GUEST EDITORIAL

KEEPING AHEAD BY KEEPING UP

A commitment to boost United States' industrial competitiveness in future years must strike beyond legislative action and economic debates.

The commitment must start with education—education from elementary schools to research laboratories, right through to professional development courses. This is not meant to suggest that education alone can reduce the trade deficit, resolve the issues of protectionism and return the U.S. to manufacturing superiority; education can establish trends, however, and lay a foundation on which to build our industrial competitiveness through the years.

The Council on Public Affairs of the American Society of Mechanical Engineers has addressed this issue in a policy statement called "Restoring America's International Competitiveness." Its recommendations and conclusions focus on a number of ways to lay this crucial educational foundation.

To lead the world through the technological jungle, we require superior engineers and scientists. Improvements in our educational system and a rise in the level of funding for research in engineering and science would point us in the right direction.

Steps must be taken to encourage young students to pursue mathematics and science because future engineers and scientists will grow from the children that enjoy those subjects.

Local and state boards of education should increase emphasis on math and science with expanded course requirements for high school curricula. Introductory courses in technology should also be pursued. Japan has established priorities by requiring the study of science and technology during elementary school. In the U.S., one-half of high school graduates take no math or science beyond the 10th grade.

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This leads to another major issue: let's get the most qualified science and mathematics teachers back into the classrooms. Obviously, public schools cannot approach the salaries of the private sector; however, many working professionals could teach on a part-time basis and recently retired engineers and scientists could provide a strong impact on educating the young.

At the university level, the federal and state governments should increase investments in engineering and science programs while stressing modernization of research facilities. A recent survey by the National Science Foundation revealed that only 18 percent of equipment used in university engineering laboratories is state-of-the-art. Once again, part-time instructors and retirees from industry could share their knowledge as well as help to provide an important link between industries and universities.

A key to international economic competition is a deep-rooted commitment to research. The federal government should target funds for high-risk, long-term engineering research, and industries should make research in manufacturing processes a priority.

Government, industry and universities must sharpen their focus on research and development. Federal and state governments need specific entities to develop, coordinate and implement policies that affect research. In the long term, a cabinet level Department of Science and Technology would coordinate programs and create a single voice for the fields of science and engineering. Companies and universities also need to re-evaluate their programs in order to pursue interests with a long-term benefit.

Beyond the labs and classrooms, education must continue for professionals in the field. The knowledge, motivation and quality of the work force will influence heavily the nation's ability to compete in the international marketplace. The ultimate responsibility for personal educational improvement lies with the individual, but companies can benefit the individual and organization by encouraging on-going educational programs.

The necessity of lifelong education grows in saliency when thinking about the rapid technological changes and increasingly competitive world market. Some economists project that people now entering the workforce may need to be retrained at least six times during their careers. For engineers, this point is particularly potent.

A well-educated work force fuels technology and spurs the ability of companies to compete.

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