

# SMALL GROUP INTERACTION: A STUDENT'S DEVELOPMENT TOWARDS INTELLECTUAL AUTONOMY.

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According to Kuhn (in Wood, 1999), "argument is central to thought and the construction of knowledge". Students could be disadvantaged in a problem-centred classroom if they lack the confidence to explain their own methods or to challenge other methods with which they do not agree with or do not understand. This paper suggests that this can be overcome if small group interaction is sensitively facilitated.

Classroom observations were made as part of a project to investigate the role of argumentation and articulation in students' conceptions of fractions. Students worked in heterogeneous groups. How discourse should be conducted was addressed by the teacher and the researchers in whole-class and small-group discussions. Some 'weaker' students did not appear to participate in heterogeneous group discourse, although the expected kind of discourse was demonstrated by others in the group.

After assessment of the concepts formed, students were regrouped into relatively homogeneous groups for remedial purposes. Two of the apparently disadvantaged students, Riyah and Lindile, were in a group whose assessment showed that the relevant concepts were not yet evident. The two girls were allowed to work together, on their own, in the hope that facilitation and support could help them to make sense of the mathematics and to participate in discourse where methods and solutions were explained, challenged and justified. A deliberate effort was made to illustrate the role of the listener by asking questions like *Why do you say that?* and *Do you agree with what she said?* and by requiring the students to verbalize their ideas - *If you want to [do something], what do you have to do?*

Although the two students did not make major conceptual gains in the first few sessions, they were soon able to participate in discourse that was characterised by reasoning and thinking. Riyah consistently demonstrated that she was willing to grapple with a problem for a length of time and try out various strategies. This type of behaviour is regarded as necessary for the construction of understanding (Hiebert et al., 1996). Lindile still tended to act irrationally, for example, adding the numerator and denominator of a fraction. But Riyah challenged her every time, genuinely interested in the reasons for her actions and trying to convince her to a different view. Assessment at the end of the year indicated an improvement in Riyah's conceptions and her ability to work abstractly.

## References

Hiebert, J. et al (1996). Problem solving as a basis for reform in curriculum and instruction: the case of mathematics. *Educational Researcher* 25(4), 12 - 21.

Wood, T. (1999). Creating a context for argument in mathematics class. *Journal for Research in Mathematics*. 30(2), 171 - 191.