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## Governor's Task Force Report on High Technology in Iowa: Results and Applications to the Crisis in Science Education

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## Recommendations

The charge to the Commission is to develop a national action plan to remedy the discouraging state of the teaching of science and mathematics in our schools. The plan is to assist our precollege educational system to meet the following equally important goals:

1. To continue to develop and to broaden the pool of students who are well prepared and highly motivated for advanced careers in mathematics, science and engineering.
2. To widen the range of high quality educational offerings in mathematics, science and technology at all grade levels, so that more students would be prepared for, and thus, have greater options to choose among technically oriented careers and professions.
3. To increase the general mathematics, science and technology literacy of all citizens for life, work and full participation in the society of the future.

## Governor's Task Force Report on High Technology in Iowa: Results and Applications to the Crisis in Science Education

*David H. Swanson: Chair  
Iowa High Technology Commission*

### The Problem

Governor Robert Ray, on May 18, 1982, directed a High Technology Task Force to examine the feasibility of the development of high technology industries in Iowa. This task force after 5½ months of study, made its report to the governor. The report found that 75 percent of the new U.S. manufacturing jobs created during the past 25 years were in seven basic industry groups. These industries were generally described as high technology. The report also concluded that in the future manufacturing employment increases were most likely to occur in high technology industries.

Considered major among the locational factors of high technology industries were characteristics which focused upon advanced research and industries which produce a high value product, proximity to major scientific research and technological universities, good vocational/technical schools, available air transportation and a supportive environment for scientists. The attractiveness of centers of excellence in research was perceived as a major attraction for most companies utilizing advanced technologies.

### Recommendations

The High Technology Task Force recommended:

1. That research and development efforts in high technologies be concentrated in biotechnology, microelectronics, productivity enhancement/process controls, and energy alternatives.

2. The mechanisms to transfer information on research, technology, and other scientific endeavors among universities, laboratories, governments, and the public be greatly improved.
3. The energies and resources of Iowa be directed to the long term development, attraction, expansion and utilization of advanced technologies.
4. A permanent High Technology Commission be established to pursue, guide and coordinate Iowa's efforts in high technology.
5. Specific legislative incentives be provided that would encourage the location and expansion of high technology companies.
6. Special efforts be undertaken to insure the necessary training and development so that Iowans could be employed in high technology industries, research, and its applications.
7. Venture capital mechanisms be encouraged which would foster the development of high technology operations and research.
8. Research and development centers be established near research universities in order to facilitate research, product development, innovation and the practical application of research.
9. Promotional efforts of the state be expanded so as to attract high technology companies to Iowa.

The Task Force, and the subsequent Commission, felt the development of high technology employment opportunities and the effective adoption of existing technologies was heavily dependent upon specific educational capabilities. Human resource development, the strength of technology based industries and research, required improvement in the public and private educational delivery systems. These improvements included (a) expansion of advanced technical skills in the area college curriculum, (b) greater emphasis upon competencies in mathematics, science, communication skills, computer literacy, problem solving skills, entrepreneurship, and other technology instruction programs in grades K-16, (c) partnerships between business/industry and educational systems so as to strengthen the technical competency of teachers and students, (d) incentives to encourage teacher preparation and retention in science, mathematics, and high technology programs, (e) the expansion of continuing education opportunities for adults seeking opportunities in high technology. (f) the identification of high technology job opportunities (g) the creation of new instructional programs at the secondary and college levels, (h) incentives to encourage business/education to share high technology equipment and facilities, and (i) the use of telecommunication and advanced educational technology in teaching.

The criticality of science and mathematics in the development of high technology industries and centers of excellence in educational institutions were strongly underscored by the task force. The decline in competencies in these fields was seen as a deterrent, not only to the development of industry and employment in Iowa, but to the development of technology in the United States. Iowa's excellent educational system was seen as an advantage, but only if additional investment and coordination assure improvement in the understanding and utilization of scientific knowledge.