

IDENTIFICATION OF MATHEMATICAL MISTAKES BY UNDERGRADUATE STUDENTS

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One of the major objectives of mathematics teaching is the development of students' advanced logical reasoning and critical thinking. To develop this kind of students' ability mathematics teachers have to be able to identify students' mistakes of different types. Checking students' solutions and studying the nature of the errors are critical components of mathematics teachers' everyday work. "Teachers need to know the ideas with which students often have difficulties and ways to help bridge common misunderstandings" (NCTM, 2000, p.17). However, pedagogical experience convinces us that this process of developing logical and critical thinking is one of the major pitfalls of mathematics education. One of the goals of this research is to answer the question: "How do undergraduate students identify mistakes of different types?" One of the ways to know the level of undergraduate students logical and critical thinking is use of worked-out examples that may include correct or incorrect solutions. "Students [as well as teachers] can use their errors to develop a deeper understanding of a concept as long as the error can be recognized and appropriate, informative feedback can be obtained." (Fisher & Lipson, 1986, p.792)

Sixty-five College's undergraduate students were asked to check four worked-out examples that included incorrect solutions for two mathematical problems (two solutions for each problem). One of the problems was an algebraic one and the second was a geometric problem. Examples for each of the problems included different logical mistakes. The students were asked to examine whether the solutions presented to them were correct and to explain students' mistakes that they found in the solutions.

The worked-out examples were included in the written questionnaire. All the students had the knowledge base to tackle the questions.

In our presentation we will show the worked-out examples presented to the students and will discuss the results of our research.

References

National Council of Teachers of Mathematics, (2000). Principles and Standards for School Mathematics. Reston.

Kathleen M. Fisher and Joseph Isaac Lipson, "Twenty Questions about Student Errors", Journal of Research in Science Teaching (1986) Vol. 23(9): 783-803.