

On Training Future Teachers for Use of Multimedia Training Tools

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Abstract

This paper rationalizes the training of future teachers to use multimedia training tools and defines future teachers' readiness to use multimedia training tools reflecting the specifics of professional teaching activity. The criteria have been developed (availability of stable motives to use multimedia training tools at school; depth and strength of scientific and theoretical knowledge on multimedia training tools and methodology to apply them at school; level of mastering methods in connection with the use of multimedia training tools to solve typical teaching tasks of future teachers) and levels of future teachers' readiness to use multimedia training tools have been specified. Model for training future teachers to use multimedia training tools has been theoretically rationalized and experimentally tested, reflecting the structure of professional competence of future teachers in the use of multimedia training tools.

Keywords: Multimedia training tools; Readiness; Future teachers; Model; Professional competence; Use of multimedia training tools

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Introduction

Within the informatization of education, of urgency is the creation and use of new training tools to organize the work of students in a single educational environment and contributing to education quality enhancement. Such tools include multimedia training tools, i.e., information sources containing graphical, word, voice, musical, video, photo and other information in digital form seeking to solve the goals and tasks of modern education. Multifunctional multimedia training tools enable to place large volume of information; quick search and access to the required information; unbiased and appropriate knowledge assessment in students; visual presentation of many complex phenomena and processes; use of graphic design; co-acquisition of information.

In that connection, utmost realization of education's informatization tasks requires training of future teachers to be improved teaching them to use modern multimedia training tools.

Literature Overview

The analysis of researches by [1-12], showed that there is a great number of studies on professional training of future teachers within education's informatization.

It should be noted that in some works [13-15] attention is paid

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mainly to theoretical and methodological training of students in information science which allows future teachers to use information technologies in preparatory school's academic activity. However those studies did not cover on future teachers' training to use modern training tools, in particular, multimedia training tools. Thus, formation of future teachers' readiness to use multimedia training tools has not been an object of wide research so far which allows to state the rationale of research in that field.

So, this research's rationale is determined by contradictions between:

Social need for teachers capable to efficiently carry out professional activity within informatization of education and with insufficient level of future teachers to use multimedia training tools required for successful realization of educational, developing and pedagogic goals of school academic process;

Need to form future teachers' readiness to use multimedia training tools and insufficient scientific development of this issue in higher school practice.

In that connection, the research problem is in the need to expose the specifics of future teachers' readiness to use multimedia training tools. Based on the above, the objective of this research is to rationalize, develop and experimentally check the methodology to form professional readiness in future teachers to use multimedia training tools at school.

Methods

Methods of research

Analysis of psychological and pedagogical, scientific, scientific and engineering and methodological literature on the topic of the research (This method will allow us to justify the essence of studied problem in the form of theoretical assumptions);

Modeling (This is the method of model creating and studying of the model of our theoretical assumptions. Creation and research of the model allows us to get new knowledge, a new comprehensive information about the researched topic);

Pedagogical experiment (it is a special organization of educational activities in order to verify and substantiate our pre-designed theoretical assumptions);

Processing and interpretation of experimental data (based on this method, we formulate conclusions about the confirmation of the theoretical assumptions of scientific research).

Analysis Result

Future teachers' readiness to use multimedia training tools is a stable feature of teacher's personality which determines the ability to solve basic professional pedagogical tasks through the use of multimedia training tools within multi-subject polyfunctional pedagogical activity seeking to educate, train and develop children of school age.

Future teachers' readiness to use multimedia training tools includes the following structural components:

Psychological, represented by motives expressed via interests and needs to use multimedia training tools, pursuance of professional improvement in the use of multimedia training tools in future teaching activity;

Scientific and theoretical, assuming the aggregate of topic-related methodical knowledge integrating general and special knowledge in the use of multimedia training tools;

Technological, represented via a range of skills on arrangement of education of pupils using multimedia training tools.

Future teachers' readiness to use multimedia training tools is formed gradually:

1. Decisive is the establishment of motivation to use multimedia training tools at school and implementation of available competences within professional pedagogical training;
2. Experience in solution of professional tasks of future school

teachers using multimedia training tools based on general professional content;

3. Improvement of experience in solving professional tasks of future school teachers using multimedia training tools during the study of methodical disciplines.

The methodology for formation of future teachers readiness to use multimedia training tools assumes the use of productive teaching methods (project method, method to solve reasonably selected tools, etc.); use of modern technical and information teaching tools (computers, multimedia projectors, Internet resources, etc.); arrangement of academic process based on optimal combination of collective, group and individual forms of learning activities. In the course of development of the methodology to form readiness of future teachers to the use of multimedia training tools, specific features of school teacher's professional activity are accounted for:

Multiple subjects, making a school teacher master theory and practice in teaching a few subjects in various areas of knowledge;

Polyfunctionality, meaning exercising a few functions by a school teacher: teaching, educating and developing pupils; assistance in socialization of pupils, creating common culture in them; pedagogical consulting for parents, governing and coordinating training effects of family and school;

Taking the age-related characteristics of pupils into account presumes the observance of particular psychological, pedagogical and methodical conditions as well as the use of health-saving technologies in the arrangement of the academic process.

Levels of readiness of future teachers to use multimedia training tools are as follows:

- I. High;
- II. Middle;
- III. Low.

The diagnostics of readiness of future teachers presumes the study of its structural components and is carried out on the basis of the following criteria:

- I. Stable motives to the use of multimedia training tools at school;
- II. Depth and strength of scientific and theoretical knowledge on multimedia training tools and methodology in connection with their use at school;
- III. Level of mastering methods to use multimedia training tools in pursuance of solution of typical teacher's tasks.

Conceptual characteristic of the components for training future teachers to use multimedia training tools is represented in Table 1.

Readiness to professional activity is the initial stage of building professional competence and therefore for more efficient formation of readiness to use multimedia training tools in future teachers it is required to be oriented at teacher's professional competence structure as a specialist in the use of multimedia training tools. We specified the following components of teacher's professional competences in the use of multimedia training tools:

Table 1 Conceptual characteristic of the components for training future teachers to use multimedia training tools.

Stages	Criteria	Levels			Components	Component's content
1	Stable motives to the use of multimedia training tools at school	High	Middle	Low	Psychological	Motives expressed by interests and needs to use multimedia training tools, pursuance of professional self-improvement in the use of multimedia training tools in future pedagogical activity. Motives expressed by interests and needs to use multimedia training tools, pursuance of professional self-improvement in the use of multimedia training tools in future pedagogical activity.
	Depth and strength of scientific and theoretical knowledge on multimedia training tools and methodology in connection with their use at school					Motives expressed by interests and needs to use multimedia training tools, pursuance of professional self-improvement in the use of multimedia training tools in future pedagogical activity. Motives expressed by interests and needs to use multimedia training tools, pursuance of professional self-improvement in the use of multimedia training tools in future pedagogical activity.
	Level of mastering methods to use multimedia training tools in pursuance of solution of typical teacher's tasks					Aggregate of topic-related methodical knowledge integrating general and special knowledge in the use of multimedia training tools: knowing typology of multimedia training tool, specifics of stages of their development, knowing software opportunities in creating multimedia training tools, requirements to multimedia training tools, knowing methodical aspects of academic process arrangement at school using multimedia training tools.
2	Stable motives to the use of multimedia training tools at school	High	Middle	Low	Scientific and theoretical	Aggregate of topic-related methodical knowledge integrating general and special knowledge in the use of multimedia training tools: knowing typology of multimedia training tool, specifics of stages of their development, knowing software opportunities in creating multimedia training tools, requirements to multimedia training tools, knowing methodical aspects of academic process arrangement at school using multimedia training tools.
	Depth and strength of scientific and theoretical knowledge on multimedia training tools and methodology in connection with their use at school					Aggregate of topic-related methodical knowledge integrating general and special knowledge in the use of multimedia training tools: knowing typology of multimedia training tool, specifics of stages of their development, knowing software opportunities in creating multimedia training tools, requirements to multimedia training tools, knowing methodical aspects of academic process arrangement at school using multimedia training tools.
	Level of mastering methods to use multimedia training tools in pursuance of solution of typical teacher's tasks					Range of skills on arrangement of education of pupils using multimedia training tools: setting learning goals using multimedia training tools; analyzing multimedia training tools; choosing particular multimedia training tools; making notes of lessons and off-class lessons using multimedia training tools; making and using electronic texts; organizing individual, group and collective work of children using multimedia training tools in connection with the content of disciplines studied at school, etc.
3	Stable motives to the use of multimedia training tools at school	High	Middle	Low	Operational and technological	Range of skills on arrangement of education of pupils using multimedia training tools: setting learning goals using multimedia training tools; analyzing multimedia training tools; choosing particular multimedia training tools; making notes of lessons and off-class lessons using multimedia training tools; making and using electronic texts; organizing individual, group and collective work of children using multimedia training tools in connection with the content of disciplines studied at school, etc.
	Depth and strength of scientific and theoretical knowledge on multimedia training tools and methodology in connection with their use at school					Range of skills on arrangement of education of pupils using multimedia training tools: setting learning goals using multimedia training tools; analyzing multimedia training tools; choosing particular multimedia training tools; making notes of lessons and off-class lessons using multimedia training tools; making and using electronic texts; organizing individual, group and collective work of children using multimedia training tools in connection with the content of disciplines studied at school, etc.
	Level of mastering methods to use multimedia training tools in pursuance of solution of typical teacher's tasks					Range of skills on arrangement of education of pupils using multimedia training tools: setting learning goals using multimedia training tools; analyzing multimedia training tools; choosing particular multimedia training tools; making notes of lessons and off-class lessons using multimedia training tools; making and using electronic texts; organizing individual, group and collective work of children using multimedia training tools in connection with the content of disciplines studied at school, etc.

- Core competences: using various kinds of information (information competence); contacting other parties of educational process in various communicative situations related to the use of multimedia training tools (communicative competence); – following social behavioral norms in situations related to the use of multimedia training tools (social competence);

- Basic competences: choosing multimedia training tools seeking to solve particular professional tasks; analysis and assessment of multimedia training tools; – creating own simple multimedia training tools;
- Special competences: design of academic and training process on various school subjects using multimedia training tools; arrangement of training at school using multimedia training tools.

Discussion

The content of components for future teachers training to use multimedia training tools enabled us to build Model for training future teachers to use multimedia training tools displayed on Table 1.

Notes to Table 1 Model for training future teachers to use multimedia training tools:

I - Readiness of future teachers to use multimedia training tools

II - Future teachers' training components to use multimedia training tools.

III - Content of future teachers' training components to use multimedia training tools.

IV - Professional competences.

V - Criteria.

VI - Levels.

The field experiment was done in the natural conditions of academic process in the course of students teaching (control group – traditional methodology, experimental group – experimental methodology). At the summative stage of the experimental work diagnostics were done using methodologies seeking to solve the level of formation of readiness to use multimedia training tools in future teachers. Assessment of future teachers' level of readiness to use multimedia training tools in teacher's professional activity was made via identification of formation levels of psychological, scientific and theoretical, operational and technological components of the readiness under research.

The diagnostic tools comprise three units in compliance with structural components of readiness. In connection with the versatility of results to process data bulks and making them homogenous the average parameter of readiness to use multimedia training tools was computed.

In students of the experimental and control groups, the initial level of formation of readiness to the use of multimedia training tools in future teachers was identified. The summative experiment showed that the results of distribution by levels of readiness to use multimedia training tools in future teachers in the experimental and control groups differ slightly and correspond mainly to the low level (86% of control group's students and 90% of the experimental one).

The purpose of the summative experiment was to test Model for training future teachers to use multimedia training tools taking into account specifics of school teacher's activity.

At the final stage of the experiment the final levels of formation in future teachers of the readiness to use multimedia training tools were identified. Dynamics of level of readiness to use multimedia

Table 2: Dynamics of level of readiness to use multimedia training tools in future teachers (%).

Levels of readiness formation	Groups			
	Control		Experimental	
	Summative experiment	Control experiment	Summative experiment	Control experiment
High	0	10	0	60
Middle	14	61	10	40
Low	86	29	90	0

training tools and their components in future teachers are displayed in Table 2.

Comparing the levels of readiness to use multimedia training tools before and after the summative experiment showed that in the experimental group 60% of tested persons reached high level of readiness while in control group only 10% did so. Thus, the implementation of our Model for training future teachers to use multimedia training tools taking into account specifics of school teacher's activity enabled to greatly improve the level of readiness to use multimedia training tools by future teachers. Therefore, the experimental work conducted confirmed the target pursuing the formation of readiness to use multimedia training tools in future teachers.

Conclusion

The need to organize target training of future teachers to use multimedia training tools in their professional activities is conditioned by the educational practice needs within informatization of education.

- The rationalized structure of teacher's professional competence as a specialist in using multimedia training tools is as follows:
- Core competences: information competence; communicative competence; social competence;
- Basic competences: selection, analysis and assessment, creating own simple multimedia training tools;
- Special competences: design, organization.

That approach served as the basis for developing Model for training future teachers to use multimedia training tools accounting for the specifics of professional activity of a school teacher (multi-subjects, polyfunctionality, age-related specifics of pupils).

The originality of our research is that, as distinct from the studies by [1-12] we proved that implementation of the developed Model for training future teachers to use multimedia training tools enables to optimize the students training process which has been acknowledged in the course of experimental work.

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