

Higher Education and Business Relations: The Case of the Education Utility

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Abstract. The Education Utility, a project of National Information Utilities Corporation and AT&T, is an electronic delivery and management system that will provide instantly, to the desks of educators and learners, located anywhere in the world, massive quantities of continually updated instructionally interactive information, and will permit a high level of networking among users. The two corporate entities involved in this information technology project have established certain linkages and joint activities with higher education institutions. The nature of these existing and planned linkages is described, together with some lessons that have been learned about this business-university relationship thus far.

Introduction

There appears to be a growing interest in relations between higher education institutions and businesses as evidenced by the availability of both descriptive and analytical literature on the topic in books (Parnell & Yarrington, 1982; Mathews & Norgaard, 1984; Lynton, 1984; and *Industry and university: New forms of co-operation*, 1984), as well as in journals (Nelkin & Nelson, 1986; Levinson, 1984; Mai, 1984; Varron & Kikich, 1985; Kornhauser, 1984; and McDonald, 1985). A review of the *Current Index to Journals in Education* (CIJE) entries on university/industry relations reveals numerous articles on the topic. In one casually selected six-month cumulative index of CIJE (January-June, 1985), for example, about ten citations were found related directly to university and/or college and

business/industry relations. This literature expansion follows, of course, from an increase in the number and kinds of relationships that have developed between higher education and business during the past decade or so.

The reasons for this increase in cooperative ventures are many, but the primary motivation is the recognition by educators that the resources of business are essential to the continued health of higher education, and the corresponding realization by businesspersons that the future of business enterprises may be enhanced if business works more closely with higher education institutions on research, development, and training efforts. In the best of cooperative relationships, everyone benefits. There is a growing awareness that the current and future complexities of our global society require that virtually *all* sectors of society learn how to work with the other sectors to ensure survival in a highly interdependent world.

While an increase in university-business relations delights many higher education officials, the situation worries others. There are concerns that our institutions of higher education are being "bought out" by business, and that the historic role of higher education in society is thus being compromised or eroded. Other educators see the links with the business community as a logical and necessary approach to addressing major social and economic issues in society. As the debate about the appropriateness and/or desirability of a higher education/business relationship goes on, the relationship itself continues to grow.

This paper contains a preliminary analysis of one higher education/business relationship that is in the early stages of development. The relationship seems worth examining even at this early stage, for the ultimate character of this particular relationship could be both highly complex and massive in scope, and could have tremendous impact on

both business and higher education. The business entities involved are a small corporation called National Information Utilities Corporation (NIU), and a larger corporation called American Telephone and Telegraph (AT&T). These two corporations are working together to create a system called the Education Utility. There are several institutions of higher education involved in this venture with more joining up in the near future.

Following a brief description of the project known as the Education Utility, a review is presented of current and projected future activities involving the corporate and higher education participants in the development of the Education Utility. Some preliminary lessons about higher education/business relations learned from the Education Utility project are presented.

The Education Utility

The Nature of the Education Utility

The Education Utility is an electronic delivery and management system that will provide instantly, to the desks of educators and learners located anywhere in the world, massive quantities of continually updated instructionally interactive information (software programs, databases, sophisticated graphics capabilities, news services, electronic journals, electronic mail, and a host of other kinds of instructional and administrative materials). The technologies to make this kind of information resource base available to learners are complex, yet designed to be virtually "invisible" to the user. Given space limitations in this article, it is impossible to spell out in great detail the technologies involved, but a very brief overview of how the Utility system works may be helpful to the reader. For those interested in more details about the technology and how it works, consult a recent volume by the author (Gooler, 1986).

Components of the Education Utility System

All of the information resources mentioned above (a constantly expanding and dynamic set of materials), as requested by a particular teacher or learner, will be stored and accessed through a main "server" computer at individual educational sites (such as a classroom in an elementary school or university, continuing education center, or business). These local host computers will be directly connected to another, larger central computer called the Network Control Center, that will serve as the main storage reservoir for all information in the Education Utility system. This connection will be made through "electronic highways," telecommunications channels (such as those available through satellite broadcasting) that are most easily and inexpensively accessed by a given local site. The transmission of information resources from the main network control center to the local sites will occur in "real-enough time," when telecommunications costs are least expensive. It should be noted that these electronic highways are already in place, but are not used extensively during the evening hours. Tremendous amounts of information can be moved along this highway, at relatively low cost.

At the local site level, individual users of the Education Utility will gain access to the information resources in the Utility through microcomputer terminals. Each terminal will have tremendous computing power in and of itself, so that instructional and information resources that are accessed by the individual user can then be manipulated using the computing power in each microcomputer or terminal. In any given setting, each learner could be working on a different database or educational program, or groups of learners could be working on a common program or information resource. The combinations are virtually endless. Teachers will thus be able to truly individualize educational programs for all learners, while maintaining a capacity for groups of learners to work together. In order to make this all feasible, the Utility will contain instructional management capabilities that will permit teachers to manage effectively the learning progress of all learners, even when each of those learners is working on different programs, at differing rates, and with differing outcomes. The system will also contain the administrative software necessary to permit teachers, administrators, and learners to track

academic progress, report results to appropriate parties as needed, and, in general, manage an instructional environment that features individualized, self-paced instruction.

Another critical component of the Education Utility is the electronic mail feature. The Utility will permit learners to communicate with each other through quick, inexpensive electronic mail almost anywhere in the world. The learning and cultural development prospects available through such a networking capacity are virtually without precedent.

Figures 1 and 2 contain a general depiction of the Education Utility system.

Benefits of the Education Utility

The Education Utility, through its integration of technologies and its vast information resources, as well as the tremendous computing power it makes available to each user, will provide numerous education and information benefits to all learners, whether they are elementary school children, adults studying for another profession, researchers, or anyone who needs information to carry out progress toward some desired goal. Teachers will be available to guide learner activities; children with handicapping conditions will be able to study at their own pace; instructional materials will always be current because they can be regularly updated and made available to all users; all learners will have access to the world's information resources, and thus be freed from the constraints imposed by local conditions. These are only a few examples of the benefits to be gained from using the Education Utility. For a more detailed example of how the utility might work see Gooler, (1986, p. 37).

The Education Utility will have profound impact on what goes on in elementary and secondary schools in America, but the application of the Utility goes much beyond that single, albeit very large enterprise called elementary

and secondary education. The Utility also has tremendous implications for what goes on in continuing professional education, in international education and information sharing, and in corporate education. The Utility has definite potential applications in higher education, in vocational and career counseling centers, libraries, prisons—anywhere information is needed, analyzed, used. The Education Utility represents nothing less than a vehicle for a significant transformation of education and a host of other service areas, such as agriculture and health care delivery.

The reader may be able to see from this cursory description of the Education Utility that what is being proposed in this system is profound and comprehensive. The Utility represents what may be the first important step into the Age of Information or, as the founder of the Utility, Jack Taub, likes to say, the "Age of Intelligence." Virtually all sectors of society will be influenced by this development. It is thus apparent that the relationships developing between the Education Utility and higher education institutions can be of great consequence and complexity, and can enhance the business/university relationship further.

In the next section of this paper, some of the kinds of cooperative activities that have developed thus far are outlined, together with some projections for additional near-term activities.

Cooperative Activities

The development of the technological aspects of the Education Utility began nearly eight years ago when Taub first created National Information Utilities Corporation (NIU). During the early years, efforts by that corporation appeared to focus on two main events: defining the scope of the Utility concept, and developing the necessary hardware and software inventions that would make the concept practical. Relatively little attention appears to have been paid

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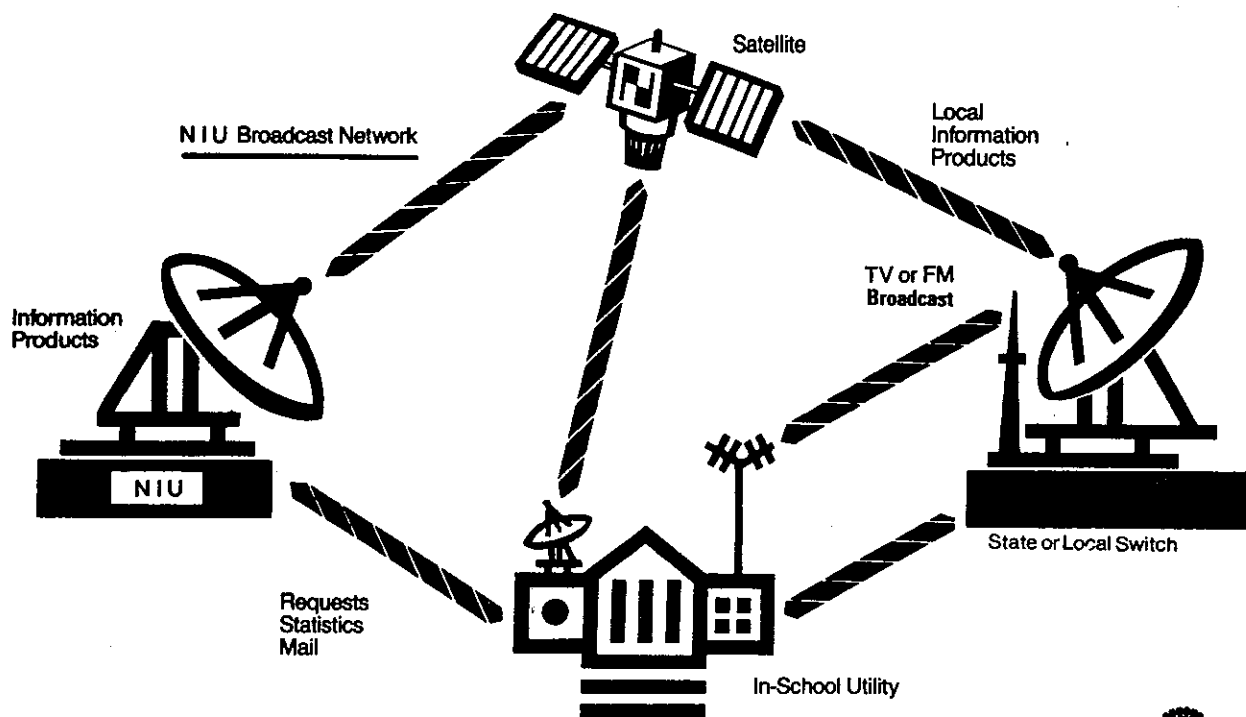


Figure 1

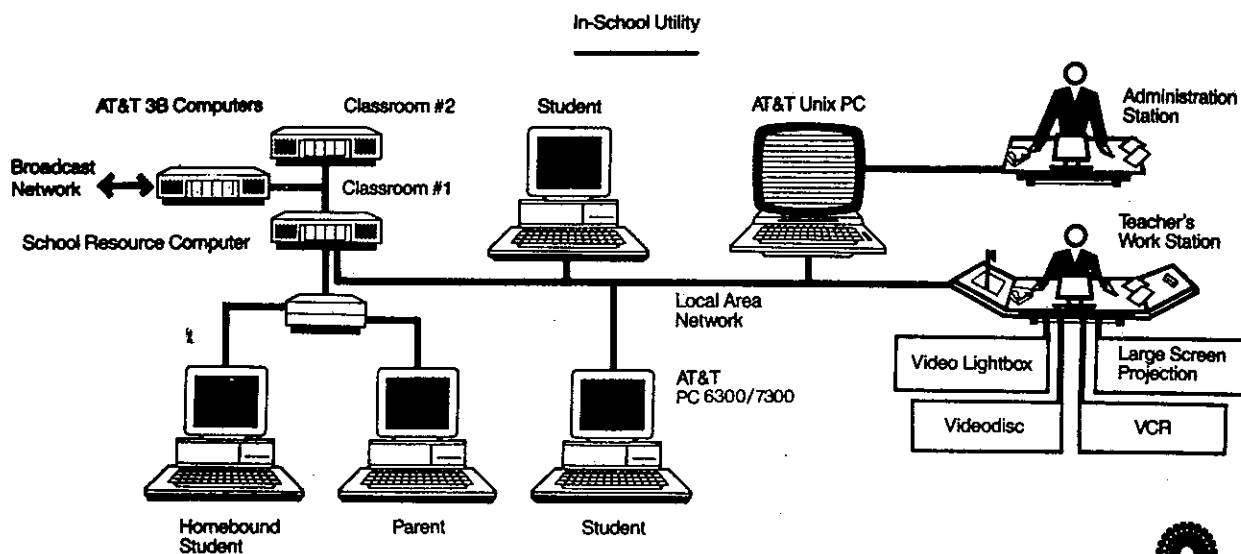


Figure 2



to many specific *educational* or *instructional* aspects of the concept. The Education Utility concept was not conceived by an educator, but by an individual who, having never completed a formal high school diploma, had nonetheless achieved a great deal of success as a businessman and entrepreneur. (Taub was a founder of The Source, and was the owner of the Scott stamp collecting company.) The initial concerns of the business persons involved in creating the Utility were of necessity technical concerns. If the technical problems could not be solved, then the dream underlying the concept could not be pursued.

Linkage Activities Undertaken to Date

Later, however, the educational concerns associated with the Utility became of much greater interest to those at NIU Corporation and AT&T. As a result, linkages with elementary and secondary school officials, and higher education personnel were established. These linkages have manifest themselves through three kinds of activities thus far:

1. A number of focus groups have been formed to investigate specific issues related to the substance and implementation of the Education Utility. Higher education personnel have participated in these focus groups, the intent of which is to provide advice and guidance to personnel at NIU and AT&T concerning developments for the Utility. For example, a focus group was convened to discuss the kinds of services and tools educational administrators might want included in the Utility, and how those administrative tools and services might most effectively be conceptualized and structured. The advice and guidance obtained from these focus group deliberations are being used by the individuals and companies developing classroom and school management software for the Utility. This kind of consulting relationship between higher education personnel and Utility personnel appears to be having a very direct and obvious effect on the character of materials being developed for use with the Utility.

2. Fundamental to the long range success of the Education Utility concept is the kind and quality of training provided for teachers, administrators, learners, and others who will eventually use the Utility. Of primary concern has been the question of how to train teachers to use an instructional resource that goes well beyond anything that has existed in the past. It is evident that the Utility has the potential to transform radically the very

character of teaching and learning, but *only* if the Utility is seen as a tool to be integrated into broader conceptions of instructional and learning strategies. It was recognized early that few teacher preparation programs prepare teachers to deal with an information resource like the Education Utility.

In an effort to address the question of training, NIU and AT&T hosted a meeting of college of education deans and directors of teacher and administrator education programs. This group, representing about 25 universities, was asked to consider how to train teachers to use the Education Utility. That initial meeting provided a great many ideas on the topic and, perhaps more importantly, formed the basis of a network of interested higher education personnel. Attempts have been made to keep that group of institutions informed about progress in the development of the Utility. A number of the people who attended that initial meeting have interacted with the Utility project in a variety of ways throughout the last year. One of the institutions involved hosted a follow up meeting of higher and elementary/secondary education personnel in the area of that university to continue discussions about how the Utility might best be implemented.

All of the information resources will be stored and accessed through a main "server" computer.

- Representatives from NIU attended that meeting. Further, a follow-up meeting was held in conjunction with the American Educational Research Association Meeting to gain feedback from higher educators as to how the Utility might best be designed to facilitate educational research.

3. Higher education personnel have been involved in discussions in several states about shaping a state-wide plan for coordinated implementation of the Education Utility. It is expected that these kinds of planning efforts will eventually be undertaken in many states; higher education representation in these planning efforts has been and will continue to be of critical importance.

Proposed Future Linkage Activities

To date, the relationship between the Education Utility project and institutions of higher education, has focused primarily on higher education providing consultation to NIU and AT&T about a number of instructional and implementation aspects of the Education Utility. Those developing the Utility have asked for advice and guidance and higher education has been responsive to the request. There are, however, plans for very different kinds of cooperative relationships in the future, including the following:

Research and Demonstration Centers. A number of research and demonstration centers have been established and operate as partnerships between colleges of education and elementary or secondary schools, with the active involvement of personnel from AT&T and NIU. These research and demonstration centers will engage in a number of activities, including:

1. The main activity of each center will be to *use* the Utility. Each center would thus have as a primary mission to *demonstrate* the various ways the Utility could be used in a given educational setting.

2. While using the Utility, each demonstration center would be expected to *evaluate* the various uses of the Utility, and make the results of those evaluations available to AT&T/NIU personnel, as well as to interested others.

3. The demonstration centers would provide a setting for the conduct of a range of research activities focusing on the uses of integrated learning technologies. Investment in research is critical to the long range success of the Education Utility. It is expected that many agencies, institutions, and/or individuals would use the research and demonstration centers to explore important issues germane to learning technologies.

The Utility represents the first important step in the "Age of Intelligence".

4. Research and demonstration centers will also be busy with *development* of new information and instructional resources, and with the exploration of alternative instructional strategies made possible by the Education Utility.

5. *Communications* will be one of the major activities of the centers. The centers will be hubs in the electronic flow of information among centers, between centers and other Utility locations, between center staff and researchers, and a host of other linkages.

These are only a few of the activities the research and demonstration centers would undertake. These centers would thus serve as a substantial linkage between the education and business communities. The education community will clearly benefit from the centers' research related to the uses of integrated learning technologies. The business partners, AT&T and NIU, will profit from a continuous flow of evaluative and research information that will enable the corporations to make improvements in the system.

Academy of Learning Technologies. Another important future relationship between business and higher education as regards the Education Utility will take the form of an entity called the *Academy of Learning Technologies*. The Academy, a non-profit organization, will be guided by a Board of Directors composed of educators and businesspersons. The Academy will provide a unique national and international forum for the exploration of matters related to the uses of learning technologies. The Academy will essentially be a major think tank for expanding our knowledge bases about how technologies in general, and the Education Utility in particular, can be more effectively used to further educational goals. The Academy, among other things, will provide Utility users with a source of both theoretical and practical ideas for how to use the Utility, and will also serve to stimulate

research, evaluation, development, and training activities that will benefit any educator attempting to use emerging information technologies.

In time, as available revenues expand (through usage fees, grants, etc.), the Academy could host a significant number of scholars and researchers in residence for study at the Academy. Eventually, it is anticipated that the Academy will financially support some number of these researchers, who come to the Academy to study topics included in the Academy's long range research agenda. Other scholars might be supported by the Academy to explore topics proposed by those scholars. The Academy might also serve as a site for higher education scholars who wish to spend a sabbatical leave in residence. The intent of these activities, of course, is to create within the Academy a community of scholars from a variety of disciplines and institutions, and to mutually explore issues of importance to understanding the future of learning technologies. Such a community should benefit both higher education and business partners.

As noted earlier, it is evident that a project as large and complex as the Education Utility will require massive amounts of training to be available to teachers, administrators, learners, and others. In the training area, it is planned that close working relations be developed between Utility officials, and various higher education institutions. At the time of this writing, a "training committee" sponsored by NIU is being established to develop a long range plan for accomplishing the myriad training necessary to support the Utility project. Higher educators will play a prominent role in that training committee and in subsequent training efforts.

National Information Utilities Corporation has determined to establish a number of substantive advisory councils to provide NIU with the kind of ongoing

counsel necessary to make sure educational issues are clearly understood and considered by those people designing and operating the Utility system. One such advisory council will focus on the uses of the Utility in higher education institutions and programs.

It should be evident that the very nature of the Education Utility concept is complex, and must involve literally all sectors of the education community, including higher education. The opportunities for partnership between higher education and the Education Utility are thus not simply theoretical, or a nice idea, but *essential* if the project is to be successful. What may be unique about this entire effort is the *amount* of intertwining that already exists, and that must continue to exist in the future, between higher education and the business partners in the Education Utility. This is a partnership not merely of convenience or superficiality, but of genuine cooperation and mutual interdependence. Neither partner can survive very well without the other.

There are many examples, however, that suggest that mutual interdependence does not always guarantee effective or quality partnerships, particularly in an enterprise as complex and influential as the Education Utility. Given that caveat, and even at this very preliminary stage in the partnership between higher education and the business partners in the Education Utility, some lessons learned about partnership building may be worth examining briefly. Some of these lessons are described next.

Lessons Learned: A Preliminary Analysis

It is, of course, somewhat premature to speak of all that has been learned about university-business relations surrounding the Education Utility project, but some preliminary observations might be made about these relationships. Six such observations follow. To facilitate this discussion, the term *partners* will be used; this term will refer to AT&T and National Information Utilities Corporation as the *business* partner, and higher education institutions in general as the *education* partner.

At the outset, both partners may have felt they knew more about the other partner's business than was warranted. That is, the business partner seemed to express a good bit of understanding of the education system, and the educators a good bit of understanding of the hard-

ware and software systems inherent in the Education Utility. A certain amount of posturing goes on in the early stages of partnerships. This posturing proceeds under some rather elaborate but unwritten rules. For example, the business partner in this case argued that they were not educators, and needed much input from educators. The educators involved alleged that they knew little about the technology involved. In spite of these protestations, both partners at various points in the relationship have evidenced behavior that indicates each thinks it knows quite a bit about the other's business. This is not necessarily a bad or counterproductive situation, but needs to be clearly understood as each partner seeks to take the measure of the other, and to build a trust level that is so important to the long range success of the partnership.

Related to the first lesson learned, a corollary observation might be made: each partner tends to feel that the problems of the *other* partner are easier to solve than their own. In the case of the Education Utility, the business partner seemed to feel that some of the issues associated with implementation of the Utility in the existing education system might be relatively easily solved. The education partner, on the other hand, often seemed to be relatively naive about some of the technical and marketing issues faced by the business partner. Over time, as long as communications between the partners remained open, some of these perceptions were indeed modified, and new understandings about the complexity of implementation of the system, from both an educator's and a business person's point of view, were gained. This issue cannot be minimized, however, for once again these perceptions shape the character and extent of the trust level that builds between the partners, and thus the extent to which cooperative working relationships can be carried forward.

It follows from the observation above that each partner in the relationship can indeed learn more about its own business by carefully considering the perspectives of its partner. In the case of the Utility, it appears that the education partner has been helped to see a variety of new ways to approach teaching through technology, as a result of contemplating the business partner's perspective on the potential uses of technology in education. The business partner in the Utility has brought a fresh

new perspective to how schools specifically, and teaching and learning more generally, might work in light of tremendous technological alternatives available in the emerging information society. The business partner, on the other hand, appears to be developing a much greater sensitivity to how the education system works, and to how to approach that system in a way that will be constructive rather than destructive. In some respects, it might be said that both partners have profited by learning how to bring about positive changes in the character of education which bodes well for the likely success of the Utility concept.

A range of talent exists within both partners in this venture. That is, one can find highly skilled and competent individuals working in both the business and education sides of this activity, but one can also encounter people who are mediocre at best, perhaps even bordering on incompetent, working within both the education and business partners. The point seems rather mundane, but in the day-to-day development of relationships, it is vital that each partner recognize the variability of talent likely to be found in the other's resources. It is thus important that each partner neither assume that the other partner's professionals are all of exceptionally high quality, nor that everyone on the "other side" is automatically of limited quality. Failure to recognize the array of talent in both partners will lead either to unfortunate self-fulfilling prophecies, or unrealistically high performance expectations that simply cannot be met. Either extreme will jeopardize the long range success of the project. In the Utility venture, some of these adjustments in perceptions and/or expectations about the quality of personnel have had to be made.

The Education Utility experience to date strongly suggests that three characteristics must be present in both partners if a university/business partnership of

the magnitude of the Utility project is going to work: patience, persistence, and persuasiveness. Without these characteristics operating on virtually every level of the partnership virtually at all times, the partnership is likely to fall apart. Almost everything takes longer to happen than was forecast, so patience is necessary. In a partnership, the wires of communication sometimes tend to cross, resulting in a certain degree of chaos. Persistence and follow-up are constantly needed. And each partner must constantly, but in a constructive manner, seek to persuade the other partner of the appropriateness and/or desirability of doing things a certain way. The creative tension involved in this kind of ongoing persuasive dialogue is what supplies the energy for an important joint project. Of course, going to extremes in attempting to persuade, without also being willing to compromise, will result in disaster, but positive approaches to persuasion make a partnership strong.

Finally, it is fair to conclude from the experience of partnership building in the Education Utility project that it takes a number of iterations before each partner fully understands the other, and before a common understanding about goals and strategies is achieved between them. This is particularly true in a project of the magnitude of the Utility. Both partners need to reexamine continuously each other's perceptions of what goals are being sought. Language certainly enters this process as the education and business partners struggle first to understand each other's words and then the *meaning* of what is being said. Initial assumptions need to be checked, processes clarified, ends enumerated in the language of each partner. The partnership is likely to succeed only to the extent that commonality of purpose can be finally achieved.

These, then, are some of the lessons being learned about establishing partnerships between business and higher

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education in a project that is of great consequence to both business and higher education. This particular partnership is relatively new, so there is much more to be learned. Because the stakes are so high, it is essential that each partner continue to learn from the other. Educators need to listen carefully as the business partners talk about how to make schools profit centers, how to capture the entrepreneurial spirit of educators and citizens in general, how to get the many sectors of the education community to come together for purposes of solving difficult educational problems. Business persons need to listen to the voices of higher education personnel who are concerned about the quality of the instructional design characteristics of the information resources made available through the Utility, of the issues of education equity that are raised by the Utility, and of the magnitude of the challenge of training educators and learners to use the power of the Utility effectively. There must be a climate of trust and mutual respect if this partnership is to work.

The signs thus far are good. The Education Utility could prove not only to be the vanguard of a substantial transformation of the education system, but also a model for a positive and productive partnership between education and business on a scale unprecedented in the annals of education history. Time will tell if the promise becomes reality.

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The Education Utility is a model for a positive and productive partnership between education and business.
