

## PEHPP 2019

### Pedagogical Education: History, Present Time, Perspectives

### DIDACTIC PRINCIPLES OF DESIGNING A MULTI ENVIRONMENTAL LESSON

I. A. Donina (a)\*, K. Elistratova (b)

\*Corresponding author

(a) Yaroslav-the-Wise Novgorod State University, Veliky Novgorod, Russia, doninairina@gmail.com

(b) State Budgetary Educational Institution "Lyceum 101", St. Petersburg, Russia, xenos88@mail.ru

#### *Abstract*

The article presents and defines, in accordance with the cross-multidimensional concept of school education and a multi-environment lesson, the contents of the didactic principles of science, visualization, consistency, problem-and-action based directing, activity, cooperation, individualization. The construction of the educational process in general and the multi-environment lesson, in particular, in a cross-multidimensional educational environment opens up new perspectives and additional opportunities in terms of obtaining pedagogical and social effects. The organization of a multi-environment lesson allows systematical practicing of subject and meta-subject learning activities with each student, creating and modeling a variety of types of educational and extracurricular activities and social practices. The practice of teachers' professional activity shows that a high level of their subject-methodological training does not provide the result expected by society, by direct consumers of educational services. For new goals and content of education, teachers need to be prepared for work in a new environment of educational activity (cross-multidimensional in structure and content), where one of the founding units is a multi-environment lesson with special didactic principles of construction and features of the methodology and content. A number of pedagogical principles can be taken as the basis for designing the content, building and conducting a multi-environment lesson, among which the principles of science, problem-and-action direction, visualization, consistency, activity, individualization, and cooperation are of the greatest importance.

2357-1330 © 2020 Published by European Publisher.

**Keywords:** Criteria of education, cross-multidimensional organization of the educational process, cross-multidimensional spaces and environments, didactic principles, multi-environment lesson, educational environment.



This is an Open Access article distributed under the terms of the Creative Commons Attribution-Noncommercial 4.0 Unported License, permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## 1. Introduction

The essence of the modern quality of education, which is the main point of its modernization, is the achievement of educational and meta-subject results that meet the educational needs of the individual, the needs of society and the requirements of the state. One of the most important conditions for achieving this quality is the transition to a cross-multidimensional educational environment and a multi-environment lesson through innovative pedagogical tools with the understanding that fundamentally new didactic opportunities create conditions for the implementation of innovative educational technologies and the achievement of modern educational results.

The emphasis on technologizing and utilizing the potential of various spaces and environments is not an end in itself. One of the most important conditions for the effectiveness of a teacher's activity is ability to quickly adapt to the changing conditions of the surrounding world, willingness to work in a cross-multidimensional educational environment (Novikov, 2017). In these conditions, the problem of didactics in general and the didactics of a multi-environment lesson, in particular, becomes relevant.

## 2. Problem Statement

An analysis of the practice of teachers' professional activity shows that even a high level of their subject-methodological training does not provide the result expected by society, by direct consumers of educational services. To realize the new goals and content of education, teachers need to be prepared to work in a new environment of educational activity (cross-multidimensional in structure and content), where one of the fundamental units is a multi-environment lesson with special didactic principles of construction and features of the methodology and content.

We believe that the basis for designing the content, building and conducting a multi-environment lesson can be a number of principles, among which the principles of science, problem-and-action direction, visualization, consistency, activity, individualization, and cooperation are of the utmost importance.

*The principle of science* determines the selection of the content of educational material and the methods of its assimilation, adequate to scientific knowledge. In accordance with this, students should master the skills of scientific research, modern methods of cognition. This implies the requirement to fill the educational process with such content that can be most effectively transmitted and used through channels and through cross-multidimensional environment tools.

From the principle of science follows the requirement of *problem-and-action direction* of a multi-environment lesson. Such a training model puts the student in the position of a researcher, designer, planner, communicator, organizer of communication, and contributes to the development of analytical and logical thinking. The direction defined by this principle effectively contributes to the achievement of personal and meta-subject results during the lesson (series of lessons), and allows the student to immediately plunge into several environments and spaces integrated with the educational environment.

*The principle of visualization* indicates the need for the student to create a sensual idea of the object being studied in its modern interpretation, presenting its model in a form that allows clearly revealing the essential connections and relationships of such an object.

In neo-didactics (Dautova & Krylova, 2018), the *principle of consistency* is especially emphasized. According to this principle, it is necessary to distinguish in the objects or phenomena presented at the multi-environment lesson with the help of tools and means from different intersecting spaces and environments, the main structural elements and the essential relationships between them, allowing for representation of this object in a holistic way, the variety of elements and relationships between such elements.

The *principle of activity* is intended to indicate the criteria for choosing the most rational activities of students in the course of a multi-environment lesson. Moreover, activity acts as a requirement for schoolchildren to reproduce not only substantive, but also their own educational actions, during which the assimilation of subject-related skills and universal educational actions takes place. So, if the task is to form typical skills in students, then the organization of activities in the lesson should be done according to a ready-made algorithm, using the specified tools and means from various intersecting spaces and environments.

The *principle of individualization* is based on the ideas of taking into account the characteristics and potential of the personality of the student as a subject of activity. The content of the principle appears as a system of individualized techniques and methods of teacher cooperation with students in the framework of a multi-environment lesson.

The *principle of cooperation* reflects the joint activity of the teacher with the students, when each of the participants performs certain functions, and the teacher, first of all, seeks to create conditions for the development of schoolchildren during the multi-environment lesson, using the potential and capabilities of interacting and intersecting spaces and environments.

It is quite obvious that the construction of the educational process in general and the multi-environment lesson in particular, in a cross-multidimensional educational environment, relying on the above principles, opens up new perspectives and gives new opportunities in terms of obtaining pedagogical and social effects.

### 3. Research Questions

The concept of cross-multidimensional organization of the educational process in a modern school, being a new direction in pedagogical science, should determine the general vision of not only its structure, but also the content of education, management, assessment and quality assurance of pedagogical and social results, the forms used, and methods of teaching technologies, development and education. In a series of these tasks, we especially emphasize the task of mastering the technology of a multi-environment lesson as a new phenomenon in modern didactics.

### 4. Purpose of the Study

In this study, we consider and analyze not only the process of designing a multi-environment lesson, but also its scientific and methodological support, the main didactic principles, and the criteria basis for assessing the quality. In addition, the issues of training the teacher for the design of a multi-environment educational process in a cross-multi-dimensional environment of educational activity, based on the mutual and multi-aspect intersection of a number of spaces and environments are important to us. Among these

spaces and environments we single out economic, social, innovative, technological, cultural and historical, ethno-cultural, subject-spatial, industrial and professional environment; humanitarian, geographical, library-media, network, conceptual-paradigm, axiological, semantic, noospheric, narrative, and semiotic spaces.

We emphasize that the teacher, in relation to the multi-environment lesson, simultaneously performs several roles, designing the content of the lesson (series of lessons), developing the topics of educational projects and participating in the project activities of students, organizing their extracurricular activities and social practices, conducting an examination and assessing the quality of educational activities of students, organizing their pedagogical support during the learning process, realizing the functions of a tutor.

## 5. Research Methods

To achieve the goal set, we used the methods of theoretical research: interdisciplinary analysis and synthesis of methodological, pedagogical, psychological, didactic, methodological literature and regulatory documents on the research problem; generalization, comparison, abstraction, forecasting, design, modeling of the process of the lesson; methods of empirical research: survey, observation, study of common and innovative experience, and evaluation of products of methodological activities of teachers.

## 6. Findings

Educational activities in the ideology of multi-environment lessons should be presented as a system of certain educational tasks, united by this ideology, focused on achieving the required pedagogical and social results, effects. They are formulated in relation to specific educational situations and involve the implementation of certain educational and pedagogical actions – subject related, design, control and evaluation, supporting, etc. (Asmolov, 2016).

During the selection of educational activities types, the teacher should be familiar with the classification of educational situation types for building the educational process in a cross-multidimensional educational environment: a) the situation - the problem - the prototype of a real problem that requires an operational solution; b) situation - assessment - a prototype of a real situation with a ready-made proposed solution, which a student should evaluate and offer own adequate solution; c) situation - illustration - a prototype of a life situation, which is included as a fact in the lecture material; d) situation - training - an example of a standard or another situation (Dautova & Krylova, 2018). In addition, the following situations are potentially possible in multi-environment lessons: a) a classical situation (a clear description of the situation - students independently formulate a question - make a decision); b) a living situation (an event from the life of students - making a decision - a description of the development of an action in a certain chronological sequence (chronotope); c) actions according to an algorithm, according to instructions, according to a standard (a situation and a regulatory document are offered - decision making).

Depending on the educational goals set by the teacher, it is necessary to plan educational tasks, organize the actions of students with educational material in different ways, using the potential and tools of a particular environment, space, following the logic and algorithm for obtaining one or another result. The task "to read the text, do the work with the text" not only involves acquainting students with information, but also includes, for example, working with the socio-cultural context, narratives, frames,

slots, a value matrix, event elements, etc. (Berstein, 2017; Cappelli & Brealey, 2016; Ivanov, 2015; Langacker, 2015; Morgan, 2017; Zhang & Studios, 2017). Methodologically, it means that in the framework of a multi-environment lesson, such tasks are useful in which students are invited to independently break the text into fragments of different significance and semantic load, select illustrations, musical and video sequences, express their attitude, and give a value assessment. Dominant in this example, first of all, are the semantic (literary terminology) (Talmy, 2015), axiological (understanding the value of textual information) (Cowell, 2017), and informational (use of digital resources) components of educational activity (Berstein, 2017; Bono, 2018; Roder, Roder, & Drunger, 2017; Tyner, 2017; Weisgerber, 2017).

The list of educational activities types, taking into account the nature of the multi-environment lesson, can be formed on the basis of the analysis of technical, technological, software, resource capabilities for working with educational content, information (multimedia equipment, interactive whiteboards, various ESM, educational resources of the Internet, educational, design platforms, services for media creation, etc.) (Ivanov, 2016; Kozyreva & Gayko, 2011; Masyukova, 2015; Novikov, 2017; Rogers, 2015).

It should be noted that the selection of the educational activities for schoolchildren in a multi-environment lesson must be carried out in accordance with three-level taxonomy: Level I - reproductive; Level II - heuristic; Level III - creative.

In Russian pedagogy there is no clear, unambiguous interpretation of the educational process result. In our opinion, it is necessary to address this issue if we talk about a new didactics, didactics of a multi-environment lesson. The definition of education follows from our broad interpretation of the educational process in a cross-multidimensional environment that performs the threefold function of education, upbringing and development. It is based on the basic principles of national pedagogical ideas about the essence, structure, mechanisms of transfer and assimilation of the content of education, as well as on the basic psychological concepts of the individual, approaches to highlighting its structures.

Qualitative analysis allowed us to present education in the form of a three-level nuclear structure, where each of the levels indicates the degree of decomposition, the breakdown of its properties into constituent elements. The first level or core of the model is education itself as an integral quality of a school leaver, as a result of his/her participation in the educational process, self-development and disclosure of abilities. At the second level, several enlarged properties can be distinguished – such structural components as knowledge-information, cultural, value-motivational and resource ones. At the third level of decomposition, they are decomposed and presented in the form of more specific and measurable properties that are formed during a particular multi-environment lesson.

Criteria for evaluating multi-environment learning outcomes (the properties of education) largely depend on the stage of training and on the duration of its segment. They contain a description (usually of high quality) of either a method of performing an activity or a product of an activity obtained as a result of multi-environment training.

The theory of a multi-environment lesson and the specifics of its didactic construction are a certain innovative challenge for a significant part, if not the majority, of the teaching community. First of all, it is important that teachers accept and understand the nature of the multi-environment lesson. So, when conducting a survey among teachers of the Facebook group "Methodological Bank of Language Teachers" in July-August 2019, the following was revealed:

- more than 80% of 150 teachers who took part in the survey prefer to use material from various spaces and environments during their lessons (creating a video museum of writers and poets, a lesson called “Philosophy of things” (at the final lesson, students bring things / objects related to a certain historical era, understanding and comprehension of the studied work, a certain character; the task of classmates is to name the character, work, author, characterize the socio-cultural context, etc.);
- 95% of the 150 survey participants are confident in the positive dynamics of their students' interest in studying the topic;
- 100 % of the 150 survey participants made positive comments on the multi-environment lesson, the very idea of conducting it.

Thus, during the research, further analysis, and approbation of multi-environment lessons in a cross-multidimensional space of educational activity, we determined the main areas of their didactic-methodological support.

## 7. Conclusion

Thus, this article substantiates the didactic principles in the design of the educational process in the modern cross-multidimensional educational environment in general, and of a multi-environment lesson in particular. In the study, we presented and specified in accordance with a cross-multidimensional concept of school education and a multimedia environment the content of the principles of science, visualization, consistency, activity, cooperation, and individualization.

In contrast to the classical construction of the lesson, the organization of a multi-environment lesson allows, at a fundamentally different quality level, for a systematically working out of the most important subject and meta-subject educational activities with each student, creation and modeling of various educational activities and social practices. The simultaneous appeal to several spaces and environments creates a powerful motivational effect. The number of interested / motivated students is increasing, which is especially important in conditions of high occupancy of the class (25 people or more).

In general, the implementation of such a multi-environment approach leads to a steady interest in learning and appearance of cognitive motives among students. The students form important skills, motives, attitudes, which are relevant from the point of view of subsequent educational and cognitive activity, successful socialization, and professional self-determination: the need for self-education, self-development; the ability to choose educational activities with awareness of personal responsibility for it; the need for teamwork aimed at obtaining a joint result; etc.

Thus, the professional activity of a teacher, as applied to a multi-environment lesson, undergoes changes in a number of components - gnostic, organizational, design, expert, reflective, etc. Moreover, the key ability is to design the educational process in a cross-multidimensional educational environment.

## References

- Asmolov, A. G. (2016). *Russian school and new information technology: a look into the next decade*. Moscow: Nex Print. [in Russ].
- Berstein, B. (2017). *Open school, open society?* Moscow: New society. [in Russ].
- Bono, de E. (2018). *Lateral Thinking*. New York: Scientific society.
- Cappelli, G., & Brealey, S. (2016). *The Thinking Learning Classroom*. New York: Science imagination.
- Cowell, F. R. (2017). *Values in Human Society*. New York: Science and thought.
- Dautova, O. B., & Krylova, O. N. (2018). The development of neoclassical didactics as an answer to the challenges of the time. *Continuing Education*, 1 (23), 4-9. [in Russ].
- Ivanov, D. A. (2015). Educational or developmental environment. *Library of the School Principal*, 1, 48-49. [in Russ].
- Ivanov, D. A. (2016). *An experiment in education*. - Moscow: Academy. [in Russ].
- Kozyreva, O. A., & Gayko, M. E. (2011). Possibilities of a multi-environment approach in pedagogy and psychology. *Education. Career. Society*, 3(32), 24-35. [in Russ].
- Langacker, R. (2015). *Foundations of Cognitive Grammar Text*. New York: Science and thought. New York: Science Imagination.
- Masyukova, N. A. (2015). *Design in education*. Minsk: Tekhnoprint. [in Russ].
- Morgan, G. (2017). *Images of Organization Text*. New York: Newbury Park.
- Novikov, A. M. (2017). *Russian Education in a New Era*. Moscow: Egves. [in Russ].
- Roder, H., Roder, Ch., & Drunger, H. (2017). *Holistische Schule. Expose zur Grundungeiner Ersatzschule in freier Tragenschaft und / oder zur Durchfhrungeines wissenschaftlich begleiteten Schulversuchs* [Holistic school. Expose on the foundation of a substitute school in free ownership and / or on the conduct of a scientifically supported school experiment]. Germany: Weiserbuch.
- Rogers, K. (2015). *Freedom to Study*. Moscow: EXIO-Press. [in Russ].
- Talmy, L. (2015). *Toward a Cognitive Semantics*. New York: Cambridge Univ. Press.
- Tyner, K. (2017). *Literacy in a Digital World Mahwah*. London: Scientific thought.
- Weisgerber, L. (2017). *Sprachliche Gestaltung der Welt Text* [Linguistic design of the world text]. Düsseldorf: Schwänn.
- Zhang, X. (2017). Studios, Mini-lectures, Project Presentations, Class Blog and Wiki: A New Approach to Teaching Web Technologies. *Journal of Information Technology Education: Innovations in Practice*, 8, 187-199.