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# PREPARING FUTURE TEACHERS TO DESIGN EDUCATIONAL CONTENT IN DISTANCE LEARNING ENVIRONMENTS

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## Abstract

This article describes the use of distance learning in training future primary school teachers to design educational content. The author defines the contradiction between the modern constantly changing conditions arising in the process of education informatization and the real level of future school teachers' readiness to activity in these conditions. Therefore preparation for designing of an educational content as the structured content of the training placed in the information-educational environment and presented by means of an electronic resource, allows future teachers to become more adapted to conditions of the future profession. On an example of the design activity ways organization of students training at pedagogical higher education institute are shown. The importance of design activity in the process of future professional formation is underlined. Designing principles an educational content which it is necessary to adhere to students at carrying out of the given activity are defined: consistency, modularity, adaptability and variability, interactivity, availability. The list of various Internet resources that can be used in the professional training of future teachers during distance learning. These include VKontakte social network, Skype, Playbuzz, CourseLab, iSpring Suite, Trello. The stages in which training was conducted in classroom and extracurricular training were described: information stage, operational stage, behavioral stage. During each stage, certain tasks were solved. Emphasis is placed on the most significant forms of training organization and their content (workshops, master classes, laboratory and practical classes). The listed organizational measures allowed to make the process of training future teachers of primary classes more effective.



*Keywords:* Future teachers, training, design of educational content, stages, distance form, project activities

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## 1. Introduction

A modern teacher must be able to innovate, think creatively and independently and be ready for non-standard solutions. Such requirements today call for a review of traditional ideas concerning the teacher training process and its content. At the same time, the content of fundamental, psychological, pedagogical, scientific, methodological, informational and practical teacher training must meet the requirements of the information society and the changes that are taking place in various social spheres. In the content of the non-service primary school teacher training, we can note the lack of orientation to the formation of the designing component of the teacher professional activity in the conditions of the information and educational environment of the primary school, namely, the orientation to the educational content designing.

## 2. Problem Statement

The problem of the spread of the COVID-19 has affected the organization of education in higher education institutions. This situation has led to the teaching of all disciplines in the bachelor's degree programs in distance form. These changes allowed teachers and students to learn how to interact with different computer programs, services and applications that previously could not be mastered because there was no need for such changes in the educational process.

## 3. Research Questions

As one of the forms of pre-service primary school teacher training, we defined the project activity, which was carried out with the participation of students in the project and educational intensification modelled on the University 20.35. As a part of this activity, a team of students created educational content for training junior high school pupils, which was the main goal of the project. We use the term “educational content” to refer to the structured content of training placed in the information-educational environment and presented using an electronic educational resource (Ilchenko, 2002). Such theme of design activity has been chosen in connection with a contradiction between modern constantly changing conditions arising in the course of informatization of education and the real level of readiness of the pre-service teachers of primary school for the activity in these conditions (Bogush, 2019).

## 4. Purpose of the Study

The study aims at providing training for non-service teachers through distance project activities.

## 5. Research Methods

The following research methods were used to solve the problems: the theoretical analysis of the problem under study based on the investigation and systematization of psychological, pedagogical and scientific-methodological literature made it possible to substantiate the importance of preparing non-service elementary school teachers for the designing of educational content; the pedagogical experiment provided

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an opportunity to study the state of the problem in practice, to introduce a remote form of non-service primary school teacher training into the educational process.

## 6. Findings

Proceeding from the idea of the purpose and pedagogical profession essence, students had to rely on several principles when designing educational content, which allowed them to interact with students in the information and educational environment. Let us consider them more closely. First of all, the educational content should take into account the principle of consistency. The system is commonly understood as a set of interrelated elements (components) that form a stable unity and integrity with integrative properties and regularities (Robert & Lavina, 2016). We present the content in the form of the following system, functional blocks: 1) an educational block (electronic and printed learning tools); 2) a demonstration block (a set of demonstration versions of learning elements); 3) an information and educational block (reference application resources); 4) a control block (control and test tasks to monitor the learning activity of each student); 5) the resulting block (personal web page of the student); 6) a methodical block (navigation, methodical instructions for the student and the teacher); 7) a communication block for the student (Ruchkin & Fulin, 2014). This design of educational content will create a communication environment for relationships between key actors in the educational process.

Based on the fact that any system includes some components, several researchers note that these should be modules (Osin, 2005; Rabinovich & Bagramyan, 2015). That is why we have highlighted the principle of modularity. Educational content may consist of training modules, which are quite complete multimedia products that solve a certain training problem. Each module is an autonomous, substantial and functionally complete educational resource and can represent a thematic element that consists of three components: information (I-type), practical (P-type) and control (C-type). In this case, each component of the module can be variable. This is necessary so that, studying a topic, a student can choose the most appropriate one in terms of information (I), practical (P) and control (C) modules. For example, the I-type can be chosen according to the depth of material presentation, in the group of the P-type one can choose a laboratory work or solution of problems on the topic, among the C-types, one can choose either a simple test or a practical task performed on a virtual simulator.

This construction of educational content corresponds to the main objective of modular learning, which is to create favorable conditions for personal development by providing the flexibility of learning content, taking into account the individual needs of each student. Thus, the principle of adaptability the learning process is dynamically adapted to the needs of the student and variability is realized. The learning process will be dynamic and personalized for each learner, who can follow different learning options according to their individual characteristics. This is confirmed by the analysis of studies that note the main purpose of individualization in adapting the learning process to characteristics, level of knowledge or preparedness and abilities of each learner (Samoylenko, 2013; Shavadi, 2015). In this regard, it becomes clear that there is a need for variable representation of modules of each type. Variatives (i.e. analogs) are electronic learning modules of the same type (I, or P, or C), dedicated to the same subject element of a given subject area (Zamaletdinova et al., 2019). A variative may contain the same material, but in a different presentation, more understandable and accessible to that particular student, and is achieved through

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different methods of presentation of the material, the technology of implementation of modules. The main condition to be met is that the student chooses a particular variative. The teacher only gives an explanation of what to pay attention to when making this choice. Interaction in the environment of alternative actions and solutions ("variative interaction") leads to cooperation in specially created situations of choice. The activity of participants in implementing this principle helps to develop skills of independent cognitive activity, critical thinking and responsible behavior.

Owing to the presented possibilities of educational content, the principle of interactivity is implemented. The term "interactivity" (from "inter" - together, "act" - to act) is used today from both technical and pedagogical points of view. In the first case, interactivity is a property of the program interface for organizing interaction with the user (Khrulyova, 2017). In the second sense, the term interactivity is used to describe some methods of learning, as the personality is characterized by activity, which is manifested in the learner's own activity (Bulanin, 2015). When designing educational content, students were asked to create its elements depending on the level of interactivity due to the age characteristics of learners. Thus, it was most feasible to use interactive elements of the I level for first-graders, II level for second-graders, III level for third-graders, IV level for fourth-graders at drawing up educational content. Such construction of educational material promotes the development of subjectivity of the learner, which functions in accordance with the degree of activity of subjective inclusion.

Such a pattern made it possible to observe the principle of accessibility. Realization of the principle of accessibility will allow solving the problem of necessity to take into account the requirements of adaptability to individual abilities of a learner when creating the content of the training. Accessibility of training by means of educational content is reached by granting learners the reference information as individual information support, maintenance of variability of the content and various forms of representation of an educational material. This principle will create an information environment - a system of information flows, in which education is mainly carried out as a process of intertranslating the knowledge of participants of the pedagogical process (Gluzman et al., 2020).

However, the task of creating such a resource is not just to present content in a form accessible to students, but also to organize effective activities of the subject. Meeting this condition is possible at designing. At the same time, the effectiveness of a ready digital educational resource, obtained as a result of competent designing, depends on the adequacy of the use of electronic learning elements and algorithms of learning, and the adequacy of selection and preparation of the source materials for the creation of its elements. Therefore, the most important aspect in the organization of educational content is the designing of its content, i.e. the definition of the necessary volume, structure and sequence of learning the educational material, as well as the optimal form of its presentation. For the organization of design activity on designing of educational content in the conditions of distance learning we have allocated three stages:

Stage I - information "know". There was overcoming the intellectual passivity of students, the actualization of their personal experience by informing about the activities of educational content design, the development of interest in this activity and the need for self-improvement and self-education. In the discipline "Digital technologies in pedagogical activity" classes, the following problems were solved: formation of understanding a role and a place of informatization of education in society; mastering of principles and methods of construction of the information-educational environment of training; formation

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of skills and abilities of application of modern methods and techniques for searching, processing, analyzing and storing resources. In the discipline "Pedagogical designing with workshop", non-service teachers understood theoretical and technological bases of pedagogical designing, got the ability to carry out project activity and objectively estimate results of this activity by systematizing fixation of all information appeared as a result of free statements of students. This stage allowed to present new information in accordance with the expectations and abilities of teachers, as well as to stimulate them to raise new questions.

Stage II - operational "know-how". For social support of the independent activity experience, a virtual pedagogical laboratory was organized in order to provide support to students during the extra-curricular time. Thus, a conversation was created in a social network for communication, exchange of developments and mutual assistance. Students could ask questions, help each other, recommend some new resources that they found and used for content. At the same time the work on the creation of virtual excursions, which were elements of educational content, was conducted. At first, students had to define the purpose of the virtual excursion, define a set of key objects for the excursion, analyze the sources of information, develop the project content, accumulate a digital database on the object of study (research stage). Then they had to make a virtual excursion based on received and processed materials, i.e. form a virtual image of the object using Microsoft PowerPoint (creative stage). Subsequently, the students had to present the created product (final stage). The students were offered to create virtual excursions in three directions: natural science, culture and bibliography. Examples of tasks are as following: to develop and conduct a virtual excursion of a natural-science orientation on a theme "Protected corners of the native land"; to develop and conduct a virtual excursion of a culturological orientation in a museum of fine arts; to develop and conduct a virtual excursion of a bibliographical orientation in a museum estate of one of the Russian writers.

Stage III - behavioral "do". At this stage, the workshop "Structuring and Visualization of Educational Material" was held. At this event, students learned to create images, screenshots, animation, knowledge maps, tag cloud, infographics, etc. While developing a specific element, non-service teachers had to determine which learning task they should perform (showing structure, behavior or appearance of the object, etc.) and accordingly choose a type of element (drawing) that should visually display only those properties of the object that are essential and necessary to show in this learning context. The workshop component was in the following discussion via Skype on which classes and for what age it is possible to use this or that element of educational content. The discussion was followed by mutual evaluation through criteria and ways to evaluate the measure of participation in the common activity. In addition, there was a "Monitoring and Evaluation Software Tools" session for students. Students had to create tests and control works on the selected topic for a particular class using the following programs at option: Playbuzz, CourseLab, iSpring Suite, ExamProfessor. It was necessary to take into account the age of learners and their level of training, which allowed them to develop their position and skills of independent analysis and decision-making. Management and control of students' work were carried out via social network Vkontakte, the board Trello and the platform of the University 20.35. The project mentor, who acted as an instructor, formulated personal tasks for each team member. The student divided that task into subtasks and solved them with the help of various Internet resources and services, which was noted on the Trello board.

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## 7. Conclusion

The results of the fulfilled tasks were reflected on the platform of the University 20.35 in the personal educational trajectory of each participant, which allowed coordinating the work on the project according to their abilities. In this way, their digital trails were created, which demonstrated the emerging competencies of the students. In parallel with the project work, training sessions on resource conditions were held. Speakers paid attention to the personal qualities and features of students that are necessary for them to participate in intensive training. The result of the project activities was educational content that was highly appreciated by experts - teachers of elementary school. This allowed laying the foundation for a large-scale project, which is planned to be implemented in collaboration with the Sevastopol Education Department.

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