

Development Of The Information Competence Of The Future Teacher

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Abstract: *Internet and information and communication technologies, a high level of information competence is becoming the most important factor in the professional success of a teacher.*

Key words: *information competence, self-design*

The most important direction of modernization of modern higher education, reflected in state standards, is to change its target guidelines from the formation of knowledge, skills, skills to the development of competencies that characterize the ability of a future specialist to act effectively in various, incl. problematic and creative professional situations.

The most important, basic competence, not only ensuring the effectiveness of various types of specialist activities, but also serving as the basis for the formation of a number of other competencies, is information competence - "the key supercompetence of a person of the XXI century" (GK Selevko).

The primary and strongest skills in working with information are acquired during the training period, and here a lot depends on what models of working with information the teacher offers, how much information competence he has formed. Therefore, a high level of information competence of teachers is the key to its successful formation among all citizens of the country. In the context of the informatization of education, the development of its distance forms, the active introduction of computer training programs, the widespread use of the Internet and information and communication technologies, a high level of information competence becomes the most important factor in the professional success of a teacher.

The most significant period in the formation of information competence of a teacher is his education at a university. It is at this stage of professional development that the models of activity in the information sphere are formed, and the effectiveness of these activities depends on how effective they are.

The social order for the system of higher professional education is the development of a specialist capable of self-education, "education throughout life", ready to independently build trajectories of professional development and career growth, identify and overcome various barriers, achieving high quality professional activities. Constant changes in the infosphere, the emergence of new information and its new sources, new technologies for its transmission and processing determine the need for continuous improvement of the teacher's information competence. Therefore, already during the period of university training, a future teacher needs to form not only information competence, but also a readiness for its continuous self-improvement.

The most productive and appropriate to modern challenges technology of self-improvement of information competence is self-design of such competence, the fundamental feature and the most important result of which is the transformation of a student from an object of training and education into a subject of self-construction, self-education, self-development. In this regard, the development of his readiness for self-projection of information competence is an urgent problem of the professional training of a future teacher.

In the modern Russian system of higher education, incl. in the conditions of its entry into the European educational space, the transition to a multi-level system of training, the introduction of new educational standards based on the competence-based approach, the problem of identifying in the structure of professional competencies, including information competence of universal components, which allows you to flexibly change and design the content of such competencies, the process of their formation and self-improvement, is especially acute.

The presence of universal components (invariants) in the informational competence of a teacher confirms a number of facts in pedagogical theory and practice: the similarity of the logic of working with information in various activities of the future teacher, the invariance of the competence structure of the subject of professional activity (M.D. Ilyazov), the allocation of universal components of information competence and their use to structure the content of other competencies (A.S. Karpechenko), as well as a similar representation of information competence in educational standards of various specialties and areas of training in the form of an invariant complex of knowledge, skills, skills, qualities, motivation with the addition of variable components, reflecting the specifics of the professional activity of a specialist.

Information competence invariants (IC) have design and pedagogical potential, however, such potential has not been identified and is not used to optimize the professional training of a future teacher, to form his information competence and readiness for its self-design.

It is in this context that the results of experimental studies (L.R. Votyakova, T.A. Gudkova, E.F.Morkovina, O.M. Tolstykh, etc.) should be considered, which show that almost half of university graduates experience problems related to the use of information in scientific research, professional and pedagogical activities, adjusting actions in the infosphere, self-development of information competence. The rather high need of future teachers for the self-development of information competence is not fully satisfied. The majority of students' readiness to self-design is not sufficiently developed: there is no clear goal-setting, consistency, the necessary skills and abilities of self-design, incl. the ability to use invariants as a basis and a key guideline for self-design.

The effectiveness of the formation of the information competence of future teachers and the readiness for its self-design could be significantly increased by using the pedagogical and project potential of the invariants of such competence. In pedagogical science, there are certain prerequisites for solving this problem.

Information competence is the subject of increasing scientific interest and is considered in many aspects and from the standpoint of various methodological approaches. In the context of information culture, it is studied by G.G. Vorobiev, A.I. Rakitov, I.V. Robert, E.P. Semenyuk and others, from gnoseological positions - I.A. Ageshin, V.S. Bibler, L.M. Zemlyakova, A.F. Losev, Yu.M. Lotman, V.P. Terin and others.

The goals, content, stages, pedagogical tools, organizational and pedagogical conditions for the formation of information competence of students in the conditions of basic and additional professional education are defined in the works of N.G. Vitkovskaya, D.V. Golubin, L.N. Gorbunova, IN Zavyalova, OB Zaitseva, and others. Researchers have revealed the functional and role structure of the teacher's information competence, highlighted the competencies of an integrated nature (information and analytical (EV Appointed), information and communication kativnaya (E.G. Pyanykh, L.B. Senkevich), information technology (E.V. Martynova, L.V. Sergeeva) and others).

The need to form during the period of university training a teacher not only information competence, but also the ability to its constant self-improvement turns to numerous scientific and pedagogical works devoted to self-development, self-improvement, self-projection of professionally significant qualities, competencies of a specialist in general and a teacher in particular. The content of self-projection as the activity of a developing subject was considered by representatives of existential culture-philosophies, philosophical anthropology and other philosophical concepts (L.P.Bueva, V.M. Rozin, J.P. Sartre, M. Heidegger, G.P. Shchedrovitsky, K. Jaspers and others). In modern studies, the phenomenon of self-design is considered in various aspects: its socio-cultural and personal-subject status, the living space of functioning, the role and place in the development of society and personality are being investigated (G.E. Glazerman, L.I. Ignatovsky, V.P. Kiselev, A.A. Popov and others); nature, sources and mechanisms (A.A.Bodalev, V.I.Slobodchikov, A.E.Solovieva, etc.); functions, structure, pedagogical tools for the formation of readiness for self-projection (V.S. Bezrukova, L.A. Volovich, N.V. Zelenko, A.A. Kirsanov, A.M. Mamadaliev, M.I. Rozhkov, E.G. Skvortsova, N.M. Talanchuk and others). However, in pedagogical science, the theoretical foundations of the formation of a future teacher's readiness for self-projection of information competence using the design potential of its invariants are not disclosed.

At the same time, invariants were considered in other areas of pedagogical knowledge. The productive results of using invariants in modern pedagogy include the definition of invariant components of the content of education (I.Ya. Lerner, V.S. Lednev), invariant components of pedagogical technologies (V.P. Bepalko, V.V. Guzeev and etc.), invariants of pedagogical goals (B. Bloom, D. Kravol), invariant basis of intersubject integration (N.I. Reznik, Yu.S. Tyunnikov).

from the standpoint of double representation of information competence in the teacher's competence model (in the form of independent competence and as a basic basis for the implementation of other competencies), its ontological status, essential features (integrativity, universality of structure, contextuality and dynamism of content filling, double representation in the teacher's competence model, oversubject and incompleteness of formation) and functions in the professional development and activities of the teacher (developing, transforming, value-semantic, paradigmatic-ideological, optimizing); the essence and structure of the future teacher's readiness to self-design of IC, criteria (value, motivational, reflective-analytical, prognostic-transformative, control-corrective) and indicators of its formation; substantiated the presence in the structure of the information competence of the teacher of invariants - universal components that ensure high efficiency and stability of the teacher's activity in the infosphere, regardless of its conditions, content and specifics; their typological composition and the logic of deployment in information activities ("Recognition", "Assessment", "Transformation", "Adjustment") are determined; the essential features of IC invariants (constancy, stability, repeatability, fundamental nature,

commonality for various types of teacher's activity in the infosphere, multilevel, reproducibility, predictability, universality, compliance with the logic of the cognitive process); their characteristics are described (functional (determined by the types of information tasks solved by the teacher), procedural (determined by the logic of the teacher's search activity in the infosphere), substantive (correlated with the types and types of information as an object of the teacher's activity), instrumental (determined by typical scenarios and algorithms of information activity); identified pedagogical (the use of invariants as pillars of the educational process and professional self-design for rationalization and algorithmicization of the educational process and increasing the effectiveness of professional training of the future teacher) and project (giving invariants the meaning of design guidelines, matrix form of design didactic structures of the IC formation process) the potential of IC invariants; a theoretical model of the process of formation of the future teacher's readiness for self-design IC has been developed, revealing the regular connections between the IC invariants, on the one hand, by the knowledge of the teacher's cognitive activity in the infosphere and information barriers and serving as the basis for constructing the content, logical-structural consistency and pedagogical tools of the process of forming readiness for self-design of IC; a system of didactic tasks of forming a future teacher's readiness for self-design of IC, a matrix of their deployment based on IC invariants, typical implementation scenarios; shows an interdisciplinary resource for the stage-by-stage formation of this readiness; identifies the logical and meaningful foundations for integrating the content of basic and variable academic disciplines, practices, research and independent work of students in the formation of readiness for self-design of IC; revealed informational information that has a didactic load barriers to educational, professional, pedagogical and research activities of future teachers, their classification has been made in the logic of IQ invariants, which allows them to be used as key pillars of differentiation and individualization of the process and content of the formation of readiness for self-design of IQ; a self-design technology has been developed a future teacher of information competence, which ensures mastery of staging and algorithmic work with information.

The study revealed the ontological status of information competence in the teacher's competence model (in the form of independent competence and as a basic basis for the implementation of other competencies), clarified its essential features, professional structure and functions as a continuously evolving readiness for productive design, implementation and correction of educational cognitive, scientific research and professional pedagogical activity in the infosphere on the basis of the design basis of the IC invariants; the content of the concept of "the readiness of the future teacher for self-projection of information competence" is disclosed as a set of knowledge, skills, motivation, personal qualities that allow the future teacher to identify and overcome information barriers, design educational and cognitive, research, professional and pedagogical activities in the infosphere and continuous self-development of information competence based on its invariants and taking into account the current changes in the infosphere; the need to include the formation of such readiness in the system of goals for the professional training of a future teacher is theoretically substantiated; the typological composition of IQ invariants is determined, corresponding to the logic of working with information, covering all functions and types of such work and complexes of information skills: "Recognition", " Evaluation ", " Transformation ", " Correction "; regular connections have been established between the invariants of the IC, the levels of the teacher's cognitive activity in the infosphere and information barriers, which influence the effectiveness of the process of forming the readiness of future teachers for self-design of the IC and ensuring its orientation to the zone of proximal IC development; the mechanism of using design and pedagogical software is shown –The potential of IK invariants in the professional self-design of a future teacher: in the system of design

decisions, they take the form of a gnological matrix, on the basis of which it is possible to design the infosphere as part of pedagogical reality, the structure of information competence, information processes, educational and cognitive, scientific research and professional pedagogical activity in the infosphere, the process of forming information competence and readiness for its self-projection, continuous self-development of the personality of the future teacher as a subject of information activity; The logic and procedures for using the design and pedagogical potential of IC invariants in building a theoretical model and complex organizational and pedagogical support of the process of forming the future teacher's readiness for self-projection of IC on the project basis of IC invariants.

In conclusion, we have made a systematic description and classification of a unified pedagogical instrumentation for the formation of readiness for self-design of IC, classified in the logic of its stages;

typical scenarios for the implementation of didactic tasks in the logic of the formation of readiness for self-design of IC; technology of self-design of IC, which ensures mastery of scenic and algorithmic work with information; comprehensive organizational and pedagogical support of the process of formation of readiness for self-design of IC: organizational and managerial, information and didactic, scientific and methodological, tutoring, material and technical; supplemented, taking into account the formation of readiness for self-projection of IC, the content of the process of training bachelors in pedagogical areas, including curricula of academic disciplines, author's courses, practices, topics of coursework, final qualification works and others; system descriptors of information barriers for future teachers who have passed expert selection from the standpoint of their didactic load, methodological recommendations for using them as key pillars of differentiation and individualization of the process and content of the formation of readiness to self-design of IC; criteria, levels, indicators and methods for diagnosing the readiness of a future teacher for self-design of IC; methodological recommendations for preparing university teachers to work with students in pedagogical areas to form information competence and readiness for its self-design, to resolve students' problems related to information aspects of educational, cognitive, research and professional pedagogical activities.

Information competence has a double representation in the teacher's competence model (in the form of independent competence and as a basic basis for the implementation of other competencies) and is understood as an integrative quality of his personality, a set of knowledge, abilities, skills, qualities, experience systematized according to the invariants of such competence. and ensuring high efficiency of educational and cognitive, research and professional-pedagogical activities in the infosphere, including their design, implementation of projects, correction, as well as continuous continuous self-improvement of the subject of such activities. The essential features of a teacher's information competence are integrativity, universality of structure, contextuality and dynamism of content, double representation in the teacher's competence model, oversubject and incompleteness of formation.

In the system of higher pedagogical education, students need to form a readiness for self-design of IC as a set of knowledge, skills, motivation, personal qualities that allow them to identify and overcome information barriers, design educational and cognitive, research, professional and pedagogical activities in the infosphere and continuous self-development of information competence, taking into account the current changes in the infosphere.

The design of educational and cognitive, research and professional-pedagogical activities in the infosphere and the continuous self-development of information competence should be carried out in the logic of 4 IC invariants ("Recognition", "Assessment", "Transformation", "Correction") , which will ensure its high efficiency and stability, regardless of content and specifics. This set of invariants

covers all types and functions of working with information and all complexes of information skills, therefore, it is necessary and sufficient both for the implementation of such activities and for the formation of information competence and readiness for its self-design.

IC invariants have pedagogical and design potential. The pedagogical potential lies in the fact that their use in the construction of the educational process and professional self-design allows rationalizing and algorithmizing the educational process, increases the effectiveness of the professional training of the future teacher; project potential - in the fact that in the system of design solutions they take the form of an epistemological matrix, on the basis of which it is possible to design the structure of information competence, information components of general cultural and professional competencies of a future teacher, information processes, educational and cognitive, scientific research and professional pedagogical activity in the infosphere and the continuous self-development of the future teacher as a subject of

this activity, thus increasing the effectiveness of the designed processes.

the theoretical foundations of the implementation of the process of formation of future teachers' readiness for self-design of IC are presented in a model built on the design basis of IC invariants: in the purpose-functional characteristics of the model, IC invariants serve as the basis for specifying the goals of forming such readiness, in structural logs characteristics - for constructing a matrix for the deployment of IC in the coordinates of its invariants and the teacher's search activity in the infosphere, in the content characteristics they act as one of the logical and meaningful bases for the integration of basic and variable disciplines, practices, independent and research the work of students and the classification of information barriers, in the instrumental and technological characteristics, set standard scenarios for the deployment of didactic tasks and a step-by-step algorithm for the implementation of pedagogical tools.

When building the process of forming the readiness of future teachers for self-design of IC, it is necessary to ensure system integration of the content of academic disciplines, practices, independent and research work of students on 6 logical and meaningful foundations: the main activities of the future teacher in the infosphere, objects of such activity, its content, structural elements of IC, invariants of IC, objects of self-projection.

Information barriers are the key pillars of differentiation and individualization of the process and content of the formation of readiness for self-design of ICs. Expert selection of such barriers from the positions of their didactic load, their classification according to the main types of activities of the future teacher in the infosphere, according to the levels of his search activity and CI invariants, determination of the initial level of the student's search activity and the use of the matrix of didactic tasks, arranged according to the levels of such activity, provide the orientation of the educational process to the zone of proximal development of the IC.

In the professional training of the future teacher, it is necessary to use a unified pedagogical toolkit, the basis of which is the technology of self-projection of the IC as a model of step-by-step design, implementation and correction by the student of educational and cognitive, research and professional-pedagogical activities in the infosphere and the process of continuous improvement yourself as a subject of such activity. The IC self-design technology includes the following procedures: 1) initial diagnostics (identification of deficiencies (lacun) in information competence and information barriers); 2) goal setting; 3) design of work with information based on the invariants of IC and the structure of search activity in the infosphere (reproductive, partial search, creative work with information); 4) scenarios and algorithms (self-design of scenarios and algorithms for working with information); 5)

control.

An important condition for the effective implementation of the theoretical model of the process of forming the readiness of future teachers for self-projection of IC is the use of complex organizational and pedagogical support - a set of organizational and psychological and pedagogical actions and means aimed at organizational and managerial, informational and didactic, scientific -methodical, tutoring and material and technical support of the specified process, its main subjects.

Information competence (IC) has been studied in work in various aspects (psychological, linguistic, social, legal, economic, philosophical, aesthetic, pedagogical, etc.) and from the standpoint of various methodological approaches (information, technological, communicative, personal oriented, etc.). It is based on the activity approach, within which the IC is considered in the context of educational and cognitive, research and professional-pedagogical activity, and a personality-oriented approach, which made it possible to include in its structure all the necessary set of components corresponding to the functions and the objectives of these activities. From the standpoint of the selected approaches, the essential features of information competence were clarified:

- integrability: combines cognitive (search, comprehension and processing of information), communicative (exchange of information), technological (use of information technology, storage of information) processes;
- the universality of the structure: it has universal components in its structure, which are manifested regardless of the content and context of activity in the infosphere;
- the contextuality and dynamism of the content: the content of the universal components depends on the context and changes due to changes in the infosphere, the emergence of new sources of information and new information technologies;
- double representation in the teacher's competence model: in the form of independent competence and as a basis for the implementation of other competencies;
- oversubject of formation: is formed in all educational disciplines, practices, as well as in extracurricular work;
- incompleteness of formation: information competence cannot be formed once and for all, for example, during the period of higher education niya, which necessitates her constant self-improvement.
niya.

The generality of the logic of working with information in various types of activities of the teacher, its correlation with the structures of cognition prompted the dissertation

to the study of the potential of invariants of information competence. To understand the essence of this phenomenon, the essence of the concept of "invariant" and the practice of its use in various fields of knowledge (mathematics, programming, natural, humanitarian, technical sciences, etc.) are analyzed. The performed analysis made it possible to determine the invariants of the teacher's information competence as universal components that ensure high efficiency and stability of the teacher's activity in the infosphere, regardless of its conditions, content and specifics. The essential features of invariants are: constancy (invariability of manifestation in various contexts, situations of information activity); stability (independence from changes in conditions, characteristics of the infosphere, external influences); repeatability (reflect the regular repetition of a sequence of actions in working with information); fundamentality (form the basis of information activities); generality

(similarity of application in various types of activities of a teacher in the infosphere with their different content, taking into account the functions of these types of activities); multilevel (take place at various levels of the teacher's activity in the infosphere: re-productive, constructive, creative); reproducibility (the ability to reproduce an invariant in a given function both in self-projection and in the learning process); predictability (allow to compare, predict, design information objects and various types of teacher's activities in the infosphere); universality (can be used for design, implementation, analysis of various types, situations of teacher's activity in the infosphere, at various levels of search activity); compliance with the logic of the cognitive process.

The analysis of the logic, functions and types of informational activities of the teacher, presented in the scientific literature of the typical structural elements of information competence, as well as the stages of the cognitive process, carried out in the work, made it possible to conclude that the design of educational, cognitive, research and professional-pedagogical activities in the infosphere and continuous self-development of information competence should be carried out in the logic of 4 IC invariants ("Recognition", "Assessment", "Transformation", "Correction"). The paper substantiates that this typological composition of invariants covers all types and functions of working with information and all complexes of information skills, therefore it is necessary and sufficient both for the implementation of such activities and for the formation of information competence and readiness for it. self-design.

From the standpoint of invariants, as well as the identified essential features of information competence, its definition as an integrative quality of the teacher's personality, a set of knowledge, skills, skills, qualities, experience, systematized according to the invariants of such competence and providing high efficiency of educational and cognitive, scientific research and professional pedagogical activity in the information sphere, including their design, implementation of projects, correction, as well as constant continuous self-improvement of the subject of such activity.

It is shown that IQ invariants take place in different types and at different stages of a teacher's activity in the infosphere, in relation to various types of information that the future teacher uses, which made it possible to determine their characteristics: functional, due to the types of tasks being solved in the infosphere, procedural - the logic of search activity, meaningful - the types and types of information with which the future teacher works, instrumental - with typical scenarios and algorithms of his information activity.

The work reveals the design and pedagogical potential of IC invariants, allowing them to be used as the basis for professional self-design. The design potential lies in the fact that in the system of design decisions they take the form of an epistemological matrix, on the basis of which the infosphere can be designed as a part of pedagogical reality; structure of information competence; implementation of general cultural and professional competencies of the future teacher; information processes; educational-cognitive, research and professional-pedagogical activity in the infosphere; the process of forming the information competence of the future teacher and the readiness for its self-design; continuous self-development of the personality of the future teacher as a subject of information activity. In this case, the use of invariants as an epistemological matrix increases the efficiency of both design and implementation of projects. The pedagogical potential lies in the fact that the use of IQ invariants in the construction of the educational process and professional self-design allows rationalizing and

algorithmicizing the educational process, increases the effectiveness of the professional training of the future teacher.

The performed analysis of modern requirements for the information competence of a teacher and technologies for its formation allowed us to conclude that the most productive and appropriate technology for the formation of information competence is the self-projection of such competence.

Self-design of IC is defined in the work as the activity of a future teacher to create an image (model) of his own personality as a carrier of information competence based on the content of the invariants of such competence in the coordinates of high information culture and drawing up a trajectory (program) for the embodiment of this image in the OS –Main activities in the infosphere. The epistemological matrix of such self-projection is the IQ invariants: creating an image-self-project of the carrier of information competence, the future teacher builds such an image according to the IQ invariants, realizing their content in the coordinates of high information culture, and then, in the logic of these invariants, makes up a trajectory (program) the embodiment of this image in the main activities in the infosphere.

The analysis of various theories of self-development made it possible to formulate a theoretical idea of the process of self-projection of information competence and identify its procedural characteristics: the source of the design of IC is the student's need for self-development, the most important prerequisite is the readiness for such self-projection, stimulating

influencing factors - the student's own activity, an example of significant personalities, the purposeful work of university teachers to form IC, a prerequisite is the conscious choice of scenarios and algorithms for working with information, the driving force is the student's creative activity to resolve the contradictions of information activity and design his own personality as a carrier information culture, which can be information barriers to educational, cognitive, professional pedagogical and research activities, mechanisms - self-assessment of information competence, self-determination in the coordinates of high information culture, self-actualization of informational abilities, skills, abilities, self-realization in informational activity, self-regulation of such activity, the result is qualitative and quantitative changes in the personality of the future teacher and the results of his informational activity. Self-design of IC acts as a way of professional self-development of the teacher, performing in this process the functions of integration, self-actualization, self-regulation, socialization, rationalization, optimization.

The goal of forming readiness for self-projection of information competence should be included in the system of value-semantic guidelines of the university training of a teacher. The need for such a goal is due to a set of factors: the dynamism of the modern infosphere, its constant changes, the rapid growth of the volume of new information, the emergence of its new sources, technologies for its transmission and processing; social order for specialists who are ready to independently build trajectories of professional development and career growth, identify and overcome various kinds of barriers, achieving high quality professional activities; Russia's entry into the Bologna process and the transition to competence-based educational standards.

The readiness of the future teacher to self-design IC is defined in the work as a set of knowledge, skills, motivation, personal qualities that allow the future teacher to identify and overcome information barriers, to design educational and cognitive, research, professional and pedagogical activities in the information sphere and continuous self-development of information competence based on its invariants, taking into account the current changes in the infosphere. A feature of this readiness is its inconsistency: on the one hand, such

readiness is an integral property of a learning person, on the other hand, it requires purposeful formation. The readiness of future teachers to self-design IC is realized in educational, cognitive, research and professional-pedagogical activities in the infosphere; the integrating basis in this case are the levels of the teacher's cognitive activity in the infosphere (reproductive, constructive, productive), which determine the logic of the IC deployment. The structural and logical characteristics of the model describe the stages of readiness formation, the IC deployment matrix in the coordinates of its invariants and search activity teacher in the infosphere.

The information-motivational stage is aimed at the development of motivational-volitional and information-content components of readiness, is implemented in 1-2 semesters on the material of general humanitarian, socio-economic and general professional disciplines, is aimed at reflection by students of the initial level of IC and available information Barriers, the development of positive motivation for her self-improvement, the in-development of students about the ways of self-projection of IC, the development of their skills and experience of reproductive activity in the infosphere and self-design of IC at the reproductive level, mastering of algorithms for solving reproductive educational, research and professional tasks.

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