CAI in the Classroom
Implications for Technology Policy
How is technology used in schools today?

According to an ETS survey of the 50 states’ policies on education technology, use of computers varies by grade level and by subject:

- Eight graders are most likely to have math teachers who use computers primarily for “drill and practice,” even though this use has been linked to lower test scores.
- The majority of 4th graders have teachers who use computers primarily for math/learning games.
- Among 8th graders, nearly half had math teachers and science teachers who used computers in math instruction that year.
- Two-thirds of teachers spend two hours or less per week using the Internet for instruction.
- Teachers are far more likely to use the Internet as a source of information than as a tool for communications.
- The majority of technology use is CAI.

Computer Assisted Instruction (CAI)

CAI has evolved significantly over the past 30 years, from drill and practice tutorials to more sophisticated simulation and modeling.

While the definitions, types of software, and usage vary for CAI, common features include:

- Students learn at own pace and convenience, and practice until mastery.
- Tutoring personalized.
- Immediate feedback provided.
- Repetitive tasks performed with equal precision.
- Large amounts of data stored.
- Automatic measurement of progress.
- Relevant instruction provided to larger number of students.
Developing technology policy for CAI

In order to develop effective technology policy for using CAI in the classroom, several questions must be addressed:

- What sort of impact does CAI have?
- Can the impact be measured through standardized tests, and if not, is it measurable at all?
- Do the benefits of this impact justify the cost?
What impact does CAI have?

Do students using CAI learn more, faster and better than if they were taught in familiar, non-technological ways?

As is evident from our summary sheet, evaluations of computer tutorials in our literature review revealed inconsistent conclusions, ranging from “significantly improved” to “no statistical significance found”
Influencing factors

These discrepancies stem in part from problems in analyzing CAI. These problems include:

- Varying definitions of what is being tested/reviewed
- Rapid changes to the technology
- No clear focus/differences in assessment measures
- Lack of a sufficient number of studies
- Diversity of reporting styles and methodologies

Other factors include:

- Class size
- Ages of participants
- Software used
- Kinds of outcomes sought
- Academic subject
Can CAI’s impact be measured?

Do students using CAI gain or increase skills that will allow them to demonstrate marked improvement on standardized tests?

As demonstrated on our summary sheet, results in this area are also mixed. Furthermore, few large scale studies exist to establish a conclusive relationship.
Additional effects of CAI

While standardized tests may arguably reflect some of the benefits of CAI, other benefits may be more difficult to measure.

Some of the less quantifiable, but desirable effects seen in much CAI research include:

- Attitude
- Motivation
- Attendance
- Cooperation/Collaboration
Both conflicting research and potential non-measurable benefits make it difficult to formulate appropriate CAI policy.

Furthermore, studies suggest that the success of CAI is as dependent upon the teacher’s implementation of the technology as the technology itself.
The big questions

While we have tried to look at the impact of CAI and its measurability by standardized tests, the big questions remain...

• What types of programs should be implemented, and by whom?
• Are the benefits big enough effect to justify the expenses?
• Can the same effect be reached through other means?
• Can standardized tests measure the benefits? If not, which, if any, should be changed?
• Will this sort of education give students the skills they need in the real world?
• How much information is enough information to make these decisions?