

Spencer Foundation

I request support for a multi-year period to study the potential of new information technologies to create powerful new educational systems during the after school hours that will have long term uptake and be maximally diffusible. The project will focus on the special educational needs of a community with an extremely heterogeneous population with respect to income, educational level of adults, ethnicity and language preference.

Summary

The project grows out of 25 years of research by the senior investigator on the cultural context of literacy. It is designed to test the generalizability of the conclusions of that work to the vital task of increasing substantially the basic technological literacy of broad masses of Americans (NRC, 1985; Resnick, 1985).

The basic strategy of this approach is to focus on contexts of instruction rather than psychological tasks as the basis for research and instructional intervention. It uses two basic methods for promoting development of contexts that support higher levels of academic learning.

1. Reorganization of activity within contexts
2. Reorganization of the relations between contexts.

A key to both forms of educational reorganization in the present world circumstances is the potential of new information technologies to solve some of the problems that have grown up as a byproduct of technological success -- e.g., massive underachievement in school. Our evidence shows that the communicative potential of new information technologies has been drastically underutilized in the rush to improve classroom practice. While not ignoring advances in software design, the special focus of a cultural context approach is on

re-connecting existing institutions so that they work synergistically to create educational innovations within institutions. This orientation provides a concrete framework within which to re-configure children's educational experience along lines proposed by Goodlad (1984) ("educative communities"), Cremins (1976) ("ecology of education") and others (e.g., Fantini, 1985).

Within each institution that will be a part of the proposed experiment there will be a variety of educational activities, each of which affords different mixes of educational tasks and technology; comparisons made across institutional settings will help to specify the conditions needed to create maximally effective instruction in each. Our use of the communicative potential of new information technologies provides for coordination of resources along two crucial dimensions: horizontal integration is achieved by site-to-site connections; vertical integration is achieved by inclusion of small children, university students, and adults in a single interactive network. The data gathered from educational activities within contexts provide one essential stream of data for analysis of the processes characterizing the impact of new technologies in the teaching-learning process. Additional process data come from the flow of discourse between sites. The products are measured in terms of change in standardized test scores, teacher and parent evaluation, and increases in community support.

The ultimate goals of this project are:

1. To research the power of a cultural context theory to engineer powerful reorganizations of educational activity within a variety of community and school contexts;
2. To investigate the power of communication between sites as a method of fomenting within context change;

3. To create a new kind of educational activity system which can be taken up and maintained by the community with its own resources.

Immediate background

Four streams of our research activity are central to this proposal.

1. Studies of culture, schooling and literacy
2. Studies of cognitive science and educational practice
3. Studies of re-mediation
4. Studies of computer-mediated joint activity
5. National Research Council (NRC) report on non-cognitive factors in mathematics, science and technology education.

-
1. Studies of culture, schooling and literacy carried out in the 1960-1970's (e.g. Cole, Gay, Glick & Sharp, 1971; Sharp, Cole & Lave, 1979; Scribner and Cole, 1981) showed that
 - A. There is a special "morphology of activity" associated with modern schooling that is specialized, creating distinctive cognitive and social demands;
 - B. Peoples from cultures where schooling is alien often fail to apply their prior knowledge and modes of understanding to school-like tasks, which is to say that successful modes of learning at home do not transfer to school;
 - C. The cognitive consequence of schooling are context-specific; which is another way of saying that a lot of knowledge acquired in school shows limited transfer outside the lesson in classrooms -- even to other school contexts where it is presumed necessary;
 - D. Limitations on transfer are as much organized from outside the immediate context of instruction as inside. Limitations on the spread of literacy are maintained by the broader context where adults think the knowledge relevant.
 - E. The specific contexts in which a literacy technology is learned and the specific contexts in which it is used are very clearly related, theoretically and empirically, to each other and to the specific cognitive consequences that accrue to those who