Future Watch: Our Schools in the 21st Century

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Past trends leading to the present can be studied systematically to determine where a society may be in the future. Such an assessment of social, technological, economic, environmental, and political trends also allows alternative futures to be considered and pursued. This article reviews major trends that have an impact on everyone in the United States and, specifically, relates this larger perspective to the practices of speech-language pathologists and audiologists in our schools.

Speech-language pathologists and audiologists are provided with trend information to help them understand the forces that soon will bear upon us, including social trends involving the elderly, baby boomers, women in the workforce, health care, and education; technology trends of genetic/molecular biology, computers, and virtual reality; economic trends of a global economy and an information-based society; and political trends of decentralization and modes of participation by people. From such an overview, many may wish to consider developing alternative futures to pursue within their practices.

KEY WORDS: trend analyses, future trends, education's directions, schools and health care, future studies

Futurists have a tantalizing way of describing the year 2001 as though being there has little to do with getting there. The future simply arrives full blown. But it is the succession of days and years between now and then that will determine what life will be like Decisions made and not made will shape the schools of tomorrow.

-John I. Goodlad A Place Called School, 1984

Future studies involves a systematic way of examining factors that can influence the future and projecting possible futures on the basis of the interaction of these factors. It also involves developing ideas and pursuing options that could create alternative futures. The term futures suggests more than one possible future for us, implying that we can take actions to develop a more preferable future. A futuristic attitude encourages us to use opportunities to influence and shape anticipated changes, rather than feel helpless about the future (Whaley & Whaley, 1986).

Analyzing societal trends is a way of assessing possible futures. A trend is a pattern of behavior occurring over time, with usually four characteristics: (a) its general direction (growth

or decline), (b) its rate (fast or slow), (c) its balance (steady or erratic), and (d) its lifetime (long or short). Trend analysis can trace a past trend into the present, but no further. Trend extrapolation is a way of forecasting an analyzed trend into the future. However, such forecasting is only good in the short-term. It is a simple linear projection into the future and does not consider many variables that could change the trend's future characteristics.

The further forward we push the trend, the more inaccurate we become (Whaley & Whaley, 1986). Accepting this limitation, the authors of this article, along with all speech-language pathologists and audiologists, will proceed to plan for the future.

The following sections of this article review trends affecting the United States today and discuss their future impact on our society, as well as on speech-language pathologists and audiologists.

TRENDS OPERATING TODAY

Certain important developments most likely will affect our American society during the 1990s and the decade beyond. These developments can be referred to as change drivers. All individuals in our society will feel their impact, whether they are rural or urban dwellers; wealthy, middle-income, low-income, or impoverished people; professional, business, or industrial workers; young or old people; women or men; or people of different political persuasions. These developments have been synthesized in a document entitled What Lies Ahead: Countdown to the 21st Century (United Way of America, 1989) as follows:

- the maturation of America
- · the mosaic society
- redefinition of individual and societal roles
- the information-based economy
- globalization
- · economic restructuring
- personal and environmental

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- · family and home redefined
- · rebirth of social activism

Futurists often cluster such developments into major trend categories convenient for information gathering, analysis, and discussion. These areas encompass social, technological, economic, environmental, and political trends. The following information from each of these categories highlights major trends that will impact the future of speech-language pathologists and audiologists in education settings (Herer & Gelatt, 1989; "Nine Forces..., 1990).

Social Trends

As specific groups, the elderly (ages 65 and above), the baby boomers (ages 30 to 47), and the birth through age 29 group decidedly will influence American society throughout the next 2 decades. By the year 2000, the elderly will comprise 13% of our population. They will be healthier, better educated, wealthier, and vitally interested in wellness/prevention rather than sickness/cures, although a significant number (approximately 3 million) will require long-term care at home or in nursing homes. The 77 million baby boomers are becoming a force in business, government, and politics. As a group, they are well educated and more challenging of authority. The baby boomers will continue to seek social change, personal fulfillment, and affluence, but few will find them. However, by sheer numbers, they will have a significant impact on our economy as they enter peak earning years. The remaining group will have greater numbers of less educated and poorer individuals than in the past. Our society already is experiencing the impact of fewer entry-level workers and more workers requiring remedial education by employers.

Other social trends involving the various age groups that will affect us significantly include an increasingly multicultural society, one that is more linguistically diverse; a whiter, older society and a browner, younger one; population shifts to the South and West and to urban areas; more women entering our workforce (two of every three new workers); more single-parent households; an increase in dependent care needs (older family members/children of working parents); more poor children and more children without health insurance and access to health care; and an illegal drug culture, particularly among our youth, which directly relates to the crime rate in the United States, the increasing number of crack babies being born, prison overcrowding, and the need for special social and education services in the future.

Schools will blend their resources with health care and social services to develop full-service neighborhood schools. These schools will restructure themselves to meet the needs of children who are at-risk, children who are disabled, students who experience English as a second or third language, and youngsters who are medically fragile. Teachers will need to work collaboratively not only with the specialists in their building, but also with medical and social services personnel who will be working with families and community programs. The current emphasis on providing equal access to the core curriculum for all children will intensify as a national cur-

riculum is proposed, followed by a nationwide assessment program. This likely will use the performance-based assessment model adopted by Great Britain in 1992–1993. Costs, scoring variability, and time allocations for test taking during the school year will be major issues of the late nineties.

Speech-language pathologists and audiologists will design their assessment tools and intervention programs to match the newly developed National Geography Standards (Viadero, 1993) published in 1993, and the Benchmarks in Science (West, 1993), due out in 1994. Language tests will be administered in natural settings, such as the classroom or the home. Dynamic assessment, authentic assessment, and similar, functionally based tools will predominate. The language sample, so long a staple of the speech-language pathologist's test battery, will be recognized for its authenticity and value in schoolbased programs. English-as-a-second-language programs will combine with speech and language programs in many areas, creating much more powerful intervention programs for children, eliminating the need for special bilingual assessments to determine "disabilities."

Health care is also a trend area of particular concern and interest to speech-language pathologists and audiologists. Trends reveal that health care costs are rising faster than the rate of inflation, partly driven by the cost of technology; present spending of 1.5 billion a day will triple by the year 2000; business is shifting more of its costs to its employees; close to 38 million U.S. citizens have no health insurance, with almost 13 million of these being children; and national health insurance concepts again will occupy the 1990s' agenda of policy makers. Access to health care and its quality will remain in the forefront, especially as it affects children, women, the poor, and minorities. The relationship between personal behavior and disease risks will receive increased attention.

Specific health trends show a rise in sexually transmitted diseases, AIDS being the most dramatic, with almost 500,000 cases by 1992, but others increasing as well (e.g., syphilis, genital herpes), especially among teenagers and young adults; the waning of immunizations that protect children from preventable diseases, creating the potential for resurgence of the deleterious effects of such diseases as polio; the leveling off of heart disease due to diet, reduced smoking, and exercise; and the continued high incidence of cancer, even though some gains from chemo- and radiation therapy are now apparent.

Communication disorders often are connected closely with specific health trends. Hearing loss due to rubella and cancer treatment in children come to mind quickly. Traumatic brain injury, now listed as a disability condition in the federal IDEA legislation for schools, brings health care and education teams together immediately. Post-acute-care after brain injury is often less than 9 weeks, virtually eliminating the need for hospital schools. School systems will operate programs on hospital grounds and transfer students back to their home schools as soon as possible. Home health care will need to be set up quickly to assist the family, and it will need to be monitored closely as the child moves through rehabilitation.

In 1993, cochlear implants were available in most comprehensive hospitals serving children. Habilitation of the child's newly acquired hearing will take place in the school, often in a regular classroom with assistance from hospital-based audiologists and speech-language pathologists. The rapid advance

of otoacoustic emissions testing in the last 3 years has reduced the cost dramatically and increased the efficiency of testing the hearing of all newborns, not just those at risk for hearing loss. Within the next 4 years, all birthing hospitals will test all newborns before they leave the hospital. This will require audiologists, or perhaps specially trained technicians, to test babies within their first 24 hours of life. At large hospitals and in urban areas, this will require services around the clock. Professionals will need to work throughout the night, providing these highly accurate 3- to 5-minute hearing tests to all newborns. This early identification system will bring with it many new challenges and opportunities, such as making the decision about hearing aids or manual signing when a child is a few weeks or months old and establishing very early intervention programs to serve newborns with communication disabilities, which will lead to enrolling these children in regular primary grades starting with kindergarten.

The Clinton administration's national health care plan, which has been under heated discussion since 1993, is based on managed competition. It, or whatever is finally selected, will include several preventative packages for communication disorders. If the prevention works well, within a decade some disorders will have completely altered incidence rates.

Technological Trends

Technological trends are the most dramatic because they occur so rapidly. The three most prominent trends involve genetic/molecular biology, computers, and virtual reality technology. Genetic/molecular biological research aimed at genome mapping is learning how our human system is put together. Its success has potential for reducing or eliminating disabilities and disease categories. Researchers already have discovered the first gene for Alzheimer's disease, which will narrow the search for causes and treatment (Kolata, 1991). A new genetically engineered drug has been developed that attacks bacterial infection and dramatically cuts the death rate from septic shock by 40%. Septic shock kills tens of thousands of people each year through a quick, overwhelming infection of the bloodstream (Angier, 1991). Molecular biologists also have developed a gene therapy method with the potential to cure the fatal lung disease of cystic fibrosis (Rensberger, 1992).

Computer performance has improved a striking 50% each year in the past 10 years. Expert systems or databases are available to solve problems and to assist decision making. Current research is leading to computers in the future that can teach themselves, known as artificial intelligence. Many recent computer advances are tied to the capacity and need to communicate (e.g., networks, FAX), and thus have served to lead us into the new Information Age. Computers can be a boon to education, especially individualized learning of information. Computers have infinite patience and allow the student to control the learning system. Speech-language pathologists, too, are beginning to use computerized language analysis for diagnostic purposes and HyperCard software for therapeutic intervention strategies (Asha, 1993). Audiologists also are using computer management of signals to assess hearing by evoked response audiometry and, most recently, otoacoustic emissions testing (White & Behrens, 1993). Computer-managed on-line clinical data collection and analysis of behavioral results soon also will be the state of the art in audiology centers.

The development of virtual reality technology will create total environments for an individual to experience and to interact with; in these environments, the individual also will be able to alter outcomes. University programs will begin using virtual reality to create clinical environments in which to educate tomorrow's speech-language pathologists and audiologists. Supervised clinical practice will be managed in a vastly different way. Students will experience interactive technological supervision. Individual learning and education from such technology will be engrossing, to say the least.

Another unique, soon-to-be-commonplace, application of computer technology for personalized learning can be seen in art education. The Micro-Gallery of the National Gallery of Art in London allows an individual with a personal computer and phone modem to receive high-resolution images of an art collection, along with information pertaining to it. Museums and libraries in the near future will be transmission centers as well as places to visit (Ptacek, 1993). Such technology and teaching concepts will add significant dimensions to the continuing education programs for speech-language pathologists, audiologists, teachers, physicians, and others from a variety of professions.

Our children's education, as well as teaching and learning for adults, should be enhanced greatly by information technology. It may help to resolve present concerns about the scientific literacy of Americans. However, technology "haves" and "have-nots" among our citizens are expected to develop, potentially affecting the latter's income expectations. Information technology also will pressure business executives and policy makers to be more hands-on managers. Such technology, too, will allow for new ways to accomplish old tasks and permit a framework of trying new solutions for processes that are no longer effective. Speech-language pathologists and audiologists in schools will be maintaining their own databases of clients, reporting figures to their states for schoolby-school reimbursement for services provided. Internal FAXmodems on computers used by clinicians will transmit the counting data immediately and streamline the management information services currently strangling special education directors. Speech-language pathologists, in particular, are likely to become small, self-contained units of clinician, two to three paraprofessionals, equipment allocation, and client base.

Economic Trends

Several major economic trends will influence our country through the turn of the century and beyond. The first involves the globalization of our economy; the other is the shift from an industrial to a technology-driven information-based economy (United Way of America, 1989). There is a growing economic relationship between the United States and other nations. The economic growth of the United States in this decade is expected to be steady but slower than that seen in the 1980s. This is due primarily to our country's no longer being the world's only economic superpower. The United States will face more competition from the major industrial

nations of the Pacific Rim, which are increasing their share of the world's economy. Further, the types of jobs in the United States are being determined by the global competition that is occurring. Low-wage nations are reducing the need to produce low-tech goods in the United States and increasing our high-tech production of more complex goods and advanced information services.

This worldwide competition is challenging the United States to improve its economic performance. In order to do so, leaders of business and industry recognize that they will need a better trained workforce, one that is prepared for a high-tech, high-quality economy. These leaders also are aware that an uneducated workforce is the major problem for the future and therefore are investing energy and finances today to meet this challenge.

Education will feel the full impact of the global economic trends cited here. There has been less money for special education each year since the passage of PL 94–142 in 1975. Less than 8% of the funding for special education came from the federal government in 1993, despite the strength and requirements of the legislation. States must make up the difference, and they too are experiencing economic downturns.

The global trends of limited resources, and a rising awareness of human rights have combined to fuel the movement toward inclusive schooling. Third World and developing countries have leapfrogged past pullout programs for special education and decided to serve all their children in one school (S. Stubbs, personal communication, August, 1993). The inclusive schooling concept will predominate the restructuring of special education that will take place in the late nineties.

The shortages of specially trained personnel have made it impossible to provide all the discrete services outlined in federal law for children in rural areas, geographically remote areas, or inner cities. Thus, we will see role release, cross-disciplinary intervention services, and natural supports and peer tutoring as major components of speech, language, and hearing services in schools. Schools will use more flexible schedules, community outreach programs, retired persons, and corporate partnerships to meet the needs of students and teachers. Limited resources will be the economic change driver that accelerates this educational reform in the United States.

Environmental Trends

The potential effects of key environmental trends and our ability to influence them will receive increased attention over the next several decades. These trends include the warming of the earth's atmosphere (greenhouse effect); the depletion of the earth's ozone layer, which protects us from harmful solar radiation; and pollution from hazardous waste (spills and landfills). In addition, the potential reduction of our nation's and the world's oil supplies should focus attention on the development of alternative energy sources.

Political Trends

Trends in all areas influence the politics of our country, but none more than the social and economic trends. Our population shifts to the South and West will lead to reapportionment of about 18 congressional seats in the 1990s. The influence of the baby boomers and senior boomers, by their sheer numbers and financial power, will dominate federal and state politics and programs. A decidedly multicultural population, particularly in urban centers and in some western states, will affect the political agenda of these communities. The growing federal budget deficit will shift many responsibilities (and thus power) from federal to state governments. State governments will be playing more significant roles in the major domestic arenas of education and health care.

Another trend is a change in the way people are participating in the political process. There is a move from the formal voting process to less formal methods, such as surveys of public opinion on issues. Elected and appointed officials of government are increasingly sampling the population's wishes/opinions prior to deciding on courses of action in order to retain the support of the citizenry. Many recent examples exist of officials not being reelected or of laws/regulations being repealed because such support of actions taken was not assessed ahead of time.

Many people will be deciding that they can make changes in the politics of their environment and will concentrate on the local government because it is more accessible and more responsive to the people. Speech-language pathologists and audiologists already are running for offices in local and state elections, a relatively unexplored strategy in the first 60 years of this discipline. School-based speech-language pathologists, in particular, are winning seats on local school boards, becoming presidents of their teacher unions, and being appointed to statewide task forces on credential reorganization and other politically charged issues.

Campaigning for speech-language pathologists and audiologists as officers of both national and state professional organizations has increased significantly. ASHA's national election committee receives letters from the membership asking if highly visible campaigning is "legal" or "ethical" because they have not experienced it before. ASHA's 1993 Legislative Council was asked to vote on a resolution to set up a poster session in order to advertise the qualifications of the candidates for executive office during the Convention each year. Some politically savvy state associations have done so for years.

The national curriculum and the national assessment program discussed earlier have been proposed by the federal administration, thereby injecting politics at the highest levels into the instructional strategies of education. Financial contacts have been acceptable for a long time, but curricular directions from the political party in power never have been proposed before. These involve extensive changes for schools and for the communication specialists who work in them.

THE RENAISSANCE IN EDUCATION

Implied and often stated in discussions of the trends that will influence America over the next decade are those important issues affecting the education of our children (Stewart, 1989). Expressed as major concerns for education—and thus for the welfare of our country in the 1990s—are illiteracy, the

large high school dropout rate, diminishing science and math capabilities, the need for technological literacy in our future workforce, multicultural and multilingual school populations, high-risk children entering school, poorer achievement in urban schools, and teacher availability and preparation.

Cetron and Gayle state that "more business-and-school partnerships and increased parental participation are among the likely developments ahead. In the near future, American schools will have changed dramatically, and so will people's relationship to them" (1990, p. 33). Businesses will strongly support schools through finances and personnel, realizing that the future productivity and international competitiveness of business depend on an educated workforce. However, Cetron and Gayle point out that parents are the key to success because parents

must accept responsibility for the performance of their local school system. They must offer themselves as part-time teachers and teaching assistants. They must work with local political leaders to raise school budgets to pay teachers for performance (merit pay) and with school administrators to see that funds are used to promote effective classes in the core subjects. Above all, they must make certain that their own children understand the importance of a good education and have the support required for the difficult job of learning. (p. 34)

Cetron and Gayle (1990) have compiled an array of trends and developments that will affect education in the United States as we approach the year 2000. Speech-language pathologists and audiologists in the schools will experience these firsthand. The list that follows highlights a sampling of the key trends they have compiled.

- 1. Education will be the major public agenda item and will be viewed as key to our economic growth.
- There is a growing mismatch between the vocabulary, reading, and writing skills of our workforce and the competencies required on the job. This involves entry-level workers, as well as those on the job who are not adapting to new technology.
- Public school enrollment will increase to 43.8 million by the year 2000, up from slightly below 40 million in the 1980s.
- 4. One million will drop out of school yearly due to increased academic standards, drug abuse, and teen pregnancy (to cite only a few key reasons), costing an estimated loss in earnings and taxes of \$240 billion over their lifetime.
- 5. The supply of newly graduated teachers will meet only 60% of the new hire demands of public schools during this decade. We will need a million more than available due to retirement, class size requirements, and enrollment projections.
- 6. Minorities among students will grow, as they will in the general population, but this increase will not be reflected in the ranks of teachers. The pool of minority teachers-in-training is small.

7. Lifelong learning will be reflected in education delivery systems.

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- 8. A core curriculum will emerge from a debate of teaching basic skills versus arts, and vocational education versus critical thinking.
- Foreign language/bilingual instruction will be necessary for all students as states prepare them for a worldwide marketplace.
- 10. Vocational education emphasizing technical literacy will be demanded by and required of an increasing number of students, and it will be integrated with academics in a restructured curriculum.
- 11. Although valued in principle, a liberal arts college education will not be valued in pay or competitiveness for jobs requiring special skills.
- 12. More than half of all jobs will require postsecondary education and training, but only 15% will require a college degree. Technical institutes/community colleges will supply the former.
- 13. The ingredients of school reform will continue to be debated in the 1990s (e.g., merit pay, longer school year, local control, accountability measures, curriculum design, etc.), with improvements occurring in some areas but not in national averages on standardized tests. A national consensus on reform will be necessary to achieve the latter and to reassert the supremacy of U.S. education versus that of other industrialized nations.
- 14. A futures perspective of basics in education will occur, using telecommunications technologies, advanced science knowledge, and technical skills to achieve problem solving.
- 15. Educational bureaucracies at all levels of government will lose power as reforms occur in the 1990s. Parents, teachers, students, and business leaders will demand more involvement in decisions, have little knowledge of how to restructure, and move forward with little research.

Speech-language pathologists will see county and regional special education agencies weaken in power and control less and less of the programming for children with communication disorders. State credentials and licenses will undergo significant changes, including speech-language pathologists and audiologists in one place, and completely overlooking them in others. Speech-language pathologists will find it necessary to define themselves as teachers or specialists, but not both. The audiologist will be aligned with medical personnel and collaborate with educators.

16. Curriculum, teacher training, and achievement standards will be controlled centrally, but decentralization of school and classroom management will occur Curriculum will be characterized by large, loose state frameworks and specific local requirements. Literacy will become the hallmark of all special education, and speech-language pathologists will be helping to write the metacognitive and metalinguistic components of local curriculum.

As IQ tests fall out of favor, the functional and authentic assessments used by speech-language pathologists will be in great demand. They will need to be computerized, administered, and scored holistically to be useful to schools.

17. Principals will be the leaders of change in schools and will share responsibility for school-based management with staff. This will require high-quality professionals during a time (the 1990s) of shortages for qualified school administrators.

Many speech-language pathologists will be moving into administrative posts in schools, particularly positions in managing special education, preschool, Headstart, and at-risk students.

18. Numerous school alternatives will fragment the traditional education system. Initiatives will range from extreme centralization/financial control to vouchers used by parents selecting private schools.

Although traditional public school programs will persist, many will have increased private-sector partnerships.

19. Parents and special-interest groups will raise legal challenges to issues such as curriculum, expenditures, and access, especially as they pertain to minorities and those with low incomes. Educational equity issues will be redefined in terms of expenditures and not access.

REBIRTH OF SOCIAL ACTIVISM

Coalitions between government, business, education, and the nonprofit sector will begin to address those social problems that are beyond the government's ability to resolve. The issues to be addressed include pervasive homelessness, racial tensions, affordable housing, child poverty, environmental degradation, and community roads. A conservative political mood counterbalanced by attention to social issues will prevail. The American public will be much less tolerant of business actions that are harmful to the economy and of those that could produce environmental pollutants, especially the ones that threaten our health.

CONCLUSION

Future studies have reported a host of significant social, technological, economic, environmental, and political trends that will affect all segments of society in the United States during the 1990s. These trends will create change, offer challenges, and provide opportunities to shape the future of speechlanguage pathologists and audiologists in schools, if we understand and act on them. The education of our nation's children will be influenced greatly by many, if not most, of these forces reshaping the United States. The specific trends affecting students, teachers, and curriculum, as well as education's governance, finance, and laws, will restructure the schools of the future. Specialists and professionals in the field of communication disorders have an important role to play.

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