describe the sequence of actions of students while using the distance course in the method of "Round table".

Step 1.

Preparing the student to participate in a Round table in the distance course under the guidance of a teacher. Working with interactive remote lecture in the course, the student masters the material using the recommendations and resources which have already been given or found independently in the form of a consultation with the teacher and group mates.

Step 2.

Discussion of the students over the basic issues of the Round table in an educational forum together with the teacher.

Step 3.

Participation in the Round table. During the Round table students:

• discuss one or two problematic situations;
• illustrate their views using a variety of visual materials;
• implement discussion-based activity, reasoning for their position, the conviction of the interlocutors.

Step 4.

Writing an essay in a form of reflection, preparing photos, presentation at the Round table, publication of the essay on the distance e-course platform for discussion and evaluation by classmates and teacher.

The description of sequence of actions of "Round table" method on the basis of the distance course shows the feasibility and effectiveness of integrating other interactive methods. Let us point out the main advantages: strengthening preparation for the Round table on the account for autonomy and the possibility of communication with the teacher and students in offline and/or online modes; the refusal from monologue-based lectures and, as a consequence, an increase in interactivity of learning process; learning becomes more person-centred, leading to increased motivation of students.

2. The components of integration of interactive technologies in the process of preparation of bachelors of pedagogical education on the platform of Moodle DLS.

In the result of analysis of conditions for implementation of interactive learning and resources of Moodle DLS to support them, we have identified the main components of the mechanism of integration of interactive technologies in the educational process of bachelors basing on distance e-courses. Let us identify the conditions for implementation of interactive learning and compare the corresponding resources of Moodle DLS (Table 1).

Table 1. The components of the mechanism of integration of interactive technologies into the learning process on the basis of distance e-courses

The conditions of implementation of interactive learning	The resources of Moodle DLS to support the implementation of interactive learning
Comfort of learning process	The educational content is available on free access and presented in a convenient way
Feedback	Implementation of different kinds of interaction of the participants of educational process: student ↔ interactive content, student ↔ student, student ↔ teacher
Group work of students	Organization of individual, pair and group work with the aim of performing tasks and accumulating shared knowledge
Mutual control and evaluation	Organization of open educational environment for free interaction with the aim of mutual control and evaluation

3. The analysis of the resources of Moodle DLS to integrate interactive technologies into the learning process.

Distance learning courses developed in Moodle DLS have the ability to implement interactive activities for both the teacher and the student.

In accordance with the resources DLS Moodle let us indicate what types of activities are carried out by the teacher and the student (Table 2).

Table 2. Interactive work of a teacher and a student in a distance e-course.

The resources of Moodle DLS	Interactive work of a teacher	Interactive work of a student
Interactive work of a student	Interactive work of a student	Interactive work of a student
Summary materials	Distributes the tasks for independent work, laboratory works, themes for term paper works, home tasks	Sends the reports on their performance
Feedback	Answers the students' questions on the material and organizational process	Asks questions on the material and tasks
Forum	Asks questions and gives consultations	Discusses the main issues with the teacher and other students online and offline
Test	Distributes tests in the form of a quiz or practical tasks setting parameters of their performing depending on the conditions (time limit, the number of possible trials, etc.	Does the tests and gets an immediate result

Additional material	Distributes additional materials and references	Studies the additional material using e-books, Internet resources, video lessons and courses, etc.
Support of interactive classroom lessons	Has an opportunity of supporting lessons in a project form	Distributes the projects and discusses important issues with the teacher or other students
Monitoring the progress of students	Has an opportunity to get objective and quick estimation and evaluation of students' work	Analyses the results of his/her work and position in the rating of students
Web statistics	Analyses the attendance of the distance course by students	Analyses the frequency of his work in the distance course

4. Identification of the elements and resources of Moodle DLS required to implement the mechanisms of interactive learning based on distance learning courses.

In Moodle DLS a teacher and students have at their disposal the following interactive elements and resources of distance learning course that can replace some traditional training activity: questionnaire, interactive lectures, feedback, wiki, HotPot, email, external applications, interactive assignments, forums, chats, video conferencing, online tests, seminars, glossary (Table 3).

Table 3. Elements and resources of integration of Moodle DLS interactive technologies into educational process.

Kinds of traditional learning activities	**Interactive elements and resources of a distance course**
Lecture	Questionnaire, interactive lectures, feedback, chat, forum, HotPot, email, interactive tests, Glossary.
Laboratory lessons	Email, video conferencing, wiki, HotPot
Practical lessons	In offline mode (email, forum) or online (video conferencing, chat).
Control works	Email, forum, chat, interactive tasks, external applications.
Seminars	Video conferencing, forum, chat, external applications, wiki.
Consulting	Email, video conferencing, forum, chat, feedback.
Intermediate control	Interactive tasks and tests.
Final control	Interactive tasks and tests.

5. Methodical recommendations for teachers on the integration of interactive technologies into educational process using the resources of DLS.

To expand the impact of the integration of interactive methods into educational process in the University based on distance learning courses is necessary methodological support. We have developed a methodological guide, intended for teachers of higher educational institutions, which have decided to integrate interactive technology into the learning process in higher education using distance-learning courses. The manual covers the theoretical basis for integration of interactive technologies into distance learning courses using the features and resources of distance learning and the technology of the creation of a distance-learning course using Moodle DLS.

The proposed mechanism was tested in Yelabuga Institute of Kazan Federal

University in the period from September to November 2014 in the framework of the module" Disciplines of mathematical and natural sciences: scientific and mathematical knowledge in educational practice". For its testing on the platform of distance learning of KFU (Moodle DLS) a number of distance learning courses was established:

- "Information and communication technologies in education" (http://tulpar.kfu.ru/course/view.php?id=2094);
- "Multimedia in education" (http://tulpar.kfu.ru/enrol/index.php?id=2096);
- "Electronic educational resources" (http://tulpar.kfu.ru/enrol/index.php?id=2092);
- "Information systems in education" (http://tulpar.kfu.ru/course/view.php?id=2093);
- "E-learning" (http://tulpar.kfu.ru/course/view.php?id=2097);
- "Internet technologies in education" (http://tulpar.kfu.ru/course/view.php?id=2095).

Courses consist of modules that have a single structure that includes the units:

- methodical (abstract, keywords, guidelines);
- interactively-information (lectures, tests, training, forum, job, etc.);
- reflexive (forum-reflection, essay, seminars, assignments, etc.).

To determine the effectiveness of the developed mechanism for integration of interactive methods into the process of future teachers' training on the basis of distance learning courses, we undertook a survey of students participating in testing. In testing of the module 127 students of three faculties of Yelabuga Institute of Kazan Federal University studying under the direction "Pedagogical education" took part.

Teachers, who participated in testing, noted that interactive methods can motivate students in active learning activities, focus on teamwork and creative mood. Students gave positive feedback for such components of distance learning courses as interactive lectures and assignments, educational forums, allowing to increase the willingness of students to participate in interactive work. They explained this by the fact that close interaction with group mates and teacher allows to solve the problems arising in the process of search and selection of necessary information.

The teachers concluded that the use of a distance learning course allows to get rid of traditional lectures, freeing up time for interactive activities, which contributes to greater independence of students, strengthening of responsibility for learning outcomes and makes the learning process active.

Interactivity and non-linearity of the organization of the learning process contributed to the students' progress in acquiring the necessary competencies. The students themselves noted: "This work is more effective than when the teacher teaches all or when performing laboratory work according to a predetermined algorithm". They expressed the desire to continue such work explaining that this arrangement gives them the opportunity to think, make decisions, etc.

4. CONCLUSION

Using the proposed mechanism for the integration of interactive technology based on distance learning courses contributes to intensification of practical orientation of training of bachelors of pedagogical education. The testing has shown that classroom interactive activity is more efficient and successful, as students have the opportunity to prepare for it by means of a distance course, if necessary the can ask for advice of a teacher in order to discuss together arising questions and problems.

Distance learning system has powerful interactive resources that allow to abandon the lecture with following discussion of the issues examined at the round tables, workshops, conferences, etc., what, in its turn, strengthens the practical orientation of the training process.

In integration process the most beneficial elements are: in offline mode – interactive lectures and use of "Test" element as an interactive simulator; online – educational forums and messaging.

The described step-by-step technology of interaction between the teacher and the student will facilitate the implementation of the mechanism of integration of interactive technologies into the educational process in higher educational institutes. A comparison of the resources of distance learning education to the conditions of implementing interactive learning activities both of a teacher and a student will help the teacher to understand the choice of methods of organizing interactive educational process.

To disseminate the experience of integrating interactivity into the educational process of higher education the guidelines for teachers has been developed.

They can be used for both self-review and in professional development.

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