
Technology for the JOB MARKET

By M. W. Shultz

Technology is expanding so quickly that no one can really predict which careers will be important or will even exist by the year 2000. Nearly every aspect of the workplace has been dramatically altered by modern technology. When technology moves, everything else moves with it. The future lies with technology. There is where the jobs will be.

The computer industry is the fastest-growing segment of the economy, since five of the six fastest-growing areas of employment

today are computer-related. Computer programmers and technicians may comprise the majority of the factory workforce by 1990. Workers who are unable or unwilling to master the computer may find they no longer have jobs.

The U.S. Bureau of Labor Statistics suggests that by 1990 approximately 802,000 jobs will be eliminated, with 251,000 of these disappearing from farming and education alone. During this same period, there will be 4.5 million jobs created, mostly in the service areas. These jobs will require higher levels of skills than were needed in the past. As the work-

force grows older and employment requirements change more rapidly, society must begin to think of employment training as a life-long process, rather than a one-time, intensive study that precedes entry into the job market.

How Will Jobs Change?

Change is occurring so rapidly that there is no time to relax or look back. *Newsweek* magazine estimates that from 50 to 70 percent of all U.S. factory workers could be displaced by smart robots before the end of the century.¹ However, other trends in employment indicate that computers are

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replacing middle managers at a much faster rate than robots are replacing assembly-line workers.²

In the future, workers will be displaced more frequently, a situation that will force them to move repeatedly from one occupation to another. They will need periodic retraining because each new job will be different from the previous one.³

By the mid-1990s 95 percent of what we learn will be stored in computers, and much of that knowledge will be learned by operating a computer.⁴ Today's pocket calculator has more memory than the first room-size computer built in 1943, and today's desk-top personal computer stores as much information as 16,000 human brains. It has been predicted that by 1990 the average computer will perform more than 200 million operations a second, and by the twenty-first century the supercalcs will do 8 billion operations a second.⁵

In the future the way we train our students will have to be as futuristic as the jobs for which we will be training them; it will often involve the use of computers and other technological equipment such as robots and lasers. Vocational training will be good only if it prepares young people for the jobs of the future. Training for the technical professions seems to be the best preparation for the twenty-first century because of the rapid move toward technology.

A recent General Motors study estimated that the company could save as much as \$25 million annually by using robots instead of humans to install windshields in new cars because robots drop fewer windshields and do not miss work because of injuries from mis-handled glass.⁶

An interesting change has been taking place in the mix of workers

in the marketplace in the past few years. It is predicted that before 1990, the majority of American workers will be women.⁷ Although today less than 10 percent of America's engineers, architects, and construction workers are women, many of these exciting careers will become commonplace for women in the twenty-first century because of the rapid move toward technology.

Where Will the Jobs Be in the Future?

By the year 2000 it is projected that as much as 90 percent of the U.S. labor force will work in service occupations.⁸ According to Citron and Appel, authors of *Jobs of the Future*, 50 of the hottest technology jobs of the future will be in the 10 categories shown in the accompanying chart. A look at this list certainly offers convincing evidence of the impact of technology on the job market.

What Will Be Expected of Persons in Technological Fields?

Computer training should be as basic in schools now as the three

"R's." The worker of the future must be able to use the technological tools of the age—computers, lasers, satellites, infra-ray technology, et cetera. Not only is education critical in preparing workers for new occupations, it will also be an essential element in the future job environment, which will combine work with training education. The type of technology and tools in today's workplace are changing at such a rapid pace that it is hard for colleges to teach anything but the fundamentals. Once graduates join a company, they will require on-the-job training in the areas that were not covered in school.

Changes are coming so quickly that it is hard to even stay abreast. No one can predict the future with certainty, but if students learn more about today's alternatives and innovations, keep alert to new trends and discoveries, and form visions of desirable futures, based on realistic goals and commitments, they will be able to equip themselves to face a variety of future possibilities and identify the

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steps by which the career they prefer can become a reality.

The race for artificial intelligence is on, with computers, biochips, and expert systems* raising computer technology to new heights as the information revolution continues.

Even in their leisure time and in their own homes, today's students will see great advances in technology. The idea of the intelligent house has been around for years, but today "architronics," the application of computer technology to architecture, is transforming this idea into reality. The house of the future may have robots doing the cooking, serving the meals, washing the dishes, answering the telephone, baby-sitting, cleaning the house, washing the windows, caring for the lawn, and walking the family dog! Tomorrow's computerized home will be more than a residence; it will be a servant, counselor, and friend to each member of the family.⁹

Technology Literacy for Survival

In the future, anyone who lacks technological literacy will have a difficult time surviving. Even today more people are involved in information and communication than in mining, agriculture, manufacturing, and personal services combined. Computers and the information revolution are changing the workplace in many ways that will affect the way people work, relax, think, and feel.

Advancing technologies in computer-integrated manufacturing will create whole new industries, employing millions of people—and robots—in jobs that do not exist today.¹⁰

It is predicted that by 1990 the

*Expert system—a computer and its program originally designed to perform a given task, which become more proficient with repeated use.

work week will be shortened to 32 hours a week, by the year 2000 to 20 or 25 hours a week.¹¹ However, for many people, this time will not be spent in an office or other traditional workplace. People with technological expertise will contract to produce 10,000 words of material per day or do a particular project over a week, a month, or a year. An employer will not be concerned about how or when the work is done—while the baby is asleep, or late at night—because the employer is buying a product and not a process.¹²

Recently, an eighth-grader in Florida built a successful business as a weather consultant serving large corporations. He processed and sent out weekly reports of free information from government computers that could not normally be processed for two or three months. This enterprising young man served more than 40 national corporations each week by electronic mail. He made money by providing his clients with a valuable service more quickly and cheaply than they could have obtained it elsewhere.¹³

Robotics will be one of the major emerging occupations of the future. The modern robot may be viewed as a computer to which limbs, organs, tools, and other equipment have been attached, with the computer serving as the robot's brain.¹⁴ Robots will eventually occupy a major role in all parts of business, including warehousing, shipping, transportation, retailing, as well as office and service industries such as hotels, hospitals, restaurants, landscaping contractors, medicine, human care, education, and even entertainment. By 1995 robots will be found wherever people and machines are found.¹⁵

The five "R's" of the future will include the traditional basics of

reading, writing, and arithmetic, alongside the new basics of computer literacy and information management. The citizen of the twenty-first century will have to be able to handle all five areas of competency to be able to continue learning at the pace and in the systems that will dominate society.¹⁶

Conclusion

Today's world is changing rapidly. In order to survive, we must be prepared to make the necessary changes and to cope with new technology. Though fantastic, the changes that have taken place in the past 15 years will diminish in importance compared to the changes that will occur during the next 15 years. Young people—and grown-ups too—will survive the technological revolution only if they keep abreast of the changes and acquire the necessary skills to compete in the technological market. The viability of Seventh-day Adventist education will be determined, to a large degree, by the creativity, foresight, and sensitivity of its educational administrators, teachers, and boards of trustees. □

FOOTNOTES

¹ John Naisbitt, *Megatrends* (New York: Warner Books, Inc., 1982), p. 30.

² John Naisbitt and Patricia Aburdene, *Reinventing the Corporation* (New York: Warner Books, Inc., 1985), p. 14.

³ Marvin Cetron, Barbara Soriano, and Margaret Gayle, "Schools of the Future," *The Futurist*, 19:4 (August, 1985), p. 18.

⁴ Marvin Cetron and Marcia Appel, *Jobs of the Future* (New York: McGraw-Hill Book Company, 1984), p. 11.

⁵ *Ibid.*, p. 12.

⁶ *Ibid.*, p. 114.

⁷ *Ibid.*, p. 13.

⁸ *Ibid.*, p. 10.

⁹ Roy Mason, with Lane Jennings and Robert Evans, *Xanadu, The Computerized Home of Tomorrow and How It Can Be Yours Today* (Washington, DC: Acropolis Books, Ltd., 1983), p. 15.

¹⁰ James S. Albus, "Robots and the Economy," *The Futurist*, 18:6 (December, 1984), p. 41.

¹¹ Cetron, et al., p. 19.

¹² Newt Gingrich, "Window of Opportunity," *The Futurist*, 19:3 (June, 1985), p. 9.

¹³ *Ibid.*, p. 11.

¹⁴ F. D. Barrett, "The Robot Revolution," *The Futurist*, 19:5 (October, 1985), p. 37.

¹⁵ *Ibid.*, p. 40.

¹⁶ Gingrich, p. 14.