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# Development Of Mathematical Competence In Future Primary Teachers As A Theoretical Pedagogical Problem

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**Abstract:** This article analyzes the issue of forming and developing mathematical competence in future primary school teachers as a theoretical and pedagogical problem. The content, structural components of mathematical competence, pedagogical, psychological and methodological factors influencing its development highlighted. In addition, the role of modern educational standards, a competency-based approach, integrated lessons, digital technologies and innovative methods in the training of future teachers considered on a scientific basis. The study provides conceptual approaches to the development of mathematical competence, methodological solutions, as well as practical proposals and recommendations that serve to form future teachers as qualified specialists.

**Keywords:** Mathematical competence, theoretical and pedagogical problem, primary education, future teacher, competency-based approach, integration, pedagogical factors, methodological training, innovative technologies.

**Introduction:** In the current context of globalization, the modernization of the educational process, the formation of practical knowledge and competencies in students is becoming one of the priority tasks of the education system. Especially at the primary education stage, the development of mathematical literacy of students, the formation of their logical and critical thinking require a high level of methodological training from future primary school teachers. From this point of view, a scientific in-depth study of the content, mechanisms and pedagogical foundations of the

development of mathematical competence in future teachers is considered an urgent theoretical and pedagogical problem today [1].

Mathematical competence is not only a set of mathematical knowledge, but also includes the student's ability to think mathematically in practical situations, analyze, draw logical conclusions, model problems and apply a mathematical approach in various contexts. For the effective development of this competence, the use of innovative pedagogical technologies, integrated lessons, a competency-based approach, STEAM elements and digital tools in the professional training of future teachers is of great importance. Also, the increasing requirements for the formation of mathematical competence in state educational standards and curricula require the improvement of theoretical knowledge, methodological skills and practical qualifications of future primary school teachers. Therefore, the issue of developing mathematical competence is included in the scope of scientific research as a theoretical and pedagogical problem that requires a radical renewal not only of the methodological aspect of the educational process, but also of the system of training pedagogical personnel.

## METHOD

The content and structural structure of mathematical competence. Mathematical competence is defined as one of the main competencies in primary education curricula, which represents the student's ability to effectively use mathematical knowledge and practical skills in real-life situations [2]. The process of forming this competence for future primary school teachers consists of the following structural components:

-knowledge component - theoretical knowledge of numbers, operations, shapes, measurements, quantities, problem solving;

-practical-skills component - calculations in various contexts, working with diagrams and tables, identifying logical connections;

-cognitive-logical component - the ability to analyze, compare, generalize, draw conclusions;

-creative-communicative component - expressing mathematical ideas, reasoning, working in groups, creatively solving problems.

The harmonious development of these components serves to form stable mathematical competence in both primary school students and future teachers.

Theoretical and pedagogical foundations of the development of mathematical competence. The issue of developing mathematical competence in future primary school teachers is associated with a number of

theoretical approaches. The competency approach - considers the ability to solve practical tasks to be more important than knowledge. In this approach, the teacher is seen not only as a provider of mathematical knowledge, but also as a facilitator who increases the activity of the student. The theory of constructivism - knowledge is actively constructed by the student. Therefore, future teachers are formed with the skills of directing the student to independent research and analysis. The concept of integrative education - teaching mathematics in connection with technology, the environment, the native language, art and life experience [3]. This approach expands the student's mathematical thinking and allows for independent use of knowledge. Methodological mechanisms for the integrative development of mathematical competence. The following methodological approaches are considered effective in the process of preparing future teachers for mathematical competence:

a) Interdisciplinary integration When mathematics is taught in conjunction with other subjects, the student's: logical analysis, observability, understanding of the cause and effect between phenomena, systematic thinking intensifies. For example, the integration of mathematics - technology, mathematics - natural science or mathematics - computer science.

b) STEAM approach STEAM (Science, Technology, Engineering, Art, Mathematics) based tasks form the skills of the future teacher: problem modeling, construction creation, creative solution of a practical problem. This method is one of the most effective integrative directions of modern education.

c) Problem-based teaching method Creating mathematical situations, giving problematic tasks, and encouraging students to seek independent solutions develop logical thinking, which is the basis of mathematical competence.

d) Using digital technologies and interactive platforms: expand visual imagination, facilitate abstract mathematical concepts, make the learning process interesting and effective. A future teacher who learns to use these tools will achieve high results in practical classes.

Ways to improve the methodological preparation of future teachers.

1. Designing mathematics lessons based on advanced pedagogical technologies.
2. Developing the skills to create integrative lesson plans and methodological guides.
3. Working with real-life problems in practical classes.
4. Mastering exercises on teaching students based

on a differentiated approach.

Conducting integrative lessons and analyzing them during pedagogical practice. These ways serve to deeply develop the mathematical competence of the future teacher. Current problems in the development of mathematical competence. Analysis shows that there are some difficulties in the formation of mathematical competence in future teachers:

- insufficient level of mathematical preparation;
- weak skills in designing integrative lessons;
- lack of experience in using digital and interactive tools;
- the gap between theoretical knowledge and practical skills.

To eliminate these problems, it is necessary to modernize the educational process and widely use innovative methodologies.

## CONCLUSION

The development of mathematical competence in future primary school teachers is one of the most important theoretical and pedagogical problems of modern education. The process of forming this competence is not limited to the acquisition of mathematical knowledge, but also includes the development of the student's ability to apply a mathematical approach in real-life situations, logical thinking, analysis, modeling and creative solution-finding skills. From this point of view, an integrative approach, competency-based education, constructivist didactics, the effective use of STEAM technologies and digital tools are of particular importance in the process of training future teachers.

The research revealed that for the successful formation of mathematical competence, it is necessary to comprehensively develop the methodological, logical, information-communication and creative skills of the future teacher. Integrative lessons, exercises based on problem situations, digital platforms and interdisciplinary connections enrich the content of mathematical competence and increase its practical effectiveness. However, there are also problems in the process, such as insufficient methodological preparation, poor skills in designing integrated lessons, and lack of experience in using digital technologies.

To overcome these problems, it is necessary to modernize the teacher training system, strengthen scientific and methodological support, and deeply integrate innovative educational technologies into the educational process. As a result, future primary school teachers will have a high level of mathematical competence and will mature as qualified educators capable of forming solid mathematical literacy in

primary school students.

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