

THE INTERPLAY BETWEEN TEACHER QUESTIONS AND FLEXIBLE MATHEMATICAL THOUGHT

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In more and more classrooms, students are taking a more active role in their own learning and building mathematical knowledge through social interaction and experience (National Research Council, 1989). With less emphasis in these classrooms on rote learning and computation, students engage in higher-level problem-solving activities. This involves working together, greater discussion and community consent for solutions to these problems. A mathematics classroom where students solve problems, discuss ideas, and build their own knowledge requires new demands from teachers and students. Since more value is now placed on student-to-student interactions and teacher-to-student interactions, it is helpful for teachers to be more conscious about how their questions affect student thinking. Teacher questions that engage students in mathematical discourse, encourage students to retrace old ideas, and extend student thinking tend to increase students' mathematical flexibility. We consider mathematical flexible thought to be the ability to recall and use facts, skills, procedures and ideas in contexts other than those in which they were constructed (Warner, Coppolo & Davis, 2002).

A qualitative study will be presented that examines the relationship between teacher questions and the flexible mathematical thought of one sixth grader, over six months. Videotape data were collected and analyzed from an interactive problem-solving based after-school mathematics class. In this report, we will show how different types of teacher questions (Ilaria, 2002) contribute to flexible mathematical thought (Warner, Coppolo & Davis, 2002). The data presented will show that listening to students' ideas and asking appropriate questions play an important role in promoting flexible thinking. We suggest that these questions help students demonstrate an increase in mathematical flexible thinking, which is necessary for student success in a problem-solving based classroom.

References

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