

Title: Partnering to Meet the Needs of a Changing Workplace

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Abstract

Technology is changing the way we live, work, play and learn. Successful partnerships between education and industry can provide the technology and innovations necessary to provide a flexible learning framework to meet the needs of today's lifelong learners. Fostering collaborative and innovative partnerships will help enable business, industry and higher education to transform in this high speed information age. Nationwide studies will provide the identification of key characteristics of the changing workplace and evidence of the potential for successful new partnerships. The lack of highly skilled workers, the growing needs for access to education by lifelong learners and the difficulty in forming fruitful partnerships will be addressed in this paper.

## Introduction

Knowing how our profession is evolving can help us position ourselves for the future. Some of the trends we describe are already emerging; others can be foretold from current and emerging events. All are supported by data and demographics gleaned from many sources both academic and industrial. Two major forces – global competition and rapid technological advances – have profoundly changed, and will continue to change the nature and content of work in the workplace of the future.

The world of work has entered a new economic era that has no precedence in the past. This new economic age is the result of many shifts that have happened in the global socioeconomic, industrial and political environment. These shifts have created new paradigms based upon technology, people, and industrial organizations, which differ significantly from those that we have relied upon for decades. These shifts are happening continuously and at an ever-increasing pace. In today's business environment, the only constant is change. This new economic age is challenging in many ways, but it also provides us with new opportunities as individuals, organizations, nations, and the world. But for business to prosper in the ever-changing world, they must completely rethink how and why they do what they do, and prepare their members well to work in this new environment. In other words, the new economy will require new paradigms in how we educate, train, and develop the workforce (Hartanto, 1993). Sustainable competitive advantage is no longer based on technology or machinery. Corporate leaders are saying that people are our most important advantage. While downsizing, restructuring and reorganizing, many organizations are creating high-performance work systems and transforming themselves into learning organizations. They are giving more responsibility to workers, who have been asked to do more with less (Bassey, 1997). The American economist Lester Thurow of the Massachusetts Institute of Technology has reminded us that “in a global economy of the twenty-first

century the education and skills of a workforce will end up being the dominant competitive weapon” (Thurow, 1993). Similar admonitions have come from Carnevale (1991), Reich (1992), Judy & D’Amico (1999) and others. In this brave new world, Shield (1995) reminds us, education and training systems must not be based upon knowledge acquisition at the expense of knowledge application; upon past practice, or upon theoretical models with little or no consideration of application, data based needs analysis, or planning for quantitative or qualitative evaluation.

### The History of Work Based Education

One of the first models to be put in place, first in manufacturing but later extended to all industries, was Frederick Taylor’s Principles of Scientific Management (Wheeler, 1990). With authority, it was argued, a manager could get anything done. Systems were created, developed, and implemented by management. Workers were only there to run the system under the supervision of management and productivity problem was the result of failure to follow procedure. It was argued, therefore, that workers really did not need to know very much. When this centralized planning method proved unsuccessful, as it almost always did, jobs were “dumbed down” leading to even less worker involvement and, inevitably, to a cycle of industrial decline obvious in the late 1970’s and the 1980’s. These centralized planning axioms developed under Taylorism suggested that management goals were specifications for performance. Actually, when used to reduce or replace worker input, they were primarily tools for shifting blame away from management when the centrally planned systems didn’t work, which they seldom did (Bradley, 1993). Today, although “scientific management” has been largely discredited, in a survey of employer sponsored training in the U.S., Lakewood Research (1995) it was found that 54% of all budgeted training dollars were aimed at programs for managers and professionals rather than workers. In addition, 64% of training managers reported that they expected

their budgets to remain the same or be cut for the next fiscal year, despite an increase in training requests from their organizations and increased corporate profits. A more recent report by Lakewood Research on the Dun and Bradstreet organizations (2001) shows that despite the fact that the nonexempt employees greatly outnumber managers and exempt professionals in the American workforce; only 36% of training spending is directed at them. An argument could be made, perhaps, that workers do benefit indirectly from the training their bosses get. It would appear that a considerable amount of research-based analysis is needed in education and training policy in both the public and private sectors.

The purpose of this paper is to suggest a starting point for the development of a work-based learning system, which will serve a motivated, highly skilled and well educated workforce. This system must be developed using the tools at our disposal while working under real world restraints. Innovative partnerships, as discussed in this paper, may help achieve this goal.

Albert Einstein reminded us “the mere formulation of a problem is far more essential than its solution.... To raise new questions, new possibilities, to regard old problems from a new angle requires creative imagination and makes real advances in science” (Fields, 1993). We suggest that the first step is an understanding of the problem using the elements of good research as suggested by Anderson (1990), Bassey (1990) and Hammersley (1992): determine the question, collect data, and then conduct a systematic, critical inquiry in order to explain, generalize and predict. A good place to begin our investigation into what work-based learning should be is to try to understand what the work place of the future will be like and who will work there. What do emerging trends and current and projected data tell us about the work organizations and demands of the future? What about the people who will work there? What will their needs be?

## The Work Place of the Future

Analysis of a review of the literature revealed 6 major areas of structural organizational change that will have significant impact on development oriented practices in and intended for the workplace. In a study commissioned by the American Society for Training and Development, (McLagan, 1989) found that the pressures for workplace productivity will intensify, and that the pace of change will continue to accelerate with organizations and industries looking beyond obvious efficiency gains to more systematic ways of being low-cost producers of high-quality products and services. Research by Grant Thornton LLP, a major international accounting firm, found that 78% of mid-sized companies surveyed are reducing cycle times and that ultimately, speed and agility will become the critical requirements for survival for mid-sized manufacturers (Cantwell, 1996). Work will continue to change rapidly because of advances in technology, and according to Peter Drucker (1994) time, has become the most valuable business resource. In a study of best practices by industry leaders in the U.S. and Canada, researchers identified the practices of quantifying and measuring reductions in cycle time, employees' recognition of their responsibility to continuously improve their work processes, and employees' understanding the compelling need for change as a major difference between high performing and low performing companies (Yearout, 1996). Further evidence of this trend is found in the report by Lakewood Research (1995) that 84% of businesses reported measuring the reactions to training provided by the employer, 60% reported evaluating behavior when they returned to the job, and 43% reported measuring the business results of training provided, all a dramatic change in the

past few years. The useful life of information was estimated at 10 years in 1980 by the software industry, at two years in 1995, and estimated at 15 months in 2002 (Olson, 2002). Recent anecdotal information from a variety of sources in manufacturing and service industries both in the U.S. and Europe confirm this trend. The “do more with less” refrain will be a dominant theme in work organizations in all industries in the future.

The second clear structural change occurring across industrial sectors is that more people continue to do applied knowledge work. According to the National Center for Education Statistics (NCES) in 1950, 60% of all jobs in the U.S. were classified as non-skilled, in 2000, only 15% were. “Virtually every group of adults examined increased their participation in adult education between 1991 and 1999, often in ways that reduced disparities in participation that had existed in 1991. Although the widespread increase in participation in adult education has been accompanied by an elimination of some inequities, in many cases the highly educated and high status groups that have been the traditional beneficiaries of adult education remain the main beneficiaries today” (NCES, 2002). Workers will continue to have greater access through technology to the information needed to do their jobs, and are therefore less dependent on hierarchy and structures. As cycle times decrease and change accelerates, the ability to apply skills quickly and effectively is becoming more important than simply having skills. Technology is continuing to take over a category of jobs, which do not require critical thinking. Automation engineers use the rule of the three Ds to determine which jobs will be automated: Dirty, Dangerous and Dumb. In the emerging work environment, knowledge skills such as judgment, flexibility, and personal commitment are now the most valuable skills to the organization (Yearout, 1996).

A third very clear trend is that work organizations in all industries and sectors will continue to shift their focus to the customer and quality. It will be pervasive because it is a key competitive

characteristic. In tomorrow's work organization, customer and quality focus will continue to permeate the organization, with every employee clear about the value he or she adds for internal as well as external customers. One of the greatest differences between high producing and low producing companies identified in recent research was that employees in high producing companies understand the link between their tasks and the organizations' strategic plans and goals, and that change in the high producers is driven by customer needs and expectations (Yearout, 1996). The pervasiveness of this trend can be seen by the variety of work organizations who have endorsed the quality movement. Within the past decade, the U.S. Department of Defense, Organizational Dynamics, Inc., General Motors, Ford Motor Co., Daimler –Chrysler, Kroger Food Stores, American Telephone and Telegraph, General Electric, Proctor and Gamble, health care organizations, schools, hotel chains, and many other organizations have proclaimed their conversion to quality. Lakewood Research (1995) reported that 70% of those surveyed from the Dun and Bradstreet list of organizations in the U.S. employing 100 people or more are providing employer supplied training in at least one of the current quality initiatives. They also noted that 82% report providing training intended to develop a customer focus, and 74% of manufacturers report adopting total quality management, with 50% reporting transitioning to a teams-based structure. In 1995 the Baldrige Quality Award, the U.S. equivalent of the Japanese Deming Quality Award, was piloted with health care and educational organizations. An emphasis on customers and quality is obviously not an issue in only a few industries and sectors, but has become a way of conducting work in most industries within the realm of new technological advances. The current Lakewood Research report (2001) states that 37% of all employer-sponsored training in the United States is devoted to teaching computer skills.

In the work organization of the future, a forth major and clearly developing trend is that in many organizations, the arena for planning and action will be global. McLagan (1989) predicted that markets, resource pools, competition, partnerships, or all of them will cross national lines. For some, competitors are suppliers or even customers. Relationships are complex and boundaries have blurred between organizations and their environments. A study by Frain and Ajami (1994) indicated that in the automobile industry, Japanese and American management attitudes became remarkably similar with each national group acquiring some of the other's philosophy. A study by Yauas (1995) of Asian managers and American managers in the electronics industry showed a great deal of "convergence" in management attitudes and practices in the entire Pacific Rim. The International Standards Organization has also greatly homogenized practices of management and production through its ISO 9000 standards and sub-standards. In addition, the pressures created by international trade unions and agreements such as the European Union (EU), the North American Free Trade Agreement (NAFTA) and The General Agreement on Trade and Tariffs (GATT) will intensify internationalism in all industrial sectors and in both the industrialized and the non-industrialized world.

In the work organization of the future, business strategies will become more dependent on the quality and versatility of the human resource. As McLagan (1989) noted, whether they rely on improved productivity, quality, or innovation, the strategies of the future will not be delivered if the organization's human resources are not capable and committed. Organizations that apply only money and technology to problems, without bringing the people along, will not survive; especially in industries in which knowledge, skills, and willingness to change are critical to competitive advantage. Confirmation that the message is clear to competitive industries is demonstrated by expenditures. Total dollars budgeted for formal training in 1998 by U. S. organizations with more than 100 employees was \$52.2 billion; an



increase of 3% from 1994 and today the 2001 report indicates \$56.8 billion dollars budgeted for formal training. (Lakewood Research, 1995, 2001). Shawn Miller of Eastman Kodak could have been talking to every work organization in the future when he gave the advice “...train everyone” (Miller, 1995). Training has become so important that the Baldrige Award criteria, ISO 9000, QS 9000, ISO 14000 standards and MRP II (the Eastman Kodak total quality standards) all have a category or requirements for a formal training plan and a disciplined approach to training.

Finally, all of our data and sources agree that work structure and design will change dramatically. In most major industries in all sectors, hierarchies have already begun to melt into or have been replaced by a flatter and more flexible organizational design. The boundaries between individual jobs are blurring, with more team accountability, flexible and multi-skilled job designs. Major downsizing and other initiatives which emphasize doing more with less have also had a great impact on worker flexibility. As large companies such as Sears and IBM which tend to represent their industrial sectors continue to move to a more decentralized work environment, this trend, already strong, can only accelerate.

### The Impacts Of Change

The next task is to ask what these projections and our interpretation means for the development of work-based learning. What will the workforce needs in the work organization of the future be? How will the changes in the work place affect the workforce? What knowledge and skills will workers need? How will these impact work-based learning?

Each of the six identified areas of major organizational structural change dramatically increases demands upon the people who work within the organization. As these changes occur, demands made

upon any work-based learning system will also change. It would be of value to examine each of the changes to see what they mean in terms of the skills and knowledge that will be required.

Pressures for workforce productivity will intensify and the pace of change will continue to accelerate. Organizations are still downsizing and still expecting workers to do more with less. Overall, 31% of U.S. industries employing over 100 people reported downsizing in 1998, but in industries employing 100,000 or more, the percentage was 56%. Another 25%, but as high as 46% in some sectors, reported increasing the use of “outsourcing”, up from 14% last year, and 21% overall and as high as 30% in some sectors reported increasing the use of “contingent” workers. “Reengineering” was also popular, with 35% overall, but as high as 59% in some sectors being involved. Of the \$56.8 billion 2001 total dollars budgeted for formal training, the amount of \$19.3 billion will go to outside providers of training products and services (Lakewood Research, 1995, 2001). In slimmed down organizations, with fewer workers to do the work, and the nature of the work changing rapidly, those fewer workers are going to need to learn to do additional tasks frequently, and to work more effectively. Obviously, any future-oriented work-based learning system will have to be grounded in solid fundamentals, close to or linked to its application, and emphasize, “learning to learn”.

More people today are doing applied knowledge work, which requires judgment, flexibility, and personal commitment rather than submission to procedures (Carnevale, 1991; Marshall & Tucker, 1993; Kappner, 1993, Judy & D’Amico, 1999). Creating competent knowledgeable workers who can apply what they know with the ability to keep pace with rapidly changing technology will be a key challenge. The emphasis will not be what the worker knows, but what he or she can do with it (Drucker, 1994). The Hudson Institute reports that net job growth between 1994-2005 will be greatest in three categories: professionals, service workers, and technicians. “The high-paying ‘professional

specialty' occupations are expected to grow by 25 percent between 1994 and 2005, faster than any other major occupational category. On the other hand, the low-paying 'service occupations' are also slated to grow by 23 percent in these years" (Judy & D'Amico, 1999, p. 77).

Organizations will continue to shift their focus to quality and customers. Of the nine current industrial trends identified by Lakewood Research (1995), six were quality or customer driven. Overall, 58% of the organizations, but as high as 80% in some sectors, report adopting "total quality management". Overall, 50% of the organizations, but as high as 69% in some sectors, report development of an "organizational vision." Overall, 78% of organizations report "teaming" with 61% of the total workforce involved. The largest change from 1994-1995 was an increase from 34% to 44% of organizations whom report that they now "partner" with suppliers and customers. The change to a customer-oriented, group-centered and broad-based responsibility and application in a total quality environment has tremendous implications for traditional work-based learning which has stressed isolated and intensive skill acquisition and single practitioner application in narrowly defined parameters of responsibility.

The arena for planning and action will be global. Any successful work-based learning system must be prepared to serve clients who work in a global setting. Flexibility and adaptability are no longer merely desirable, but are required. Indicative of this is that 53% of U.S. companies with over 100 employees provided training in "diversity" this year, 51% provided training in "strategic planning", and 16% provided training in a foreign language (Lakewood Research, 1995). Also, 72% of mid-sized U.S. manufacturers recently surveyed by Grant Thornton, a major accounting and consulting firm, reported that they planned to increase their emphasis on developing foreign markets as a result of various regional and world trade agreements (Cantwell, 1996). Diversity is now a dominant feature of all work and

teaching the skills required to function effectively in diverse work settings must become a major thrust of work-based learning.

Business strategies will become more dependent on the quality and versatility of the human resources. An anecdote might be an appropriate example here. A technician was summoned to a company to repair a major piece of manufacturing equipment. The plant manager looked on anxiously, as the production line was stopped. The technician removed the metal inspection cover, then, shaking her head, replaced it. She then walked to the rear left side of the machine and tapped it with a hammer. The machine lit up, reset itself and began operating again. Before leaving, the technician presented an itemized bill which read: "Tapping the machine with hammer, \$1.00, knowing where to tap, \$999.99" (Burban, 1995). A look at the relevant literature indicates that many organizations are getting the message. Lakewood Research (1995) reported that 72% of U.S. organizations employing 100 or more people provided training in "leadership", 60% provided training in "decision making" and "listening skills", 58% in "quality improvement" and "delegation skills", and 57% in "problem solving" and "managing change". Between 19% and 35%, depending on sector and size, provided some form of "remedial training". The 2001 report by Lakewood Research reports that the most frequently offered training sessions focus on computer applications for end-users, technical skills/knowledge and customer service, while training for computer systems/programming, executive development and sales is far less frequently provided. "The training most frequently provided on a weekly or monthly basis consists of new employee orientation, product knowledge, customer education and new equipment operation" (Lakewood Research, 2001, p. 48).

Work structure and design are changing dramatically. As organizational hierarchies become flatter, more flexible work organization designs result. Increases in responsibility and accountability for

many workers also have increased. As organizations become leaner, clear lines between jobs begin to blur and the fewer workers must acquire more skills to accomplish more tasks. Teams carry out complex operations and everyone must work more effectively. An effective work-based learning system in this environment must have maximum flexibility in content and delivery.

### The Workforce Of The Future

Now that we have some understanding of what the work place and work organization will be like, and some understanding of the demands that will be made on the people who work in these organizations, our attention must now be turned to the people who will work in these organizations. Any effective work-based learning system must meet the needs of the learners it serves. What are their needs likely to be? What unique problems must the system address? What resources will be needed? What challenges must be met to prepare the workforce of the future for the work place of the future?

When we examine the data, the first thing that they tell us is that the workforce is changing as fast as the work organization, but not in the same way, and not for the same reasons. One similarity, however, is that the changes are structural. That means that the changes have begun and will continue and intensify through all industrial sectors. An advantage is that since some of the changes have already taken place we can examine some impacts of those changes.

The first of three structural changes in the workforce that the research identified is that it is rapidly becoming more diverse. In the U.S. it will be more female and non-white than male and white in the future (Johnson et al., 1987; Carnevale, 1991; U.S. Bureau of Labor Statistics, 1994, Judy & D'Amico 1999). In Western Europe, judging from recent events this also appears to be the case. Literacy gaps will widen, with increasing proportions of the adult population classified as "functionally illiterate" as the demands of technology accelerate skill requirements. Inability to function adequately in

the language of the work place is another emerging problem (Chissman, 1990; National Center for Educational Statistics, 2002). When it is considered that about two-thirds of the people who will be in the workforce at the year 2005 are already in it (Brustein, 1994), and that the birth-rates of all the western industrialized democracies have remained relatively low for some time, the challenges that relate to an older workforce are added. The South to North and East to West migration in all parts of the world accelerate the multiculturalism of the workforce and adds even more diversity. It is clear to educate and train the future workforce; management practices, communication processes, and development issues must be addressed forcefully.

The second major workforce change reflects a value shift: people will expect meaningful work and involvement. They will see their skills as resources to be used. They will have access, through technology rather than hierarchy, to more of the information they need to do their jobs. They will expect to participate in decisions, as well as, in the wealth they help create. Studies by Hatcher and Hill (1993) in the U.S. involving regional industries noted that for several years, workers had been exhibiting increased work ethic scores on measurement instruments as compared with workers in the region in comparable industries of a generation ago. Productivity indicators, however, did not always rise. Closer investigation revealed that the workers, while believing that they should always do their best were sometimes reluctant to do so if they believed that their input was not valued by the organization and that they would not benefit from their increased effort. These findings are consistent with the literature of the past 40 years, which consistently identified worker involvement as one of the more important motivators. As Breisch (1996) notes "In the 21<sup>st</sup> century, people will gravitate toward organizations that add a unique valuable dimension to their lives ... The choice is clear: You can either compete by offering high salaries and wages or work to create an environment that makes people beat down your door to

get in. The only way to survive in the 21<sup>st</sup> century is to build a dynamic, creative environment that motivates people.” It should also be noted that employee empowerment is a prominent feature in all total quality initiatives. Any work-based learning system designed for tomorrow's workforce must emphasize the concept of the worker as a value adding human resource.

Finally, a shift is occurring in the nature of the contract between organizations and their employees. Merit is replacing loyalty as the basis of the bond between the worker and the work organization. Evans (1976) observed that as the skills of a worker became noticeably improved, their loyalty tended to shift toward the skill area, and away from the employing organization. The effects of continuing massive industrial plant relocation, outsourcing even in knowledge industries and professions, the dominance of the knowledge professions in compensation, and extensive corporate downsizing in all industrial sectors have now imbedded this as a major structural change in the workforce.

Technology is changing the way we live, work, play and learn. Successful partnerships between education and industry can provide the technology and innovations necessary to provide a flexible learning framework to meet the needs of today's lifelong learners. Fostering collaborative and innovative partnerships will help enable higher education to transform in this high speed information age.

### Types of Partnerships

The National Alliance of Business has been instrumental in examining and promoting partnerships. In their report “Partnership Planning Structure for Business/Education/Government Partnerships” they outline the following categories for partnerships and indicate that most partnerships fall under one of these areas:

1. Partners in Public Policy

These partnerships are collaborative efforts at the national, state, or local level, among businesses, schools and public officials that shape the public and political debate, bring about substantive changes in state or federal legislation or local school governance and affect the overall direction of the educational system.

2. Partners in Systemic Educational Improvement

Systemic educational improvement partnerships are those initiatives in which businesses, education officials and other community leaders identify the need for reform or improvement in the educational system, and then work over the long term to make those major changes happen in the system. These partnerships generally affect a large number of youth, combine and channel resources in a different way, and bring about lasting institutional change.

3. Partners in Management

Management assistance partnerships provide school officials with management support and business expertise in a broad range of areas. Some management partnerships address administration and organization reform in matters such as increased principal or teacher autonomy, labor management relations, flexible personnel and incentive systems, purchasing efficiencies and plant and equipment issues. Others address such areas as management information systems, strategic planning and goal setting, legal insurance, finance, accounting and tax assistance, organization development, performance standards and productivity, public relations and school building management.

4. Partners in Teacher Training and Development



Businesses involved in teacher and counselor training and professional development provide opportunities for school personnel to update, upgrade, or maintain their skills for example, to learn the latest developments in science or mathematics, or learn more about the labor market, industries and business in the community, workplace needs and career opportunities.

5. Partners in the Classroom

Classroom partners are business volunteers who improve the learning environment by bringing their business or occupational expertise directly in the classroom for students and teachers, or bringing the classroom to the business. The activities are planned and coordinated with the school staff, generally are tied to the school year or semester and can focus on the needs of the school or of the individual students.

6. Partners in Special Services

Special service partnerships provide short-term, project or student-specific activities or resources to help with a specific problem or need, such as awards, recognition programs, scholarships and other incentives, professional memberships, fundraising, donating or sharing equipment or educational material, sponsoring career fairs or book fairs, hosting receptions, sponsoring student teams, etc. These partnerships can include both financial and staff support, but are generally shorter term, are confined to one school, one teacher, or one class, and they involve less business time and money (1992).

The National Alliance of Business in an earlier report “The Fourth R: Workforce Readiness” gives detailed information regarding the types of activities involved in all types of partnerships as well as

the amount and type of resources that are necessary, the commitment and leadership of top management, focus of the activity and scope of involvement and investment. The major focus of these partnerships are identified under the following categories; public policy, systemic education reform, leadership, professional development, classroom enrichment, special projects (1987).

### Learning Partnerships

Technology learning partnerships can provide a flexible learning framework to meet the needs of today's lifelong learners. Fostering collaborative and innovative partnerships will help enable higher education to transform in this high speed information age and provide new e-learning opportunities for adult learner to help address the needs for today's high skilled workforce.

Electronic networks and the Internet increase an individual's opportunity of gaining an education in a variety of new modes. Students are no longer differentiated by manner of attendance and learning is distributed across networks, geographic areas and age spans. "Learners expect seamless, lifelong, affordable, asynchronous, interactive diverse, customized, specialized, learner-centered higher education" (Hill Duin, Baer & Starke-Meyering, 2001, p. 59). The challenge to educators remains to assist students to achieve learning from today's diverse information rich environment.

E-learning incorporates courses that are web-based and those delivered through videoconferencing and combinations of the two. Innovative e-learning is an exciting and challenging endeavor for business educators and trainers. It is critical that e-learning courses adhere to the same standards and quality as those courses taught in the traditional classroom yet they provide additional flexibility to place bound learners.

In a report from Berg, Manager of Education Programs at WMX Technologies it is reported that businesses want to form partnerships, such as; return on investment/results orientation, school

accountability, positive image/public relations, good communication, school reform, companies learn what they don't even know they are going to learn such as, what it is to be a teacher today, and businesses want partners who want to learn, grow and change (1995). The report goes on to explain how a partnership should be started. Universities need to think about the important benefits to their students when entering into partnerships and I believe a very important aspect of this report is the section on what it is that students need from partnerships:

1. To be able to connect what they are asked to learn in school with "real life" applications. Business can provide a "sneak preview" of the world of work and give students a reason to study and do well.
2. To take responsibility for their own learning.
3. To understand that they must be life-long learners. Finishing high school or college is no longer enough.
4. To be proficient in technology, especially computers. Waste Management garbage trucks now have on-board computers. Students can no longer say to themselves, "Well, I can always be a garbage truck driver if I drop out of school."
5. To be exposed to a variety of career options and understand the educational and experiential paths to various careers.
6. To figure out what they have a natural aptitude for, enjoy doing and could develop into a career.
7. To be exposed to real life success stories and role models.
8. To set higher personal goals (Berg, 1995).

### Internship Opportunities through Partnerships

The U.S. Labor Department predicts that 18 million graduates will be competing for the 14 million college-level jobs in the year 2005. Former Secretary of Labor Robert Reich pointed out that 80% of these jobs will require some vocational training, according to the Watson study (as cited by Gault, Redengton & Schlager, 2000). Experience is a major issue when it comes to the job search. Practical experience is a key attribute that entry-level professionals can offer as structured work experience related to career interests. The National Society for Experiential Education reports that one out of three four-year college students worked as an intern prior to graduating. The research states that work experience programs are more likely to receive increased research attention and faculty support when a more clear link is established between on-the-job experience and career development (Gault, et al., 2000).

Higher education research has focused on improving teaching methods and modalities and pedagogical processes, which operate in the classroom setting. There is a lack of research into the efficacy of internships, which diminishes the perceived legitimacy of field experience programs, and as a result they remain marginal to academic programs (Migliore, 1990; Gault, et al., 2000).

There are three terms that are commonly used to describe higher education programs that pertain to learning through employment in industry. There are cooperative extension programs, which refer to state-sponsored agricultural work experiences. Cooperative and internship are the two university names most often used to describe field experience opportunities for students. Cooperative students tend to work full-time while internship students tend to be part-time (Gault et al., 2000). In their study of internships, DiLorenzo-Aiss and Mathisen (1996) describe a typical internship program as being characterized by four criteria: (1) a specified number of work hours, (2) the work may be paid or

unpaid, (3) credit is awarded, and (4) oversight is provided by a faculty supervisor or coordinator or other university representative and a corporate on-sight supervisor.

Interns are expected to be novices, not experts. They are very different than consultants. When a consultant is hired they are expected to be experts in their respective fields. Also, the internship experience is designed so that the intern can gain experience. It is intended that through the internships experience the student gains experience in an area where they have received academic training. The intern may be a student or faculty intern and are expected to gain specific skills pertaining to tasks in which they already possess general knowledge (Peak & O'Hara, 1999).

There is little information in the literature regarding predictors of internship success and outcomes of successful internships. According to Beard & Morton there are six predictors of internship success. "These include: (a) academic preparedness, (b) proactivity/aggressiveness, (c) positive attitude, (d) quality of worksite supervision, (e) organizational practices and policies, (f) compensation" (1999, p. 42).

### Summary And Conclusions

In this paper we have presented the necessity for the development of a work-based learning system which will prepare a motivated, highly skilled, well educated and self-directed, workforce for the work organization of the future. In order to present the elements and challenges the system must face, we have outlined six major structural changes in the work organizations of the future which our research revealed. We have also analyzed what these changes will mean in terms of demands upon the people who will be working in them. We next turned our attention to the four structural changes that are occurring in the workforce itself, then attempted to interpret the meaning of these. We provided a discussion on partnerships between business and industry and higher education that may help to fill the

needs of today's lifelong learners. It is beyond the scope of this paper to factor analyze the work-place organization and the people who will work in and operate it; such a task must be left to future research.

Two major conclusions, however, can be drawn:

1. The escalating pressures of productivity, change and technology, combined with increasing diversity from many directions in the workforce make it imperative that in order to maintain our standard of living, a true work-based learning "system" must be developed which is built upon cooperation between all stakeholders and must include education, government, labor and industry. All levels of public and private education must be articulated, and education and training (specific task-oriented training as compared to general multi-purpose education) must be moved closer to or linked with its applications as a result of accelerating change.
2. The total quality demands of the workplace combined with the changing values of the workforce make it imperative that the quality model be nurtured along with industry and education partnerships. Innovative partnerships will help to meet the challenges of a work-based learning system needed for the future.

Elements of this system must include:

- Clearly understood and agreed upon goals
- Focus on customers, both internal and external
- Commitment to excellence in which all functions focus on continual improvement
- Commitment to teamwork
- Decision making based upon measurement and data
- Commitment to lifelong learning
- Partnering to meet the needs of a work-based learning system

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