

# PEDAGOGICAL REQUIREMENTS FOR THE USE OF SMART TECHNOLOGIES IN HIGHER EDUCATION INSTITUTIONS

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**Abstract.** *This article discusses the requirements and principles, possibilities and effective aspects of using SMART technologies.*

**Keywords:** *SMART technologies, E-learning package, e-learning environment, modern technologies.*

Due to the development of information and communication technology and the improvement of the modern pedagogical application of the computer, it is necessary to improve the requirement and principle of using SMART technologies in the field of physics and astronomy in higher education from the discipline of "Information Technologies in Education" [1; p. 124]. For this reason, there is a plan to further improve the principles and requirements for the creation of an electronic educational program, an electronic learning program for the use of SMART technologies in the field of "Information Technologies in Education".

In the modern teaching process, great importance is attached to the use of SMART technology, therefore, SMART technologies are effective in teaching and serve to increase the quality of teaching. Appropriate use of SMART computers and tablets in the educational process leads to successful results.

One of the advantages of electronic resources used through SMART technologies is that they are designed for comprehensive assimilation of educational materials and scientific information through independent education, creative thinking, formation of skills and competencies. Also, manuals of this type are better than traditional manuals in terms of concentration of scientific information, taking into account the age and physiological characteristics of learners.

Using SMART technologies, electronic manuals are presented in an attractive, effective form, the main concepts and definitions are written clearly and clearly, and at the same time, they have the ability to control the knowledge of users.

Recently, a scientific apparatus has been formed in the field of education with the help of SMART technologies, and professors and teachers of higher education institutions (HEIs) are paying great attention to the creation of a teaching system designed for the distance education system.

This is an electronic version of the state educational standard, which contains electronic publications, model and working plans, as well as sets of exercises and problems, maps and schemes albums, structural atlases, subject catalogs, diploma project instructions, reference books, prepared on the most important sections of the sciences of the state educational standard is the source. Contains complete multimedia or virtual material on a subject or course created in one of the programming languages or html using SMART technologies. There are two options for using SMART technologies, i.e. online and offline. The Online (open) option implies that the user is in

the global or local network for a long time, and the Off line (closed) option implies occasional access to the network.

The following requirements are set for electronic manuals that can be used on the basis of SMART technologies created for HEIs:

- compliance with the content of the chosen subject, educational goals and state educational standards;

- ensuring students' independent education;

- integration with other disciplines;

- embodying a sufficient amount of information about science;

- to create an opportunity for the student to self-assess and control the student's knowledge.

At the same time, it is necessary for students to develop their independent activity skills, to connect the acquired knowledge with daily life practices, to closely connect education and upbringing, and to serve to strengthen the acquired knowledge.

It is necessary to develop an e-learning package created using SMART technologies, pedagogical-psychological requirements for the completion of the e-book, basic digital voice demand, the task of the e-learning, its purpose and importance in the educational system, and the methodical support. These requirements can be divided into several groups: technical, technological, didactic, psychological, content and structure, economic and other [2; pp. 9-10].

A number of recommendations have been made by the scientists of our country regarding the demand for the development of electronic education packages, electronic notebooks, and electronic manuals. In particular, in the opinion of A.K. Jamolov, the following basic psychological-pedagogical requirements should be taken into account when designing a multi-electronic manual:

- to ensure the formation of the content of educational activities, following the basic principles of pedagogy, psychology, cybernetics, systematic design;

- providing the learner with a tool for teaching and training and a toolbox for training;

- motivation is due to interest in the computer itself;

It should be suitable for the level of difficulty of the science-related educational task and the psychophysiological capabilities of the students.

According to N.V. Makarova, the technology of creating an electronic educational package related to subjects was thoroughly researched in Japan, and he recommended the following steps for the processing, design and implementation of the pedagogical scenario [3]:

- determining the didactic purpose; development of the creative structure of the educational environment;

- perform technical work; to determine the shortcomings of the approbation in the educational process and to correct the problem;

- development of a proposal and recommendation for use in the educational system.

According to M. Lutfillaev, the problem in creating an electronic manual is related to understanding how much information can be given to the user. In order to solve this problem, electronic manuals should have the ability to improve the quality of the educational material, change the volume, for example, turn off the sound, reduce the volume, increase the volume, and change the volume [4]. In our opinion, electronic manuals should not only meet the above requirements, but should also be designed to present information in an adaptive and differentiated manner.

According to S.Tursunov, in the creation of an electronic axbopot pecupclap from the science of "Web-design", it is placed on the content and structure. used a pluggable tag [3].

U.M. Mirsanov used scientific-pedagogical requirements, psychophysiological, psychophysiological, methodical, digital, technical requirements in making a practical arrangement of 5th-6th grade mathematics [6].

U.N. Taylakov used the requirements for graphical design, functional structure, content, dashboard, desktop, database, digital voicemail, and technical support to create a unified online educational environment [7].

Based on the analyzed scientific research, we came to the conclusion that SMART technologies should follow the following requirements:

- be able to provide visual and audio information about the topic;

- occasional changes in colors viscosity;

- the content of the training-information sheet, which is based on the visual form, is too simple or too complex.

It is also necessary to follow the following guidelines:

- Before starting to use SMART technologies, to clearly imagine what structure it will have;

- Optical information should be available in SMART technologies

- It should be the main element of the presentation and should be related to the general idea of the presentation and serve to open it up;

- It is recommended to use a custom template when choosing a label style and background. Embrace a creative approach;

- the resources should be loaded optically with the bran detail. Sometimes it's a good idea to have multiple submissions for one successful clay-show game;

- the presence of additional animation effects, minimizing the content of the text, using it only for the purpose of drawing attention to the main aspect of the presentation, as well as the sound and visual effects, which need to be presented in a clear way to attract the attention of the reader;

- providing the learner with a detailed description of the module and module (content) name, text, graphics, tables, graphics, audio, video and other multimedia features;

- to consolidate the acquired knowledge, skills and competences, to design feedback training with students (testing, problem solving, choosing a modeling task, developing an answer analysis tool, multiplying typical wrong answers, giving advice);

- to create a text according to the ergonomic requirements, select and develop a chart, diagram, table, diagram, video sequence;

- designing the module of each section of the DAPC from an ergonomic point of view.

From this point of view, it is recommended to build each module in the following way [8; p. 114]:

- text of psychological research (module annotation and link to it);

- learning objectives and tasks of the module;

- training and information;

- a list of basic problems and issues related to the module;

- prompts for self-examination and reflection (with answers, answers and suggestions);

- structural-logical scheme of the module;

the list of educational literature for the module, referring to the page on the Internet page related to the topic of the module;

the presence of a special voice to stimulate the reader, to keep the attention and interest of the student;

availability of the final generalization summary;

the use of special symbols, such as icons of different types, which provide clear information about the content of the educational document;

unified support of the description with practical examples;

additional didactic information to support the independent cognitive activity of students (written notes, teacher's advice, etc.);

the openness of the language course, the fact that it is directed to the target group of students;

clarity and same quality of the navigator in the tutorial;

protection of universally accepted single signs and terminology;

a public feedback page containing a description of the object used and the object used;

general information about cognitive needs, which includes motivation, age, social status, cultural and professional level, level of acquaintance, level of prior training and others.

In short, electronic educational literature that can be used with the help of SMART technologies should be promoted to the status of "resource-teacher" according to its content and quality of preparation, and all features of independent education should be reflected in it according to the principles of individualization of education.

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