Education and educators can and should become involved in "futuristics"

Looking ahead in education: Some predictions

By Richard E. Ishler

Whether we admit it or not, all educators are, at the very least, quasi-futurists simply because they are involved in the preparation of young people who will grow up and live and work in a world about which we know very little. Hence, we are responsible for ensuring that through the educational system these young people acquire that knowledge and those skills which will enable them to survive and be contributing members of society. For the children who are now in the first grade, this means that they will need such skills to see them through until at least the year 2040! This is indeed an awesome responsibility for all educators.

Alvin Toffler (1970, 1980), author of **Future Shock** and his most recent book, **The Third Wave,** was probably among the first to make the general public aware of the impact of the impending future. He made the term "future shock" a household word, defining it as a disorientation brought about by the premature arrival of the future. In short, a disorientation caused by not being prepared for the future. Toffler predicts traumatic changes not only in technology, but in our values, sexual attitudes, relationships with family, friends, organizations and the way we structure politics, business and education.

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Many futurists view education as the one area with the most potential to help people adapt to what lies ahead. And yet, they charge, education presently remains the most reactionary and the least adaptable system in operation.

Educational planning in the future must include a series of considerations. No significant decisions can be made without viewing impending technological advances which promise to alter learning systems, lifestyles and accountability methods, as well as provoke sociological changes. Futurists demand that educators rethink the role of long-range planning. Most schools tend to be immersed in problems now considered by futurists as "yesterday." As a result, schools produce people to fit into a reasonably well-functioning industrial society, but we no longer have one. As society shifts away from the industrial model, schools will have to turn out a different kind of person. Schools now need to produce people who can cope with change (Toffler, 1970).

Consider the following as evidence that change in fact occurs:

1. Nearly one-third of the items found on supermarket shelves today did not exist 10 years ago.
2. Fifty percent of today's labor force earns its living in industries which did not exist when this country was founded.
3. Seventy-five percent of all people employed by industry 12 years from now will be producing items that have not yet been conceived.
4. At least 50 percent of all today's factual scientific knowledge will be obsolete 10 years from now, a condition which has led scientists to define facts as opinions not currently in dispute.
5. Our store of knowledge will double each five years and over the next 30 years, new knowledge will exceed all that has been generated throughout the history of mankind. Incidentally, in 1899 the director of the U.S. Patent Office urged President McKinley to close the office because, he said, everything that can be invented, has been invented.

The list could go on, but suffice it to say we are living in a world of rapid change. The schools must educate people in what nobody knew yesterday, and prepare people for what no one knows yet, but which some people must know tomorrow.

Clark Kerr (1980:4), chairman of the Carnegie Council on Policy Studies in Higher Education, says that we are on the threshold of a new, electronic, technological era which many refer to as the fourth revolution. According to Kerr, the first revolution was the idea of having teachers, of having someone who specialized in teaching. The second revolution was handwriting and the third revolution was the printed page. Now computers, data banks, calculators and other electronic phenomena will catapult us into the fourth revolution.

I believe that this technology will not just augment existing methods, it will actually revolutionize schools as we know them today. School will become more of a "concept" and less of a "place." Schools without walls will become a reality for all children, not for just the few who are enrolled in experimental programs. This is to say, the world will become the classroom through holographic projection and satellite links which will allow students to tour the British museum or visit China from their schoolroom. As a result, the curricula will become more

exciting and more challenging. Right now, 50 percent of the students say high school is too easy.

Prediction—Much of "schooling" will begin at home and it will continue there with the aid of computers and television. Education will be supplemented at home for most students via these electronic devices but for many, including the handicapped, they will receive their entire education through computerized learning programs and/or television. Television and its immense impact on peoples' thoughts and habits has achieved almost total coverage. Today 98 percent of all U.S. homes have TV sets and 40 percent have two or more. Computer assisted cable television will make available to every home adult education and correspondence courses; legal information; consumer advisory services; credit card purchasing; bus, train, and airline scheduling; and sales information. Computers will provide us with the ability to communicate orally and visually with anyone, at any place, at any time. They will give us instant access to limitless reference and research files. They will make it possible to examine items, objects, and materials in three dimensions. All that will be needed will be a compact console which can be located in any home, office, or school. Already more than 100 companies are manufacturing home computers. Some day, soon, virtually every home will have a computer. It will be as standard as a toilet. By 1990, according to **U.S. News and World Report** (1980:54), 80 percent of the homes will have computers available for school assignments, doing the family budget, figuring their taxes, and sending messages to relatives and friends. Such computers are already available for around $1,000 plus hook-up fees and hourly rental changes for the use of the telephone lines over which information is sent. However, within the decade, personal computers will drop in price to $50-$100 and the network of users will grow from a few thousand to millions.

Besides the personal computer, many family television sets by the late 1980s also will be equipped to serve as complete information centers. Over the TV set, people will be able to call up local and international news, sports results, calendars of local events, restaurant menus, theatre schedules, etc. Even sections of magazines and newspapers will be delivered on home screens and families will be able to print out parts they want to save. However, experts don't believe that the screens will soon replace the printed media. Even Walter Cronkite said in a recent interview that rather than end his nightly news broadcasts with "That's the way it is," he was often tempted to say, "Consult your local newspaper for details on tonight's news."

In general, then, school will begin earlier—age one or two—and extend through adulthood with emphasis on lifelong learning. The new technology will finally enable teachers to accomplish what they have been striving for so long—individualized learning. Curriculum will be designed for individuals and will be carried out anywhere and everywhere. For some it will be in school, for others at work, for others at home, and for still others, elsewhere. Computers will also take on more human functions. We now have robots to act as maids and butlers so we will probably have robots to serve as teachers at home and at school.

One of the most revolutionary educational outgrowths of the computer genre is the robot. Already available for about $50 to $60 is a toy robot that talks and tests people's ability to think, learn, create and play games.

Also available are advanced teaching robots, though most are still experimental. One such robot, created by New Yorkers, Michael Freeman and Gary Mulkowsky is called Leachim. They describe Leachim's introduction in the educational community as follows (1978):

> "When the fourth-graders heard about their new teacher, the description made him sound quite normal, 200 pounds, six feet tall, well-spoken, and named Mr. Leachim—all very conventional, except for one thing. Leachim is a computerized electronic robot. Leachim knows the names of their brothers, sisters, parents, pets, reading scores, IQ scores, math scores, hobbies and interests, the contents of their seven class textbooks, and a number of different teaching methods. Leachim is motorized and has an adjacent visual display screen (called a tableau) that exhibits material as Leachim explains it verbally.
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> Leachim is an advanced experimental verbal computer that has all the capabilities of conventional computer systems but can convert standard computer output into words and tailor his responses for different children. In addition, Leachim grades tests and maintains progress reports on each child.
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> Leachim can be quite stern if a child is working well below his capacity. On the other hand, when slower children demonstrate even a little success, Leachim's compliments and reassurances are generous."

So much for computers. Let's move on to some of my other predictions for education in the future and touch on them briefly:

Prediction—Grade levels will disappear and students of various ages will learn together. As school becomes more of a concept and less of a place, it will no longer be necessary or even desirable to group children by age. When it is necessary to group children at all it will be done on the basis of common learning experiences and not on the basis of chronological age. In the future, of course, most education will be highly individualized with much of it occurring in the home via television and computer, thus diminishing the need to bring children of common ages together. Even today there is no sound educational reason for grouping children by grade and age. It is, of course, administratively more efficient and so we continue to do it this way. But this will all change in the future.

Prediction—Subjects as we know them will disappear and more emphasis will be placed on the integration of knowledge from various fields. Most schools today tend to operate on a factory-model. Kids are grouped neatly together by grades and courses are packaged by subject. The student graduates when he reaches the end of the assembly line. By reflecting on this approach to education it becomes obvious within a few minutes that it is anachronistic and does little to prepare students for life in American society. The separate subjects curriculum employed in most schools does not teach the student to integrate and assimilate knowledge in such a way as to make it useful to the individual to function well in society. If schools have a major shortcoming, it is this—their failure to go that next step to assist students to integrate the knowledge which they have learned.

Prediction—Educators will work in teams to educate, thus allowing teachers to advance career-wise without

giving up teaching. Some teachers will become more highly paid than any other profession. The innovations described earlier imply enormous changes in instructional techniques. Today lectures still dominate the classroom. Research indicates that nearly two-thirds of the teaching at all levels can be described by the broad term of lecturing. While still useful for limited purposes, lectures must inevitably give way to a whole battery of teaching techniques, ranging from role playing and gaming to computer-mediated seminars and the immersion of students in what we might call contrived experiences. Experimental programming methods drawn from recreation, entertainment and industry will supplant the familiar lecture. Learning may even be maximized by biofeedback techniques and through the use of controlled nutrition or drugs to raise IQ, to accelerate reading, or to enhance awareness. These changes and the technologies underlying them require basic changes in the organizational patterns and, hence, in the roles of teachers. Differentiated staffing arrangements will be necessary to operate the classrooms and direct the learning experiences of students in the future. Instructional teams will include learning specialists, counseling specialists, child development specialists, computer technicians, perhaps even medical personnel, and, as indicated earlier, perhaps even a robot. These instructional teams will be managed by team leaders who will command high salaries as a result of their complex responsibilities. It will not be uncommon to see salaries as high as $50,000 for team leaders in the schools of the future. Different configurations will require a different set of skills on the part of the teacher, skills possessed by various members of the instructional team. Salaries will match the level of skills which each team member has and will reflect each individual's contributions as a member of the instructional team. The single-track salary schedule for all teachers will become a thing of the past.

Prediction—Teacher education will change dramatically. Teachers as previously described as members of instructional teams will be prepared in various places. Some will be prepared in schools and colleges of education as they are today, some will be prepared in schools of business, some in schools of engineering, some in medical schools, and almost certainly some will be prepared in law schools. Training will be ongoing in order for teachers to remain abreast of the new technology and innovations being employed to educate children. Competencies will be defined for each role and programs will be designed to enable teachers to acquire the specific competencies. Performance will need to be demonstrated before teachers will be certificated. Since most teaching will be done by instructional teams, there will be apprentice teachers or intern teachers on every team. Team leader positions will be held by master teachers who possess the doctoral degree and who are experts in the teaching-learning process.

I have some additional predictions for education in the future which I will enumerate without elaborating on them. They are:

Prediction—Class size will decrease dramatically as research continues to demonstrate that smaller classes result in higher achievement. In fact, as indicated earlier, most of the educational process will ultimately become individualized.

Prediction—Alternative or specialized schools will become commonplace.

Prediction—Process skills will be emphasized over product skills.

Prediction—Schools will allow and encourage students to enter, dropout, and reenter according to individual circumstances.

Prediction—Our educational system will strive to achieve the twin goals of access to education for all and excellence for all.

Prediction—There will be special programs for preschool handicapped children and gifted children (infants to age 4) with increased emphasis on parenting and parent education.

Prediction—Child care services in business and industry will increase and will become more educational as opposed to just providing babysitting service.

Prediction—Schools will include courses in "Futuristics" which will be designed to provide students with an orientation to their alternative futures, to increase their awareness of potential careers, and to help them gain new interests in the use of leisure time.

In summary, let me suggest to you that education and educators can and should become involved in "futuristics." No other profession has greater potential for molding and shaping the future than does the education profession. Will we meet the challenge? We cannot wait until tomorrow. The future is now!

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