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## DEVELOPMENT OF ICT COMPETENCE OF PRIMARY SCHOOL TEACHERS IN THE PROCESS OF CONTINUOUS EDUCATION

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**Abstract.** The article examines the problem of formation of informational competence of future primary school teachers in the process of continuous education. On the basis of the methodological provisions of systemic, personal-activity, competence, and acmeological approaches, the essence of the process of formation of information competence of future primary school teachers is revealed, the peculiarities of theoretical and practical training of future teachers are reflected under the conditions of implementation of the model of formation of information competence of future primary school teachers in the process of continuous education. The research defines the essence of the concept of "information competence of the future primary school teacher" as a systemic personality quality that reflects the theoretical and practical ability of the future primary school teacher to use ICT in the process of implementing training methods for students of the first level of comprehensive general secondary education, self-educational activities.

**Key words:** continuous education, ICT, information competence, primary school teacher, self-education, interactive board, courses.

**Introduction.** The main idea of continuous education is the humanistic orientation of education, when a person needs to be provided with such conditions that he can fully develop his abilities throughout his life (Luzan, 2010: 52). In modern society, teachers who possess information and communication technologies and are ready for constant improvement of their professional level and self – education are the most in demand. In this regard, the education system still needs teachers with a high level of ICT competence who are able to effectively carry out their professional activities in an informational and educational environment.

The main goal of developing the competence of teachers in the field of information and communication technologies is their preparation for methodical competent use of ICT in the educational process. It includes: stimulating the cognitive activity of students and creating motivation for the educational process with the help of ICT tools; application of means of informatization of education depending on the goal and tasks of the educational process; conduct general education subjects with the help of ICT, taking into account the learning goals, interests and inclinations of students; mastery of methods and techniques of learning with the help of ICT; implementation of control and self-control of educational activities with the help of ICT; self-analysis, self-assessment, including diagnostics based on ICT (Belova, 2004: 65).

**Analysis of recent research and publications.** The basis of the problem of the formation of informational competence of future primary school teachers in the process of professional training is scientific ideas, concepts, starting points, investigations that were carried out in the following main directions: foreign experience of professional and pedagogical training of teachers (P. Dawson, P. Grossman, M. Huberman, D. Lambert, J. Ross, D. Williams, etc.); pedagogical education of future primary school teachers (Sh. Amonashvili, O. Babakina, N. Bibik, M. Vashulenko, I. Gavrish, O. Ionova, L. Petrychenko, O. Savchenko, V. Sukhomlynskyi, K. Stepaniuk, I. Upatova, L. Khomich,

etc.); informatization of education as a component of the formation of an information society (M. Zhaldak, Yu. Mashbyts, N. Morse, O. Spivakovskiy, O. Spirin, etc.); forming the future teacher's readiness to use ICT (M. Levshin, I. Smirnova, V. Shakotko, O. Shiman, etc.); the impact of ICT on children of primary school age (P. Bisirkin, A. Platonova, N. Polka, etc.). However, as evidenced by the analysis of psychological and pedagogical sources, there are no works in the modern scientific space in which the questions regarding the formation of the IC of future primary school teachers in the process of professional training were investigated.

**The purpose of the research** is to increase the level of formation of informational competence of future primary school teachers in the process of continuous education.

**Presentation of the main material.** The process of continuous development of ICT competence is gradual. The pre-professional stage includes professional orientation towards the teaching profession. The professional stage is implemented at the levels of secondary professional and higher professional education. It assumes purposeful training of students of pedagogical educational institutions in the field of ICT application, which includes theoretical and practical training, pedagogical practice, course and diploma design, which is the basis for the further development of teachers in the studied aspect and . The post -professional stage is: professional adaptation in an educational institution, development of professionalism during the period of work in an educational institution, postgraduate studies and advanced training. All these three stages refer to the institutionalized form of continuous education, as education during his whole life. There is also a non -institutionalized form of continuous education, which can be attributed to self-education.

Self-education is a process no less important than education received within the framework of an educational institution. Methodical work for continuous professional development in the form of self-education is one of the effective and necessary forms of teacher mastering the practice of applying the requirements of new educational standards (Kremen, 2000: 16).

Self-education can be presented in two forms : individual and group . IN In the individual form, the initiator is the teacher himself. The group form is carried out in the form of methodical association work, seminars, workshops, advanced training courses, etc., which provide feedback between the results of individual teacher self -education (Luzan, 2010: 52).

One of the most common forms of organization of the post- professional stage of the system of continuous and pedagogical teacher education in Ukraine are professional development courses organized on the basis of state Institutes of professional development. By "improvement of qualifications" we mean the mechanism of development of a teacher 's professional activity and his pedagogical competence. Constant improvement of one's own pedagogical abilities is an important process in a teacher's activity. The quality of professional skills, the relevance of available knowledge in the interdisciplinary field and in the field of innovative learning technologies depends on it. The teacher's timely mastery of modern teaching tools, their use in the practice of teaching children contributes to the successful assimilation of knowledge by students. This aspect was highlighted by a number of teachers who believe that the teacher's self-education and his readiness for this activity is a necessary condition for his successful development among students.

The study of psychological-pedagogical problems and scientific-methodical training in professional development courses are laid down in standardized course training programs. About 65% of the study time is allocated to lectures, the remaining hours – to practice and seminars. Institutes for the development of education have the right to independently adjust the programs of advanced training courses. District and city pedagogical methodical offices also have the function of training and improving the qualifications of teachers. They organize conferences and seminars. Their participants are active listeners and speakers. They adopt the experience of working in educational institutions, master new technical means and methods of learning. The formation of the teaching staff of advanced training institutes is carried out from qualified teachers, scientists, teachers of pedagogical institutions

of higher education. Pedagogical institutes and pedagogical universities, being the basis for the organization of seminars and conferences, participate in improving the qualifications of teachers.

However, the system of such training in courses has a number of disadvantages: episodic and short-term, theorized, low differentiation, remoteness from the educational institution and students. In this case, there is a contradiction between the discreteness and short-term training of elementary school teachers based on professional development institutes and the need for continuous development of ICT competence of elementary school teachers, caused by the need to use ICT in their practical activities.

Passing periodic training in the traditional form once every five years at professional development courses is necessary, but not sufficient and does not allow the teacher to reorganize his work in a timely manner in accordance with the changes that are happening, leads the teacher to be unprepared for the organization of project, research and creative activities (Wikipedia, 2016).

The goal of our experimental research is to create conditions for the active interaction of participants in the educational process. We have come to the need to create a new form of interaction that can and will involve the maximum possible number of participants (teachers, students, pupils, parents). And the interaction will make it possible to create conditions for the active involvement of all parties on a voluntary basis, thus ensuring the development of the ICT competence of each participant, with the aim of activating the activities and positions of students. In our opinion, forms of remote interaction will help both teachers and students in their professional development. This orients primary school teachers to the broad possibilities of using ICT in education.

On the basis of the above, the idea of developing the ICT competence of primary school students and teachers, who are in the continuous process of developing information and communication competences based on remote forms of interaction, etc., was formulated. It is in this way that it is possible to create optimal conditions for effective support of the professional development of students and teachers.

It is very important that the teacher's ICT competence becomes in demand by all participants of the educational process (students, parents, teachers). Unfortunately, neither pedagogical higher education institutions nor PCs pay due attention to teacher training, because it requires the development of new methods and forms of work with teachers, the search for which is still ongoing. Therefore, the development of a model of such training of teachers is relevant.

To date, a teacher does not have enough knowledge obtained during training in a professional institution and experience gained during pedagogical practice [3]. A four-year course of study of bachelors in pedagogical institutions of higher education is not able to provide the necessary level of readiness for the successful performance of professional pedagogical activities, therefore the education system should transition to continuous education.

The formation should be continuous in nature and be based on the ideas of self-development and self-education of teachers in the process of forming their professional activities (Bryukhanova, 2010: 254). It is impossible to organize the training of teachers for the use of ICT tools in the educational process by staying only in the classroom.

The necessary theoretical and practical basis for the use of ICT in the educational process of the school is given to students of pedagogical institutions of higher education by continuous pedagogical practice on the basis of schools. The development of ICT competence of teachers at the university level ensures the minimum level of mastering the methods of information activities and information and interaction with the help of ICT, which is necessary for every teacher.

Experience is the main component of personality, formed in the process of learning. It can be obtained within the framework of informatization of education during the implementation of continuous practical work at school under the conditions of complex use of ICT in the educational process. When organizing work in an elementary school, the most common form of using ICT technologies is accompanying the lesson with a PowerPoint presentation. This became relevant with the advent of the simplest projectors that projected an image on a wall or canvas.

However, information technologies do not stand still and interactive whiteboards are now actively used. This board is equipped with various devices: markers, remote controls. Each interactive board is arranged on the basis of individual software, with which the teacher must be able to work. The ability to work with an interactive whiteboard is especially in demand as a primary school teacher. With the help of flipcharts created in the interactive whiteboard program, physical education minutes, updating of knowledge, control, self-examination of students, projects can be presented.

Also, in the practice of elementary school teachers, didactic games are used (for example, "Light the lights on the Christmas tree", "Mathematical necklace", etc.), created in the program to support the interactive whiteboard (Kremen, 2000: 17). Interactive whiteboards have also become widespread in higher education institutions. Future primary school teachers have the opportunity to make a bank of flipcharts from educational materials subject ah, for the purpose of practical use during lessons in elementary school. Thus, already the university stage of education provides a minimum basis for the use of ICT in the educational process of the school as a place of future work of current students.

In the process of work, the teacher, who has already been trained, implements the theoretical knowledge obtained in the pedagogical higher education institution, while the ICT competence of the teacher is found in the inherent mobility, efficiency, and adaptability. The gradual development of the teacher's personality in the field and application of ICT occurs both during the student's studies at the pedagogical higher education institution and throughout the entire period of work at the school. This is especially relevant in connection with the constant development of both the ICT tools themselves and the methods of their pedagogical use. The requirements for ICT competence of a modern teacher are constantly growing in connection with the development of ICT, the implementation of regional programs in the field and informatization. Competence in the field of ICT will allow the teacher to be competitive in the labor market, ready for permanent employment professional growth and professional mobility in accordance with the needs of modern education in the era of informatization.

Given the constant need to modernize education, modern scientists pay special attention to the methodology of pedagogical science and practice. In the philosophical encyclopedic dictionary methodology (from method and Greek *logos* – word, concept, teaching) is defined as a system of principles and methods of organization and construction of theoretical and practical activities, as well as a teaching about this system (Averyntsev, 1989: 365).

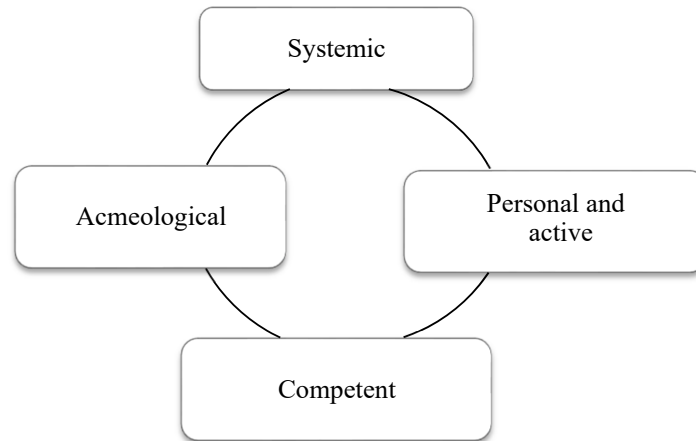
According to I. Shkurat, the main task of the methodology is the accumulation and transfer of social experience with the help of a special formalization of principles and prescriptions, techniques and operations contained in the activity itself (Shkurat, 2006: 22).

The tool for the implementation of methodological bases of the scientific analysis of pedagogical phenomena and processes is a methodological approach, which scientists consider as "a system of activities for obtaining knowledge that allows to substantiate programs, logic and methods of assessing the quality of socio-scientific and pedagogical research", "a system of knowledge that allows to determine the essence and methods of cognitive activity, to establish effective ways of transforming the practice of educational activity", "guidance, orientation, methodological knowledge, which acts as a teaching about the structure of scientific knowledge and the regularities of scientific knowledge".

The significance of methodological approaches lies in the fact that the strategy of studying and transforming pedagogical theory and practice is determined on their basis. It is the methodology that allows the most perfect study of a process or phenomenon, therefore the theoretical problems of modern education are closely related to the development of research methodology in the field of professional teacher training.

In modern pedagogical science, there is a large number of methodological approaches that determine different directions of research and reflect the specifics of specific research activities in the field of professional education.

The study of the problem of the formation of information competence of future primary school teachers in the process of professional training, a thorough analysis of scientific, psychological-pedagogical, methodical sources made it possible to identify the most appropriate methodological approaches to its solution, namely: systemic, personal-activity, competence, acmeological (Fig. 1).



**Fig. 1. The unity of methodological approaches to the formation of information competence of future primary school teachers**

The identified approaches are interdependent and equal in determining the effectiveness of the formation of information competence in future primary school teachers. Let's consider their essence.

*System approach* provides research of system-forming connections of the process of formation of informational competence of future primary school teachers in the process of professional training; allows you to track the general properties and qualitative characteristics of individual elements, which are not considered in isolation, but in interaction. This approach is the original foundation on which it is based to develop the formation of informational competence of future primary school teachers in the process of professional training.

In our opinion, it is the systemic approach that helps to take into account the structure of information competence of future primary school teachers as a dynamic system, helps to investigate the interaction of its components that ensure its effective functioning.

In order to more fully understand the essence of the system approach, let's turn to the definition of the original concept "system". Thus, in the online encyclopedia, this concept is defined as a category that denotes an object organized as a whole (Wikipedia, 2016).

Wedster's Revised Unabridged Dictionary characterizes this concept as a set of objects subordinated clearly or according to a certain special order, usually logical or scientific; a single set of objects connected by some common law, principle or purpose; unification of principles or elements that make up a single whole (Dawson, 1984: 96).

The systematic approach in pedagogy is aimed at revealing the integrity of pedagogical objects, various types of connections found in them, and bringing them into a single theoretical picture.

According to the system approach, according to Y. Babanskyi, the following substructures must necessarily be included in the developed research model: conceptual (principles), normative (purpose, content, criteria), technological (methods and forms). Implementation of the system approach involves awareness of the process of formation of information competence of future specialists as its structural components that are interconnected and interact with each other.

The specified approach makes it possible to identify the general properties and qualitative characteristics of individual elements that will make up the author's model of the formation of information

competence of future primary school teachers in the process of professional training of future primary school teachers and should be considered not in isolation, but in interaction.

Since the key concept of the system approach is the concept of "system", when developing measures for the formation of information competence of the future primary education specialist, we relied on the characteristic features of all existing systems (according to P. Luzan, I. Sopivnyk, S. Vygovskaia), namely:

- integrity: the properties of the system cannot be reduced to the sum of the properties and features of its components, and the properties of the system do not follow from the properties of the latter;

- structurality: any system can be characterized based on existing connections and relationships between its elements (based on its structure); the functioning of the system is determined by the functioning of its individual elements and properties of the structure;

- interdependence of the system and the environment: since the system forms and reveals its properties in the process of interaction with the environment in which it functions and in the relationships with which it reflects its integrity;

Hierarchy: any system can be an element of a system of a higher rank, while its elements can be systems of a lower order;

multiplicity of description due to the complexity of the system: its adequate knowledge requires the construction of a significant number of different models, each of which describes or reflects only a certain aspect of the system (Luzan, 2010: 52).

According to O. Ionova, the systematic approach as a method of scientific knowledge is at the basis of all systematic studies and allows to form a complete, integrated idea of the researched object.

Therefore, a systematic approach to the problem of formation of informational competence of future primary school teachers in the process of professional training makes it possible to consider the educational process as a complete system that gives an opportunity to characterize the interrelationship of structural components of the process of formation of informational competence of future specialists of primary school.

We believe that the model of IC formation of future primary school teachers should be considered as a system of interrelated elements: goals, tasks, methodological approaches and principles, structural components of information competence, content, forms, methods, results, as well as criteria and indicators of levels of information competence formation.

It is worth noting that the systematic approach requires the implementation of the principle of unity of theory, experiment, and practice. Thanks to the principles of the system approach, the author's model of the presented research will be an open, non-linear, complex, far-from-equilibrium system with signs of self-organization and self-improvement. It should be noted that it is the systematic approach that makes it possible to present the process of formation of information competence of future primary school teachers in the process of professional training in the form of structural blocks.

*The personal-activity approach* to the formation of informational competence of future primary school specialists is definitely one of the important modern approaches.

The methodological basis of the activity approach is the theory of activity (O. Leontiev, S. Rubinstein), that is why this approach is manifested in the desire of researchers to use the provisions of the theory of activity in the methodology and interpretation of the content of their works [14]. In this regard, we fully agree with N. Bryukhanova (Bryukhanova, 2010: 215), who emphasizes the need to strengthen the application of the activity approach at the level of each of the disciplines that provide a certain professional training: "teachers should build all theoretical positions and tasks with a "sight" for the future professional activity of students. Students must act, perceive information about the activity and what ensures its implementation, reproduce its elements first, and then in its entirety, determine the prospects for development and their own contribution to this process."

The above-mentioned approach in our research allows us to create conditions for the formation of the activity of education seekers due to working in cooperation with the help of the inclusion of future teachers in professional pedagogical activities. It should be noted that the formation of the information competence of the future primary school teacher is determined primarily by a specific professional need, the satisfaction of which requires certain actions. That is why the personal-activity approach in the presented study involves the practical orientation of the process of training the future primary school teacher to the formation of the ability to use ICT in professional activities, the ability to creatively use the formed information competence in professional activities, motivated to actively use ICT in the conditions of the implementation of the new State Standard of Primary Education and implementation of the Concept of the New Ukrainian School.

It became obvious that information and communication technologies increasingly affect the functioning of a modern school, which in turn becomes an information environment for all participants in the educational process.

The analysis of the genesis of the introduction of the competency paradigm into domestic and foreign education systems confirms its use and restructuring of the higher and secondary education system over the past three decades.

The competence approach as a new conceptual reference point of the system of professional training arouses the interest of the international pedagogical community (Dawson, 1984: 87).

L. Dzyuba-Shpuryk analyzes and rightly notes that one of the leading areas of activity of international organizations (UNESCO, UNICEF, Council of Europe, Organization for European Cooperation and Development, International Department of Standards) is the implementation of a number of initiatives aimed at scientific, methodological, organizational and monitoring support for the process of training international specialists based on the competence approach (Dzyuba-Shpuryk, 2016: 44).

The idea of the competence approach is that the person being taught should not acquire specific knowledge, skills and abilities, but he should develop the ability to navigate independently and make the right decisions in any professional situation. The main goal of this approach is the formation of a competent specialist.

V. Lunyachek in the scientific article "Competency approach as a methodology of professional training in higher education" analyzes in detail the etymology of concepts "competence" and "competence", illuminates views on the structure of competence taking into account the main provisions of the National Qualifications Framework of Ukraine, offers a conceptual scheme of the competence model of a bachelor's / master's degree. The scientist rightly concludes that professional training of students at the current stage in the conditions of a higher education institution is impossible without taking into account the basic provisions of the competence approach (Lunyachek, 2013: 160).

Researchers in the field of the competence approach in education (B. Elkonin, I. Zimnya, A. Khutorskyi, S. Shishov, etc.) note that the difference between a competent specialist and a qualified one is that the former not only possesses a certain level of knowledge, skills, skills, but is able to implement and implements them in work.

The concept of "competent approach" means the focus of the educational process on the formation and development of the main key and subject competencies of the individual. The result of such a process should be the formation of a person's general competence, which is an integrated characteristic of the individual.

Analysis of the theoretical foundations of the professional training of future primary school teachers and research in the field of the competence approach to professional training, we consider it necessary in the definition of this concept to reflect specific aspects of the professional activity of a primary school teacher, such as: propaedeutics, multi-subjects, poly -functionality, reliance on the age characteristics of students and activities with the aim of forming education seekers at the first level of complete general secondary education. key competencies, among which a significant

place is occupied by information and digital competence, which involves confident and at the same time critical application of information and communication technologies for creating, searching, processing, exchanging information at work, in public space and private communication (New Ukrainian school, 2018).

Therefore, the implementation of professional training based on the principles of the competence approach in order to form the informational competence of future primary school teachers allows to fully ensure their readiness for high-quality implementation of professional activities in the conditions of constant renewal of education, in particular, the effective use of ICT.

In the process of scientific and pedagogical research, it was established that the scientific basis of the problem of forming the informational competence of future primary school teachers should be based on the *acmeological approach*, which today is one of the progressive and promising ones for higher education.

**Conclusions.** So, by the ICT competence of a primary school teacher, we understand his ability to perform professional activities with the help of information and communication technologies and the formation of ICT literacy of students, the readiness to quickly master and introduce new technologies into school practice in accordance with the trends in the development of the information society .

In particular, the possibilities and advantages of forming teachers' ICT competence are provided by applied forms of training for bachelors in the field of pedagogy. Dual education is built into the programs and the bachelor's degree, in which the theoretical part of the training takes place on the basis of an educational organization, and the practical part – at the future workplace of a primary school teacher.

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