

FORMATOIN OF PROFESSIONAL COMPETENCES OF FUTURE TEACHERS OF MATHEMATICS

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Introductions. The draft of national standard for higher education (specialty 014. Secondary education), among other competences that future professionals have to acquire, states the need to critically reflect on their basic worldview theories and principles in education and professional activity, as well as to develop the ability to implement the state standard and educational programmes.

The professional training of students - future teachers of mathematics involves the formation of both integral and general competences and purely professional competences. Thus, when teaching the discipline "School Mathematics Course and Methods of its Teaching", priority is given to the formation of such professional competencies as:

1. Ability to form subject-based mathematics competences in learners (PC 1).
2. Ability to make interdisciplinary connections while teaching mathematics in Secondary School (PC 2).
3. Ability to analyze, model, explore and present learning experiences (PC 3).
4. Ability to objectively monitor and evaluate the level of educational achievements of learners in mathematics (PC 4).
5. Ability to organize distance, independent, extracurricular work in mathematics (PC 5).
6. Ability to speak terminology by specialty and to have communicative means (PC 6).

Aim. The purpose of this research is to analyze the experience of using test tasks in a professional subject "School Mathematics Course and Methods of its

Teaching" in the context of forming the professional competencies of future teachers of mathematics.

Materials and methods. As an empirical material, test tasks were worked out and used in one of the key topics of the professional subject "School Mathematics Course and Methods of its Teaching" - the theory of formation of mathematical concepts. The methods used were pedagogical observation, questionnaire of students, conversations, analysis of modular control works of future teachers of mathematics.

Specific examples of test tasks developed by the author are presented in the table (Table 1).

Table 1

Examples of test tasks in the theory of mathematical concepts formation

1. The set of roots of the equation $\frac{1}{2}x = -\frac{3}{7}$ is the concept:	A	Specific and single
	B	Abstract and general
	C	Abstract and single
	D	Specific and general
2. Does the law of inverse relation between content and volume apply to the concepts "rectangle" and "rhombus"?	A	Yes, since this law holds true for any concepts
	B	Yes, since this law is valid only for concepts that are in the genus - species relation
	C	No, since this law is valid only for concepts that are in the genus - species relation
	D	No, as these concepts are subordinated to the concept of "parallelogram"
3. In what respect are the concepts "algebraic number" and "transcendental number"?	A	Contradiction
	B	Opposite
	C	Subordination
	D	Identity
4. Is the concept "conoid" dependent to the concept "cone"?	A	Yes, these concepts are in the genus - species relation
	B	No, the concept "cone" is dependent to the

		concept "conoid"
	C	Yes, the concept of conoid is dependent to the concept of cone
	D	No, the volume of the concept "conoid" is not included in the volume of the concept "cone"
5. "A plane, as well as a straight, consists of points, that is, a plane is a set of points." The presented sentence is:	A	the definition by dint of the notitia
	B	the definition by dint of nearest genus and species difference
	C	the descriptive introduction of the concept "plane"
	D	the axiom
6. "Through any three points of space that do not lie on one straight, a plane passes, and besides, only one." What can be this assertion?	A	Axiom or definition
	B	Axiom or theorem
	C	Theorem or definition
	D	This is a false assertion
7. Consider the assertion: $a > b \Leftrightarrow a - b > 0$. Can this be considered as the definition?	A	No, such assertion does not reveal the meaning of concept "more"
	B	No, such assertion incorrectly reveals the meaning of concept "more"
	C	Yes, this is a definition that is expressed in symbolic language
	D	Yes, this is a recursion definition
8. "The ratio of two numbers is called the fraction of these numbers". This is the definition of what kind?	A	the definition by dint of the notitia
	B	the recursive definition
	C	the definition by dint of nearest genus and species difference
	D	The genetic definition

9. "Identity is an equality that is true for all the values of the variables contained in it ". Is such definition of the concept "identity" true ?	A	Yes, that's right
	B	No, the generic concept is incorrect
	C	No, it's wrong. It is necessary to speak "at all meanings of letters which are included in it"
	D	No, it's wrong. Missed the essential feature "for all <i>allowable</i> values of variables"
10. Does the law of inverse relation between content and volume apply to the concepts "natural number" and "prime number"?	A	Yes, since these concepts are subordinated to the concept "number"
	B	Yes, since these concepts are in the genus - species relation
	C	No, since these concepts are in the genus - species relation
	D	No, because these concepts are not subordinate

(The key to test tasks: 1- C, 2 – C, 3 – A, 4 – D, 5 – C, 6 – B, 7 – C, 8 – D, 9 – D, 10 – B).

Results and discussion. The form of organization of educational activity is presented, besides that it facilitates preparation for the state examination in the specialty, which provides for the fulfillment of part of the tasks in the test form, realizes the formation of professional competences of future teachers of mathematics, namely:

PC 1. Qualitative knowledge of students in the theory of mathematical concepts formation will contribute to the development of mathematical competence in those who study.

PC 2. The formation of conceptual thinking is the basis of scientific knowledge, and thus facilitates the implementation of interdisciplinary connections.

PC 3. Formation of conceptual thinking involves the processes of analysis, modeling, research; working with tasks in a test form will activate these processes.

PC 4. The performance of test tasks allows students to control their own learning activities, and thus teaches to objectively monitor and evaluate the level of educational achievement of learners in mathematics.

PC 5. Experience of work of future teachers of mathematics with the tasks in the test form and their development contributes to the formation of skills of organization of distance, independent and extracurricular work in mathematics.

PC 6. Various forms of work, including the fulfillment of test tasks in the theory of mathematical concepts, contributes to mastering the terminology of the specialty and communication and speech means.

Conclusions. The pedagogical observation, conversations and questionnaires of students showed their interest, increase of the level of cognitive activity, expediency of using test tasks in the context of the mentioned problem. Quantitative and qualitative analysis (including comparative) of modular control works of students in the professional subject "School Mathematics Course and Methods of its Teaching" led to the conclusion about the effectiveness of the experiment.

The author is currently developing and engaging test assignments in all of the core topics of the subject in order to effectively formation the professional competencies of future teachers of mathematics.