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Designing method for educational environment in the system of continuous pedagogical education

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Abstract

The trend of development of the information and communication environment is the transfer of individual activity to the Internet: professional activities mediated by remote technologies; the development of social networks-communities, personal websites, blogs, twitters; scientific, educational, and artistic publications; viewing news, movies, concerts, meetings, etc. In this context, the dual social role of a professional teacher as a provider and, at the same time, a consumer of educational services is highlighted. Meeting the needs of the education system the teacher is able to implement innovative changes in the educational process, requires a fundamentally new technological support of innovation and expects the teachers' knowledge of the relevant standards of innovative behavior and description of models.

Keywords: Personal educational environment, Continuous pedagogical education, Information technologies, Teacher's electronic portfolio.

Método de diseño para el entorno educativo en el sistema de educación pedagógica continúa

Resumen

La tendencia de desarrollo del entorno de información y comunicación es la transferencia de la actividad individual a Internet: actividades profesionales mediadas por tecnologías remotas; el desarrollo de redes sociales: comunidades, sitios web personales, blogs, twitters; publicaciones científicas, educativas y artísticas; ver noticias, películas, conciertos, reuniones, etc. En este contexto, se destaca la doble función social de un maestro profesional como proveedor y, al mismo tiempo, un consumidor de servicios educativos. Para satisfacer las necesidades del sistema educativo, el maestro puede implementar cambios innovadores en el proceso educativo, requiere un apoyo tecnológico fundamentalmente nuevo de la innovación y espera que los maestros conozcan los estándares relevantes de comportamiento innovador y la descripción de modelos.

Palabras clave: Entorno educativo personal, Educación pedagógica continua, Tecnologías de la información, Cartera electrónica del docente.

1. INTRODUCTION

The need to move to the concept of lifelong learning and lifewide learning is recognized in the education system of Russia and other countries and is implemented for the teacher through continuous pedagogical education. One of the priority tasks of Russian education is to create a modern system of continuing education, retraining and professional development of teachers. As noted by T.Yu. Lomakina, postgraduate education is designed to help ensure effective, freely chosen employment of citizens, meet the needs for training and

increase the growth of professional skills, strengthen the competitiveness of personnel in a market economy, their professional mobility and social security.

Continuing education can be implemented in the unity of professional activity and professional development of the teacher, using individual educational programs and personal communication tools that meet the needs of the individual. Naturally, the question arises about the mechanisms for implementing these functions in the emerging information society [1-12].

The rapid pace of updating information contradicts the relatively long inter-course period of teachers. Continuous non-formal education and teacher's self-education are of great importance. In this regard, in recent years, the number of works of foreign and Russian scientists (G. Atwell, D. Vermot, G. Davis, J. Haibert, S. Feidler, N.Yu. Goncharova, E.D. Patarakin and B.B. Yarmakhov) discuss the problem of creating online learning environment, OLE, personal learning space, PLS, and personal learning environment, PLE, implemented by Web 2.0 Internet services. However, this problem is mainly considered from the point of view of creating a technical base for e-learning. In our opinion, a more adequate means and environment for continuous professional development of teachers can be a personal learning environment (PLE) that integrates the possibilities of formal, non-formal education and self-education,

mediated by modern information and communication technologies and implemented on the basis of a competency-based approach.

In view of the dual role of the teacher (to teach and to learn), PLE is a sociotechnical system that includes not only software and technical services of the Internet, but also social interactions related to the activities of the teacher. In this context, it is necessary to study possible ways of forming PLE, their cultural and social functions, the structure and content of variable areas that allow both import and export of educational services. In this regard, there is a need to analyze the phenomenon of the emergence of social media services from the point of view of integration of information and pedagogical technologies and development of pedagogy of cooperation and personal development education on this basis.

Today the meaning-forming factor, as shown by E.F. Zeer, is an open self-developing educational space. The result of personal development education is a creative personality capable of self-development and adaptation to changing technological and socio-economic conditions of life. In this regard, there is a problem of finding ways to implement the theoretical provisions of personal development education in the field of professional development of teachers. Despite the increasing role of non-formal education in the information society and the need for institutional development of the system for ensuring continuous education of citizens, the problem of creating PLE as a person-centered sociotechnical system has not been

adequately reflected in pedagogical research. Currently, there is no practically tested method of creating and using PLE in the professional activity of a teacher, which prevents continuous professional development of teachers and the successful use of Web 2.0 services in their professional activities [13-25].

Personal learning environment (PLE) is defined in our study as an integrative combination of an open information space and a limited, personalized activity environment in it using Internet services and tools created by the individual himself. In contrast to the concept of personal learning space or environment (Personal Learning Space, Personal Learning Environment), the term “personal learning environment” highlights the relative “radius” of the individual’s field of activity and its increase as the subject of activity develops the social and communication competence of teachers (SCC).

2. METHODOLOGY

According to the forecasts of M. Castels, K.K. Colin, E. Tofler, A.D. Ursul and a number of other researchers, information civilization will reach its peak by the middle of the XXI century, when education will be a constantly ongoing process of personality formation in the process of information exchange with the surrounding social environment. A fundamental problem is the transition of the modern education system to the concept of lifelong education. The European

Union's "Memorandum of continuing education", in addition to formal education (which ends with a standard diploma) and informal education (which is not accompanied by the issuance of a document, which takes place in educational institutions or public organizations, clubs and circles, during individual sessions with a tutor or coach), also considers informal education. It is defined as an individual cognitive activity that accompanies our daily life and is not necessarily purposeful. Informal education does not require guidance from a teacher or educator.

Informal and casual education directly reflects and satisfies the individual's personal needs and demands, thereby mobilizing his natural ability to self-improvement, to spiritual inner growth. According to D. Cross, S. Wheeler, J.S. Brown and other researchers only 15-20% of the acquired knowledge of modern specialists is obtained from formal sources, and the remaining 85-80% - from sources of an informal nature. As noted by E.D. Patarakin and A.A. Andreev, in the modern, rich in information educational environment the role of non-formal education is increasing, which requires a revision of the teacher's competencies.

The dual nature of the teacher's life activity distinguishes him in society as a proclaimer of the personality of the future information civilization. A teacher becomes a prototype of a person who integrates social roles as a provider of disciplinary knowledge, an organizer and facilitator of students' cognitive activity, a head of joint project

activities, and a consumer of professionally significant and cultural information that guarantees personal development and active interaction with the professional community.

Intensive development of interpersonal communication tools (social media on the Internet) meets the human need for self-development, self-expression, and self-education, but carries risks of spontaneous and uncontrolled socialization of the younger generation, and inadequate use of knowledge bases. In this context, the mission of the PLE is to be a mechanism for adapting the teacher to the changes taking place and, at the same time, a means of organizing the cognitive activity of students in a rich in information educational environment, allowing them to reach a level of competence that they cannot achieve on their own.

Currently, there are the following approaches to interpreting the teacher's information resource:

- 1) Information educational subject environment as a component of the open information educational environment of an educational institution;
- 2) Electronic portfolio of a teacher as a way to assess his professional competencies, a tool for reflection of professional activity;
- 3) Personal learning environment / personal educational environment / personal educational space as a means of implementing educational needs implemented on the Internet.

In our opinion, the components of the teacher's information resource, presented in an open rich in information environment, have their own areas of intersection. In this regard, it is necessary to combine these areas through consideration of the general principles of operation and search for information and communication tools for their implementation.

Implementation of the concept of continuous professional development, the idea of creating an electronic portfolio of teachers and designing a subject-based educational environment requires the formation of PLE, formed by the subjects themselves to solve professional problems based on the achievements of information technologies. According to the functional criterion, the teacher's PLE structure can be divided into four areas formed by two pairs of hemispheres. The first pair is the opposition of the consumer and the producer of educational services, the second is a hemisphere of professionally regulated and informal, individual and personal educational and social activities. At the same time, the Internet, with its innovative Web 2.0 services (social media), is the information and communication basis of all the selected areas (LIMA ET AL, 2018).

In different periods of a person's life as a member of the information society, the ratio of the volumes of the selected areas changes, depending on the external conditions and internal needs of a particular individual (the development of his personal value-semantic sphere). For a professional teacher, the leading area of his personal

development is the area of casual and informal self-education. At the same time, for a high school student, the main area of development and cognitive activity will be the area of the consumer of regulated educational services.

The function of remote controlled learning is assigned to the formal component of the teacher's PLE. In the field of educational services provider, it is determined by educational standards, rights and statutes of educational institutions and can be a personal page on the school's website. Following the demands and level of development of distance learning technologies, it should contain not only text and audiovisual educational materials of educational-methodical complex of the discipline, but also tools for remote consulting and training, webinars, chat rooms, forums, network projects. It is obvious that the teacher must have the appropriate competencies and professional skills that were not required in the traditional educational process.

Opportunities for content placement, access control, and communication change the social roles of users from a passive consumer of information to an interactive and personalized position as a commentator, participant in the discourse, and producer of information. Human professional and social activities are increasingly concentrated in the open information space and are mediated by network tools and technologies. Taking into account the peculiarities of the information society and trends in the development of Internet

services, the following basic principles of the formation and functioning of the PLE are highlighted:

Meta formality - as the use of all the possibilities of formal, casual and informal education, as well as the diversity of information, legal, professional, cultural and existential connections for the professional activity of a teacher and self-education. Globality - as the use of open and licensed educational resources and services of the domestic and international Internet in professional activities.

Peering - as an equal partnership in organizing and participating in multi-project educational and cognitive activities of various genres and directions. Multiform at - as the use of variable means and methods of educational interaction in professional activities (mail, ICQ, forum, chat, webinar, blog, personal website, initiated community). Evolutionism - as the freedom to choose the optimal forms, means and methods of educational (pedagogical) and cognitive activity for the achieved level of personal and professional development.

Subjectivity - as the construction of pedagogical interaction on a personal-oriented basis and the transformation of subject-subject relations in the direction of informal joint activities. The principles of openness, multimedia and tolerance are considered as additional ones. Based on these principles the software and hardware to be used as

working tools in PLE is selected - Internet services, software, and communication tools.

3. RESULTS AND DISCUSSION

As a result of the research, effective forms of continuous pedagogical education using information technologies were identified (table 1).

Table 1: Forms of continuous pedagogical education using information technologies

Form	Content
Workshop, organizational and activity game.	The master (the teacher who transmits the experience) conducts classes with colleagues.
Pedagogical club (studio)	A voluntary community of like-minded teachers who share the ideas of the master, who is the organizer and leader. Communication takes place in the form of discussions, consideration, etc.
Master classes	It is used by the master to demonstrate and teach colleagues non-standard pedagogical techniques and technologies. The goal is to convey a conceptual idea, increase motivation, and encourage creative pedagogical search.
Auction of “pedagogical ideas”	A long-term project involving the entire teaching staff. Teachers perform certain tasks; prepare materials for demonstration (fragments of lessons, extracurricular activities, etc.). Audio and video recording capabilities are used. Experts (juries) evaluate ideas according to the developed criteria.
Creative groups	Association of teachers, which can include both practical teachers and methodologists, scientists, managers. The goal is to solve an actual

	pedagogical problem by means of innovative pedagogical experience.
Bank of pedagogical experience (pedagogical ideas)	Collection, generalization and systematization of materials describing innovative pedagogical experience (can be both printed and electronic).
Printed material	Methodical literature, books, albums, etc.
Electronic educational resources	Websites, collections, network community, etc.
Festivals of innovative pedagogical experience	An active form of exchange of information, experience, and ideas at different levels (municipal, city, regional, and international).
School of innovative experience (for both young and experienced teachers).	The School program may include master classes, video lectures, workshops, trainings, tests, etc.

In the system of professional development of teachers using information technologies, it is necessary to focus on andragogy principles of training (table 2).

Table 2: Comparison of andragogy learning principles

Andragogic learning principles		
According to S.I. Zmееv	According to S.G. Vershlovsky	According to M.Sh. Knowles
Independence of learning	Independence of learning	The leading role of the adult learner in the learning process
Reliance on the learner's experience	Reliance on professional, social and life experience	Learner's experience as a source of learning

Actualization of learning outcomes	Actualization of educational outcomes	Immediate use of the gained knowledge
Joint activity	Cooperativity	
Individualization of learning	Individualization of learning	
Contextual learning	Contextual learning	
Electivity of learning	Electivity and variability	
Development of educational needs	Development of educational needs	
Awareness of learning	Reflexivity	
	Innovativeness	
Consistency of learning		
		Willingness to learn is due to the challenges of development in the fulfillment of social roles
		Internal conditionality of learning motives

Based on the analysis of table 2, the general principles identified by all authors are highlighted: independence of learning, reliance on the experience of an adult student, and actualization of learning results.

General principles are distinguished by S.I. Zmeev and S.G. Vershlovsky: joint activities, individualization of learning, contextuality of learning, electivity of learning, development of students' educational needs, awareness of learning (reflexivity).

The principles of systematic learning (S.I. Zmeev), innovativeness (S.G. Vershlovsky), and conditioning of willingness for learning by external (realization of various social roles) and internal (cognitive motivation, striving for self-development) (M.Sh. Knowles) factors are presented separately.

The analysis of andragogy principles of learning allowed identifying *general principles of adult education* that make it more successful to design a personal learning environment: the principle of independence; the principle of relying on the experience and needs of students; the principle of early implementation of the acquired knowledge; the principle of professional and personal development in training.

4. CONCLUSION

The developed PLE allows the teacher to solve the following tasks:

Methodological: to implement the functions of the producer and consumer of educational services in a single system; to integrate formal education with casual and informal education; to combine dialogical text (epistolary) interpersonal communication with polylogical group and audiovisual one.

Pedagogical: to change actually the status of the teacher as the main source of educational information to the status of the facilitator and manager of educational and cognitive activity of students; to direct pedagogical interaction in the direction of subject-subject relations; to develop key and professional competencies of students in the managed practical activities of students; to expand opportunities for the manifestation of cognitive, creative, existential abilities of the learners' personality and the teacher; to be involved in student-centered online learning and social (civic) activities; to establish and maintain interpersonal communication with recognized experts in their professional field of activity; to implement Self-concept in a broader (regional and/or global) context of the information society.

Didactic: to prepare and place in regulated access educational and methodological support of the taught discipline; to differentiate and individualize educational interaction with students; to implement a comprehensive use of computer didactic tools to ensure the unity of theoretical and practical training; to coordinate individual and group educational and cognitive and project-research activities of students; to organize immediate feedback and evaluation of educational activity of students; to increase the volume of self-produced knowledge and its informal application; create a base for inter-subject relations in the general context of the educational environment.

PLE becomes the mechanism of satisfaction of needs in lifelong education, ensuring proper existence and successful development of

the individual in the information society, which is the medium in which formal, casual and informal teacher's postgraduate education is materialized, meeting the personal needs and requests of the individual actualizing his natural ability to self-improvement, spiritual inner growth. New pedagogical conditions (complex application of distance learning technologies based on social media network services at all stages of course preparation in the field of ICT and in the inter-course period; use of various methods and methods of training; orientation in the process of professional development on motivational-value, cognitive and operational-activity results of training; the inclusion of a module (section) on the didactic capabilities of social media in the programs of additional professional education, the creation of an information and educational environment based on social media), in which learning takes place, become a context in which competencies are developed, while knowledge, interactive learning materials and interpersonal communications on the Internet become educational tools that are used for the formal and informal educational process.

The specific composition of the PLE is determined by the actual needs of the teacher and the level of formation of the SCC, which is defined by us as the ability of the teacher to solve every day and professional problems using modern tools and Internet services.

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