

LOGICAL ERRORS OF STUDENTS IN THE SOLUTION OF MATHEMATICAL PROBLEMS

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One of the major objectives of mathematics teaching at schools is the development of advanced logical thinking in students. Pedagogical experience convinces us that the process of logical thinking development in students was and is the major weak point of mathematics teaching in school. Studies of the nature of students' logical errors during solving mathematical problems show that such errors result from certain gaps in the students' system of fundamental knowledge. Elimination of these drawbacks requires from the students assimilation of basic notions of mathematical logic such as: a necessary and sufficient condition, corollary, equivalence, etc. The proposed technique is based on the idea of students' involvement in the research and expertise activity.

A student is offered: to check the "problem solution" proposed by the teacher and try to find the logical error in it; to highlight the error; to study the error nature; to offer correct solution technique; to formulate the rule preventing further mistakes of the kind.

This instruction technique promotes:

- Practical study of mathematical logic elements;
- Finding and elimination of logical errors;
- Development of critical thinking, which is the integral part of mathematical culture and scientific outlook;
- Maximal rapprochement between standard mathematics teaching process and the students' teacher-instructed self-education;
- Realization of basic ideas of the collaboration pedagogic;
- Advancement of learning motivation (a student is warned against "the potential danger", and he, naturally, strives to test his abilities).

The authors have tested the of the report major statements on high achievers of various grade levels for a number of years. The report indicates typical examples illustrating the technique, substantiates and demonstrates certain methodological types which are efficient for generating the respective teaching process.