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DIALECTICS OF OBJECTIVE CONTROL OVER PREDICTED OUTCOMES OF TEACHING THE INDIVIDUAL

The study materials reflect the research findings on the dialectics of the competence-ideological formation of a future specialist as a phenomenon of control and management in teaching. The educational doctrine and the environment are considered as the most important guidelines for effective teaching. The effective forecast in education is substantiated to be an essential basis for the quality management of its results. Idealized and realistically possible schemes of the learning process, the general scheme and method of managing the learning of an individual in the implementation of various types of control have been developed and illustrated. Paper proposes a technological model of the formation of future teacher competence-ideological qualities – his personal pedagogical credo.

Key words: cognitive task, learning control, teaching management, competence, pedagogical credo.

1. Introduction

The issue of effective training of learners should be perceived as a dialectical procedure of optimization and organizational patterns/principles, control, management of such an educational and cognitive activity, the subject of which correlates with the processes of goals predetermination, the predicted degree of awareness, own value system, professional competence and ideological experience.

The transition to European standards should necessarily prompt domestic education to increase its potential regarding the insurance of high-quality professional training of specialists (through effective management of this process) and enrich existing priorities [1-5]. Under such conditions, the main result of the research appeared to be the theoretical substantiation and technological interpretation of the concept of purposeful quality management of training future specialists with an emphasis on personality-oriented learning [6-10].

2. Material & methods

In accordance with the goals, at different stages of the study certain theoretical methods (comparison, logical analysis of philosophical, psychological, pedagogical and methodical sources) were used to clarify the state and prospects of the research problem. Generalization and theoretical analysis were applied to reveal the essence of the problem, substantiation of the structural and functional model of control over the predicted learning outcomes of the individual, determining the main components of future specialists' professional training in the implementation of educational technologies in the teaching process, characteristics of technological competence in the overall structure of professional competence. Such diagnostic methods as – psychological and pedagogical observation, conversation, testing, questioning and interviewing – were applied as empirical methods. The pedagogical experiment with qualitative and quantitative analysis of the results, personal pedagogical scientific and practical experience enabled the introduction of the technological system of future specialists' training into the real educational process.

3. Theory

Any educational material can be interpreted as a combination of a certain class of problems (tasks) to be solved. Behind the criteria of interpersonal subject-object relations, in any educational procedure, there are only three types of tasks:

- scientific problem (controlled thermonuclear fusion, contact with intelligent civilizations ...) – a distant and not immediately feasible perspective (goal);
- cognitive task as a goal, determined by objective conditions of its achievement in the present (competent explanations, recommendations, consultations of a teacher contribute to the operational achievement of such goals);
- learning task – the goal is correlated with the need to repeat, generalize and systematize the experience that already exists (learning and "refinement" of the competence and ideological personal qualities).

This gives grounds to determine that only a cognitive task focuses on the actually predictable and feasible cycle (**goal → means of achieving the goal → result**) of learning and cognitive activity [6, c.8-10]. Therefore,

the cognitive task actually acts as a backbone for analyzing the characteristics of the course and the quality of the result of any learning and cognitive procedure.

The following basic premises for the formation of future teacher professional competencies were substantiated:

- the involvement in an active learning and cognitive activity, in which the "theorist" practices more, and the "empiricist" theorizes more [1; 3; 6; 8];;
- the confidence that the effective level of a specialist awareness is formed only through the proper suggestion of attitudes towards the object of knowledge;
- the focus on the principle of a dynamic balance of rational-logical and sensory-emotional in perception and learning contributes to the formation of students' proper professional qualities and their own pedagogical credo [4-8];
- the indisputable need to develop the creative abilities of students as the main task of the educational process, which is to teach pupils to apply the studied theoretical principles for analyzing and explaining real objects and phenomena, solving practical problems they encounter: predetermination of applying theory as a method of knowledge for analysis of real phenomena and solving practical problems.

The cognitive task is proved to [3, c.77-148], exists in the form of a system of interrelated concepts and categories, which reflect our insight into the essence of the subject or phenomenon of objective reality. In *fig. 1*, the proposed task conceptual apparatus with its connections is outlined by a closed curve, where the initial state (**IS**) of the task subject is indicated and its final state model (**FSM**) is presented. The space between the outer and inner margin denotes the problem-solving means (**PSM**).

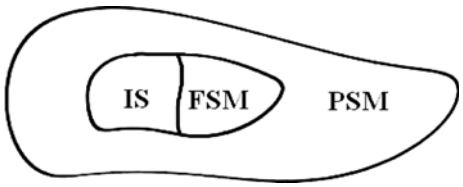


Fig. 1. *The system of interrelated concepts of the cognitive task*

Each teacher should be able to detect the system not just in the concepts, constituting the cognitive task, but also in those properties, relations, and attributes which can be detected with the help of these concepts in the objective world and reflected in the public consciousness. And, such systematization and awareness are fully synonymous.

Learning the cognitive task by student means, first of all, that such an "order in things" should be reflected in his consciousness, and should somehow fit into the system of knowledge and ideas that he already possesses. This is the first sign of the functioning of the cognitive task in a learning situation – **awareness**. **Awareness** of knowledge, in the considered cognitive task framework, characterizes the current state of its functioning, reflects how the student became currently aware of it in the process of learning the cognitive task.

It is easy to identify two more important characteristics (stereotyping and bias) of the cognitive task [3; 4; 8; 9]. The subject of this study is the first one of the three selected – the characteristic of awareness. It is worse mentioning, that in order to objectively control the quality of learning material mastering, the critical values of this parameter (awareness) is to be clearly described.

Critical values for the parameter of awareness should be sought in ways to improve the quality of educational material, which is characterized by the closest logical connections, connections that correspond to the implicative structure. Generating the teaching problematic method is a characteristic feature of the implicative structure of educational material construction. The easiest way to select criteria for the parameter of awareness is to use the scheme of the learning material mastering, illustrating its main stages (*Fig. 2*).

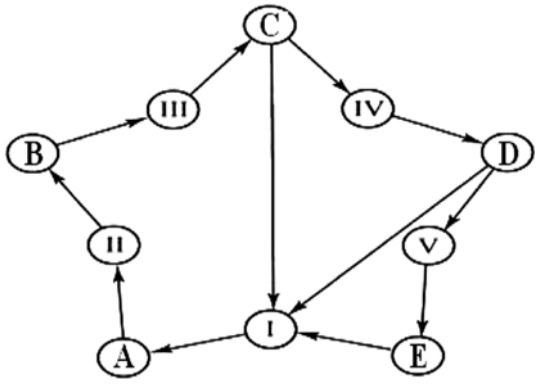


Fig. 2. *Scheme of learning material mastering, according to the parameter of awareness*

The numbers indicate the stages of the process under consideration: **I**) formulation of a learning problem; **II**) perception of educational information; **III**) understanding the cognitive task; **IV**) its fixation (memorization); **V**) application of knowledge of the problem.

The letters indicate the results of these processes: **A**) orming of a cognitive task; **B**) memorizing the individual operative judgments; **C**) primary understanding of the cognitive task; **D**) complete acquisition of the cognitive task knowledge; **E**) ability to apply knowledge.

(I → A→ II → B → III → C → I;
I → A → II → B → III → C → IV → D → I;
I → A → II → B → III → C → IV → D → V → E → I)

This scheme reflects three complete cycles, corresponding to certain levels of learning material mastering (competences): general understanding (GU), knowledge comprehension (KC), ability to apply knowledge (AAK). These criteria (see *Table 1*) are basic for objective control and purposeful management of the formation processes of the future specialists' professional credo [3-10].

Table 1

Competence characteristics of the personality, according to the parameter of awareness

Criteria	Level of mastering the learning material	Contractions	Value formations (quality of knowledge acquisition, a measure of individual competence)
Low	General understanding	**GU**	The student consciously reproduces the main essence in the formulation and solution of the cognitive task.
Optimal	Knowledge comprehension	**KC**	The future specialist not only understands the main essence of the cognitive task but is also able to reproduce all of its content in any structure of presentation.
High	Ability to apply knowledge	**AAK**	Ability to consciously apply acquired knowledge in non-standard learning situations (creative transfer).

At the first stage, organized by problem [9] process of learning the cognitive task begins with the formulation of a learning problem. Such a problem arises as a result of the actualization in the student's mind of fundamentally correct, but contradictory, at first glance, ideas about the object of knowledge. The emerging contradictions become the leading means of learning motivation and cognitive search. Due to this, an intensive perception of those relationships in the subject of the task, constructing its condition, occurs. As a result, this first stage of learning the cognitive task ends with the formulation of a learning problem as external mental action, often in a verbal form.

The formulation of the learning problem consists in the students' awareness of the clear features of the initial state of the subject of the problem and the model of its final state, which is conventionally presented in *Fig. 3* as a system of interrelated concepts, respectively, **α** and **β**.

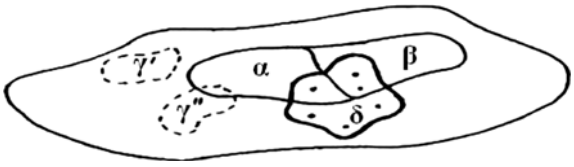


Fig. 3. *The system of interrelated concepts*

At the same time, the attention that focuses on the subject of the task is activated most of all. A sign of the formation of the condition of the cognitive task for the student is the ability to convey its meaning in his own words.

The second stage of solving a cognitive task consists in the perception of a sequence of judgments or, in the case of an independent solution of the problem, its production due to the internal information circulation. Mainly, at the stage of awareness of solving a cognitive task, both external and internal information comes into motion: the beginning of the formation of new concepts. The conceptual apparatus of the cognitive task (*Fig. 3*) is conventionally limited by the external contour. In contrast to the first stage, the operational memory comes to a state of heightened activity. It results in awareness of actualized judgments.

To test the effectiveness of mastering the learning material, the teacher may suggest that the student reproduce elementarily, expressed by one-act action, fragments of the cognitive task in consequence of their actualization (see *Fig. 3*): marked with the letters **γ′**, **γ″** and enclosed in dashed outlines.

At the third stage, as a result of a reproductive understanding between the existing and newly formed concepts, short-term connections are being established. But the most essential connections, if attention was focused on them in the process of learning the cognitive task, and they were consciously actualized, become stable. Then we can say that the student has achieved a primary understanding of the cognitive task being learned in general. With problem-based learning, this level is usually achieved as a result of a dialectical leap, the so-called insight. The student, as if suddenly, becomes able to convey through the one-act action the meaning of not only a particular fragment but the main essence. The ability to logically connect the basic concepts of the initial state of the problem subject, the final state models and the means of its solution in one judgment arises.

Fig. 3 presents the system of interrelated concepts **δ** of the level of primary understanding (outlined with a bold line). The dots inside the contour indicate the main concepts of the individual and the cognitive task requirements. It is clear that in order to understand the educational material, it is necessary to possess certain knowledge and skills (this is the basis of the test of understanding). Knowledge of a specific academic issue implies, first of all, an understanding of the essence of the main, as well as the ability to apply this knowledge within certain limits. The skill level is based on the understanding and knowledge of the necessary learning material.

However, such characteristics of knowledge as profundity, completeness, comprehensiveness, etc., should be incorporated in the content of learning material. Successful mastering of the former remains just a necessary, but not a sufficient condition of the individual's successful acquisition of knowledge. Sufficiency is determined by how objectively and reliably, profoundly and comprehensively, scientifically and accessibly the laws of reality are being displayed in the educational material.

The personally oriented teaching process guarantees the realization of an effective model for the development of the student's professional qualities: it is based on ensuring the adequacy of the criteria for the capabilities (levels of competence) of an individual and the requirements of a specific training program.

The essence of control in the theory of cognitive activity management is reduced to comparing the real indicators of learning material mastering (according to each of the three parameters: awareness, stereotyping and bias [7, c. 6-10] with predetermined standards (competencies): **general understanding (GU)** – the student consciously reproduces the main idea in the formulation and solution of the cognitive task (the primary effect in the context of expedient activity); **memorized knowledge (MK)** – the student mechanically reproduces the content of the cognitive task, according to the mastered volume and structure; **imitation (I)** – the learner copies the main actions associated with learning the cognitive tasks, under the influence of certain motives (internal or external); **knowledge comprehension (KC) –** the student not just understands the main essence of the cognitive task, but is also able to reproduce all of its content in any structure of presentation (implicative, operational or classifying one); **ability to apply knowledge** (**AAK) –** ability to apply acquired knowledge in non-standard learning situations (creative transfer); **skill (S)** – the learner is able to apply the content of a specific cognitive task at a subconscious level, as an automatically performed operation (the only capacity of the student's knowledge, the identification of which is to be strictly limited in time); **convictions (C)** – the irrefutable for the learner knowledge, which he consciously attaches to his life, in the truth of which he is confident and ready to defend and protect it. At the same time, convictions are the ability to maintain one's freedom of thought, sufficient to abandon the previous hypothesis, view or point of view, as soon as real facts turn out to disprove them.

Analyzing the mentioned levels of knowledge, we note that with improving the quality of mastering the learning material for each parameter, we will definitely go through the level of knowledge comprehension of a particular cognitive task. In the teaching practice, any control of knowledge acquisition is mainly associated with the achievement of this level. Its specific role is determined by that fact, that regardless of the initial progress towards it, further improvement in the quality of learning is possible according to each of the parameters described above. Moreover,

the generation of knowledge is often accompanied by an increase in bias towards the object of knowledge, and this contributes to the emergence of favorable conditions for the formation of a **habit (H)** in learning. That is, the individual achievements of the student, in addition to other qualities, may gain a trait of the deed. The introduction of control standards (levels of mastering) in the learning process allows more precise designing of cognitive goals of learning. This creates the conditions for the implementation of reliable operational and current, thematic and final control, which ensures the effectiveness of the learning process management.

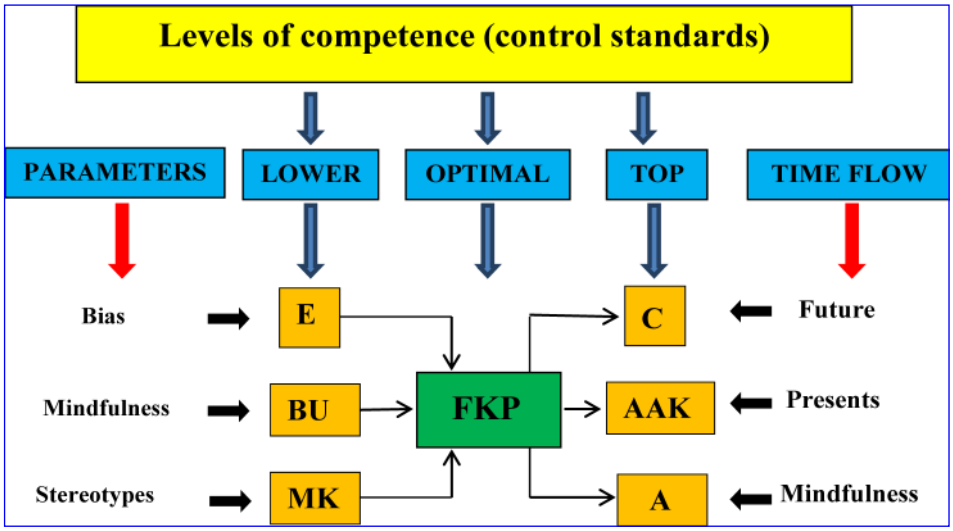


Fig. 4. *Levels of competence.*
BU – basic understanding; MK – memorization of knowledge; E – emulation; FKP – full knowledge possession; AAK – ability to apply knowledge; A – ability; C – convincing

For the purpose of substantiation of the told and illustration of administrative technologies of training of the future teachers-physicists, we shall specify essence of qualitative characteristics of parameters (consciousness, stereotyping, partiality) outside of which educational and cognitive activity of the individual does not occur. Competence characteristics are (control standards) (Atamanchuk, 1999) (*Fig. 4*).

Basic understanding (BU) – the pupil consciously reproduces the main idea in the formulation and solution of the cognitive problem (the primary effect in the context of an appropriate activity); memorization of knowledge (MK) – the pupil mechanically reproduces the content of the cognitive problem in the volume and structure of its learning; emulation (E) – the pupil copies the main actions connected with learning of cognitive tasks under the influence of certain motives (internal or external); full knowledge possession (FKP) – the pupil not only understands the main essence of cognitive task, but also is able to reproduce all its content in any structure of presentation (implicative, operational or classification); ability to apply knowledge (AAK) – the ability to consciously use the acquired knowledge in non-standard learning situations (creative transfer); ability (A) – the student is able to use the content of a specific cognitive task on a subconscious level, as an automatically performed operation (the only quality of knowledge of the student, the allocation of which must be imposed strict time regulations); convincing (C) – are the knowledge that the student consciously uses in his life, the truth of which is undeniable. However, belief is the individual's ability to maintain his or her freedom of thought sufficient to reject a previous hypothesis, view, or point of view as soon as real facts prove to disprove it.

Analyzing the selected levels of knowledge (competence), we note that improving the quality of learning material for each parameter we necessarily pass through the level of full knowledge of a specific cognitive task: in teaching practice, any control of knowledge acquisition is mainly associated with the achievement of this level. Formation of habits (Ha) in learning – a process where individual achievements of the student, in addition to other qualities, colored and in a behavioral connotation. The introduction of standards of control (levels of competence) in the learning process allows more accurate design of cognitive learning objectives.

However, one should not be seduced by the fact that in the real learning process, the learner's learning ability itself is effectively implemented by someone previously declared the only way.

The teacher must ensure that the learning process is developed in a way that reflects the scheme for each parameter. However, in real learning physics (technology), as a rule, due to the influence of different factors (inferiority of knowledge, inadequate interest, semantic barrier, type of character, asymmetry in the work of the hemispheres of the cerebral cortex (left and right thinking), insufficient mathematical training, teaching-methodical and material-technical incompetence, lack of trust in the source of information, the level of experimental abilities, the level of intuition, the nature of attitudes, etc.), quite complex and numerous transferences occur.

Let's characterize some possible schemes. At lower levels of learning, these are often encountered in real-life learning:

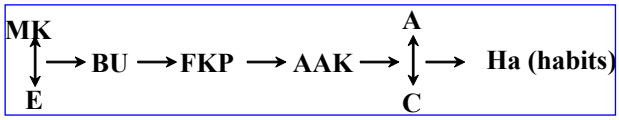
$$MK \rightarrow BU;\ E \rightarrow BU;\ \begin{matrix} MK \\ \updownarrow \\ E \end{matrix} \rightarrow BU;$$

$$\text{or}\quad MK \rightarrow Mk;\ E \rightarrow Mk;\ \begin{matrix} MK \\ \updownarrow \\ E \end{matrix} \rightarrow Mk,$$

where (Mk) – misinformed knowledge.

It is clear that these processes of learning are influenced by such factors as a student's existing experience, his ability to learn, his trust in the source of information, his attitude to perception, etc. It follows from the experience [3] that the best prevention and neutralization of the danger of the formation of erroneous knowledge (for physics, as for any other worldview science, error is not at all acceptable!) is an individualized approach to learning: observe, research, generalize, referee, write works on a physical theme, etc.; search and creative tasks; consult-

ing and tutoring assistance, etc. [10]. The most realistic scheme of self-governing learning process:



An individual approach to learning is the best way to overcome the meaning barrier of each individual, and thus achieve the ultimate learning goal in the best way.

The effective use of an individual approach in a group setting can be achieved by providing clear feedback: external feedback in teaching, internal feedback in learning. Feedback is needed not only for the teacher (control and regulation) but also for the student (self-control and self-regulation) [2, 10]. The highest result of an individual approach to learning is the development of a strong cognitive interest and the creation of internal student attitudes towards learning a particular learning material, which contributes to subsequent self-learning and self-education.

An important reserve for improving the efficiency of the training process is the constant convergence of external and internal control criteria. Such convergence is a favorable condition for the objectification of the evaluation of the cognitive activity of a pupil and is also the main factor in ensuring the rational self-governance of this activity.

In this case, the effect of the dominant influence of the teacher is in direct dependence on the dialectical unity of the maximum demands on the pupil and respect for his personality.

Only a student's transformative cognitive activity generates a cognitive interest in the object of cognition. The teacher will only be able to create a cognitive interest in the subject of cognitive task based on an individual approach to teaching. He has such opportunities: to do this, it is necessary to establish a constant control and correction of learning activities of the student. However, reference requirements should be commensurate with the student's projected (expected) learning achievements in a particular situation, which fulfill not only a supervisory function, but also a stimulating, activating, learning activity. The point of view of the famous Slovak didactic E. Stračár is very instructive and relevant. The point of view is that during the check the teacher should take care that the task in its scope is formulated clearly, understandably and correctly [7, c. 6-10]. The inadmissibility of control, in which target (reference) benchmarks exceed the real limit of an individual's claims and learning achievements, is explained by the fact that in such a situation the possibility of controlling his learning and cognitive activity is immediately lost. The ability to translate learning into a self-regulating process is easy to achieve. With the help of control, using the methodical function of educational material, the conditions of maximum respect and exactingness to the pupil are provided. This creates favourable psychological prerequisites for the transfer of learning into a self-controlled process (no sense barrier, the joy of learning, confidence in success, etc.). The question of creating psychological prerequisites for learning the cognitive task, as well as the question of its material supply, is the subject of the following consideration. Summarizing the aforesaid, we will note that "... the direct organization of any work, including educational work, necessarily provides planning and self-control", and that, self-control in training is the highest form of control which is provided by the teacher with a methodical function of an educational material.

In the theory of functional systems self-regulation is interpreted as active and conscious activity of the subject, and the system of conscious self-regulation of activity has a structure that is unified for all types of activity. It consists of the following elements: purpose of activity, model of objective-subject (significant) conditions, plan or program of actions, evaluation of results, correction. The main link defining the features of activity self-regulation is subjectively accepted goal. Therefore, it is very important in training that each goal is diagnostic in relation to the student. If an activity is planned and implemented, the regulation of its passage is provided by the evaluation of results. In this phase, self-control is born as a specific mechanism of correction (regulation) of the activity based on the evaluation of results, as the ability of the pupil to establish the difference between the program of educational and cognitive activity and the implementation of the given activity, to adjust the plan of this activity.

Formation of the self-control mechanism starts with creation of favorable conditions for realization of educational and cognitive activity. Among the external conditions for the formation of self-control can be distinguished those that provide: creating situations to guide students to self-examination; (managing the mental activity of students at the orientation and executive stages of cognitive activity, creating conditions for systematic self-examination, positive emotional disposition of the students' spirit);

The way the activity is organized and its improvement in the process of self-testing (targeted training using various methods of self-testing, self-regulation in the course of practical reproductive activities, knowledge of the sample (standard) and self-control, i.e. knowledge of its algorithm, ability to evaluate its performance).

Ensuring the conditions for the formation of a self-control mechanism is carried out according to this scheme:

1) awareness of the meaning of self-control in learning the educational material based on the fact of subjectively accepted goal;

2) formation of skills valuable for the implementation of the goal of educational and cognitive activities;

3) assimilation of general self-control skills in the process of performing practical activities (exercises, tasks, tasks, etc.);

4) development of methods of self-control in the process of expanding educational and cognitive activities according to the algorithmic principle;

5) development of different types of self-control: self-control at the material action stage; self-control at the approximate action stage;

6) self-control at the stage of reproductive activity;

7) development of self-control skills at the stage of heuristic and search-and-creation activities;

8) formation and development of the emotional-evaluation mechanism and the mechanism for correcting the student's knowledge.

The characteristics of the formed skill of self-control are the following criteria: quality of reproductive activity (infallibility of statements, completeness of thoughts); speed and accuracy of performance of separate operations or their sequences; absence of tension and fatigue; absence

of orientation to the form of performance of action; selection of intermediate operations, compactness of actions.

It is necessary to manage the process of learning physics to the level of self-regulation:

1) to refuse the vagueness of goal setting training such as: "to learn the phenomenon of the photo effect", "to acquaint students with the first principle of thermodynamics", "to form the ability to analyze the observed phenomenon", "to learn to solve problems on the application of laws of dynamics", etc.;

2) so that the goals of physics training are built on the principle of increasing complexity (hierarchy is maintained), covering the cognitive (cognitive), affective (emotional-value) and psychomotor spheres of activity (goals determined by the parameters of stereotype, awareness and partiality fully meet such requirements);

3) to ensure that the learning objectives (standards: memorization, inheritance, understanding of the main thing, full knowledge, ability, skills, persuasion – to be directed to such objectives) are diagnostic (ability to accurately describe, measure and exist the scale of grades) and appropriately instrumental (coordinated to the final result by the situation of success);

4) that the learning objective is subjectively accepted (the implementing entity becomes the actor).

The following must be taken into account:

1) terminal (vital) learning objectives related to the comprehensive development of an individual's abilities are set by the social order, the need of the state and society for education;

2) affective learning goals (from simple perception, interest, readiness to react, to the acquisition of values and relationships, their active identification) form an individual's emotional and personal attitude to the phenomena of the real world;

3) psychomotor learning goals are related to the formation of various types of motor (motor), manipulative activity, nerve and muscle coordination (in physics training, we cannot ignore the fact that in the course of observation, setting experiments, measurements, etc., we need to master many techniques and skills of this quality);

4) high instrumentality of the goals and standards contributes to the development of an individual's ability to correct his or her own activities at the level of foresight, foresight, constructive action, and increasing the activity of the operation performed;

5) thus, by varying the levels of given terminal, affective, psychomotor, cognitive and operational goals, we create predictable conditions for the management of effective training of a future specialist of the physical and technological profile.

4. Results and Discussion

Selected research results: 6 doctoral and 15 candidate theses have been defended; over 50 graduate papers have been defended. For discussion and approbation of the research results, the authors organized and held more than 22 international scientific conferences. 5 monographs are signed for publication and 17 monographs, 2 textbooks, 54 educational and teaching manuals for teachers and students have been already published. The authors of the study prepared 25 issues of the "Collection of Scientific Works of Kamianets-Podilskyi National Ivan Ohiienko University. Pedagogics". All issues of the collection concern innovative research in the fields of didactics and methods of teaching natural sciences. Since 2012, the journal has received the status of an international publication, as a result of its inclusion in the following scientometric databases: Google Scholar, Index Copernicus and GEJSH. 15 certificates of copyright on the developed and implemented teaching technologies have been received by the authors. More than 2100 scientific and methodological articles have been published (242 articles – in journals included in the scientometric databases).

The practice has confirmed that the experience, gained by a team of researchers on the integration of higher natural science education and science, meets the requirement of ensuring effective future specialists training. This can be concluded, taking into account that fact that over a long period, under state funding, at the department of teaching physics and technological education disciplines, the following fundamental scholarly studies on the theory and methodology of teaching physical and technological disciplines were carried out:

- (1995-2000): "Management learning and cognitive activity in the study of the natural sciences and mathematics disciplines under application of the new information technology in training";
- (2000-2004): "Theory and technology of cognitive activity management in the context of the secondary school reforming (physical and mathematical disciplines)";
- (2007-2009): "Innovative technologies for the formation of a specialist in terms of person-oriented learning and tiered education";
- (2010-2012): "Managing formation of professional competencies of future teachers of physical and technological profile in the European integration context";
- (2013-2015): "Innovative technologies of quality management of training future teachers of a physical and technological profile."

Now a research project "Theory of process management for the formation of the competence and ideological qualities of the future teacher of physics and technology" (2017-2019) is being carried out. In addition, a significant part of intellectual products has undergone serious international expertise and has been recognized with a high estimate at the European-Asian and National Research Analytics Championships in the field of didactics and teaching methods, (gisap.eu/ru/user/1943). According to the results of the Expert Council of the International Academy of Sciences of Higher Education, the authors were awarded with 19 gold, 13 silver, and 3 bronze medals and gained a grant support for further research.

5. Conclusions

The specific standard of the educational environment [1-6], through which the teacher carries out the appropriate purposeful influence on the effective learning and cognitive activity of the student, can exist in line with available education model. The content of teaching is scheduled by the targeted training program, which outlines specific levels (standards) of learning for each cognitive task. These standards are objective in nature and must be equally interpreted by both, the student and the teacher.

Management, governance (correction, regulation) of teaching is carried out on the basis of monitoring results, which act as a peculiar consequence of comparing the actual results of teaching with the certain standard requirements. Since the student's knowledge may be such that meet "1" or do not meet "0" the outlined standard, these states are encoded in binary calculation system, which can be used to create automated control programs. Adequate management decisions, taken according to the control results, contribute to the gradual transition from teaching to self-government, self-education.

Involvement of the future specialist into appropriate activities constitutes the basis for his professional qualities formation. Ancient wisdom says: "Tell me – and I will forget; teach me – and I will remember; involve me – and I will learn". It should be an activity, in which the "theorist" practices more, and the "empiricist" more theorizes [2, 4]. An effective level of specialist awareness is formed only through the proper suggestion of attitudes towards the object of knowledge. The principle of a dynamic balance of ratio-logical and sensory-emotional in perception and learning, which forms the basis of teaching, contributes to the students generating their own author's pedagogical credo.

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ДІАЛЕКТИКА ОБ'ЄКТИВНОГО КОНТРОЛЮ ПРОГНОЗОВАНИХ РЕЗУЛЬТАТІВ НАВЧАННЯ ІНДИВІДА

Матеріал статті присвячений відображенню результатів досліджень діалектики компетентнісно-світоглядного становлення майбутнього фахівця як феномену контролю і управління у навчанні. Розглянуто освітню доктрину і освітнє середовище як найважливіші орієнтири дієвого навчання. Обґрунтовано, що дієвий прогноз у навчанні виступає сутнісною основою менеджменту якості його результатів. Розроблено та проілюстровано ідеалізовані і реально можливі схеми навчального процесу, загальна схема і методика управління навчанням індивіда при здійсненні різних видів контролю. Запропоновано технологічну модель формування компетентнісно-світоглядних якостей майбутнього педагога – його авторського педагогічного кредо.

Ключові слова: пізнавальна задача, контроль навчання, управління навчанням, компетентність, педагогічне кредо.

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