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Issue Article

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FORMATION OF INFORMATION AND DIDACTIC SKILLS OF FUTURE PHYSICS TEACHERS

Abstract: *The article examines the problem of the formation of information and didactic skills of future physics teachers. The importance of the development of information and didactic skills in the formation of professional competence of future teachers is conceptually substantiated. The methodological model of the formation of characteristics inherent in a competent student is being improved.*

Key words: *information and didactic skills, competencies, physical structures, educational process management, diagnostics, forecasting, training design, initial (external) level of motivation, basic (internal) level of motivation, higher (internal) level of motivation.*

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Introduction

As a result of the theoretical analysis of scientific and pedagogical literature on the problem of the formation of information and didactic skills of future bachelors, as well as the results of the ascertaining experiment, it became necessary to develop a specific technology for the formation of information and didactic skills of students of future physics teachers based on a competence approach. The complexity of pedagogical systems poses to researchers precisely the task of formalization and, ultimately, modeling of the educational process. Thus, the link between pedagogical theory and practice is pedagogical modeling.

This research step is supported by the fact that, firstly, with the help of models, one can design a particular area of knowledge, skills, abilities of any participant in the pedagogical system, what they should be from the point of view of the desired result; secondly, based on the model, one can consider the phenomenon being studied as a system, verify the truth and completeness of theoretical concepts; thirdly, the comparison of what the system forms with what should be formed allows us to qualify the existing pedagogical system and carry out a conscious search for ways to improve it.

Modeling in didactics is successfully used to solve the following important tasks: optimizing the structure of educational material, improving the planning of the educational process, managing cognitive activity, managing the educational process, diagnostics, forecasting, designing training.

Main part.

In foreign literature, the "model" is understood by many authors as a representation of processes describing in a simplified form some aspects of the real world.

The general concept of the model is proposed by G.M. Kojaspirova and A.Y. Kojaspirov, who consider it as an artificially created object in the form of a scheme, physical structures, sign forms or formulas, which, being similar to the object under study (or phenomenon), displays and reproduces in a simpler and coarsened form the structure, properties, relationships and relationships between elements this object.

According to L.M. Friedman's interpretation, a model is a special object, a generalized and abstract representation, a scheme of the phenomenon being studied, or an original object.

Our task is to form students, future bachelors in physics, information and didactic skills based on a competency-based approach, which will be effectively improved in the process of further mastering the profession. It is appropriate to note here that the system-forming factor of our model (Fig. 2) is the result that the entire educational process is aimed at. This result is the informational and didactic skills underlying pedagogical activity, professional competence of the future physics teacher.

Any didactic process, regardless of the applied pedagogical technologies and the subjects studied, has a three-component structure: the motivational (target) stage, the stage of the learner's own cognitive activity and the stage of managing this activity. Let's look at the first one.

The concept of motivation in psychological and pedagogical sciences denotes a process as a result of which a certain activity acquires a certain personal meaning for an individual, creates the stability of his interest in it and turns the externally set goals of activity into the internal needs of the individual. Since motivation is, as it were, the internal driving force of the actions and actions of the individual, one of the necessary conditions for its active inclusion in educational work, teachers strive to manage it, including us when using electronic learning tools (ESO).

Motivation is a common name for processes, methods, and means of encouraging students to productive cognitive activity, active mastering of the content of education.

Since motivation is a multifaceted phenomenon, the content of training includes a whole range of means to maintain it. First of all, the means of maintaining motivation for cognitive, developmental and educational activities are important. In the general structure of motivation, the cognitive motive is dominant, which determines educational activity and attitude to it. It is based on a constant desire for personal self-improvement, for cognition and self-knowledge, as well as a connection with the content and organizational aspects of educational activities, i.e. passion for the process of cognition. In the process of educational activity, private motives begin to act related to the formulation, acceptance and solution of individual tasks to achieve specific learning goals, manifested in his desire to improve personal achievements [93, 198].

It is necessary to take into account that the motivational and value sphere of the individual (needs, attitudes, values) underlies any cognitive activity. This is explained by the fact that the student himself tries to determine the goals of his teaching, regulates this process and evaluates its success. At the same time, the needs transformed into motives contribute to the formation of motivation levels of professional development of the individual in the conditions of the university. There are three such levels in total.

The initial (external) level of motivation is associated with the fact that the need for professional development is motivated by an external social or narrowly personal motive (job responsibilities, career, etc.). It determines the external (formal) attitude to educational and cognitive activity.

The main (internal) level of motivation is achieved when the need of a specialist "finds" itself in a pedagogical subject, which is objectively necessary for further professional activity knowledge, skills, skills, professional positions and developed (adapted) psychological characteristics. Such an "objectified need" becomes an internal motive for the professional development of a specialist.

The highest (internal) level of motivation reflects the student's need for the development and productive realization of his creative potential. It is based on the high claims of a specialist for self-realization in educational and cognitive activity, which is accepted by him as the highest and main priority. The involvement of self-realization. At this level of motivation, achievement motivation plays a significant role. It is characterized by the desire of the student to perform the work at a high level of quality wherever there is an opportunity to show his personal skills and individual abilities.

It should be noted that the degree of awareness of the need to replenish their knowledge is not the same for different people. Students often come to the fore pragmatic motives associated with solving particular, situational problems. In these conditions, it is especially important to provide special measures for stimulating educational activities, maintaining positive motivation to study, and creating a favorable work regime when teaching using ESO. It is necessary to involve students in the independent activity of teaching, imitating practice, repeatedly strengthening the possibilities of analysis and synthesis of phenomena and processes.

We believe that computer-based learning tools are the means that create the necessary prerequisites for the emergence of internal motivation of a person's activity, especially when they are able to adapt to the trainees' characterological characteristics, their way of thinking, and the level of available knowledge. In this case, students begin to enjoy the learning process itself, regardless of external motivational factors.

The use of ESO in the educational process makes it possible to strengthen the motivation of teaching through the formation of a positive educational attitude. A computer can influence the motivation of students, revealing the practical significance of the material being studied, providing an opportunity to use the intellectual potential of students, show originality, ask any questions and offer any solutions to interesting problems, without the risk of getting a low score. All this creates a psychologically safe space

for creative search, forms such qualities of thinking as creativity, flexibility, etc., which, in turn, contributes to the creation of a positive attitude to learning.

As for entertainment as a source of motivation for learning, the possibilities of the computer here are truly inexhaustible, and the main task is to ensure that this entertainment does not become a prevailing factor in the use of the computer and does not obscure educational goals.

It is possible to maintain incentives for learning by creating a situation of success in learning. To do this, when using ESO, it is necessary to provide gradation of educational material taking into account the zone of proximal development for groups of students with different basic training, different skills in performing mental operations and intellectual development, i.e. it is necessary to have a data bank with tasks of varying degrees of complexity, providing for several methods and forms of submission of the same educational material, depending on the level basic knowledge, goals and development of trainees.

The effective use of ESO is possible if the following didactic conditions are met: the opportunity for each student to work on a computer and use various peripheral devices is provided; computer software has been developed that contributes to the formation of professional skills, in accordance with the identified didactic capabilities; the methodology of using ESO in the process of forming information and didactic skills is implemented, which ensures the inclusion of the student in the "advanced" professional activity, developed on the basis of didactic principles: scientific, systematic and consistent, clarity, accessibility, consciousness of learning, implementation of a differentiated approach and continuity in learning, unity of learning, education and development, as well as cooperation - co-creation in the process of formation of information and didactic skills; the readiness of the teacher to implement the developed methodology of using ESO in the process of forming information and didactic skills is ensured.

The use of ESO encourages students to master new forms of work on the application of acquired knowledge in project activities. The inclusion of ESO in the educational process makes it possible to actualize the system-forming function of motives, namely: it structures the content of perception, memory, thinking, i.e. all cognitive processes of students.

According to the American psychologist M. Ksikzentmihali, internal motivation arises only in cases when the "must" and "can" are balanced in the activity of the individual, when what needs to be done and what a person can do are brought into harmony. If in the perception of a person these two parameters of activity – requirements and abilities – correspond to each other, then the necessary conditions are created for internal motivation to arise in the activity.

Teaching with the use of ESO allows students to form a positive attitude to learning; to maintain their competence and self-confidence, thereby stimulating internal motivation; to increase the objectivity of self-esteem, discipline and intellectual activity, well-being and mood, and thereby the effectiveness of learning in general.

In our proposed model for the formation of information and didactic skills of future bachelors on the basis of a competence-based approach, we carry out in the course: "General Physics", in which the following blocks are highlighted:

In our model, we propose to use a classification three-level measuring scale to determine the level of readiness of students, where tests of the first two levels of assimilation according to V.P. Bespalko will be used.

1) low – those who have not reached the 1st level of assimilation;

2) average – those who have reached the 1st level of assimilation;

3) high – those who have reached the 2nd level of assimilation.

In the conditions of informatization of education, it is reasonable to monitor the educational process using computer testing to diagnose the level of readiness of students, since it is the most productive and progressive form of control today, which allows combining the content of measuring materials with high accuracy of evaluation of test results.

The essence of the concept of testing is closely related to the concept of "test". Tests are considered as "standardized tasks, the result of which allows you to measure the psychophysiological and personal characteristics, as well as the knowledge and skills of the subject."

The performance test is a set of specially selected tasks to identify students' knowledge and skills. The tasks included in the tests differ in that they require short and, as a rule, unambiguous answers.

Levels of formation of information and didactic skills in the use of electronic learning tools.

To determine the level of formation of information and didactic skills in the use of electronic learning tools, we have identified the following levels:

Low - a future teacher with this level of competence studies the available resources intended for use in his professional field of activity, and refers to them occasionally.

Average – a future teacher who has reached this level of competence uses ready-made resources in professional activities, is able to develop his own program and methodological materials.

High – a future teacher who has reached this level of skills has the knowledge and skills to organize the activities of teaching students to develop and use ESO in educational activities.

Thus, the training of physics teachers is a complex and lengthy process of formation of

professional culture, competencies, which determines the appropriate quality of education of schoolchildren in the future. The competencies of a future physics teacher are manifested when solving professional tasks in the process of obtaining education. Competencies are always manifested in activities. It is impossible to identify and diagnose unmanifested competence. Its nature is such that it can manifest itself exclusively in unity with human values, provided there is a deep personal interest in this type of activity.

Conclusion.

The implementation of the competence approach in education requires a fundamental change in the position of the teacher, the teacher, including physics. He ceases to be, together with the textbook, a carrier of "objective knowledge", which he seeks to convey to the student. Its main task is to motivate students to show initiative and independence, to organize independent activities of students, in which everyone (including the teacher himself) I could realize my abilities and interests.

As can be seen from the above in the monograph, among the many important components that make up the model of a specialist – teacher of physics in the context of the implementation of the competence approach, primary importance is attached to information and didactic skills - as tools that ensure the qualitative formation of professional competence.

First of all, we have considered the state of development of the competence approach in the theory and practice of vocational education, and also highlighted the main definitions of the concepts of "competence", "competence", "key competencies" and "professional competence". The competence approach involves deep systemic transformations in the educational process of the university, affecting teaching, content, assessment, educational technologies. The meaning-forming factor in the design of education is the development of the student's personality.

The analysis of modern psychological and pedagogical literature devoted to the work of a teacher allowed us to show that the concept of "professional competence" of a teacher unites all the diversity of professional skills of a teacher. However, professional competence is not just a set of professional knowledge and skills, but a complex individual psychological education based on the integration of socio–pedagogical experience, theoretical knowledge, practical skills and significant personal qualities, which determines the teacher's readiness to perform professional activities.

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