More on Long-range Planning


I finally believe that computers are going to be at the foundation of major changes in our educational system. In my April (1987) editorial I suggested that adequate long-range planning could help ensure that our educational system improves as these changes occur.

In the past couple of months I have presented five workshops on long-range planning. One of the exercises I use in these workshops is called "Stranded on a Desert Island." For this exercise, I describe the following scenario.

Suppose you had done long-range planning for computers in your school or district. Your plan was completely up to date, reflecting the state of the art in hardware, software, curriculum development, legislation, public attitude, etc. Then you were stranded on a desert island for a year (the year that has just ended).

I then ask workshop participants to tell me what has changed during the past year that would have a major impact on their planning. At first this seems like an easy question. They start to name new computer systems, new pieces of software, new books, the increasing number of computers in schools, etc. I counter with the observation that all of these things were easily predictable. Any well-done long-range plan would certainly take into consideration such easily predictable changes. I challenge participants to come up with significant changes that would undermine the foundations of a well-done plan.

With this additional encouragement, two important types of answers usually emerge. First, some participants will indicate that they have had a change in administration, perhaps at the superintendent or principal level. Or the computing teacher moved on to a different job. Such a change often destroys a plan.

The second major change suggested is progress in the commercialization of artificial intelligence. During the past year, knowledge-based Expert Systems have gained significant acceptance and some impact in business and industry. We now know that it is possible to develop systems that will run on the more powerful microcomputers and that can be a major aid to a large number of white collar workers. It is becoming evident that Expert Systems will have a major impact on large numbers of people who make rather routine decisions and process data. Examples include insurance underwriters, bank tellers, and financial planning consultants. Expert Systems can increase their productivity and improve the quality and uniformity of their work.

The Desert Island exercise illustrates two major difficulties in long-range planning. The first is that planning must be people-oriented (high touch) and take into consideration changes in personnel. This suggests that the plan must have widespread backing and become school board and district policy. The second difficulty is that the field of computer applications is continuing to change very rapidly. One must anticipate the increasing availability of very powerful aids to problem solving throughout our society.

I have discussed long-range planning with a number of educators who have been involved in the process. My conclusion is that most of the planning that has been done is quite superficial. A
A typical plan is the work of a small number of people and is accomplished using about 300 to 600 person-hours of work. It includes a goals statement, often supplemented by scenarios of what school might be like as these goals are accomplished. It indicates how much computer hardware is to be acquired each year (or how much money is to be spent). Often the plan was developed under severe time constraints to meet state requirements for obtaining funding.

Most of the hastily constructed plans contain serious flaws. Here is a list of typical ones. Do any of them apply to the planning process and plans developed by your school or district?

1. Inadequate participation and ownership by all of the critical stakeholders. Taxpayers, business people, parents, teachers, school administrators, school board members, college faculty, legislators, students, etc., are all stakeholders. They will be significantly affected by the educational changes being planned. Unless diverse groups feel adequately represented in the planning process, they will likely be a serious deterrent to successful implementation of the plan. The plan is apt to be destroyed by the work of a few opponents or by small changes in school personnel.

2. Inadequate consideration of articulation issues. What students learn at anyone grade level should affect the content and process of education at subsequent grade levels. All teachers at higher grade levels must be aware of and take into consideration the computer knowledge and skills students acquire in earlier grades.

3. Failure to address the testing issue. An obvious example centers on process writing in a word processing environment, perhaps supported by a spelling and grammar checker or other aids to writing. Eventually students will have had years of practice writing in this environment. Will they be allowed to use these writing aids during tests?

4. Failure to address equity issues. In some communities more than half of all students have access to computers at home. Often the ratio of computers to students differs by a factor of five from one school to another—sometimes within a single state! As computer use is more thoroughly integrated into the curriculum, some students will have an increasing educational advantage.

5. Failure to provide for permanent funding. The majority of computers now in schools have been acquired using a variety of entitlement and other "one shot" sources of funds. Computer resources have not yet been integrated into the ongoing budget at a level needed to maintain current computer facilities, much less at a level needed to increase these resources to meet student needs. We may well have a computer crisis in schools in a few years as current equipment wears out or becomes outdated and the entitlement funds are no longer available or must be allocated to other educational problems.

6. Failure to address changes that may occur as substantial units of study become available in computer assisted instruction or other "distance education" modes. There has been a gradual, long-term trend toward individualization of instruction. CAI and other modes of distance education could hasten this trend. My personal guess is that we are on the verge of a
very rapid growth in use of CAI in schools. This will have a major impact on both students and teachers.

7. Failure to provide for adequate evaluation. In essence, use of computers in schools is still an experiment. Each major step should be accompanied by careful formative evaluation designed to provide feedback needed to improve the step. Summative evaluation is needed to assess the longer-term effects of substantial use of computers in schools.

8. Failure to provide for annual review and update of the plan. This periodic revision process need not take as much time and effort as development of the original plan. However, it must take into consideration information from formative and summative evaluation conducted during the year as well as major changes in technology. For example, eventually an inexpensive and high quality voice input unit will become available. Surely this will affect the use of computers in schools.

The list could be extended. The main point is that computer-related technology is at the heart of a major change in education. A significant fraction of the discretionary funds available to schools is being used to address these changes. Careful long-range planning is needed to maximize the benefits of this use of educational resources.