



CREATION OF PEDAGOGICAL AND PSYCHOLOGICAL BASIS AND METHODICAL SYSTEM OF TEACHING GEOMETRY COURSES USING INFORMATION TECHNOLOGIES

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Annotation

Currently, there is growing interest in improving the effectiveness of education through the use of innovative and information technologies that are rapidly developing in the educational process. Lessons using the most modern technologies are aimed at searching, studying, analyzing and even conclusions. This facilitates the formation, formation, acquisition and training of individuals and communities in the process, and also serves as a manage and guiding person.

Keywords: pedagogical technologies, computer and information technology, interactive, geometric preparation, logical thinking, personal computers, geometric problems, methodical system, electronic textbooks, test assignments and tests, new knowledge, electronic textbook, quantization principle, completeness principle, demonstration principle, networking principle, management principle, adaptability principle, computer support principle, programming, methodological recommendations, interactive elements, pedagogical technologies.

Introduction

The Law on Education emphasizes that one of the main challenges of today is the introduction of computer and information technologies in the educational process of educational institutions.

Successful resolution of these tasks largely depends on the teacher's ability to use advanced pedagogical and information technologies in the educational process. Therefore, it is important for students in academic lyceums to use advanced pedagogical and information technology to teach geometry courses.

The use of computer technologies in the learning process and the use of multimedia tools based on them are of great pedagogical and psychological significance and have the following important implications.





- intensification, intensification of the educational process, increasing the effectiveness of education;
- The transfer of educational material in various forms (using voice, text, video, graphics, animation) attracts the reader;
- high level of visualization is of great interest to the student in the studied subject;
- Ensures the long-term storage of the studied material;
- provides the basis for transition to a differentiated education;
- A student who is passive listener during the course of the lesson, becomes an active participant and a partner who interacts with the teacher;
- Increase students' independent learning opportunities and develop independent learning skills;
- Most of the organizational work carried out by a teacher is done through a computer;
- The problem of time deficit is sharply reduced;
- The computer monitors and evaluates the student's level of knowledge. When the learning activities are complex, they are made up of several components.

1. Educational tasks.

2. Training activities.

3. Self-monitoring and evaluation efforts.

There are a number of requirements for students' knowledge today.

1. Have students' knowledge systematized.

2. Students' knowledge should be clear, meaningful.

3. Learners need to have deep and comprehensive knowledge.

4. Student knowledge should be linked to life experiences.

Mastering is important in the learning process. It is assimilated through psychological processes such as knowledge, senses, memory, cognition, and thinking. Mastering the learning material begins with the perception of the material. This is done through the use and application of computer technologies and the use of multimedia tools based on them.

There are some downsides of using computer technology in the learning process. First of all, sitting in front of a computer is detrimental to the health of the student, secondly, the student does not develop writing skills, and thirdly, the student's communication with teachers and peers are limited. Given these disadvantages, the teacher should make good use of the possibilities of computer technology. At the same time, it is necessary to use the rich experience of the traditional methods of teaching the subjects with the use of new pedagogical and information technologies. Accordingly, the pedagogical methods used to organize the educational process on the basis of modern pedagogical technology provide the students with the opportunity to





learn sequentially, both in-class and out-of-class materials. Teaching methods are established taking into account the learning objectives, content, subject matter and age characteristics of the learners, and the form of learning and the tools used to influence the choice of teaching methods.

The pedagogical methods used to organize the educational process based on state educational standards are divided into three categories, which are used when designing lesson plans and introducing pedagogical technology into the learning process, depending on the nature of the areas of knowledge. These include:

The first category is called "Traditional Methods" which is based on the principle of "transferring" knowledge to students.

The second category is called 'Non-traditional' or 'Interactive' and relies on the principle of 'Activating' students to acquire knowledge.

The third category is called "Advanced or Modern Methods" which is based on the principle of "Intensification and Enhancement" of the educational process.

These three categories of methods have historically been compounded, evolving over time, and meeting the demands of their times.

“Traditional methods” based on the principle of “delivery” are still relevant today if they are chosen according to the characteristics of the future specialist and the subject they are taught and are used to.

The research revealed that the problems and difficulties that can be overcome through the use of computer technology in ensuring geometric preparation of students in the academic lyceum are:

- 1) many students do not understand the role and role of computer and information technology in modern geometry research;
- 2) the existing methodological system for the geometric preparation of students is not designed to adequately develop their spatial representations;
- 3) many students formally imagine the connection between geometric devices and their visual and figurative representations;
- 4) As you know, one of the most important tasks of the geometry course is to develop students' logical thinking, but the science teacher does not always have the opportunity to focus on this important aspect of geometry teaching. Computer-assisted authentication techniques allow us to fill in those gaps;
- 5) It is known that systematization and structuring of geometric knowledge acquired by students plays an important role in organizing the learning process as they are not only important in learning theoretical material but also in solving geometric problems. The simplest way to use computers at this time is to create a database and develop a methodology for using it;





6) Many students do not have the skills to use computers as a tool for learning geometry.

The methodological system is a pedagogical structure that consists of the purpose, content, methods, forms, and means of learning components. In the methodological system, teaching tools are subject to the purpose and content of the training and are consistent with the forms and methods of teaching. Therefore, it is often viewed as a secondary component of the methodological system. However, with the advent of computer and computer technology in the learning process, there are ample opportunities for achieving didactic goals that are still difficult to meet.

This, in turn, dramatically increased the role of teaching tools, especially electronic textbooks, among the components of the methodological system.

1. Illustration in e-learning literature is higher than in printed textbooks. Electronic textbooks are provided with visual aids, animations in their creation, use of sound tracking, hyper transmissions, videos and other multimedia technologies.

2. Electronic textbook provides versatility, versatility and variety of test tasks and tests. E-learning literature allows all tasks and tests to be interactive and instructive. In case of an uncertain answer, a clear answer can be achieved through explanations and comments.

3. Publishing and publishing of e-learning literature is not done. E-learning literature is an open system in its structure, which can be replenished and refined during its use.

4. The convergence of e-learning literature with learners is higher than that of printed textbooks. When demand for e-learning literature increases, the number of copies can easily be increased or sent via the network.

Taking into account the aforementioned, the research was conducted on the creation of an electronic manual on geometry courses taught in academic high schools.

The research revealed that the electronic textbook should have the following features:

- ensuring the quality of training sessions;
- Creation of new knowledge and opportunities for self-evaluation of students;
- convergence of lectures and workshops;
- Harmonized classification of information resources development;
- Text and other information materials should be updated (hypertext) and illustrated (multimedia tools, pictures, tables, diagrams, etc.);
- e-textbook should not become a textbook reference.

At the same time, the creation of an electronic textbook for geometry courses should be based on the following principles:

1. The principle of quantization. The training material should be broken down into sections that are small in size but have a whole section.



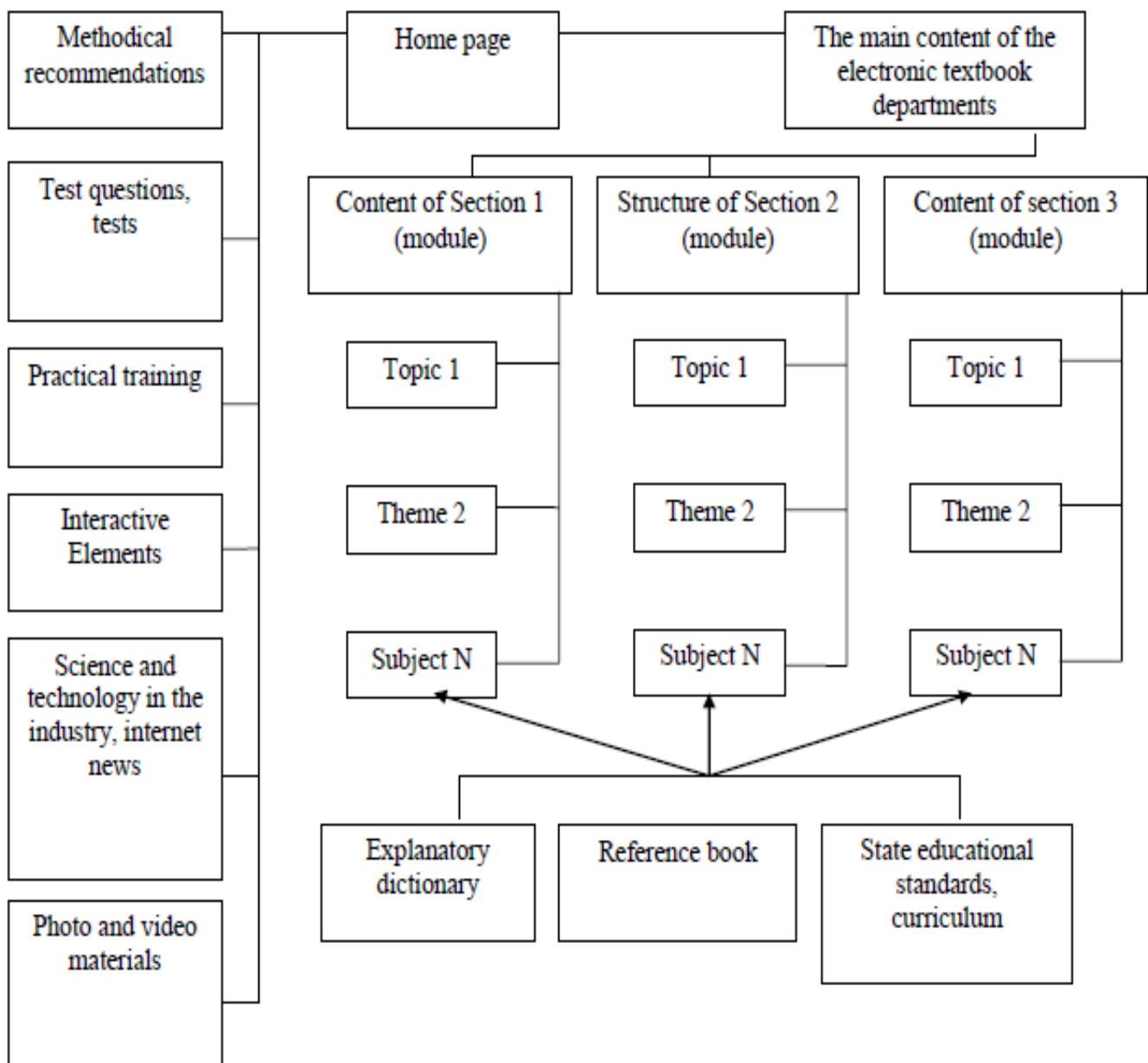


2. The principle of completeness. Each section should be comprised of: theoretical part, control questions for checking the theoretical knowledge, tests, assignments for practical problem solving and practical skills, as well as historical reviews.
 3. The principle of visualization. Each section should consist of a series of shots that are small in size and dimension, allowing new concepts, ideas and styles to be understood and easier to remember.
 4. The principle of networking. Each section should link other sections through hyperlinks so that the user can freely navigate to any other section. Although the principle of networking does not limit the learning material of the study, it involves the gradual, gradual mastering of science.
 5. The principle of controllability. Learners should be able to independently manage screen shots, and be able to display any topic or information, concepts and ideas, visual material and multimedia. Learners should be provided with opportunities to control their own knowledge, such as questions, answers to tests, and tests of skills in practice.
 6. The principle of adaptability. An e-learning guide on geometry should be able to adapt to the needs of a particular user in the learning process, allowing for the complexity of the material being studied and its practical orientation depending on the student's professional activities. The user should be able to produce additional visual material according to his / her own needs, to interpret the concepts learned in a graphical or geometric way.
 7. Principle of Computer Support. In this principle, students should consider tasks and tasks that encourage them to focus on the nature of the learning material at any time of the learning process, and use the computer to complete them. The computer should not only perform complex swap operations, compute various calculations and graphs, draw pictures and schemes, but also perform various complex operations. There should be an opportunity to examine previously studied and obtained results, not only at the response phase but also at the optional phase.
 8. The principle of accumulation. The e-learning manual should allow new sections and topics to be expanded and supplemented by science and technology, and to create private e-libraries for students, teachers or researchers.
- Electronic textbooks are an effective teaching tool that can safely incorporate the aforementioned principles of didactics into the learning process.
- As a result of theoretical and practical researches, didactic, technical and technological, ergonomic, aesthetic requirements of the electronic textbook were developed and the stages, technology and methodological support of its creation were identified.



The technology of creating the electronic textbook is sufficient and includes the following steps:

1. Define the purpose and objectives of creating e-textbooks.
2. Creating electronic textbook structure.
3. Creating the content of the textbook and sections.
4. Preparation of separate scenes of electronic textbook.
5. Programming.
6. Testing.
7. Improvement of the content of the electronic textbook based on the results of tests.
8. Preparation of methodical instructions for use.





Nowadays, there is a growing interest in increasing the effectiveness of education through the use of innovative and information technologies, which are rapidly developing in the educational process. Lessons using state-of-the-art technology are focused on finding, learning, analyzing, and even drawing conclusions. It facilitates the formation, formation, acquisition and education of individuals and communities in the process, and also serves as a guiding and directing person. In this learning process, the teacher becomes the main figure.

- pedagogical technologies allow wide introduction of systematic approach to the educational process.

- Pedagogical technology encourages the teacher to pre-design the technological chain from the objectives of the educational process to the establishment of the diagnostic system and control over the process.

- As pedagogical technology is based on the use of new tools and information methods, their application will ensure the implementation of the requirements of the National Program for Personnel Training.

Experience shows that knowledge is enhanced through the use of the most appropriate pedagogical technology in education. In conclusion, if we want to improve the quality of teaching geometry courses at academic high schools using information technology, we need to use the most accurate, affordable and effective pedagogical technology with an in-depth analysis of the purpose of education.

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