Cooperative Learning and Computer-Assisted Instruction in Grades K-5

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Would students perform better in a cooperative classroom learning format than in a traditional classroom format? Would using screen-based technology in conjunction with cooperative learning improve children's mathematics outcomes? Following are two examples of how some researchers think that screen-based computer-assisted instruction (CAI) can be used with cooperative learning to help students in grades K-5 better understand mathematics within the National Council of Teachers of Mathematics' numbers and operations content standard.

Before describing these two examples, a caveat is needed. Both of these studies used rigorous research designs and conclusions about effectiveness of the screen-based technology are viable. However, in one of the studies (Xin, 1996), both groups used CAI, so any effects are due to CAI in conjunction with classroom learning format and not CAI alone. In the other study (Butzin, 2001); students in both groups came from "technology rich schools," so any effects of CAI cooperative learning may be partly due to this.

Curriculum studies
Xin (1996) did two studies to see how third- and fourth-graders' math achievement, attitudes, and social relationships would be affected by using CAI (software packages for learning of math concepts) in a cooperative learning format versus CAI in a whole group learning format. Third- and fourth-grade students—both with and without disabilities—were assigned at random to either a CAI class using cooperative learning or a CAI class using whole group learning. Students participated in the CAI four days per week for 20 weeks, and at the end students took a standardized math test, a questionnaire to assess learning attitudes, and an acceptance scale to measure social acceptance. In third grade, math achievement was higher for students in the CAI cooperative condition than for students in the CAI whole class condition. Achievement scores were the same for both groups of fourth-graders. Students in the CAI cooperative learning group were also more likely to prefer the learning subject, have higher effort and self-confidence, and be more likely to engage in social contact with others than those children in the more traditional whole class format.
Butzin (2001) wanted to see how students’ math achievement scores were affected by participating in Project CHILD (Computers Helping Instruction and Learning Development), which is a transformed learning environment in which children work in cross-grade clusters and rotate between clusters to receive instruction. Second-through fifth-grade regular education students in schools that used Project CHILD were compared to second- through fifth-grade regular education students in traditional classrooms. Students participated in Project CHILD for one hour a day for three years, and took standardized tests in math (computation and applications). The students in Project CHILD classrooms had higher math scores than children in the traditional classes.

References