

MATHEMATICAL PREPARATION OF STUDENTS OF TECHNICAL HIGHER EDUCATION INSTITUTIONS ON THE BASIS OF INNOVATIVE TECHNOLOGIES AS A PEDAGOGICAL PROBLEM

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ABSTRACT

The article gives information about an important role of modern technologies and information technology but they are not used to teach higher mathematics at Universities and its methodology has not been produced yet. That is why, this article reveals the problems of creating new system of teaching mathematics with the help of technologies and introduce new innovations and information technologies into practice.

Keywords: Information, information technologies, innovation, innovative technologies, to model, education, process of education.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

The Decree of the President Sh. M. Mirziyoyev of the Republic of Uzbekistan "On Measures for Further Improvement of Information and Communication Technologies in the sphere of information technologies and communication", adopted on February 19, 2018, in particular, introduces innovation system of information technologies and communications in education the basis of which was formed.

In recent years, developing information technologies can give new opportunities to use them in mathematical calculations. There is a need to change the education system and to find the ways of increasing the effectiveness of education process in order to put this innovation into practice. Therefore, there are proportional new problems, which are related to lectures and seminar lessons of mathematics at University. Mathematics becomes one of the subjects which demands much attempt from students at higher education. Technical University students have to acquire almost all spheres of mathematics in a short term even minimum parts. That's why, I think it is essential to introduce new methodic systems of teaching mathematics, to put innovation and information technology into practice at higher education system.

In researching the scientific and theoretical aspect of my research, I have studied a number of foreign and regional scientists in improving the higher mathematics and education process, and introducing pedagogical technologies in the process. While studying, I am sure that the problem of studying mathematics and improving its effectiveness is still sophisticated. Many scientists did scientific researches to develop the quality of education. For example, V.P. Bepalko, V.V. Davydov, V.A. Dalinger, L.D. Kudryavtsev, I.Ya. Lerner, V.M. Monxov, M.N. Skatkin, A.A. Duradgor and others. Famous representatives Yu.K. Babanskiy, P.Ya. Halperin, A.N. Leontiev, J. Piaget and others learned practical and theoretical approaches of increasing education quality problems.

Subject research of the article is to improve students' math system at Technical Universities by using innovative technology. The purpose of the research is the development of innovative

methods of broad explanation of abstract concepts of high mathematical sciences on complex subjects, to improve the degree of enhancing knowledge and experience and creative and scientific independence of students. The achievement to these aims cause of particular problems.

1. To identify which innovative technologies is preferable to use for modern math teachers during the lesson on the basis of analyzing specific resources and practice.
2. Identify, formulate, and justify the principles of using innovative technology in today's math teachers' teaching maths in technical universities.
3. Develop mathematical methodology for students using innovative technologies and information technologies that are consistent with the established principles.
4. To check the effectiveness of methodology which is produced in the experiment.

To choose the meaning of math course and solve problems about the increase of effectiveness math lessons are reflected on the works of many scientific researches of scientists. For example, Vertgeym Burov [4] has done research in optimizing the mathematics teaching process in technical higher education institutions and compiling the mathematical course in mathematics with the basic parameters of the level of knowledge (degree of abstraction, assimilation rate, etc.). Furthermore, his scientific research is different from using computer technology in the course of studying the higher mathematics course and analyzing the level of students knowledge at Novosibirsk State Technical University. As we know, "course of higher mathematics" is not studied but "mathematical analysis", "line algebra" and others are taught and special time is separated for it at Novosibirsk State Technical University. What's more, The mathematics education level at this university for the first year is much higher than many other technical schools. Taking all into consideration, using this experience to study the higher mathematics course of first-year students does not justify itself because time for course of high mathematics is not adequate. From this it is necessary to adapt the process of mathematics education to existing conditions in technical high schools.

Usually the first-year students are trained in organizing educational activities on a systematic basis. O.E. Malskaya [5] does not use the method of systematization of teaching load to ensure that first-year students understand study material up to 70 percent. This experience typically leads students to master a large amount of information or reduce the motivation of the curriculum. If the first-year student feels that he / she can not get enough information in the shortest possible time, the above-mentioned problems will become the most pressing problem for students studying at the Higher Education Establishment. The use of the theme syllabus gives information about the scientific results of this subject, as well as how successful the subsequent courses will be. Therefore, Therefore, technics can be considered as the most important task of higher education institutions in the first semester during the adaptation period to teach a teacher on a systematic basis in teaching high mathematics. Therefore, technics can be considered as the most important task of higher education institutions in the first semester during the adaptation period a teacher should teach on a systematic basis in teaching high mathematics. Many developments in technical higher education institutions deal with the issue of improving the quality of education (including mathematics) in the learning process use of test technologies and, of course, their use is effective at some extent (for example, P. Bepalko, HA Gulyukin, PP Kamalov, MV Klarin, MR Melamud and others).

Nowadays, innovative, communication and information technologies have a great role to increase the quality of modern education. But I consider that methodology to use these opportunities in higher education has not been fully accomplished yet. Due to the widespread usage of information and communication technologies in education, research in this area has

specific importance. Along with the developed countries of the world, this trend is also considered as a priority in the reform process in the country.

Informatization of educational process of technical high schools, including teaching of higher mathematics by means of information and telecommunication technologies leads to improvement of the content and essence of the lesson. Establishment of the learning through active use of modern information technology offers a wide range of educational activities that are focused on independent learning. Introduction of modern information technology into math science helps students to develop the thinking, optimal decision-making skills, communicative skills, aesthetic education, professional skills and culture awareness.

In the mathematical lesson, the use of innovative technologies will increase the quality and effectiveness of the course process, intensify student learning activities and deepen interdisciplinary interaction.

Using contemporary information technologies can give a chance to the demonstration of graphic imagery and geometrical sections of various cosmic objects, teaching mathematical geometry sections on the use of computer graphics and modeling, and the ability to solve many complex math problems through ready-made programs and programming languages.

The process of using modern information technologies in teaching mathematics and other subjects leads to changes in not only the organizational forms and methods of teaching, but also the innovative teaching methods. Informatics of the science domains leads to the improvement of educational activities, the intensification of the learning process, the expansion, deepening of the sciences and their integration. Thus, the process of informatization of higher mathematics is the basis for changing the content and size of the training materials, the development of higher mathematics (courses) programs, and the integration of separate themes or subjects. This will change the content and structure of mathematics and, consequently, change the content and structure of education.

The use of distance learning in the world as an important part of the open-access system, as well as the use of modern information technology and the Internet in education, is one of the factors that enhance its quality.

Effective organization of mathematical preparation of students on the basis of innovative technologies in technical higher education institutions requires the creation of distance learning courses and electronic literature, the consolidation of computer programmers and mathematics teachers, the organization of educational process, and monitoring the effectiveness of the systematic and pedagogical activity.

The pedagogical activity, based on innovative technologies, facilitates the simplification of the complex process of creating courses related to the rapid development of the teaching methodology, the formation of special skills in the development of training courses, the openness of the distance courses, the need for quality requirements and the need to control the quality of the teaching materials, the importance of independent work of students in the academic process, the transfer of the educational process from the teacher to the student, the organization of the educational process, the increasing of student's participation, and the contradictions of the teacher with each student are based on the use of modern communication technologies.

I think, these reasons are caused of impacting negatively to use state-of-the-art information technologies during the math lessons.

- Pedagogic colleagues is not fully ready to informatize math lessons;
- Imagination on the possibilities of mathematical curriculum and the lack of methodological developments in their application;
- There is a lack of mathematics teachers who know information technology in education adequately.

An important aspect of addressing these issues is to further enhance the role of a teacher in the condition of information.

Introduction of modern innovative technologies in mathematics classes does not result in the limitation of the scope of activities of the teaching staff in the teaching process, but also the change of its role of pedagogical activity. Now the teacher is demanded to be a designer of the training courses - the developer of training courses; teaching methods consultant; expert on providing interactive training courses; a specialist in methods of controlling learning outcomes.

The introduction of innovative technologies, including modern information and communication technologies in mathematics classes, creates new opportunities for the organization of distance courses in mathematics. Distance learning courses in mathematics are conducted jointly by programmers (courses designer).

Teaching mathematics on the basis of the innovative technologies and information technology at higher education system supports the improvement of technical and mathematical education meaning. These technologies include the improvement of the content of mathematical education, linking the components of the content of mathematics, using different types of science achievements in mathematics courses, presenting courses as a set of exercises, creating lessons as virtual mobility, provides a tool for ensuring consistency of training materials, and introducing a differentiated approach to the content of teaching materials.

In summary, innovative technology creates theoretical basis for the introduction of advanced science and technology achievements into the educational system, and provides opportunities for pedagogical achievements in pedagogical practice, development of teaching and learning processes, and achievement of new quality indicators.

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