FORMATION OF INFORMATION AND DIGITAL COMPETENCE OF FUTURE EDUCATION SPECIALISTS AS A COMPONENT OF THEIR PROFESSIONAL CULTURE

Inna Shyshenko[1], Inna Kharchenko[2]

[1]*Candidate of Pedagogical Sciences, Associate Professor, Associate Professor of the Department of Mathematics, Makarenko Sumy State Pedagogical University, Sumy, Ukraine, e-mail: shiinna@ukr.net, ORCID: https://orcid.org/0000-0002-1026-5315*

[2]*Doctor of Pedagogical Sciences, Associate Professor, Associate Professor of the Department of State and Legal Disciplines and Ukrainian Studies, Sumy National Agrarian University, Sumy, Ukraine, e-mail: kharchenko-inna@ukr.net, ORCID: https://orcid.org/0000-0010-0111-0125*

Abstract. *Increasing the influence of the humanities and digital technology on the education of the individual, of course, changes the system and makes a direct contribution to the formation of a new model of education, led by the problem of forming the creative personality of the future specialist and his professional culture. This leads to a new view of the essence and structure of the professional culture of the specialist, the requirements imposed on him by society, the requirements he puts forward to himself, which leads to the transformation of «education» in the «professional culture» of the specialist. A special role in this formation belongs to higher education institutions. That is why the professional training of education specialists, first of all, should provide for the formation of their readiness to develop also information and digital competence of students. The general hypothesis of the study is that the preparation of future education specialists for the development of information and digital competence of students in NUS becomes effective if it is based on sound theoretical and practical principles that reveal the readiness of future education specialists to develop information and digital competence of students taking into account the developed concept and the corresponding organizational and methodical support. The main theoretical foundations of the formation of information and digital competence of future education specialistsas a component of their professional culture can be called the following: multilevel structure of the process of professional training; gradual complication of educational and developmental tasks; constant improvement and self-development of the future specialist; maintaining an individual approach in training; a combination of competency approach and executive universality; high level of creativity in the educational process; in-depth training in the field of the latest digital technologies.*

Keywords: *educational space of Ukraine; higher education; professional training*; *information and digital competence; professional culture; future education specialists.*

JEL Classification: I 24, I 29

Formulas: 0; fig.: 0; tabl.: 0; bibl.: 4

Introduction. The basis of modern globalized society is technological progress and constant development of technology. Technology is the basis of most of the mental and material goods inherent in our world. The modern personality must think outside the box, embody the latest ideas, directions, create creative, scientific and other important products for the state. Currently, there is a growing demand for professionals with original thinking, capable of non-standard solutions, able to navigate in the digital space and work in a dynamic environment. That is why the priorities of the educational sector are changing, which at the level of general secondary education have led to the emergence of a new model of education - the New Ukrainian School (NUS). Naturally, there is a need to adapt the system of professional training of future teachers to work in it. The NUS paradigm is based on

the formation and development of such key competencies that everyone needs for personal realization and lifelong success.

One of the ten key competencies of the New Ukrainian School is the information and digital, necessary for every modern person to navigate in the information space, to quickly and effectively master the latest technologies, using them for their own needs. «Digital» literacy (or «digital» competence) is recognized by the EU as one of the 8 key competences for a full life and activity. In 2016, the EU introduced an updated Digital Competence framework (DigComp 2.0), consisting of the main 5 blocks of competencies, where information and digital competence is included in the 5th block «Problem Solving». In order to integrate into the global processes of «digitalization» in 2016, the Cabinet of Ministers of Ukraine presented the project «Digital Agenda of Ukraine 2020», and on January 17, 2018 the Government approved the Concept and Action Plan for Digital economy in Ukraine until 2020. The introduction of the above in the system of training is the subject of special attention of the state, which is reflected in the main documents that determine the priorities of educational policy of Ukraine: Laws of Ukraine «On Education» (2017), «On Higher Education» (2014), National Informatization Program, National Open World Project, National Strategy for Education Development until 2021 and other state national programs and documents.

The Concept of the New Ukrainian School states that the end-to-end use of information and communication technologies in the educational process should become a tool to ensure the success of the reform. Not only the problem of students mastering the computer in order to solve various tasks, but also the question of preparing them for an adequate perception of the flow of information that they encounter in everyday life and within the educational institution. This implies the need for the formation and development of children's skills of analytical activity, logical reasoning, comparison, generalization and systematization, critical analysis. On the other hand, the spread of information technology, portable devices and their active and widespread use by the younger generation require education specialistsnot only to take into account such trends, but also in the context of teaching to ensure the development of children's critical skills, filter information aggressive influence of media and digital technologies. That is why the professional training of education specialists, first of all, should provide for the formation of their readiness to develop also information and digital competence of students.

A special role in this formation belongs to higher education institutions, which within the specially created information and educational environment have the opportunity to promote the professional culture of future professionals in general and its components through the use of modern pedagogical and information technologies and in-depth integration of specialized professional tools with quality information. educational components.

Literature review. The scientific works of O. Asmolov, M. Bastun, E. Bondarevska, A. Valytska, G. Vasyanovych, I. Zyazyun, O. Lobova, O. Otych, O. Rudnytska, V. Serikova, V. Slastyonina, V. Sheika, in which the leading conceptual provisions and principles of development of the educational process in the

context of this approach are developed. In pedagogy, all dimensions of the existence of culture focus on the individual, and any cultural phenomena reflect his inner world and creative potential. Therefore, for the educational field is fundamentally important to understand culture not only as a historically determined level of society, creative forces and human abilities, reproduced in the types and forms of organization of life and human activity, but also as a factor in the formation and properties of personality [2; 3].

At the present stage in the educational space to describe skills and competences in the field of information technology simultaneously uses a number of concepts, including «digital competence», «information-digital competence», «information-communication competence», «media competence», «digital literacy», «Digital culture». Among them, the most used in recent years is the concept of «information and digital competence» as the ability of a person to apply information and digital technologies in life, study and work, constantly and autonomously develop it.

Interpretation of the essence of these concepts, the definition of their structure, features are found in many works of foreign and domestic scientists. In the studies of N. Soroko, O. Spirin, S. Gunko and others. The issues of digital literacy and information and communication competence of future specialists are scientifically substantiated. Works by O. Hrytsenchuk, I. Ivanyuk, S. Lytvynova, I. Malytska, N. Morse, O. Ovcharuk, O. Kravchyna and others. devoted to the problem of assessing information and communication competence. G. Lavrentyeva, R. Motsyk, O. Nikulochkina, L. Petukhova, O. Sukhovirsky and others. cover some aspects of the formation of information and communication competence of future teachers. The work of scientists M. Zhaldak, N. Morse, Y. Trius, O. Szyman and others is devoted to the problem of formation of information competence of future education specialists. At the same time, the analysis of theoretical and practical experience of training future education specialists showed, along with the mandatory courses of psychological, pedagogical, methodological, informational orientation, the lack of a systematic vision of the importance of future education specialists to form their information and digital competence. It also requires comprehensive research on the theoretical foundations of the problem of formation and development of professional culture of future professionals in today's reformed educational environment of higher education institution.

Aims. Highlight the theoretical aspects of the formation of information and digital competence of future education specialists as a component of their professional culture in higher education.

Methods. Theoretical methods: systematic analysis of scientific, psychological and pedagogical, methodological literature; generalization and systematization of theoretical information on the introduction of innovative changes in the higher education system of Ukraine.

Results. The basis for ensuring the development of education specialists' information and digital competence of students is a theoretical justification of the essence and structural components of «readiness of future education specialists to develop in terms of NUS information and digital competence of students» and

idealization in the form of an author's model of future education specialists marked readiness. Such professional training is characterized by purposefulness and manageability and is carried out in a higher education institution, and then implemented in further professional activities. The concept of the study includes three interrelated concepts that contribute to the implementation of the leading idea of the study. The methodological concept of preparing future education specialistsfor development in the conditions of NUS information and digital competence of students reflects the interrelation and interaction of different scientific approaches, among which the leading are systemic, andragogical, axiological, acmeological, competence, praxeological and professional as a basis for such training.

The basis for ensuring the development of education specialists' information and digital competence of students is a theoretical justification of the essence and structural components of «readiness of future education specialists to develop in terms of NUS information and digital competence of students» and idealization in the form of an author's model of future education specialists marked readiness. Such professional training is characterized by purposefulness and manageability and is carried out in a higher education institution, and then implemented in further professional activities.

The concept of the study includes three interrelated concepts that contribute to the implementation of the leading idea of the study. The methodological concept of preparing future education specialistsfor development in the conditions of NUS information and digital competence of students reflects the interrelation and interaction of different scientific approaches, among which the leading are systemic, andragogical, axiological, acmeological, competence, praxeological and professional as a basis for such training. The theoretical concept defines a system of ideas, source categories, basic concepts, without which it is difficult to understand the essence of the problem under study, and contains the following provisions:

- the readiness of future education specialists to develop information and digital competence of students in NUS should be seen as one of the results of their training, which means an integral socially significant personal qualitative characteristics of education specialists, which combines: values for the development of information and digital competence of students information and digital technologies and electronic educational resources in professional activities; motivation for their own professional development in the field of information and digital technologies, for the introduction of digital technologies for the development of students' ability to think critically, constantly and thoughtfully learn; knowledge of experimentally tested, including innovative, educational technologies, the main harmful factors influencing the health of students arising from the use of information tools in the educational process and methods of neutralizing this influence; ability to organically integrate them into the holistic educational process in the conditions of NUS; ability to combine universal and specialized software with child-centered technologies of teaching, the ability to interact and cooperate in the educational process;

- training of education specialists should be subject to specific principles of teaching, principles of integration of computer science and other knowledge,

cognitive visualization, pedagogical skills, socio-cultural orientation of the educational process, use of digital educational environment, application of innovative learning technologies; be based on a balanced combination of professional, methodological and psychological-pedagogical training; focus on the development of critical thinking of future education specialists; take into account the impact of active development and use of information technology and tools on students' health and their priorities;

- the model of preparation of future education specialistsfor development in the conditions of NUS of information and digital competence of pupils should be based on essence of a phenomenon «information and digital competence of pupils», to provide as a result readiness of future education specialistsfor development in the conditions of NUS of information and digital competence principles of appropriate training, use common forms, methods, tools, as well as characterize the levels of readiness on the basis of developed criteria and indicators;

- the effectiveness of the model of preparation of future education specialists for the development of information and digital competence of students in NUS is determined by qualitative changes in each of the indicators of readiness of future education specialists for development in NUS of information and digital competence of students.

The practical concept describes a system of actions that provide a practical solution to the problem, and is characterized by the following provisions:

- training of future education specialists should be based on their own educational experience, ability to self-educational activities, a critical attitude to innovation;

- active use in professional training of innovative technologies of training, in methodical preparation of information technologies and means, in psychological and pedagogical preparation of practical trainings and master classes.

The general hypothesis of the study is that the preparation of future education specialists for the development of information and digital competence of students in NUS becomes effective if it is based on sound theoretical and practical principles that reveal the readiness of future education specialists to develop information and digital competence of students taking into account the developed concept and the corresponding organizational and methodical support.

Discussion. We consider the formation of information and digital competence of future education specialists as a component of their professional culture. In our study, the concept of «culture» is considered as a higher level of human existence, which characterizes a person's attitude to the world and in an integrated form is a culture of personality. G. Drach writes that professional culture is inherent in every profession and includes a set of special theoretical knowledge and practical skills related to a particular type of work. Its formation is influenced, firstly, by specific features of the profession itself, and secondly, objective social trends (global trends in education, public procurement, the state of the education system and the quality of educational services, the culture of the institution, the prestige of the profession in society, etc.) and, thirdly, subjective factors, which include general culture, motivation of the

individual to receive professional education, propensity to social practice in the specialty [1].

According to N. Krylova, the professional culture of a specialist can be characterized as an expression of maturity and development of the whole system of socially significant personal qualities, productively implemented in individual activities. Professional culture is defined by the researcher as the result of the qualitative development of knowledge, interests, beliefs, norms of activity and behavior, abilities and social feelings. It is important to note that professional culture is acquired in the process of specific-oriented educational process, which provides a sufficient level of internal control, the desire for self-development and responsibility [4]. The variety of such a complex phenomenon as the professional culture of the future specialist, determines the multiplicity and diversity of aspects related to its formation, which can be grouped into several areas.

First of all, we should not forget the fact that the internal system of the professional environment will change under the influence of socio-cultural trends. In today's rapidly changing world, the priority is not knowledge as a set of studied material, but their applied nature, their applicability in many related fields simultaneously, including in the field of digital technologies as a mandatory element of professional activity today. That is, a specialist who knows how to apply this knowledge in practice and has methods of independent development, self-improvement is valued. In this case, the personality of the specialist is considered through the prism of all intellectual, volitional, emotional and evaluative attitudes to professional activity. That is, this aspect is related to the personal sphere of the individual, such qualities as diligence, self-control, desire for knowledge, responsibility and obligation, which develop in the process of transferring skills directly from teacher to student and performance practice.

The next aspect stems from the need to apply in the educational process a broad cultural approach, based on a harmonious combination of professional and general cultural training with universal performing skills. In studying this topic, we rely on the specifics of activity (V. Davydov, L. Zankov, etc.) and competence (I. Zimnya, B. Gershunsky, etc.) approaches. The activity approach orients students to acquire knowledge, skills, abilities and practical experience in a consistent manner, and the competence approach is aimed at acquiring relevant competencies, focusing their attention on achieving a significant result. The integration correlation and interdependence of these pedagogical approaches are based on the fact that practice-oriented education, based on the acquisition of extensive experience, is implemented and evaluated using the methods of the competency approach. Under such conditions, the learning process acquires a new meaning, it turns into a process of acquiring appropriate knowledge, skills, abilities, as well as (and this is the determining) extensive practical experience in order to achieve professionally and socially important competencies and qualities.

An important factor necessary for the formation of the professional culture of the future specialist is the organization of a professional creative atmosphere while studying at the university. Here students not only master professional skills and

acquire special knowledge and skills, but also gain experience in social and professional relationships, form a certain worldview, life attitudes and professional values. Finally, in this environment, the future specialist, joining a certain culture, becomes its bearer, because specifically in the university the basis of those qualities of the specialist is formed, with which he will enter a new environment of professional activity, where he will further develop as a person. From our point of view, an important condition that characterizes the success of the process of forming the professional culture of the future specialist, is the collective creative productive activity of the teacher with students and students among themselves. The internal system of the professional sphere, changing under the influence of progressive trends, brings to the fore fresh current methods of training (implementation of continuing education, systematic interaction of scientific, educational and educational potentials of the educational process, development of quasi-professional experience, synthesis of different activities, game modeling, implementation co-creation of teachers and students, design and creative technologies, etc.), the central place in which is the use of digital technologies.

Conclusions. Thus, the main theoretical foundations of the formation of information and digital competence of future education specialistsas a component of their professional culture can be called the following: multilevel structure of the process of professional training; gradual complication of educational and developmental tasks; constant improvement and self-development of the future specialist; maintaining an individual approach in training; a combination of competency approach and executive universality; high level of creativity in the educational process; in-depth training in the field of the latest digital technologies.

Thus, the system of continuous growth of professional culture of the future specialist in higher education is both a certain sequence of educational processes and in the future increase the level of personal self-development, developed in practice based on a dynamic model of formation and development of professional culture of the future specialist and guarantees the demand for young professionals in today's professional environment.

Author contributions. The authors contributed equally.

Disclosure statement. The authors do not have any conflict of interest.

References:

1. Drach, G. V. (2006), *Sotsialnaya i kulturnaya dinamika* [Social and cultural dynamics], Moscow [in Russian].

2. Chaika, V. M. (2006), *Pidhotovka maibutnoho vchytelia do samorehuliatsii pedahohichnoi diialnosti* [Preparation of the future teacher for self-regulation of pedagogical activity], Ternopil: TNPU [in Ukrainian].

3. Kalashnikova, S.A. (2011), *Teoretyko-metodolohichni zasady profesiinoi pidhotovky upravlintsiv-lideriv v umovakh suchasnykh suspilnykh transformatsii* [Theoretical and methodological principles of professional training of managers-leaders in the conditions of modern social transformations] : avtoreferat dysertatsii ... doktora pedahohichnykh nauk : 13.00.06, Derzhavnyi vyshchyi navchalnyi zaklad «Universytet menedzhmentu osvity», Kyiv [in Ukrainian].

4. Kryilova, N.B. (2007), *Kulturnaya paradigma kak osnova razvitiya sovremennoy shkolyi* [Cultural paradigm as the basis for the development of a modern school], Novyie tsennosti obrazovaniya : kulturnaya paradigma [New values of education: a cultural paradigm], 4 (34), 128-136 [in Russian].

Received: August 22, 2021
Approved: September 25, 2021