DG3 FOSTERING THE MATHEMATICAL THINKING OF YOUNG CHILDREN: PRE-K-2

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This Discussion Group held its first meetings at the PME-NA meeting in Athens, Georgia, October, 2002.

The Group is a response, in part, to an upsurge of interest in the mathematical capacities of young children following recent advances in cognitive science, convincing evidence that young children are more capable learners than current practices reflect, and evidence that good educational experiences in the early years can have a positive impact on school learning.

Participants in this discussion group will be invited to contribute informal reports of recently completed research, research in progress, and/or assist in identifying problems and questions worthy of future investigation. Current and future collaborations between participants interested in common problems will be encouraged. Areas that could offer fruitful avenues for investigation include:

I. Investigations of the nature of young children's mathematical thought and capabilities, including affective factors, role of verbal interactions, problem solving strategies, foundations of core topics such as multiplicative thinking, part-whole relations, mathematical features of children's play.

II. Investigations of the role of teachers/caregivers in fostering mathematical thought, including their mathematics background, beliefs about what mathematics is appropriate, kinds of interactions conducive to learning, needed support materials, assistance, and interventions.

III. Investigations of what mathematics young children can learn using computer-accessible materials, including the role of the teacher/caregiver, relation to conventional materials and possible transfer, features of games and activities that transfer to other problem settings.

IV. Investigations into the nature and role of mathematics curriculum and professional development, including characteristics of programs that work, insights, theories and practices from primary mathematics education transferable to the preschool situation, mathematical thinking fostered by music, literature, outdoor activities, movement, etc., cultural and social class differences in children's engagements with mathematics to which early childhood teachers and curricula authors need take account.