

ELEMENTARY STUDENTS' USE OF CONJECTURES TO DEEPEN UNDERSTANDING

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Developing students' mathematical understanding through reasoning is central to teaching mathematics and is one of the process standards highlighted in the Principles and Standards for School Mathematics (National Council of Teachers of Mathematics [NCTM], 2000). Furthermore, one element of reasoning is the ability of students to make and test conjectures from observing patterns and to judge the validity of the conjectures through logical arguments and creation of counterexamples (Polya, 1968; Zack, 1999).

This article explores how elementary students reason using conjectures while learning about triangles. The research questions were: What types of conjectures do students in primary grades create when studying triangles? When do students find the need to reason? How do students justify their responses or test their conjectures? And, how do students' conjectures change from primary grades through intermediate grades?

Students in first, third and fifth grade classes, were asked initially to describe the attributes common to all triangles, and to then, observe patterns, write conjectures and test them (Polya, 1968; Reid, 2002). Each of the lessons took place over a two-day period and was videotaped to capture interactions between the teachers and students and among students.

In all cases, students were able to create and test conjectures. The paper highlights the types and sophistication of the conjectures across grade levels and describes the differences among the conjectures created, the need and ability to test conjectures, and the discourse pattern among students.

References

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