Collective Mathematical Understanding as Improvisation

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This research is concerned with the nature of the growth of mathematical understanding, and more specifically with how a group of learners can develop a collective understanding for a mathematical concept. We seek to characterise collective mathematical understanding as a creative and emergent improvisational process, through drawing on theoretical perspectives from the fields of jazz (Becker, 2000; Berliner, 1994; 1997), theatre (Sawyer 1997; 2000) and conversation (Sawyer, 2001). In considering video data, taken from an initial pilot study, we extend improvisational theory to begin to consider collective mathematical understanding as a process with a similar nature and characteristics.

Student Beliefs & Their Impact on Participation in Mathematics in the Middle School

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This round table discussion will focus on a proposed study of middle school children's beliefs about their participation in mathematics classrooms.

In the study the motivation of students when undertaking mathematics tasks, and the influence of motivation on strategies for coping with frustration when experiencing difficulties, will be investigated. It is suspected that some students may not have established perceptions of the benefits of being competent in mathematics, nor be aware that there is potential for them to be empowered by competency.

One determinant of participation in education is student perceptions of goals, and the influence that perceptions play on motivation. Students who feel in control of their lives are more likely to have opportunities for success both within schools and without (Lapadat, 1998). Dweck (2000) investigated perceptions of intelligence and contended that students may hold beliefs that inhibit their participation at school; that students can be taught that both intelligence is incremental and a mastery orientation can be taught through explicit instruction.

Students of one grade six class will complete an assessment in which each task is incrementally harder to complete. Once each task is completed, they will be asked to evaluate their work. If correct they will continue to the next task. If not, they will be asked how they feel, and what teaching they require in order to continue. Various background data will be gathered to seek to identify contributing factors, and a survey adapted from Dweck's instrument will seek data on their beliefs concerning mathematical intelligence.

References

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