

Technology for Development of Intellectual Skills of the Future Teachers From the Perspective of the Competence Approach

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Abstract: Modernization of higher pedagogical education in terms of competency approach requires rethinking quality content of future teachers training in a holistic educational process of the university. The key foundation for the development of teachers' competencies is intellectual abilities that serve as a basis of logical thinking of a person and determine the successful implementation of all tasks. A psychological analysis of the essence of intelligence allowed the authors to present the structural-component model of students' intellectual development in the competence-oriented educational process of higher education. The technology for development of intellectual abilities of future teachers, based on the general professional training of the future teachers in close relationship with the development of their intellectual abilities, includes formation of cognitive skills at orientational phase, metacognitive intellectual skills - at theoretical and methodological stages and intentional intellectual skills - at the stage of implementation. Implementation of the development technology proposed by the authors and intended for the future teachers is incremental in nature and provides for the development of the above intellectual skills.

Key words: Modernization % Pedagogical education % Competency approach % Professional training

INTRODUCTION

Today, one of the priorities in modernization of higher vocational teacher education is the transition to competence-oriented education, which primarily defines the requirements for teaching staff in accordance with the needs and demands of today. This suggests deep systemic changes affecting teaching, content, evaluation and educational technology, i.e. systemic restructuring of the entire process of the university training in order to achieve the desired result of education in the form of competencies of future specialist.

In this connection, the Republic of Kazakhstan adopted the State Program of Education Development for 2011-2020, which sets out the purpose, objectives, duration, target indicators and the sources and amounts of funding. Thus, the purpose of education is to: increase the competitiveness of education and to develop the human capital through the provision of quality education for sustainable economic growth. Among the objectives of particular note there are the need for integrating education, science and industry, the creation of

conditions for commercialization of intellectual property and technology and training highly qualified scientific and pedagogical personnel [1].

Hence, the critical importance of the development of intellectual skills of the future teacher causes a study on theoretical understanding of the problem, identifying pedagogical conditions for implementation of the technology, developing the intellectual skills of students, being a basis of logical thinking and determining a successful career in general.

To solve the research problems we used the following methods: a theoretical analysis of philosophical, psychological and educational literature; sociological methods (questionnaires, interview); investigation and generalization of teaching experience; observation; demonstrative and forming experiment; and study and generalization of educational activities.

The Main Part: The issues of competence-based approach implementation in vocational education have been actively investigated by Kazakh (A.K. Kusainov, T.O. Balykbaev, K.A. Asabay, U.S. Esaydar, I.I.

Bekbasarova, R.G. Mukhitova, B.S. Sarsekeeva) and foreign scientists (E.F. Zeer, I.A. Zimnyaya, N.V. Kuzmina, A.K. Markova, J. Raven, V.I. Baydenko, A.A. Verbitsky, N.A. Selezneva, M.S. Pryazhnikov, Yu.G. Tatur, V.D. Shadrikov *et al.*). The analysis of these studies has shown that there is a variety of researchers' views on the nature and structure of the concepts of "competence" and "competency". In most studies, the competence approach is seen as the basis of professional education, the link between the educational process and the interests of specific employers, an integral part of education quality management [2, 3].

In modern pedagogical science there is a dominant opinion, which states that the main characteristic of a competent professional should be focused on functional training. In this regard, the educational process at the university primarily focuses on training the technologies of professional work and the value of intellectual skills of the future expert in the context of developing professional competences in higher education is unfairly understated.

In the new educational standards of higher professional education the competency is defined as "the ability to apply knowledge, skills and personal qualities to be successful in a particular area" [4, 5]. Psychological, educational and special (on the subject) knowledge is a necessary but not the sufficient condition for professional competence; this knowledge (particularly practical, theoretical and methodological knowledge) is a prerequisite for intellectual and practical skills.

It should be taken into account that the skills, distinguished in modern pedagogical science, are rather ambiguous: general educational skills (informational, educational and intellectual, educational and communicative, practical skills), general professional, general cultural, designing, general technical, organizational, intellectual, etc. Analyzing the nature of skills the researchers tend to expand the nature and content of the concept.

According to psychologists and educators the pedagogical skills are a set of sequential actions, some of which can be automated (skills); these skills are based on theoretical knowledge and address the challenges of a harmonious personality development [6, 7].

Such an understanding of the essence of pedagogical skills emphasizes the crucial role of theoretical knowledge in the formation of practical preparedness of future teachers, the unity of theoretical and practical training, the multi-level nature of pedagogical skills (from reproductive to creative) and the opportunity to improve them through the automation of individual actions [8].

Hence, the formation of competencies is inevitably accompanied by the development of certain intellectual skills that serve as a basis for realization of such competencies and an internal resource for their successful development.

This statement was proved in the works of R.M. Asadullin, A.G. Asmolov, A.A. Verbitsky and V.D. Shadrikov revealing the ratio of competence and performance. The authors emphasize that the key basis for the development of future teachers' competencies is their intellectual abilities, that is, the ability to implement various techniques of mental activity: analysis, synthesis, comparison, classification and systematization of concepts and facts, to find cause and effect, to distinguish a general, special, single and etc.

Mastering mental activity provides for the formation of professionally significant skills: to make rational decisions, to search for non-standard methods for overcoming the involved problems, to choose the best ways of work, which contributes to the formation of innovative thinking of the future specialist.

Hence, the formation of the general methods of mental activity not only characterizes the intellectual status of the individual, but also suggests the possibility to adequately assess their actions and to offer original solutions to professional problems.

Analysis of different scientific views on the studied issue results in the conclusion that the intellectual skills as actions are formed during active learning activities; their development in students is closely linked to such activities as studying monographs, training, periodical and reference literature; to media sources and to processing information and compiling catalogues; to analysis and synthesis, comparison, classification and systematization of concepts and facts, finding the cause-and-effect relationship, distinguishing the general, particular, individual and etc. [9-11].

All this defines one of the most important trends in education, which is to review the concept of educational activity organization in terms of the competency approach. From management, where the student is an "object" of teaching, there is a transition to the system of organization, support and encouragement of independent cognitive activity of the subject of teaching, to teaching by creative activities, to the pedagogy of cooperation, to student-centered education, etc. [12].

In this context, the idea of developing education becomes especially important; its main objective is development of personal activity of students [13]. The latter provides an active attitude to knowledge,

systematic character and persistence in academic work, positive results and successful continuous education [14].

The need to build such educational process caused the search for the pedagogical conditions of development of future teachers' intellectual skills, at the same time developing their core, basic and special competencies. The basis of this search was theoretical principles of the concept of developmental education (V.S. Ilyin, Zh.K. Karayev, T.T. Galiev), the principles of student-centered approach to education (V.V. Serikov I.S. Yakimanskaya, E.Z. Battalkhanov, G.K. Nurgalieva, B.A. Turgunbayeva), the ideas of subjective personal development of teachers (R.M. Asadullin, V.A. Slastenin, E.N. Shiyarov, N.D. Khmel), mechanisms of modular organization of the educational process (S.Y. Batyshev, A.A. Verbitsky, M.A. Choshanov, P. Yutsyavichene) and the experience of real educational preparation of future teachers in higher vocational education.

The research allowed building a theoretical model for training future teachers, whose goal is to develop the intellectual skills of the individual. The content of education addresses three correlating problems: the formation of pedagogical thinking of primary school teachers and their development of intellectual skills and professional competencies. At that, the logic of students' thinking is formed not by the logic of educational material, but by the methods of learning activities organization, by mastering these techniques and turning them into a means for organizing their own subjective experience.

Understanding of the psychological essence of intelligence helps to identify the major aspects of intellectual development of primary school teachers. Features of the organization of the structural components of intelligence (cognitive, metacognitive and intentional) determine the properties of individual intelligence (that is, the specific manifestations of intellectual activity in the form of certain intellectual skills) [15, 16].

The study of students from the Department of History and Pedagogics of Kh.A. Yasawi ICTU, intended to identify the level of intellectual skills development in future elementary school teachers, provided the following data: of 100 students (75 students of 1-2 year and 25 students of the 3rd year) only 28% say that they can retell the course material with "their own words" and choose the information necessary to solve a learning task; and 24% say that they fulfill all training tasks successfully, i.e. can apply the received knowledge in practice; 17% say that they always successfully implement the theoretical knowledge in practice; and the other students mention difficulties. The survey of 93

teachers of this department, aimed at comparing the views of the university teachers on the studied problem, revealed that the most common difficulties, experienced by the students in training, are related to the inability to analyze and assess the situation and to apply theoretical knowledge in practice. According to many teachers (66%), the greatest difficulties arise, when the students structure the educational information in accordance with the set problem. 59% of the teachers referred to the inability of students to justify their choice of methods and means for achieving their educational and professional goals and 45% - to insufficient abilities to plan and to prove a case. The teachers, who participated in the experiment, noted that the high level of specified difficulties results from the fact that in the real learning process, there is no system, developing the students' skills for work with the sources.

To determine the most common tasks that teachers offered to students, we conducted a survey of teachers. Based on this survey it may be concluded that 80% of assignments, offered to students, aims at finding answers to the questions, annotation of literature sources, summarizing training and additional literature and preparation of abstracts and reports. The learning activities related to training and educational objectives, structuring the material, substantiation of choice and argumentation are no more than 20%.

With this in mind, we developed and tested technology for forming the intellectual skills of the future teacher, based on the use of the author's program "The method for development of intellectual skills of future teachers" during training of the primary school teachers, realized as a "pass-through" during the traditional teacher training courses.

The implementation of educational technology for development of intellectual skills of future teachers is incremental and includes three successive stages to ensure the development of three types of intellectual abilities (cognitive, metacognitive and intentional), resulting from the nature and structure of the intelligence of the individual.

The process of developing the intellectual skills of future teachers, in our opinion, is implemented in three stages: Stage 1 - orientation, Stage 2 - theoretical and methodological, Stage 3 - activity, which go in line with the years of training: I stage - year 1, 2 stage - years 2 and 3 and 3 stage - year 4.

The main purpose of Stage I is to develop an internal model of behavior, the value attitude to the knowledge and cognitive activities; formation of intentions for independent separate search and extraction of knowledge.

The main direction of the second phase of training is to develop and improve the knowledge, skills and abilities of the cognitive activity. Besides, at this stage it is important to form the skills providing research, synthesis and use of progressive teaching experience in application of innovative technologies in pupils' training and education.

The third stage is a specially-organized professional and practical training of future primary school teachers in the implementation of educational and cognitive activity. The focus is on self-education and the development of experience of creative teaching activities. The formation of skills to update and use the entire accumulated pedagogical knowledge and skills in practical educational activities requires the students' ability to use the recommended training and methodical literature, to search, select, process and analyze the necessary teaching materials.

The formed internal model of the teacher's behavior, the professional and pedagogical knowledge and skills of independent research of the psychological, educational, methodical and other literature, received in high school, provide the teacher with the opportunity of active self-education, independent selection of the content and the most effective forms and methods of work with students and realization of creative vocational and educational activities.

That is, at this stage, particular attention is focused on forming the motivational component, readiness and willingness to assimilate the knowledge and skills that allow successful teaching of future teachers.

The basis of intellectual abilities is mental operations, which are the source of thought. So in itself, the educational content - without special formation of training techniques - can not automatically develop thinking in students. The main tool for the development of intellectual abilities of students in general and for increasing the training efficiency, used in our experimental work, was active teaching methods that focus not only on the acquisition of specific knowledge, but also on improvement of the professional competence of future teachers in primary schools. The active learning methods develop the skill of managing the proper style of behavior, empathy, analytical verge of a thought process, stimulate creative thinking, provide an increasing confidence of the future expert in his abilities and facilitate his transition from education to self-learning.

In the process of university training, we used such active educational methods as problem-based instruction, the method of case studies, the immersion method, positional training, business games and etc. depending on the studied subject.

So, using the situation method, the teacher offers student to describe the situation. The students themselves determine what is "given" and what "has to be found". The essence of the method is the process of decision-making. The goal of the method is not merely consolidation of theoretical knowledge, but the development of students' initiative and analytical skills. The method promotes the proper use of the available information.

The problem-based instruction includes creating the problem situations for the students, joint understanding, making decision and resolving them under the supervision of the teacher, directing such activities. The problem-based instruction develops a special style of mental activity, research activity and independence of students.

The formation of active position of the future teacher is stimulated by the positional training model. The roles of speakers, consultants, experts, etc. are distributed between the students. Each participant has to present the studied problem from his position.

Business games involve conventional reproduction, imitation and modeling of some real work mastered by the participants. The advantage of business games over the traditional forms of learning is that they require activity from every student, captivate more than any other method of learning, remove the emotional barriers and help to overcome various forms of psychological defense. The advantage of business games is a drastic reduction in the time for accumulating the experience.

In our study we found out that the organized effort using the above methods promotes gradual formation of the intellectual abilities of students, reduces the number of difficulties in learning the subject and creates conditions for the development of professional competences of future teachers.

For example, in the group studies, all students work on the same concept or on different concepts within the same theme, with a further self-reflection and conclusions. The students learn to present information in various forms, to structure the concept models, to develop a position in relation to the concept under consideration and aim at concrete results.

The main conditions to achieve this are: the regular appeal directly to the student, the use of specific symbols instead of generalized and abstract ones, clear, concise language, the selection of significant pedagogical concepts in their relationship, that is, work with the concepts and not with the amount of terms.

For the development of professional thinking and intellectual skills, the important is independent work with additional sources - encyclopedias, dictionaries, books and the Internet. During mental activity, which content is a reflection of the general and specific characteristics and qualities of the class of objects and phenomena of reality, there is a process of generalization, underlying the formation of concepts.

In addition, students carry out evaluation of the obtained result and the ways to achieve it, as well as the participation and contribution of each individual. Reflection helps students to formulate the obtained results, to redefine the purpose of further work, to adjust their educational path and to realize their individuality and uniqueness.

The level of independent mental activity as well as the level of development of intellectual abilities of students increases significantly and promotes deep and accurate assimilation of psychological and pedagogical concepts, providing a higher degree of their active application for the account of the used training methods.

The modern concept of "training" includes quite a large number of various methods and techniques: demonstration, individual counseling, discussion, role play, analysis of critical cases, training games, interactive video programs, manuals for independent study (using the tutorial), case studies (case studies) and work in project groups [17].

Try to relate the stages of training, the content of the teacher's function and the characteristics of critical thinking. So, its organization requires mastery of such techniques as individual counseling, group discussions, role-playing and story-simulation games and disclosure of "Me". Besides, it is necessary to pick up the diagnostic material on the topic and to develop assignments for independent work of the student.

Collecting and analyzing data about others and yourself, comparing alternative points of view and using the possibility of a collective discussion, the student finds the answers to his questions. In addition, the skills for analysis, synthesis and selection of information are developed. The function of the teacher is not only to provide students with information, but also to direct them in the scientific literature on the problem. At this stage,

the discussion gives an emotional impulse to further search by the participants, which in turn is implemented in their specific activities.

Preparing the training the instructor defines the range of issues needed to be considered, formulates and asks the leading questions and develops non-standard assignments and exercises. At this stage, the instructor's function is to encourage each participant of the training, allowing recognizing the problem and predicting its solution.

During the training, the students argue that their chosen solution is more logical and rational than the others. The most convenient method to use at this stage of the training is a method of the incident, the method of analysis of concrete life situations, which purpose is the development of skills for analysis and comparison and of an individual style of learning activities in the trainees.

It Should Be Noted That Three Types of Individual Tasks Have Been Applied in the Educational Process:

- C Algorithmic, when the students are given the description of a situation and the list of ready alternative solutions and must choose the option that provides an optimal solution to the problem;
- C Creative, allowing students to use their knowledge and skills in finding an unusual solution to the familiar problem;
- C Depictive, that describe the situations that do not occur in practice and are aimed to overcome the common mind inertia and develop the skills of optimal decision-making in future professional activities.

In applying this method, one must pay great attention to the development of qualities necessary for a productive exchange of views: tolerance, ability to listen to others, responsibility for one's own point of view, which allows the teacher to significantly approach the process of education to real life.

In addition, our experimental work has proved that the method of "argumentative essay" is an effective tool for development of future teachers' intellectual skills. Written argumentation contributes to the development of intellectual skills: thought organization, facts assessment, logical order observance, clear and brief expression.

Future teachers' skills are refined thanks to the practice of contradictions, since the author is obliged to hold a discussion through which he becomes aware of the existence of other points of view and their grounds.

Considering the opposing views, the students learn to find solutions to the problems turning an opposite view into a positive argument, to identify weaknesses of the opposite view and to find compromise solutions to situations.

Development of intellectual abilities by the students within the proposed didactic algorithm helps to gradually approach the previously established goals, correct the errors in time and to be conscious of the actions performed (including the intellectual ones).

Application of this method allows not only to take into account the nature of information, but also contributes to the development of intellectual, creative and communicative skills; students acquire the ability to develop new forms of actions and to express themselves in a creative way, build communication in group problem solving, get used to thinking in terms of juxtapositions.

Thus, the technology of future teachers' intellectual skills development is viewed as a sequence of cycles, intended for performing a particular type of educational and professional tasks and using precisely defined methods, when each step supposes the achievement of a certain result that can be quickly identified.

CONCLUSION

The application of the competence-based approach methodology in higher pedagogical education, previous experience of research and practical developments in creating the qualifying models for professionals and graduates and examination of the psychological essence of intellect, allow identifying the major aspects of future teachers' intellectual development and elaborate the competence-based model of graduate in the context of his intellectual abilities development.

The model of a graduate is viewed as a result-targeted basis of the higher education and is based on the competence, the system quality of the person that ensures the graduate's readiness and capability for successful (productive) professional and social activities that represent a complex system (structure) of cognitive, metacognitive and intentional skills.

The testing of the technology of students' intellectual abilities development on the basis of the proposed model of the graduate, Bachelor of Pedagogy, primary education methodology have revealed the pedagogical conditions for their effective

implementation that can be used in preparing the Bachelors in other fields of studies, as well as in other areas of higher education.

Furthermore, an important condition for the development of the future teacher's intellectual abilities matching the stages of future teachers' general professional training and the stages of their intellectual skills development: at the stage of orientation, the priority is given to the development of cognitive skills, at the methodical and theoretical stage - to the development of metacognitive intellectual skills; at the implementation stage - to the development of intentional intellectual skills.

The development of future teacher's intellectual skills depends on a combination of various types of educational and professional tasks (intellectual abilities actualization, planning of intellectual skills development, modeling of the intellectual skills development process) at different stages of general professional training.

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