Restructuring Education for the Information Age


The school restructuring movement in the United States is gaining momentum. Education bashing and teacher bashing are in full swing. Almost everybody is convinced that our school system is woefully inadequate and is rapidly deteriorating. Frequent reference is made to student performance on test scores, comparing this performance with students in past years or students in other countries.

In addition, it seems that almost everybody has suggestions on how to improve our schools. We should have more testing (or less testing, or more relevant testing). We should have cooperative learning (or classrooms should be quieter). We should empower teachers (or we should require that teachers follow the prescribed curriculum). We should have site-based management (or we should have stronger administrators who will require the teachers to "shape up"). We should go back to the basics (or we should place more emphasis on higher-order cognitive skills). We should require all students to become computer literate (or we should stop wasting resources on such frills as computers). We should require all students to stay in school until they graduate or are at least 18 years old (or we should stop using classroom space and school resources on students who don't want to be there). Undoubtedly you can add your own recipes for greatly improving our educational system.

Why Isn't Education Better?

I wonder why, with all of these excellent suggestions, education isn't much better? Can it be that they all fail to address the underlying problems?

I am reminded of the time when the automobile was first being developed, and began to have an impact on the horse and buggy industry. I can imagine the Board of Directors of a buggy factory discussing the changes needed to make their product competitive. Undoubtedly they came up with a long list of suggested modifications to the product and to the manufacturing process. Perhaps people wrote learned articles on transportation reform to better fit the horse and buggy, and on buggy factory restructuring. Undoubtedly people talked about breeding stronger and faster horses.

Of course, it was all to no avail. The new technology was changing the transportation industry. To survive, the company needed to adjust to the "Automobile Age."

The Information Age

In the United States we have an educational system that was designed for the Industrial Age of about a hundred years ago. While the system has undergone a number of modest changes since its inception, its basic design and nature remains little changed.

Unfortunately for our educational system, the world has changed. According to Naisbitt (1982), the United States entered the Information Age in 1956. Even before that time, the nature of employment in the country was changing. Industrial manufacturing jobs were being replaced by service jobs and by information processing jobs. Information was becoming an increasingly
valuable commodity. People who could think, solve problems, and adjust to new situations were in increasing demand.

The most important defining characteristic of the Information Age is information. The total amount of information that humans have collected is growing very rapidly and is of increasing value.

Information is of value when it is used to help solve a problem or accomplish a task. Thus, information needs to be stored, manipulated to fit specific problem or task situations, retrieved, and used. Interestingly, that is what computers are all about. Computers are excellent aids in the storage, manipulation, retrieval, and use of information. In these regards, computers are an extension of books, the human mind, and other aids to accomplishing these same tasks.

**Restructuring Must Include Information Technologies**

Our educational system was designed for an era in which the human mind, the book, paper, and ink pen were the major aids to the storage and processing of information. That is no longer the case. In an increasing number of information processing tasks, a person and computer system working together can far outstrip a human working without such an aid. No amount of tinkering with our current educational system will change this fact!

The starting point for school reform or school restructuring should be a good understanding of what has changed to make our current system inadequate. It is easy to compile a long list of changes, many having nothing to do with computer technology. Changes in family structure and in the amount of television that young people watch are two important examples.

However, the basic fact remains that information processing is a central part of education and that computers have changed information processing. Thus, any successful effort at school restructuring must include an adequate treatment of information technologies. We will address details of this in subsequent editorials.

**Reference**


**Retrospective Comments 5/2/00**

This series of eight editorials was outlined during the spring of 1991, and quite a bit of the writing of the eight editorials occurred during that spring. The series reflects an optimism about the continuing growth in the capabilities of microcomputers and in their increasing availability in schools.

A major focus in this series of articles is on school reform, school restructuring, and school renewal. That topic has continued to be very important during the decade of the 1990s, and continues to be so in the early 2000s. The US Federal Government has put some resources into supporting the school improvement movement.

There are various Websites that have been developed from Federal grants that focus on school reform. For example, see:


The Internet had already existed for a long time by 1991. The World Wide Web was invented in 1989, but had not yet come into widespread use. For a history of the web and information about its inventor, see Accessed 5/5/00: http://www.w3.org/People/Berners-Lee/. The editorial series does not reflect any awareness that the Web exists. It was several years after I wrote these editorials that I became aware that there was a World Wide Web.

Education bashing was in full swing by 1991. Gerald Bracey has long argued that the US educational system is far better than suggested by the education bashers. For information about Gerald Bracey, see Accessed 5/5/00: http://www.america-tomorrow.com/bracey/gb.htm. His books and articles are quite useful if you want to argue that our educational system is a lot better than most people think it is, and it is doing better than the education bashers think it is.

In summary (of this retrospective section), it feels to me like our educational system has been slow to recognize the ideas given in this August-September 1991 editorial.