Electronic Educational Methodology Requirements for Creating the Complex

Haqberdiyev Bahrom Bobonazarovich

Lecturer at the Department of Digital Information Technology,
Denau Institute of Entrepreneurship and Pedagogy, Uzbekistan

ABSTRACT

The electronic educational-methodical complex of science (hereinafter referred to as the EMC) means the development of knowledge, skills and competencies to be acquired by students at the level of competence in accordance with the requirements of the State Educational Standard and the science program. Electronic teaching aids, didactic tools and materials, criteria for the development of creative abilities of students, providing guaranteed results, independent learning and study and control on the basis of a complex design of the educational process; includes

KEYWORDS: EQM, methodological requirements, didactic requirements, requirements for teaching achievement, requirements for problem-based learning, requirements for flexibility

Methodological requirements for the development of EEMR

Methodological requirements include taking into account the specifics of the subject for EEMR, its laws, research methods, the possibility of introducing modern methods of information processing.

EEMR generated from sciences must meet the following methodological requirements:
1. EEMR - a construction based on the interdependence of the conceptual, figurative and moving components of the presentation of educational material.
2. Provide EEMR training material in the form of a high-order structure. Taking into account interdisciplinary logical interdependence.
3. EEMR to enable the learner to determine the gradual mastery of the learning material through a variety of controls.

Didactic requirements for the development of EEMR

EEMR must meet the didactic requirements of traditional educational publications. The following are the traditional didactic requirements for EOMM:

1. Taking into account the latest achievements of science, science and technology in education ensures the depth and reliability of the content of EEMR. The process of learning materials using EEMR is based on modern teaching methods. For example, experiment, experiment, comparison, observation, abstraction, generalization, rounding, similarity, analysis and synthesis, modeling method, as well as mathematical modeling, as well as methods of systematic analysis.

2. Achievement requirements for teaching - are implemented in the EEMR and indicate the need to determine the level of complexity and depth of learning material specific to the age and individual characteristics of learners. Learning material should not be overly complex or overloaded, otherwise the learner will be unable to master the material.

3. Requirements to ensure the difficulty of teaching - the description of educational activities is conditioned. If the learner tries to complete problem-solving tasks and exercises, his / her thinking activity will increase. The level of

implementation of this didactic requirement using EEMR is significantly higher than in traditional textbooks and manuals.

4. Demonstration requirements for teaching - the need to take into account the sensitive perception and personal observation of objects studied by learners, their models or 8 models.

5. Requirements for teaching awareness, independence and activism of students - to provide EEMR for independent work of students on the involvement of educational information in achieving the ultimate goals and objectives of educational activities. 'zda tutadi. It refers to the purpose and content of the learning activity for the learner. EEMR in science should be developed on the basis of a systematic approach.

6. Requirements for systematic and sequential teaching in the use of EEMR - means the systematic acquisition by students of knowledge and skills in the field of study. Knowledge, skills and competencies must be logically formed and put into practice in the education system. To do this, it is necessary to: - Systematically and orderly recommend the training material;

➤ to develop the knowledge and skills formed on the basis of educational materials;

➤ Ensuring interdisciplinary relevance of the studied material;

➤ In-depth consideration of the sequence of transmission of learning materials and educator influences;

➤ build the educational process on the basis of a logical sequence;

➤ The content and method of teaching the information recommended by EEMR should be chosen depending on the individual ability of the learner, for example, to create meaningful play situations, to recommend practical tasks and experiments, models of real processes and objects Ensuring that it is linked to practical activities.

7. Requirements for the acquisition of knowledge in the use of EEMR - is of great importance in the development of students' skills such as deep thinking, memory, so that they can master the material.

8. Requirements for the implementation of developmental and educational functions of teaching in EEMR.

In addition to the didactic requirements for traditional educational publications, there are the following specific didactic requirements, such as the use of the advantages of modern information and telecommunication technologies in the development and implementation of EEMR:

1. Flexibility requirements - EEMR should be tailored to the individual capabilities of the learner, ie the learning materials should be tailored to the learner's knowledge and skills as well as its psychological characteristics. There are three levels of EEMR flexibility. The first level is the opportunity for students to study the material at an individual pace that suits them. The second level is a diagnostic analysis of the student's condition, the results of which suggest the content and methods of teaching. The third level is based on an open approach, which does not involve the grouping of users, and the authors are encouraged to develop as many options as possible for the entire contingent of learners.

2. Interactive learning requirements include ensuring that the EEMR interacts with the learner during the learning process. EEMR tools should provide interactive communication and feedback. An important condition for the organization of communication is the reaction of the EEMR to the user's actions. The control is carried out on the basis of feedback and makes recommendations on further work, the introduction of reference and explanatory information.

3. Requirements for the introduction of computer visualization capabilities in the provision of educational information of EEMR. The capabilities of modern electronic media include the analysis of the quality of the presentation of educational information.

4. Requirements for the development of students' intellectual abilities in working with EEMR. Thinking involves the ability to make independent decisions in complex situations and to develop information processing skills.

5. EEMR - must meet the requirements of structural and functional dependence of the presentation of educational material.

6. EEMR - should ensure the completeness and continuity of education.

Psychophysiological requirements for the development of EEMR

The functional and psychophysiological capabilities of students must be taken into account in the formation of students' independent learning skills and competencies based on the use of EEMR. The fact that professors and teachers try to cover as much information as possible on the basis of EEMR can lead to overcrowding. Increasing the speed of data transfer, in turn, reduces the quality of data acquisition, increases the number of errors, and negatively affects the student's self-esteem and health.

Research in the field of physiology and hygiene recognizes that the mental capacity of learners to work on a computer changes inversely with the amount of information being assimilated. This is explained by the following reasons:

➢ Increased load on the visual organs;
➢ the cessation of the initial enthusiasm for the news;
➢ accumulation of negative emotions due to possible uncertainties and mistakes;
➢ The adoption of a large number of educational resources prevents the active development of further information resources.

This necessitates the development of EEMRs in the educational process, taking into account the necessary didactic, psychophysiological and methodological requirements.

In addition to the general requirements for the development and use of EEMR, there are a number of psychological requirements that affect the success and quality of its creation.

The following are the psychological requirements for EEMR:

1. Demonstration of learning material in EEMR should be appropriate not only for verbal but also for sensory and demonstration situations of the cognitive process. EEMR should be developed taking into account the characteristics of psychological processes such as perception, attention, thinking, imagination, memory.

2. The educational material in the EEMR should be designed taking into account the age and basic knowledge of the students.

3. EEMR should focus on the development of figurative and logical thinking. The structure and content of the EEMR should be consistent with the curriculum of the subject being studied, with a focus on in-depth study of the study material.

The EEMR created for the education system must also meet the following general requirements:

➢ The content and structure of the EEMR should meet the requirements of the educational standard;
➢ Automation of search, collection, storage, analysis, processing of BEEMR educational activities, the system of problem-solving and research tasks of EEMR has an intellectual character; should include automation of calculations, design and construction, processing of experimental results, control tasks, information processing;
➢ EEMR should keep the imitation of the work of complex objects (machines, equipment, apparatus, devices, etc.) as a means of demonstrating various processes in real, accelerated or decelerated time scales;
➢ EEMR training tools - it is necessary to train the student in a virtual environment, depending on his future career;
➢ All calculations performed in the EEMR should have an open system of visualization, demonstration of the interdependence of the studied variable objects or processes.

The development of the EEMR should take into account the intellectual level, motivation, functional status and level of performance of the appropriate audience students.

The concept of motivation means the importance of the activity for the individual, the formation of a stable interest in it, as well as the process of transformation of externally defined goals into internal needs. Thus, motivation can be recognized as an internal driving force that enables an individual to actively participate in the learning process. It should be borne in mind that the motivational qualities of the individual form the basis of cognitive activity, in the process of which the student sets appropriate educational goals, manages the process and assesses its level of success. In this case, the need for independent learning leads to the development of different levels of motivation of student professional development.

The following three levels of motivation can be identified in the process of student professional development:

The initial level of motivation is related to the need for professional development and is based on external social and personal motivations. A moderate level of motivation emerges in the process of acquiring professional knowledge and lays the necessary foundations for further professional activity. A high level of motivation reflects the student's needs for development and the realization of their creative potential. The development of creative potential leads to the creation of optimal conditions for meeting the needs of student self-development.

The psychophysiological effectiveness of the use of EEMR is explained by the fact that the use of EEMR in the organization of independent learning allows students to significantly search for large amounts of learning materials and master them, develop motivation, increase knowledge.

The psychophysiological effectiveness of EEMR is determined first of all by the level of students' mastery of learning materials, education and intellectual development, performance, motivational stability. Second, it is related to the teacher's activity, which is determined by the concepts of teaching, indicators of rational use of pedagogical technologies and teaching aids, the teacher's stable motivation for work, ability to work.

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