

ANALYSIS OF CHILDREN'S ARGUMENTATION WHILE MAKING SENSE OF FRACTIONS.

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Argumentation and articulation of ideas are viewed as important processes in the development of children's mathematical thinking. Analysing children's argumentation is therefore important.

Wood (1999) states that "...conceptual change and progression of thought result from mental processes involved in the resolution of conflict" and Yackel (2001) underlines the importance of challenging and justifying explanations. Our analysis of an episode where a group of three Grade 5 children are working on a problem to find a fraction of a fraction, shows an absence of disagreement or challenging of others' ideas.

We used Toulmin's scheme as a methodological tool. According to Toulmin, an argument consists of four parts. A *claim* is made and *data* is offered as grounds for the claim. A *warrant* explains why the data supports the claim, while the *backing* finally links the core of the argument to collectively accepted assumptions (Yackel, 2001).

In the episode, several claims were made and data and warrants offered as support. The claimants tried to find a backing, thereby trying to justify their claims, even though they were not challenged to do so by one another. They were unable to find backings for those claims that were mathematically invalid. The researcher then focused them on a mathematically valid claim that one of them had made earlier. This minimal facilitation enabled the claimant to provide a backing and she made an effort to have the backing accepted by the rest of the group. Eventually a frame switching, from a numerical backing to an iconic backing, made it possible for the whole group to accept the full argument.

We argue that it was the acceptance of the obligation to explain and justify explanations by the whole group that drove the discourse and kept the group from reaching early closure and not disagreement or challenging of others' ideas. It was clear from their claims, data and warrants that their fraction concept was not yet stable, making it difficult for them to challenge others' ideas.

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