

ORGANIZATIONAL FOUNDATIONS FOR ORGANIZING INDEPENDENT WORK IN MATHEMATICS IN AN INFORMATION- BASED EDUCATIONAL ENVIRONMENT

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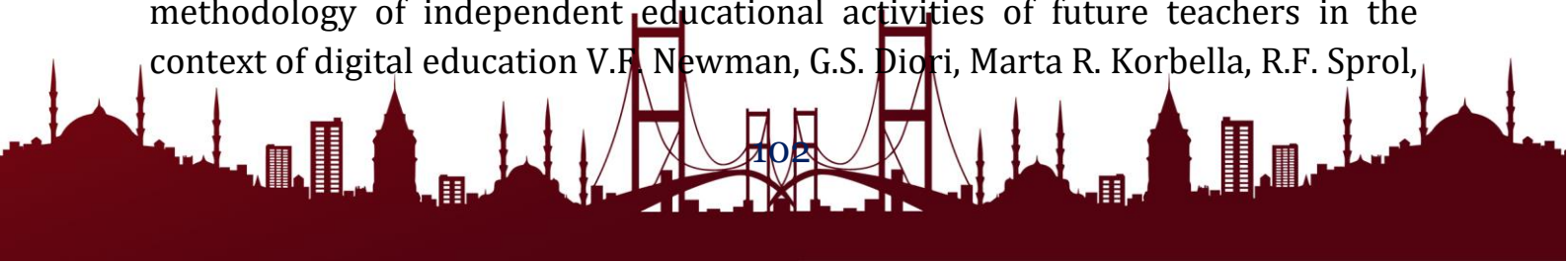
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Abstract: The article studies the theoretical foundations of the development of the methodology of independent educational activities of future teachers in digital education, the pedagogical content of the methodology of independent educational activities of future teachers in digital education, the effectiveness of the development of the methodology of independent educational activities of future teachers in digital education. Also, the methodological aspects of the development of the methodology of independent educational activities of future teachers in digital education are analyzed.

Key words: digital education, pedagogue, independent learning, theoretical and methodological basis, competence, improvement, pedagogical, technological, model, didactic, professional pedagogical activity, innovative approach, mechanism, intellectual.

INTRODUCTION. In higher education, the forms and methods of independent activity in mathematics in an informational educational environment are diverse and are the basis for independent study of the subject (field): annotating scientific literature, compiling a synopsis of primary sources, writing abstracts and reports, completing term papers and graduation qualification works, conducting experiments outside the classroom and analyzing the obtained quantitative results both quantitatively and qualitatively, etc. When determining the content of improving independent work in an informational educational environment, the importance of: taking into account the directions of higher education, incorporating the foundations of mathematics into the content, forming students' skills to independently apply their acquired knowledge in practice, developing their activity, increasing textbooks, improving the pedagogical knowledge and skills of mathematics teachers, popularizing and implementing advanced practices in practice is emphasized.

LITERATURE ANALYSIS AND METHODS. Issues of developing the methodology of independent educational activities of future teachers in the context of digital education V.F. Newman, G.S. Diori, Marta R. Korbella, R.F. Spool,



A. Kroupley, P. Dripiyu, B. Crowell, D. Schaffer, G.V. Abramyan, V.V. Aleynikov, R.S. Arefyev, V. Bospalko, N. Gomulina, V.V. Davidov, R.Kh. Djurayev, A.R. Khodzhaboyev, N.A. Muslimov, Sh.S. Sharipov, Q.T. Olimov, O'.Q. Tolipov, M.B. Urazova, R.G. Isyanov, N.N. Azizkhodzhaeva, D.O. Himmataliyev, J.A. Hamidov, M.M. Aripov, U.S.H. Begimkulov, M.Ochilov, B.S. Abdullayeva, It has been studied by scientists such as S.D. Bazarova, N.A. Muslimov. Also, Angela Stof, Benjamin Blum, Brian Cole, Drapeau Patti, Jaslin Golberg, Merriembar Geron conducted research on the problems of developing the professional training, competence, and professional and pedagogical potential of teachers.

RESULTS AND DISCUSSION. Independent work in mathematics in an informational educational environment is a component of the educational process in a higher educational institution and is carried out in the following areas:

1. Independent work on the topic and material of a lecture in mathematics in an informational educational environment: organizing one's notes (synopsis) after the lecture to understand and comprehend the main concepts and important mathematical issues presented in the lecture, making corrections and supplements to one's notes by studying the recommended educational literature, electronic literature, primary sources, obtaining additional texts from the sources read.

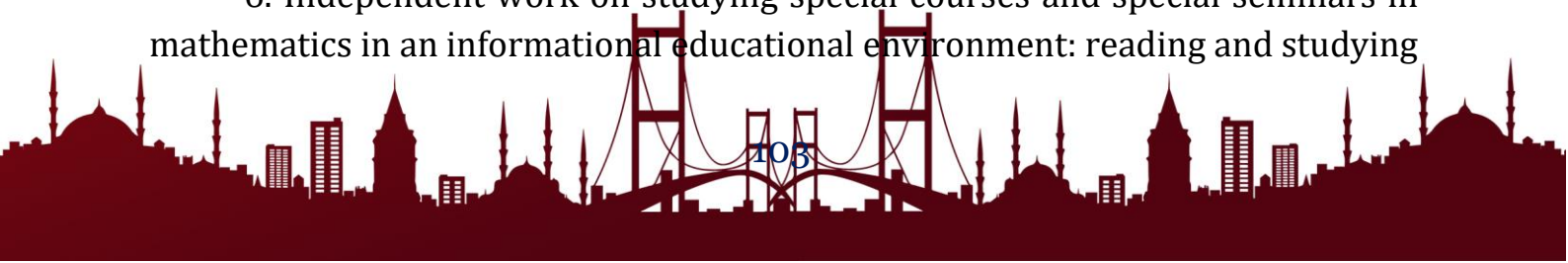
2. Improving independent work in the field of preparation for practical classes, seminars and laboratory work in mathematics in an informational educational environment: organizing information, composing questions, preparing answers, compiling lesson plans, preparing for questions and answers, participating in discussions, and performing practical work.

3. Independent work on the implementation of educational and cognitive tasks in writing abstracts, reports, term papers in mathematics in an informational educational environment.

4. Independent work on the implementation of educational and cognitive tasks in the field of control work (current, intermediate, final control work) in mathematics in an informational educational environment.

5. Independent implementation of educational and cognitive tasks related to qualification practices in mathematics in an informational educational environment: these include educational and cognitive tasks related to pedagogical practice, production practice.

6. Independent work on studying special courses and special seminars in mathematics in an informational educational environment: reading and studying



literature on the topic of the lecture, preparing a text on a specific issue, preparing for a lecture, etc.

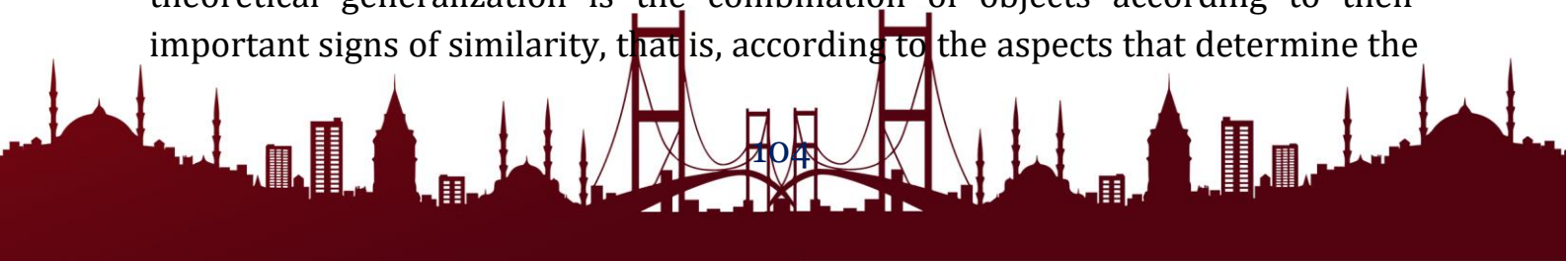
7. Independent work in the field of preparation of qualification graduation works, master's monographs in mathematics in an information-based educational environment.

Annotation of scientific literature is a special form of mathematical knowledge of a person, consisting in listing and highlighting the main problems of a particular scientific research being studied by the author. When annotating, it is advisable to separately highlight the issues directly related to the mathematical problem being studied, their aspects and content.

Making a synopsis of scientific literature. The term synopsis itself means a brief description of the content of an article, book, monograph, speech, and other similar creative work. Usually, there is an opinion that making a synopsis is necessary to memorize and retain some material (lecture), but making a synopsis is considered one of the more important methodological measures in order to study the material being studied more deeply, from a different perspective. For this, the synopsis should be short, fluent, complete, and clear, because it is a product of a person's activity intended for reuse.

Numerous experiences have shown that when making a synopsis, the source being studied should be read at least twice, because the first time you get acquainted with the work, a general idea of it arises, and the second time its main content is revealed and you begin to make a synopsis.

In the process of providing students with information about compiling a synopsis, it should be emphasized that attention should be paid to its main structural components: a hypothesis, its theoretical and experimental verification, the identification of facts, empirical and theoretical generalizations. Experimental methods, discussion of results, conclusions, etc. In particular, a hypothesis is an assumption that there is some kind of regularity, reason between a phenomenon or related phenomena; theoretical verification of a hypothesis consists in comparing the assumed idea with the rules and principles that have already been proven and exist in the scientific literature, as a result of which it is determined that there is no logical contradiction between the hypothesis put forward and those principles; events, phenomena identified and recorded by researchers are called facts; empirical generalizations are the unification of the phenomena of the subject based only on their external signs; theoretical generalization is the combination of objects according to their important signs of similarity, that is, according to the aspects that determine the



specific nature of this phenomenon; the experimental methodology includes a task for the research subjects, a description of the conditions for conducting the experiment, the composition and number of subjects, and their interrelationships.

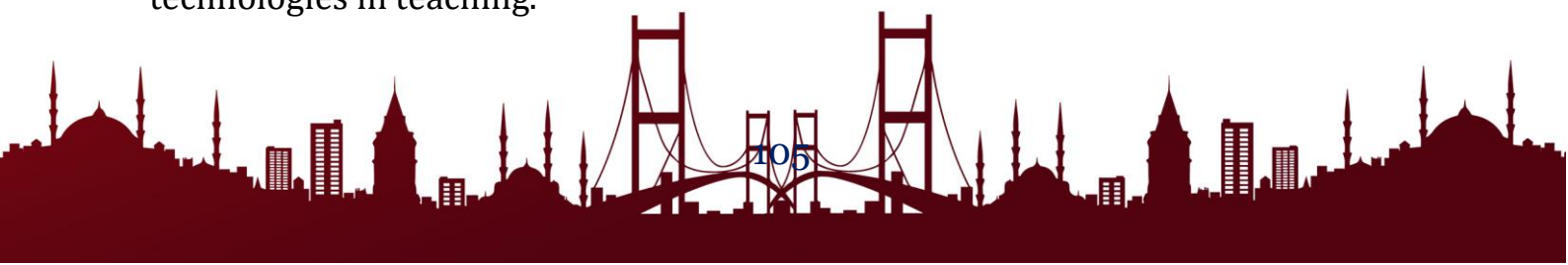
When drawing up a synopsis, it is necessary to provide explanations for unclear terms, use mathematical dictionaries, create a card index, and prepare a bibliographic description (description of an article, contents of a book, description of a multi-volume publication, etc.).

Acquiring skills in conducting an experiment can be carried out as follows:

- 1) organize activities to develop skills in the study of mathematical research;
- 2) carry out a set of activities related to mastering experimental methods and their application in various situations;
- 3) mastering and mastering simple methods for determining the level of statistical reliability of the results obtained;
- 4) teach students to study correlations between empirical materials, conduct dispersion and factor analyses, and determine the validity and representativeness of methodologies;

The creation of a unified information environment of education is planned to be organized on the basis of the following basic principles:

1. Fulfillment of the requirements of state educational standards created for higher education.
2. Openness of information about all educational resources, teachers, and means of providing the educational process available to students. For this, it is necessary to organize an educational information environment, ensuring that all information resources located in them are accessible to all higher pedagogical educational institutions in the Republic.
3. The availability of opportunities for choosing the volume and content of individual stages of the educational process, taking into account the individual characteristics of students, and its flexibility, based on the curriculum and programs.
4. The availability of the possibility of using remote information resources based on the place of study, form, duration and technology of education, including the use of computer technology. As well as the availability of conditions for combining traditional technology with modern educational technologies in teaching.



5. Ensuring the readiness of students to methodically develop teaching technologies and analyze the results achieved, based on the systematization of educational subjects.

6. Creation of appropriate conditions for organizing effective independence of participants in the educational process in an educational institution or at home.

7. The possibility of organizing individual and group consultations with students through the use of a computer network.

8. It provides for the use of educational and methodological complexes, which are designed for placement on a computer network and stored in the form of files, as the main tool for students to carry out their independent activities.

CONCLUSION. The form of modeling depends on the models used and the areas of its application. In the issue of the use of modeling in the organization (design) and research of the effectiveness of information technologies, one can talk about specific approaches to the creation of social models, which are called "pedagogical modeling". The possibility of modeling, that is, the transfer of the results obtained in the process of theoretical creation and research of models to the original model, is based on the fact that the model in a certain sense reflects (develops) some of its aspects and assumes the presence of relevant theories or hypotheses that indicate the limits of simplicity allowed in modeling.

References:

1. Boltaev B. Information and communication technologies as a factor in increasing the efficiency of the educational process // <http://uz.infocom.uz/more>.
2. Zhanabergenova A. Development of mathematical thinking of students in the organization of independent education in mathematics // Proceedings of the International Scientific and Practical Distance Conference "Improving the Quality of Modern Continuous Education: Innovations and Prospects". Tashkent. Nizami State Pedagogical University 2020. 438-441 p.
3. Коваленко О. Ю. Инновационные формы подготовки учителей в США. // «Молодой ученый», 2013, №10. -С. 506-509.
4. Садыкова А.В. Организация самостоятельной работы по математике студентов педагогических вузов направления начального образования// Пед. фан. фалс. докт. ... дисс. автореферати. – Тошкент: 2008. –21с
5. Tillashaykhova M.A. Scientific and pedagogical issues of the use of information technologies in the education system. "Science and Education" Scientific Journal. 2020. No. 2. -P.586.

6. Yunusova D.I. The content and structure of the innovative activity of a mathematics teacher in the system of continuous education // Pedagogical education. – 2008. – No.6., p. 60-65.

