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DISTANCE LEARNING TECHNOLOGIES AS A MEANS OF INCREASING THE EFFICIENCY OF INDEPENDENT WORK IN THE STUDY OF MATHEMATICS AND METHODS OF TEACHING MATHEMATICS BY FUTURE PRIMARY SCHOOL TEACHERS

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ABSTRACT

In this article, the author outlines the essence of distance technologies and gives examples of the use of elements of distance technologies in teaching mathematics and methods of teaching mathematics to full-time and part-time students of the primary school faculty. The importance of independent activity in the professional training of a teacher is especially noted: what is learned independently, consciously, motivated, provides a higher level of development.

KEYWORDS: *Mathematics, Teaching, Distance Technologies, Methodology, Junior Schoolchildren.*

INTRODUCTION

It is a well-known statement that what cannot be taught can be learned. Indeed, what is cognized independently, consciously, motivated, provides a higher level of development. Particularly important is independent activity in the professional training of teachers, in particular, in preparing the future primary school teacher for teaching mathematics to junior schoolchildren. After all, not a single professional competence can be developed outside of independent cognitive activity and personal activity. **[1]**

However, the traditional study of mathematics and methods of teaching mathematics, organizationally represented by lectures, seminars and laboratory-practical classes, provides the student with very few opportunities for such activities and activities. From school he got used to the fact that when studying mathematics, he was first given information, organized mastering of given patterns, and for independent fulfillment they were offered training tasks, sometimes non-standard and creative. Moreover, his participation in the choice of the content and organization of his own teaching is either absent or minimal. **[2]**

University education, according to modern approaches, including those laid down in the SES, should be focused on a different type of teaching, in which the student is the initiator of his educational and cognitive activity, responsible for its results. One of the teaching models that provides maximum independence and at the same time a sufficiently high level of controllability of the educational process is distance learning technologies (distance learning technologies). **[3]**

The main goal of introducing distance learning technologies is to improve the quality and accessibility of education. Distance education technologies many times increase the effectiveness

of independent educational and cognitive activities of students and allow them to get quality education, regardless of the physical ability to spend a lot of time in an educational institution. According to the method of information delivery, case technologies, network technologies and TV technologies of distance education are distinguished. The introduction of distance technologies into the learning process usually begins with the use of case technology. The use of any technology requires the creation of appropriate information support and the development of methods and means of interaction between the teacher and the student. **[4]**

The creation of information support for the implementation of distant teaching of future primary school teachers in mathematics and methods of teaching mathematics is a very important and responsible task, which is presented in the work.

The complexity of creating such information support lies in the fundamental openness of the system of pedagogical, including methodological and mathematical, knowledge, their constant variability, the presence of many different approaches and different implementations of the same approach.

As part of our research, we focused on the development of materials for a system of tasks, the core of which is made up of tasks of a semantic nature. With the introduction of distance technologies, the student has the opportunity to interactively interact with the teacher in on-line and off-line modes (forums, chats, e-mail, electronic seminars, video conferences), which contributes to the timely receipt of advice by students on emerging issues and quick access to information in electronic form or posted on the Internet. **[5]**

To organize training, which is completely built on the basis of distance technologies, from a technical point of view, a single local intra-university network is needed, uniting the departments, the dean's office, the library, computer classes with Internet access, and the presence of a computer with Internet access for students.

In connection with the transition to a qualitatively new level of education, the view on the nature of the learning process is changing, in particular on the content of the teacher's and student's activities - pedagogical activities and learning activities. The task of the teacher of mathematics and methods of teaching mathematics is to show the place of mathematical and methodological-mathematical training in the professional competence of an elementary school teacher, to set an attitude towards a personality-oriented approach to educational and cognitive activities, to ensure the focus of information and organizational materials on the implementation of appropriate methodological positions. **[6]**

The student's task is to completely independently build their education. The teacher in such teaching is not the one who teaches, but the one who helps to learn. The tasks of the teacher are to provide consulting services, current and final assessment of knowledge, preparation of educational and methodological complexes, which should be electronic, but can also duplicate some of the information on paper for the convenience of students.

Electronic educational and methodological complexes for disciplines are developed by university teachers. They should be built on the basis of a modular principle using hypertext presentation of information and easy navigation to provide quick access to the information of interest to the student at the moment.

Each student must be presented with a set of teaching materials in printed and (or) electronic form, including the curriculum of the academic discipline, methodological recommendations, a textbook on the discipline (in the absence - a textbook, a full course of lectures), a practical or practical manual, teaching aids and problem books, test materials for self-control and final control. **[6]**

As additional literature, you can use reference books, dictionaries, readers, periodicals, industry and public policy publications in electronic form, as well as links to databases, sites, reference systems, electronic dictionaries and network resources. In case of full-time study of mathematics and methods of teaching mathematics, independent work of students can also be organized on the principles of distance learning.

In the system of distance learning mathematics and methods of teaching mathematics based on information and communication technologies, the sources of information are significantly expanding, since future primary school teachers have the opportunity to familiarize themselves with teaching programs for primary schools, with testing systems and with information databases. The use of distance technologies leads to an increase in the proportion of independent work in the organization of the educational process. In fact, we are talking about the independent work of students with theoretical (lecture) material, about current and intermediate self-control, about the implementation of student research work, about preparation for seminars or practical work, about working with computer simulators and simulation models, etc. **[6]**

With full methodological support of the academic discipline, the share of independent work can be more than two-thirds of a student's semester academic load. In the conditions of full-time or part-time education in the first classes in mathematics and methods of teaching mathematics, students are recommended lists of e-mail addresses of sites and portals in these disciplines so that they get acquainted with their content, structure, functions and services for searching information on the Internet.

When performing special tasks in a computer class, future primary school teachers get acquainted with effective ways of organizing queries, including searching for information not only by keywords, but also by attributes (for example, subject area, type of material, level of education, nature of the audience, etc.).

It should be noted that students who study remotely and communicate in writing only through e-mail have certain difficulties, because the teacher does not always have the opportunity to see and point out the mistakes that students make when completing assignments, to understand the sources of these mistakes. The problems of "distance students" are aggravated by the low level of computer literacy of most of them. In this regard, at the first stages of the introduction of distance technologies, courses are needed to increase this level.

We see an important role in solving the above problem in the creation of guidelines for the individual work of students in the study of a specific discipline, including questions and provisions that need to be paid special attention to, and in the analysis of typical mistakes made by other students. As additional tools, you can use the capabilities of forums and chat rooms to discuss problems and exchange views between students and teachers, including group and collective forms of work. As practice shows, when organizing independent work in the distance learning system or using the capabilities of such technologies in the study of mathematical and

methodological disciplines by future primary school teachers, an important place is occupied by the structural organization of the educational material and the teaching methods used. **[3]**

At the first consultations, the teacher often has to carry out work to familiarize students with various effective techniques for working with texts and sources of information. For this, students or a group of students are given special assignments, during which they learn not only to acquire knowledge on their own, but also to communicate with the teacher and other participants in the learning process, using the capabilities of the Internet.

To control the success of mastering the discipline, various forms are used, including systems of tests, laboratory, practical and creative work, the results of which can be presented on special "personal" pages of students in the distance learning system or sent by e-mail.

The testing system allows the student to carry out self-control and correction of his own level of knowledge when studying the discipline (when performing tests for self-control, students are usually given from three to six attempts, it is possible to view the result of the test, indicating the correct and incorrect choice of answer options). The teacher can assess the progress of students in independent study and the implementation of practical tasks in mathematics and methods of teaching mathematics during computer testing. **[4]**

Modern testing tools allow him to develop his own test materials for current, intermediate and final control without much effort and time consuming. Based on the results of the study of each module, a survey of students should be conducted in order to identify wishes and comments on the quality of the distance course and the organization of the learning process.

To coordinate the work of students in the system of distance learning mathematics and methods of teaching mathematics, it is also necessary to provide for the following forms of organizing the independent study of the discipline: - the use of printed and electronic educational-methodical complexes with access in the distance learning system or distributed on CD-ROMs; - file exchange via e-mail or using standard tools of the distance learning system; - the use of various multimedia teaching tools and network resources that are publicly available on the Internet; - building the educational process in such a way that the teacher has the opportunity to systematically track, correct, monitor and evaluate students' activities throughout the course. **[5]**

Our experience of using even elements of distance technologies in teaching mathematics and methods of teaching mathematics to full-time and part-time students of the faculty of primary grades showed a significant increase in the effectiveness of independent work of students in accordance with the goals of the discipline being studied, made it possible to take into account the individual characteristics of students more differentially.

With the improvement of the experience of using distance technologies, conditions are gradually created for students to build an individual educational trajectory for studying the discipline within the curriculum of the specialty and on the basis of an individual curriculum. **[6]**

It becomes obvious that mastering the components of the professional competence of a future primary school teacher largely depends on the readiness to master and use new methods, forms and means of teaching in their educational and professional activities, including those based on information and communication technologies.

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