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ABSTRACT

This report represents actual business and industry practices to support schools as reported by business and industry representatives, teachers, state and local administrators, and professional and trade organizations. These efforts are divided into (1) direct services to students, (2) skill enrichment for teachers, (3) contributions, and (4) policy development. Each practice is briefly described. These types of direct services to students are discussed: visitations to trade shows; onsite use of equipment; tutors; job shadowing; loaned personnel; student work experience/cooperative education; hosting classes; field trips, tours, visits; career days, tele/video communications; display/mobile units; sponsorship of events; and youth organizations. These types of skill enrichment for teachers are described: trade missions, internships, inservice classes, and open enrollment in industry classes. Contributions include donated equipment, financial support, awards for excellence, hidden support, and materials and software. These forms of policy development are covered: advisory committees, technical assistance, and job market analysis. Ways in which schools can provide services to local business and industry in return for private sector help are then described, including instruction in school or work site, use of school facilities/resources, subcontracts and sales of products and services, and management assistance. Print and equipment resources and resource organizations are listed. (YLB)

Technological Literacy: What Industry Can Offer

A prior Ideas for Action--"Technological Literacy Skills Everybody Should Learn"--reviewed the skills and attitudes students need for success in today's technology-oriented workplace.

NWREL surveyed industry efforts at the national, regional and local levels to support such outcomes. We found many interesting developments, some old and some new, but each requiring vision and commitment by all partners if they are to be successful. The new competencies for a technology-driven world of work were grouped by NWREL into three domains:

1. Attitudes or generic skills that can be taught in any class. Examples ranged from students learning to be accurate and precise in their work habits to "troubleshooting" a problem they encounter.

2. Applied skills requiring directed instruction as well as practice in many learning situations. These skills ranged from computation and calibration to writing clearly and concisely--a skill that is particularly important with computer-processed information.

3. Specialized skills that may require the expertise of someone with special preparation. Examples here started with evaluation of software and concluded with skills in search and retrieval of data.

The question about what industry can do to support schools can be answered in several ways:

- Direct services to students
- Skill enrichment for teachers
- Contributions
- Policy development

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IDEAS FOR ACTION in Education and Work

Northwest Regional Educational Laboratory

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Direct Services to Students

Visitations to Trade Shows

Vendor displays provide convenient opportunities for students to observe the latest technological innovations in the marketplace. Invite local dealers to sponsor a student delegation or provide complimentary tickets to nearby business and industry product fairs.

On-Site Use of Equipment

A major Northwest manufacturer offered nearby schools access to their multi-million dollar computer-assisted design terminals complete with industry staff and instructors. Incompatibility with school schedules and concerns over staff certification stymied the effort. Bridges over these issues are slowly being built, however, and benefits to students are impossible to measure. State-of-the-art equipment in a real-world setting is a teacher's dream and many faculty would be willing to overlook inconveniences such as transit time or lack of ideal classroom space.

Tutors

Not only can business, government and industry volunteers provide invaluable one-on-one assistance to young people in basic academic skills, but they can also provide special help with technological literacy skills such as problem solving, creativity, systems thinking, networking, file maintenance techniques and many others.

Job Shadowing

Short explorations of work settings can provide both youth and adults with first-hand exposure to how technology is affecting the workplace. These two-three hour or two-three day excursions are simply vehicles for helping a learner sort out career options with the help of an experienced hand in the field without making a long-term commitment on either person's part.

Loaned Personnel

Some observers expect an upswing in the loaning of business and industry personnel to education agencies. Under such agreements, a loaned executive, for instance, can provide valuable leadership by making contacts in the community for donated equipment, materials and human resources, helping with curriculum and analyzing present programs. As some schools and colleges face reduced budgets, linkages are being made with the private sector for shared-time personnel to teach classes. The PIPE Program in Seattle (Private Initiatives in Public Education) helped arrange for a top electronics technician to help teach two high school classes in 1984, for example.

Student Work Experience/Cooperative Education

Employers will support opening their workplaces for student placement when there is consistent school backup. There is no better way for students to see for themselves what technological innovations are entering the workplace than by spending several weeks or months in meaningful work experience, usually for pay. More and more employers and educators alike are making sure that students rotate through several work assignments at each placement so students can see the full gamut of technological change in career opportunities while learning valuable job skills. Teachers with release time to monitor student placement have the added benefit of working with employers themselves. Cooperative education features a learning "contract" between the school and employer that spells out the purposes, tasks and skills that will be addressed. Ideally, cooperating employer/supervisors should be carefully selected and trained in how to work with students.

Hosting Classes

Using private sector facilities for classes has been on the upswing according to recent reports on vocational education trends and issues. In Idaho, for example, one secondary level regional vocational consortium teaches its health offerings in

the basement of a community medical clinic where experts and equipment are a few steps away.

Field Trips, Tours, Visits

All of us remember the time we visited the local firehouse, airport or museum with a class or scout group. While those field trips still go on today, there is much more attention to preplanning, observation and followup. Some schools are video taping these visits to share with others or review later on. Even more memorable for some youth are the familiar "exchange" days when students take on the roles of mayor, judges, police officials, or legislators for several hours. Some communities, such as Seattle, have a private sector-financed clearinghouse for speakers and field trips. The Regional Youth Employment Council in Portland was established to explore similar issues with local schools and community colleges.

Career Days

Here again, while not a new idea, employers are still eager to spend their valuable time sharing what they do in their occupation. With a little coaching, they can easily define how technological literacy skills are used in their line of work and the education/training implications.

Tele/Video Communications

The Vancouver, Washington School District is "wired in" to the local cable network, as well as to nearby Clark (Community) College and local electronics industries. One of the purposes is to link up the on-site expertise of "high-tech" engineers and technicians with secondary and post-secondary classrooms without actually moving students or teachers. Lane Community College is an Oregon leader in two-way interactive video to accomplish "long distance" instruction.

Display/Mobile Units

The sophistication that larger companies have in preparing marketing exhibits and traveling road shows can be turned into a school opportunity, too. If an industry group were interested in promoting a technological concept or demonstrating an emerging occupational field, their investment in a traveling exhibit could be well worth the outlay.

Using mobile training labs has worked well for some rural settings, but could be modified for any community looking for cost-effective ways to help deliver a message or skill relating to technology literacy.

Sponsorship of Events

Many communities have promoted an Olympics of the Mind to provide competitive opportunities for talented and gifted youths. These and other "contests" or demonstrations (e.g., Science Fairs or Free Enterprise Days) can be underwritten by local business and industry concerned about technological literacy. Another valuable activity in the states of Washington and Oregon is the Business/ Education Week programs. These are week-long summer workshops on various college campuses where students from high schools around the state interact with business leaders on a variety of topics. Scholarships for students and teachers are often available, thanks to business contributions.

Youth Organizations

Vocational-oriented clubs such as Future Farmers of America, Office Education Association, Vocational-Industrial Clubs of America, Junior Achievement; the in-school exploring initiative of the Boy Scouts of America and Junior Achievement are several of the many youth organizations that are available to young men and women under school auspices. Each is dependent, in its unique way, on the support of local business and industry. While financial contributions may be a visible way of offering support, these groups are even more interested in the commitment of personal expertise. The Exploring Program through the Boy Scouts of America, for example, concentrates on setting up in-school career focused "units"--say in engineering or architecture--which draw heavily on community volunteers.

Skill Enrichment for Teachers

Trade Missions

If a city or state can afford to assemble a sizeable delegation for business, industry and government leaders to visit another nation or state in the name of economic development, what better way to recognize a region's priority on education than to include student and teacher representatives in such missions. Better yet, equip them with portable video equipment for capturing the experience for social studies, foreign language, and career-oriented classes.

Teacher Internships

A previous Ideas for Action (1983) addressed the trend toward teachers seeking summer or part-time work experience in business and industry. Vocational teacher certification requirements emphasize subject area/job experience. Some believe academic educators and administrators should also take advantage of this unique way to bring workplace realities into curriculum and instruction.

Teacher Inservice Classes

Washington County, Oregon has been a regional pace-setter in arranging teacher "updating" workshops in local industry settings taught by industry personnel. Late afternoon sessions were held over a period of weeks so faculty from various subject areas could hear and see new developments in the workplace. Graduate credit is sometimes available for these activities.

"Open Enrollment" in Industry Classes

Some businesses can be approached about encouraging both students and faculty to enroll in corporate sponsored training events on a space-available basis. While these classes may sometimes be highly technical in nature, they do present valuable opportunities for the right kinds of students or teachers.

Contributions

Donated Equipment

Legislation is in place or pending in many states to encourage private sector donations of quality equipment for school and college use. Some school administrators carefully set criteria for the used equipment that they will accept, while others welcome and document any donation for its goodwill value, and then simply dispose of what is not usable. Area vocational skills center directors in Washington state recently reported sizeable donations of computers, small engines, new automobiles with high-tech components and motorcycles--all just for the asking, and arranged in some cases through successful graduates now working for the donating company.

Financial Support

Direct grants to schools and colleges for scholarships, materials or equipment are now often funneled to foundations created by schools, even at the K-12 level. A separate board of directors can then allocate funds to areas of high need while private sector donors enjoy tax benefits for supporting education.

Awards for Excellence

Private sector support for excellence in school achievement, teaching performance, and volunteer participation is catching on around the country. In some instances, recognition comes in the form of cash or scholarships; in others, such as school volunteers, plaques are awarded. In the case of students, this is one way to reward accomplishment and should be available to all students no matter what their subject matter specialization or post-secondary plans. Honoring volunteers and lay advisory committees has also been a common practice with business and industry often footing the bill for a recognition banquet.

Hidden Support

Some schools have discovered that if the private sector cannot provide outright donations or loaned personnel, there are

some less visible ways to help. For example, one company's computer experts created a software program to organize community volunteers as classroom resources. Another offers graphic support for student recognition certificates.

Materials and Software

When teachers are looking for reality-based learning opportunities for students, industry is willing to step in when asked. Automotive teachers, for example, will frequently obtain parts manuals and repair guides for student reference--a direct way to help students encounter the fact that reading, writing and math really do play a big role in the daily lives of automobile service workers. Software actually used by the private sector can be a valuable adjunct to school instruction when used by a teacher who knows its proper application.

Policy Development

Advisory Committees

Pressures on schools for a variety of reforms mean it is no longer possible to get by with "rubber stamp" advisory committees. Parents, graduates, and particularly employers provide not only political support, but can and should help shape the curriculum itself.

Some schools build support for program improvement to meet technological challenges by assembling blue ribbon teams of industry and business representatives to examine classrooms, equipment and curriculum. In those cases where a private sector organization--say the Chamber of Commerce--takes the leadership, there is even more credibility. The Anchorage School District and Chamber of Commerce provide a recent example of this kind of interaction. While vocational programs have utilized advisory committees for years, perhaps it's time for "core courses" in academic areas to adapt a similar format.

Technical Assistance

The state of Washington has created a business-oriented "roundtable" comprised of major employers who have taken it upon themselves to serve as watchdogs and political support groups for school reform efforts extending from the elementary through the graduate school level. Released time executives have donated thousands of hours to the effort.

Job Market Analyses

While the private sector admits it has as much difficulty as anyone else predicting labor supply and demand, industry groups will often support surveys of future needs and skill requirements. The American Electronics Association is one, for example, that gathers both state and national data. The state employment service in each state conducts rigorous employer surveys every two or three years in each major industrial classification.

The Other Side of the Coin

If we ask business and industry to help us deliver skills for a technological world, should there be a quid pro quo? We found evidence that there is indeed much going on to make the partnership between business and education a two-way street.

The biggest payback all employers seek is a more productive work force open to the possibilities introduced by technology. Some would like to see more planning between secondary and post-secondary schools as exhibited in so-called "two plus two" programs which enable students to accomplish many prerequisites at the high school level followed by advanced standing in post-secondary schools. There are many other ways schools can provide services to local business and industry in return for private sector help:

Actual Instruction in School or Work Site

Sharing school personnel either during off periods or off hours is a trend we are seeing not only in the Northwest but nationwide. This is particularly evident in so-called "adopt-a-school" programs, where activities have included:

- Basic computer literacy instruction
- High school completion classes
- Career planning classes
- "Brushup" classes
- Short term training
- Pre-retirement classes

Use of School Facilities/Resources

"Community Schools" is the natural response to taxpayers' concerns that their investment be open to all ages for longer time periods. Even without a formal community education coordinator, there are ways that schools can offer their physical plant and equipment to meet private sector needs:

- School library and career center
- Gymnasium, pool
- Computer lab
- Playing fields
- Conference rooms
- Auditorium

Subcontracts and Sales of Products and Services

Students are capable of operating small businesses as part of class work. Some schools have adopted the entrepreneurial spirit and operate small scale businesses. Examples include:

- Assembly of components
- Light construction
- Bookkeeping services
- Landscaping
- Catering, restaurant
- Entertainment
- Artistic/graphic services
- Auto repair/maintenance
- Housekeeping services
- Retailing

Management Assistance

Educators can offer managers in small businesses some unique kinds of help:

- Staff development planning
- Staff evaluation and performance improvement techniques
- Searches for reference material
- Administration of typing/ keyboarding screening tests for job applicants

Higher education has led the way in some innovative partnerships with industry emphasizing the research aspects of technological development. One example of this is under way in the state of Oregon where the Advanced Science and Technology Institute was created in the Willamette Valley. Members of ASTI typically enter into "industrial liason programs" in which several private sector companies in a similar field agree to support a particular research program at the university and in turn receive regular research briefings from university personnel. In addition, member corporations can send their own staff to the college campus for one-on-one interaction with university-based scientists. According to Director Richard Hersch, University of Oregon, this has been a very profitable venture for both parties. Businesses often do not have the resources to engage in comprehensive scientific research and cannot afford their own laboratories. By sharing the costs with other companies, they are able to support impressive research efforts at the university level.

Another unique project called the Oregon Partnership Education Program (OPEP) was initiated by several electronics firms and Oregon State University to develop instructional modules using interactive computers/video technology. For information on this effort, contact Dr. Dan Dunham, Oregon Alliance for Program Improvement, School of Education, Oregon State University, 112 Batcheller Hall, Corvallis, OR 97331-2404, (503) 754-2179.

Resources to Consider

For additional reading on these topics, you may wish to examine the following publications:

American Association for Vocational Instructional Materials (AAVIM). Linker's Tool Kit, AAVIM, 120 Driftmier Engineering Center, Athens, GA 30602

Business-Higher Education Forum. The New Manufacturing: America's Race to Automate, American Council on Education, Suite 800, 1 Dupont Circle, Washington, D.C. 20036

Martin, Robert. Business and Education: Partners for the Future. U.S. Chamber of Commerce, 1615 H Street NW, Washington, D.C. 20062 ($15).

Southern Growth Policies Board. "Public-Private Cooperation and Human Resource Development". Foresight #2, July 1983.

The California Round Table. How Can We Help Students Prepare for Tomorrow (Improving Student Performance in California: A Guide to Community Involvement). Contact: Mary M. Anderson, Executive Director, California Round Table, 575 Market Street, Room 1942, San Francisco, CA 94105-2856 (415) 974-5721

Resource organizations that can help:

- National Association for Industry-Education Cooperation (NAIEC)

  NAIEC is the national clearinghouse for information on industry involvement in education and is the principal advocate for fostering industry-education joint efforts for school improvement and economic development. For over twenty years it has focused on assisting communities and states to develop the structure and the process for long-term cooperation between the two sectors. Contact: Donald M. Clark, President, NAIEC, 235 Hendricks Blvd., Buffalo, NY 14226 (716) 846-4191

Two regional organizations with valuable ideas to share include

- Partnerships in Public Education (PIPE) program in Seattle - Cynthia Shelton, PIPE, 215 Columbia, Seattle, WA 98104

- Regional Youth Employment Council in Portland - Tom Nelson, Executive Director, Regional Youth Employment Council, 627 N.E. Halsey, Portland, OR 97232

Equipment Resources

The following sources are available in the Northwest for useable equipment to support vocational education programs.

- Property Redistribution Center, (formerly Surplus Property), Government Services Administration, Auburn, WA (206) 931-3931

- National Association for the Exchange of Industrial Resources, 550 Frontage Road, North Field, IL 60093 (312) 446-9111

- Defense Industrial Plant Equipment Center, Memphis TN 38114 (Contact: Eddie Carter, Jr., Chief of the Defense Industrial Reserve Branch)

- Tektronix Donations Program, Mr. Tim Richardson, P.O. Box 500, Beaverton, OR 97077

- The Boeing Co., 20651 84th South, Kent, WA 98032 (206) 773-9684

Editor's Note

IDEAS FOR ACTION IN EDUCATION AND WORK synthesizes information from research and practice on topics of current interest. Other titles in the series include:

Removing Barriers to CETA/School Collaboration (out of print)

Improving Learning in the Workplace

Teaching Independent Living Skills to Youth

Volunteering...Pathway to Paid Employment

Striving for Excellence: Middle Schoolers Study "Work"

Learning Responsibility: The Importance of the Home, School and Workplace

Northwesterners Out of Work: The Human Costs of Unemployment

Northwesterners Out of Work: The Effects of Job Dislocation

Choices for Migrant Youth

Out of the Classroom, Into Industry: Summer School for Teachers

Building Work Skills Through Volunteering

Striving for Excellence: Applications of Successful Business Principles

Technological Literacy Skills Everybody Should Learn

Meeting the Challenge: Northwestern Communities Move to Help Dislocated Workers

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