MECHANISMS OF INTRODUCTION OF PEDAGOGICAL DESIGN OF MULTIMEDIA EDUCATIONAL PRODUCTS

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ABSTRACT
Contemporary modernization of education takes place on the one hand under the influence of the evolution of society's expectations of its results, and on the other - the rapid spread of new technologies, the implementation of which would ensure the achievement of clear didactic results. Such technologies should include reproducible pedagogical design systems. They should be aimed at the optimal contextual solution of real pedagogical situations. The consideration of educational processes as isolated events in laboratory conditions leads to the detachment of mechanisms and methods for preventing and solving pedagogical risks from actual situations. The pedagogical means, methods, forms, techniques used should not be static, they require systematic adjustment and modernization in accordance with the ongoing processes in society, which involves the use of pedagogical design mechanisms that include various interactive means and also multimedia content. This article discusses the concept and characteristics of pedagogical design, the mechanisms and risks of its introduction using multimedia educational content in school. The study characterizes the advantages and risks of using a multimedia didactic context, the mechanisms of its introduction.

Keywords: *education, multimedia educational content, pedagogics, обучение, content, teachers, pedagogical design.*

INTRODUCTION

Modern educational processes, which require intervention in the design of certain pedagogical objects and phenomena in specific contexts as holistic phenomena, are necessary for the development of relevant educational prototypes (a version of pedagogical intervention before the introduction of the developed educational product occurs) [6, 9].

The development of pedagogical, educational, didactic, educative, formative, developing, socializing prototypes is called "pedagogical design". Such a palette of various aspects related to becoming a person, combined in one phenomenon, has given rise to many terms that are often used interchangeably: "pedagogical design", "teaching design", "instructional design", "learning design", "development of educational processes" and "structuring educational practices", etc. In modern world scientific practice, the concept of "Pedagogical Design" and the concept of "Instructional Design" are being studied. In domestic scientific works, the term "pedagogical design" is more often used.

LITERATURE REVIEW

Pedagogical design "refers to any systematic choice and use of procedures, methods, prescriptions and devices in order to ensure effective, efficient and productive learning" [11, p. 6]. The term "pedagogical design" partially intersects in functional action with other concepts such as "technology" and "design", which explains the use of a unified pedagogical toolkit. But at the same time, the main distinctive function of the concept of "pedagogical design" is aiming not at an educational result, but at the comfort of presenting an educational product to achieve the goal.

It is to conclude that along with the consideration of the phenomenon of pedagogical design as a field of science, it is considered as "a creative practice-oriented activity based on a set of cognitive theories (behaviourism, cognitive science, connectivism, positivism and constructivism), elements of engineering and artistic construction" [4, p. 46], structuring of content, strategies, rationalization of didactic, formative,

developmental and educational processes, practices for creating a comfortable educational landscape [13].

The introduction of pedagogical design involves the creation of an integral system that should include tools for achieving the set goal (planned result), certain tasks, principles, methods, didactic material and stages (algorithms) of action.

Investigating the phenomenon of pedagogical design as a process, scientists emphasize that it is "a process of systematic development of pedagogical specifications with the use of educational and pedagogical theories to ensure high-quality teaching. It covers the entire process of analysing the needs and goals of learning, as well as developing a teaching system to meet these needs, and also provides for the development of pedagogical materials and activities, as well as testing and evaluating the effectiveness of all pedagogical and educational activities" [7].

Conditioning educational practices, pedagogical design determines the content of the procedure for "solving a didactic task, namely, "the process of analysing the needs and goals of learning, as well as the development of a teaching system to meet these needs" [4, p. 304] it should be noted that it "comes down to a system of procedures that ensure the pedagogical effectiveness of educational materials, including those developed using new information technologies" [8, p. 36].

In the process of creating developing, teaching, forming, educational models, pedagogical design is refracted in practice and can begin at any stage of this process. The reproducibility of the pedagogical design of a particular educational phenomenon is determined by the analysis of the degree of coverage of all its components, as well as the possibility of creating an algorithm describing its systematic reproduction [12]. This supposes translating the didactic scenario into a set of actions, stages, principles, methods, ways, means and evaluation procedures, which makes it systemic [6]. The systematic process of pedagogical design is necessary for designing a consistent and reliable method of didactic, educating, developing, socializing and educative programs [10].

MATERIALS AND METHODS

The characteristics of pedagogical design as a process include complexity (coherence, consistency, reliability), creativity (innovation), interactivity (activity, dialogicity) and iterativity (repetition of action, reproducibility) [2, 3].

The stages of the pedagogical design process are the stages of the process itself:

- the stage of analysis of the study of the problem: the study of theoretical sources and pedagogical experience, the identification of pedagogical needs, the definition of connections and the basic concept of the planned interference;
- prototyping stage: creating a prototype with a given functionality of future educational practice;
- evaluation stage: research (monitoring, evaluation) of the degree and direction of the results of pedagogical interference, achievement of the set pedagogical goal;
- stages of adjustment: determining pedagogical risks and ways to eliminate them.

All the designated stages develop sequentially, non-compliance with this logic entails the risk of disruption of the pedagogical design process, and, consequently, its effectiveness.

The specificity of the phenomenon under study is determined by:

- contextuality, since all projected pedagogical interferences occur based on practicality and usefulness for improving the educational landscape;
- sensitivity, since pedagogical interference occurs on the basis of collaboration of analysis, prototyping (design), evaluation and correction;
- comfort, as it reaches an understanding of the sufficiency and safety of using pedagogical tools to improve the processes of perception of pedagogical interference;
- algorithmization, since it contains a template structured description of a method for solving a repetitive pedagogical task.

These characteristics manifest themselves together and are an integral part of the pedagogical design process, distinguishing it from other pedagogical phenomena. Pedagogical design is necessary for the design of pedagogical interference to eliminate existing educational deficits leading to educational problems that do not have clearly structured guidelines on principles, methods and means of solving them. Therefore the ultimate result of pedagogical design activities should be a roadmap or scenario that define pedagogical tools (forms, methods, ways, means), content, principles and conditions for their implementation [11].

Thus, in pedagogical design, the student's needs and capabilities are analyzed, the ultimate educational goal is determined and also the creation of an algorithm for some "intervention" that helps achieve the result. The results of this activity should be scientifically measured. The tools for implementing pedagogical design are differentiated by several characteristics, for instance, visual and non-visual, with the use of multimedia educational products, etc.

The pedagogical design of multimedia educational products acts as an holistic document (script, synopsis, etc.), which contains the purpose, forms, methods,

techniques, content of media components, as well as an assessment of their employment and correction of difficulties.

Multimedia, like many storage media, represents digital technologies that syncretically use sound, video, text, computer graphics, video. The main difficulties are caused by the choice of a set of components containing media and interactive, as well as ways and mechanisms of their introduction into the educational process to achieve this goal.

A distinctive feature of the inclusion of multimedia content in the educational process is that the created media models allow you to see previously incomprehensible phenomena and objects from the inside [16].

To create multimedia content, there are various software products aimed at professional users, but you can also find simple and understandable software products for "amateurs".

Software products for creating multimedia content allow you to:

- create demonstration works, for instance, a presentation that can be included at any stage in any pedagogical context. This type of content is considered the most convenient and effective way to demonstrate information using a computer. The presentation can combine animation, sound and image, video, i.e. those communication channels that are effective for keeping the student's attention and having them interested in the subject;
- record and edit audio files, with the help of which it becomes possible to study foreign languages, learn to read and calculate, etc. Thanks to audio content, not only visual analysis, but also sound occurs;
- shoot and edit video material, which improves students' understanding, increases enthusiasm. To shoot a video, you need a video camera that allows you to shoot videos with high quality. The footage is further processed on a personal computer with the addition of effects, a soundtrack and necessary text blocks.

RESULTS OF RESEARCH

Multimedia content, which is used in the learning process, introduces its own specifics, transforms traditional teaching methods. This allows:

- to increase the volume and speed of perception of the educational material by connecting the visual and auditory channels of assimilation in the teacher's presentation of the theory and visual demonstration;
- to form skills of working with search engines, to collect and process the necessary information on the studied material, as well as to improve the skills of independent work of learners, due to the extensive opportunities of Internet networks;
- to develop motivation and creativity of learners, due to multimedia effects;
- to develop the cognitive abilities of students due to the possibility of perceiving a large amount of materials from the Internet space.

But there is also a downside of using multimedia content, i.e. certain risks.

For instance, any multimedia content should contain a sufficient amount of information, while it should not be overloaded with it, since this can lead to a deterioration in perception and the effect of such training will be reversed. In addition, when using a large amount of multimedia material, a situation may arise where the subject of training becomes a passive spectator, which involves the use of a large number of training exercises to consolidate information, which in turn adds a load to both the teacher and the student. There are also risks of increasing fatigue when working with the monitor, as there is a large load on the eyes when perceiving information from the screen by using multimedia content.

But any risks in the educational process, including the introduction of multimedia educational content, depend primarily on the professionalism and competence of the one who creates and implements it. When transforming the traditional model of an educational event into a digital educational product, it is very important to know the measure and mechanisms of pedagogical design [14], which can be conditionally classified according to the leading purpose of virtual learning tools:

- teaching: the formation of skills and (or) competences;
- mastering: working out skills;
- controlling: assessment of the degree of competence formation;
- informing: providing the necessary material;
- modeling: designing algorithms of models for solving pedagogical real and virtual situations;
- visual: demonstration of educational material [1].

Comfort, which determines the essential characteristics of pedagogical design, assumes the actualization of mechanisms when introducing multimedia educational products, which are primarily aimed at changes occurring in the student's personality:

- identification (identification with the surrounding world through their acceptance and formation of the "I" image);

- dramatization (the emotionally-coloured state of one's own life experienced by the subject and the creation of new images);
- verbalization (establishing a connection between objects and images in a dialogue: analysing and comprehending one's actions, exchanging points of view);
- "sublimation (transformation and switching of the energy of affective drives for the purposes of social activity and cultural creativity)" [15, p. 16].

CONCLUSION

Thus, the mechanisms of pedagogical design, first and foremost, should be aimed at activating the mental activity of students, while the technological effectiveness of this phenomenon is determined by a clearly constructed algorithm.

At the first stage, the phenomenon under study and its functional properties are isolated. This stage is called perception.

At the second stage, the objective and subjective connections of the phenomenon under study are revealed. This stage is called comprehension.

At the third stage, repetition takes place to capture the identified properties and connections. This stage is called memorization.

At the fourth stage, the subject of learning reproduces the perceived, meaningful and memorized phenomenon being studied. This stage is called playback.

At the fifth stage, there is an embedding of new knowledge into the construction of existing knowledge. This stage is called transformation [7].

When activating the mechanisms of pedagogical design, the teacher together with the student must go through five stages from empirical acquaintance with the phenomenon under study, understanding its connections, repeating everything they learned to consolidate and move on to awareness and understanding of its essence, demonstrating the ability to apply it in various situations.

It can be concluded that the mechanism of pedagogical design, as a production cycle for the creation, implementation and assessment of multimedia didactic material, is a design by a teacher, together with colleagues, students and their families; several interrelated and interdependent elements:

- why (definition of the meaning (relevance of the creation of this product);
- who (age characteristics, analysis of the needs of the target audience, its motives);
- when (sequence of events to happen, time frame);
- how (type of the product created: presentation, website, electronic textbook, web application, etc.; form of training: full-time, part-time, hybrid);
- structure (strategies, tactics, means, methods of educational work used, creation of elements, style and visual design, loading material into the learning management system);
- quality (necessary control mechanisms, development of methods for evaluating the results and effectiveness of materials, tests and assignments, means of control and information collection).

The considered aspects of the pedagogical design of multimedia educational products do not fully reveal all aspects of this multifaceted pedagogical phenomenon. But they can be the basis for further study, for instance, the principles and methods of implementing pedagogical design in modern conditions.

AUTHOR'S CONTRIBUTION

G. Palatkina - disclosure of essential characteristics of pedagogical design

A. Palatkina - analysis of the specifics of the introduction of multimedia educational products;

I. Gorina - review of the practice of implementing mechanisms for inclusion of a multimedia product in the educational process;

T. Simonova - analysis of particularities of the formation of socio-cultural competence of older preschool children.

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