

Cooperation Between Business and Education to Meet the Challenge of a Changing Environment

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Articles in professional publications with titles like "Academe and Business Tighten Ties: Corporate Giving Nears 1.5 Billion" (Desruisseaux, 1985) and "Carnegie Report Calls Corporation a Major Part of the U.S. Educational System" (Scully, 1985), or "Partnerships: Schools Forging Relationships with Business Community" (Glass, 1984) are a sign of the times. The business/academia relationship continues to change and develop as the eighties roll along. Huddleston and Fenwick (1983) indicated that in 1981 alone "more programs between education and industry were established than during the previous five years."

Referred to variously as "partnerships", "joint ventures", "collaborative efforts", "cooperation", and so on, these relationships are increasingly important to colleges and universities, to the businesses and industries with which the colleges and universities interact, and, to a relatively smaller degree, to public schools. We tend to talk about these relationships as if they were a new idea, which of course they are not. One of the earliest examples of such cooperation was in 1865, when Ezra Cornell and Andrew Dickson White joined business and scholarship together to found Cornell University (Schmotter, 1983). However, the relationships have now become generally symbiotic. Business and education must support each other in order to achieve the broad goals of our society. Warmbrod, Persavich and L'Angelle (1981) reported on 219 exemplary programs, and many others have been reported in recent literature (Jasso, 1984; Sullivan, 1984; Worthy, 1985). Moreover, the experience is not a uniquely American one.

Such cooperation is growing in Ireland (Kelly, 1985; O'Gorman, 1985), the Netherlands (Van Meygaard, 1985), and other parts of Europe (Michel, 1985). In this paper the major forms business and education partnerships currently take and the benefits of cooperation to the parties are presented. In addition, a review of factors that encourage or enhance business-education cooperation and some of the many barriers to such cooperation are explored.

Method

A structured review of a sample of recent literature on business/education cooperation was conducted. Forty-three articles and documents based on content relevance and accessibility were selected from the *Education Index* and the *Business Periodicals Index*, or from citations in the literature. One additional document, an Arthur Andersen & Co. (1984) report titled, "Joint Ventures Between Business and Higher Education: Human Resource Evaluation" was also included in the review. Each article or document was read, and verbatim statements were categorized as a (an):

- benefit,
- impact,
- facilitating factor,
- obstacle, or
- example of cooperation.

The verbatim statements were transcribed to a word processing file. Each statement was coded to enable sorting using the capabilities of the word processor. When a statement served two categories, it was entered twice and coded appropriately. Approximately 300 statements resulted from this process and were then sorted into the respective categories. Each category was analyzed into the subcategories that were summarized to form the basis for the results reported here.

Forms of Business-Education Cooperation

Four fundamental forms of cooperation

were found. They were: faculty consulting, training program development and delivery, training program evaluation, and support of research.

Faculty Consulting

Hiring a faculty member as a consultant to address a specific need is one of the most frequently used forms of cooperation (Foote & Borsting, 1985). Through this vehicle a business is able to use the expertise of university faculty on an "as-needed" basis. Thus the business receives expert advice and the faculty member receives pay and valuable, non-university experience.

Training Program Development and Delivery

Employee training is a significant form of the cooperative relationship and may vary depending on its origins and intent.

Work-education programs are cooperative efforts designed to prepare students to join the work force before completing the schooling process. These programs include internships, visiting speakers and unpaid work experience for school credit (Zemke, 1985).

Adopt-a-school programs, in which a local company provides an elementary or secondary school with needed resources (e.g., aides, specialty teachers, equipment, incentive funds), are also a growing phenomenon. Started by the Atlantic Richfield Company in Los Angeles (Management Review, 1983) and spreading nationwide, the Adopt-a-school program has been effectively used in cities such as Akron, Chicago, and Boston.

Consortia, in which a group of companies jointly sponsor training programs for the general benefit of an industry, are also contributors to the business/education relationship. For example, Atlantic Richfield Company (ARCO), San Diego Gas and Electric Company, and Westinghouse Electric Corporation joined with the American Federation of Teachers, Joint Council on

Economic Education, National Council for the Social Studies, National Education Association, National Parent-Teacher Association, and National Science Teachers Association to have a K-12 energy education program developed (Sullivan, 1984).

Companies working singly or in joint ventures with government agencies to support programs in schools contribute too. The Greater Cincinnati Industrial Training Corporation, cooperated with General Electric Company and the U.S. Department of Labor to produce and distribute courses in industrial machining and fabrication (Zemke, 1985). Hewlett-Packard and Palomar Community College jointly sponsor a program in general electronic and microelectronics technology, and Fairchild Industries supports graduate work experience for masters and doctoral level students in electrical engineering at the University of Maryland (Huddleston & Fenwick, 1983). Finally, in the first-of-its-kind program for security education in the U.S., Northern Arizona University and Honeywell have developed a five-month "in-depth, hands-on security experience" that students complete before graduation (Security Management, 1981).

In other cases, companies, professional societies or consortia join with schools to provide training as in-service for their employees or other adult learners. The University of Cincinnati and Miles Community College, Montana, provide specific training for employees of Proctor and Gamble and Montana Power Company (Huddleston & Fenwick, 1983). In a slightly different approach to in-service, Arthur Andersen & Co. sponsors a professor-in-residence program in which selected university professors are invited to spend a semester or academic year working in the Center for Professional Education.

Training Program Evaluation

Universities also can provide evaluation expertise and an "independent" view in assessing the impact of existing training programs. For example, Vanderbilt University's Institute for the Advanced Study of Corporate Learning Environments and the New York State University College at Buffalo have both recently been involved in such studies (Huddleston & Fenwick, 1983). Sometimes the evaluation link is one step removed from the university/business recipient link. The Vander-

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bilt group has used private consultants to provide direct service to a business in conducting needs assessment and establishing evaluation criteria, and the university has then supplied technical content and instructional staff and facilities for the training (Zemke, 1985). In a similar design, Arthur Andersen & Co., through its education consulting practice, worked with a large business machines manufacturer to plan, design, and evaluate a training program that subsequently received university accreditation.

In the preceding examples there was direct and immediate value for the efforts of both parties. Faculty receive pay for teaching, and businesses receive training and evaluation of the program. In some relationships, the *quid pro quo* may be less clear.

Support of Research

Cooperation in research to enhance technology transfer is a highly visible type of interaction between the academic and business communities. Businesses can draw upon the expertise of large, well-established research teams in universities by supporting research that might have commercial potential.

The Stanford Center for Integrated Systems is one example of such research cooperation. It is a research facility in which academic and industrial scientists work side by side. It was created through support by the U.S. Department of Defense and 20 microelectronics firms (Langfitt & Ambrose, 1985). Another example of this type of support is the Microelectronics and Information Sciences Center at the University of Minnesota. Control Data Corporation has donated funds, facilities and processing expertise to allow the Center to conduct highly technical research (Schilling, 1983).

Support for research is also provided in direct contracts, state-subsidized programs, shared facilities or equipment,

and in other ways. In order to ensure a significant and assured recurring payoff to such collaboration, the benefits to each party and the factors that facilitate cooperation must be clear.

Benefits of Cooperative Arrangements

Both parties must benefit from cooperation if it is to exist long term. The benefits recognized are fairly easily sorted into benefits to business and benefits to education.

Benefits to Business

The most commonly noted benefits to business resulting from cooperation are improved recruiting—based primarily on higher levels of entry skills resulting from training partnerships or on internships (Jasso, 1984; Michel, 1985)—and business gaining earlier access to technological improvements (Agres, 1983; O'Gorman, 1985). The quality of recruiting and the speed of technology transfer can be critical to a business in maintaining its competitive advantage.

Two other benefits that accrue to business are increased effectiveness of employees taught by expert instructors, and access to the research expertise within the universities (Langfitt & Ambrose, 1985; Darkenwald, 1985; Michel, 1985; O'Gorman, 1985).

Also noted as business benefits are improved morale (Jasso, 1984) and improved retention of personnel (Huddleston & Fenwick, 1983). These effects are assumed to arise from greater involvement in the community, as in adopt-a-school programs, and through the company attending to employee self-development needs by providing access to good training programs.

A final benefit noted for business is improved public relations (Jasso, 1984). The public relations benefit of direct contributions to schools or community projects is evident, but in today's environment some of the social respon-

sibility for managing environmental change and skill/knowledge obsolescence falls to businesses. Those businesses that conspicuously contribute to the effort through cooperating with local educational entities will be more likely to be perceived as acting for the public good.

Benefits to Education

Two very prominent benefits emerged for education: (a) increased revenues, resources, and equipment, (Kelly, 1985;

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Langfitt & Ambrose, 1985; Schmotter, 1983), and (b) the provision of practical experience for teachers and students (Langfitt & Ambrose, 1985; O'Gorman, 1985; Robinson, 1985). Although increased revenues was seen by many as a benefit, at least one article presented it as a potential problem (Zemke, 1985). There is some sentiment that revenue replacement may redirect the mission of universities and that the current funding of projects is aimed not at improvement of curricula or schools, but to short-term objectives of the participating businesses. Other benefits for education were the enrichment of the educational process (Schilling, 1983), increasing enrollments through the captive business audience (Boyle, 1983; Burke, 1985; Zemke, 1985), and improving retention of faculty (Langfitt & Ambrose, 1985).

The benefits of cooperation to both business and education are strong and varied. They can lead to increased technological innovation and an improved flow of information and ideas in both directions. There are many factors that operate to promote the business-education interactions that yield these benefits.

Facilitating Factors

The factors that facilitate or encourage business-education cooperation fall into three categories: (a) attitudes and procedures, (b) environmental pressures, and (c) other incentives.

Attitudes and Procedures

Successful cooperation depends upon commitment and the perception of mutual benefit by both parties. There must be a match between the business and the educational institution (Agres, 1983; Hansen, 1985). A strong industry or company will need strong scientific capacity in a university to benefit from a research partnership. Supporting structures (e.g., inexpensive office space, part-time appointments) may be provid-

ed by a strong university to support fledgling businesses or entrepreneurs.

The pivotal element in successful cooperation is joint planning (Agres, 1983; Darkenwald, 1983; Hagen, 1983; Fink & Kosecoff, 1986; Jasso, 1984; Marketing News, 1981; Michel, 1985). Roles and responsibilities, outcomes processes, and time schedules must all be clearly defined and communicated. Through joint planning carried out at an appropriate level of detail, the parties may come to understand one another better and communication patterns will be established.

If the attitudes and procedures necessary to make cooperation work are not cultivated, widespread cooperation will not be achieved. Sometimes pressure from external factors can stimulate development of appropriate attitudes and procedures.

Environmental Pressures

Four significant environmental factors have contributed to the increase in business/education cooperation over the past few years. The most potent and most frequently mentioned of these is the growing importance of the international marketplace and the attendant international competition (Bradley, 1981; Boyle, 1983; Burke, 1985; Business Higher Education Forum, 1983; Huddleston & Fenwick, 1983; Kelly, 1985; O'Gorman, 1985; Robinson, 1985; Schmotter, 1983).

A second major factor that increases the push for cooperation is rapid change in technology and knowledge (Huddleston & Fenwick, 1983; Langfitt & Ambrose, 1985; Michel, 1985; Pratzner, 1985; Schmotter, 1983). Close links between businesses and universities means that the transfer of technology or knowledge takes place routinely and quickly. This can mean the difference to the business of having a competitive edge or of being second best. The support provided by business also helps the school break new ground and use new information more effectively for its own purposes.

Other significant environmental pressures are declining enrollments and public spending cuts (Fink & Kosecoff, 1986; Kelly, 1985; Schmotter, 1983; Zemke, 1985; Van Meygaard, 1985). While these environmental pressures encourage cooperation, there are also incentives or facilitating factors that are not as broad but still can have significant impact on cooperation.

Other Incentives

Educational institutions have a pool of academic and research expertise that businesses can tap and businesses have money, equipment and other resources from which schools can benefit (Boyle, 1983; Kelly, 1985; O'Gorman, 1985; Pratzner, 1983; Robinson, 1985). Other incentives and facilitating factors that may make a difference are geographic proximity, local shortages of prepared personnel, and local student needs, government incentives, and person-to-person contacts (Fink & Kosecoff, 1986; Huddleston & Fenwick, 1983; Langfitt & Ambrose, 1985; Gorman, 1985; Van Meygaard, 1985; Whitworth, 1983). Finally, it is important that university reward systems be established so that teaching and research faculty are recognized for their contribution to cooperative ventures (Arthur Andersen & Co., 1984; Kelly, 1985). If the reward system does not serve as an incentive, it may function as a barrier. There are other barriers to cooperation as well.

Barriers to Cooperative Arrangements

Baldwin and Green (1984) identified three major themes related to obstacles to cooperation: *attitudes*, which they described as perceptions held in each community of the other; *administrative philosophy*, which focused on the differing missions and accountabilities of business and education; and *profes-*

sional work styles, which dealt with issues related to determining the scope and directions of research and rights to (or ownership of) results of sponsored research. These themes appear in the current literature (although they have been renamed here) as perceptions, missions, and academic rights and ownership. In addition, a fourth issue, political influences, was identified as a potent barrier.

Perceptions

Whether perceptions are accurate or not, they affect the level of trust and type of interaction that occurs in any partnership. Fink and Kosecoff (1986) suggest that the educational decision-making process is sometimes slower than is conducive to interaction with business. The perception among many potential partners from business is that academicians do not appreciate the critical nature of timeliness. For a business the timeliness of information can make a significant difference in its value. If a consultant (or an employee) is a little late in delivery, decisions may be made without benefit of critical information. Perceived reliability is the issue. Business needs to be able to "... rely on the educational community to deliver the desired product on time" (Boyle, 1983, p. 16). Further, there is a significant barrier to cooperation represented by a business attitude of "skepticism about the interest and capacity of educational organizations to serve the needs of industry" (Darkenwald, 1983, p. 242). Also the stereotype of the theory-focused thinker unable to quite come to grips with short-term practical applications still holds valid for many businesses. On the other hand, the academic scientist often views the industrial counterpart as profit-oriented, interested in the short run, motivated by limited goals, and neither attuned to nor particularly interested in the development of knowledge, deep understanding, and insight for their own intrinsic

value. Zemke (1985, p. 23), summarized the barrier well when he said, "Industrial trainers regard university educators as ivory-tower theoreticians. Spokesmen for educational associations seem to view profit-making training vendors as thieves."

Missions

The university's mission, to serve the public good through the search for knowledge and through teaching, is viewed by some to be antithetical to the mission of business which is to serve the interests of its stockholders (i.e., make a profit) by providing products or services to meet the needs and wants of buyers. The issue of most concern in relation to organizational missions is: By whom and on what basis is the research/teaching agenda established?

It has been observed that industry is reluctant to invest in R&D directed towards the development of fundamentally new technologies and that its orientation is toward applied rather than basic research. Given these conditions, it is feared that a university tied too closely to business for funding could be influenced to modify its fundamental mission. The concern is a broad one. If business is able, through funding, to dictate the research agenda, the effects could expand to (a) tenure and promotion of professors who have the closest ties to business and who generate large funded projects, and (b) the management of student programs and support (leading to narrow topic assignments for both graduate research and courses). Finally, there is the concern that if, over time, the relationship between business and academia continues to increase, professors may neglect their teaching and administrative duties as a result of which their institutions and students will suffer (Kelly, 1985; Management Review, 1984).

Academic Rights and Ownership

Closely related to the issue of business

gaining an undue influence over the research and teaching agenda of colleges and universities are the issues of academic freedom (Langfitt & Ambrose, 1985; Management Review, 1984), ownership of intellectual property, proprietary information, and patents and royalties (Langfitt & Ambrose, 1985; Schmotter, 1983). Coberly (1985) contends that information exchange through publishing is a fundamental responsibility of colleges, and that secret or proprietary work that limits students or faculty in the free exchange of information is detrimental. There is a need to establish legal rights to intellectual property (copyrights, computer programs, etc.) in the initial agreements with a research sponsor.

Politics

The political barriers to collaborative efforts occur on three levels. First, there is no national agenda for collaboration and no real leadership has emerged to shape and steer policy (Huddleston & Fenwick, 1983). Second, state executives and legislators make decisions about support or encouragement of programs based on political considerations and these decisions sometimes dilute the effects of concentrated effort or funding (Jaschik, 1986). Third, the politics within education encompass issues like contractual limits on assignment and scheduling (Jasso, 1984) and the use of tax monies to provide direct support to a business entity (Pratzner, 1983).

Ways Around the Barriers

Perceptions, if they are erroneous, will probably be changed only through significant interaction. As collaborative efforts increase in number and breadth, stereotypes and inaccurate perceptions may be replaced with understanding of the different philosophies under which each community operates.

The issues related to mission and academic rights and ownership are complex. On the one hand, businesses must protect their competitive advantages in order to succeed. On the other hand, the university must be true to its missions, protect academic freedom, promote basic research, and disseminate new knowledge and ideas. Colleges and universities and their business partners must, therefore, enter into agreements on an equal footing, and the agreements must be clearly spelled out to include rights and responsibilities of the parties. There needs to be genuine reciprocity

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and mutual benefits. One way around this barrier is to initiate third-party funding sources so that industry is not placed in the role of paying client (Arthur Andersen & Co., 1984). Another approach is through institutional policies. The University of Pennsylvania, for example, established guidelines that set the following expectations: (a) No sponsored projects are to be accepted if results cannot be publicly disseminated, (b) The university will patent all discoveries and grant all reasonable use to the public, and (c) university researchers will guard against conflicts of interest with the corporations with which they are associated (Management Review, 1984).

Finding resolutions to political barriers is not an easy task. There will always be the politics of the education community and local and state politics with which to deal. The issue of a national leadership, however, could be taken up by an organization or group of organizations coming together to try to develop a global plan for cooperation.

Conclusions

The decade of the eighties has become a pivotal period for the passage into the information age. Rapid technological advancement has made information potentially more accessible and certainly more important to the processes of business and inquiry. In addition, the move toward a global economy has heightened pressures on both business and education to better develop and use the human capital upon which both depend. Working better with human capital and taking advantage of technological advances often means working together for businesses and educational institutions.

The benefits from cooperation for both parties are strengthened positions and improved ability to react appropriately to the changing environment. The facilitating factors are many, but the barriers are potent. The challenge to the business and education communities is for each to maintain its unique mission within a recognized interdependence.

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