



**Building Strong  
Public/Private Partnerships  
in Information Technology**

**A Cross-Cultural Primer**

The Techforce Initiative—Building IT School-to-Career Partnerships

Education Development Center, Inc.  
Information Technology Association of America  
National Alliance of Business

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**Information Technology Association of America (ITAA)**

**National Alliance of Business (NAB)**



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# Introduction

Information technology (IT) is transforming our society. It is changing the ways that we work and learn, and, in the process, is creating the potential for synergy between historically disparate groups. In particular, there are rich opportunities for educators and IT industry professionals who grasp the key aspects of the changes underway.

Effective public/private partnerships in IT are critical to helping both educators and businesses develop the workforce of tomorrow. Education-to-employment initiatives have the potential to develop millions of successful, technologically advantaged students ready to enter the workforce. They can also help to build productive and lasting relationships between the business and education communities.

There are, however, significant difficulties inherent in creating effective partnerships between business and education, and in implementing successful education-to-employment programs. Foremost among these is the dynamic tension between the culture of business and the culture of education. Within business/education partnerships there may be unspoken differences in expectations, difficulties with communication, and stresses that result from vastly different perspectives and ways of working.

A deep understanding of each partner's culture can go a long way toward maintaining positive relationships between educators and employers. The purpose of this resource, *A Cross-Cultural*

*Primer*, is to assist IT professionals, educators, and leaders of intermediary organizations\* in developing that understanding, and setting up successful education-to-employment systems as a

*"A deep understanding of each partner's culture can go a long way toward maintaining positive relationships between educators and employers."*

result. Toward that end, this primer is designed as a tool to help educators and employers:

- ◆ understand that each of us has an organizational culture that we bring into partnership activities;
- ◆ recognize common cultural issues that get in the way of effective partnership building;
- ◆ learn, through examples and short case studies, how others have dealt with these issues in ways that respect each organization's culture while meeting the shared objectives of the partnership;

\*Groups that recruit industry involvement and facilitate smooth relationships between business and education.



- ◆ consider strategies that can help to build cross-cultural competencies within local partnerships; and
- ◆ access resources that expand knowledge and skills in this area.

Much of the information presented here on culture represents broad generalizations about the nature of both business and education. It is designed to provoke discussion rather than present an exact portrayal of the IT industry or education. Every individual organization, company, and school has a unique culture and style of working, which is

dependent on a variety of factors, including the organization's history, leadership, degree of success, and status and role in society as perceived by itself and by others.

This document is an illustrative rather than exhaustive look at a complex subject. With it, we hope to encourage partnership members to explore their partners' cultures as well as their own, and to raise awareness about culture's often unseen presence and the effects that it can have on understanding, perceptions, and the ability to communicate effectively.

# Starting With a Common Ground

**E**ducators and industry leaders depend upon each other for success in the high tech world. Educators need cutting edge technology to be accessible to all of their students. They need training and support in using these new technologies so that they can create the most effective learning environment and develop students with strong IT skills. Industry leaders need an IT job pipeline that is reliable and effective. They also need workers with real world IT experience and skills, as well as excellent “soft” skills, including the ability to communicate and work effectively in teams.

Education and business share more than an interest in developing students with strong IT skills. They also share other concerns, as well as some similar ways of learning and working. Recognizing and sharing common practices can bring about synergy, increase communication, and foster better teaming across education/employer relationships. Talking about the commonalities listed below is a good way to start up a conversation—the first step to building a strong partnership.

## Nontraditional Ways of Learning and Working

*As we move from an industrial to an information-based society, education and business are developing similar new ways of learning and working.*

**Education:** Many in education are leaving behind traditional teaching methods in favor of *constructivist learning*. Students were once expected to memorize and recite, but now take a more active role in structuring their own work and are principally responsible for the acquisition of new skills and new understandings.

- ◆ Students work in teams, organize their work, and decide what they will learn and how it is demonstrated.
- ◆ Questioning is valued as a key to deepening and internalizing learning.
- ◆ Assessment is an integral part of the teaching process, taking place at every stage of learning and feeding into and helping to shape the learning process.

**Business:** In the face of an extremely competitive marketplace, businesses are developing *high performance worksites*. Businesses don't need dutiful workers who can perform only repetitive tasks; they prefer self-directed individuals who are flexible, creative, and able to learn as needed.

- ◆ Employees work in teams, schedule their own work, and have control of the development and production of an entire product.
- ◆ Questioning is essential to improving product quality and understanding the entire work process.
- ◆ Continuous improvement quality assessment is used to raise the quality of products and services.

## Organizational Diversity

*A great deal of individual variation exists within IT companies and educational organizations. This variety encourages the development of many different models for learning and working.*

**Education:** Schools are developing many unique and individualized models for meeting student and teacher needs, which may change from district to district or from school to school.

- ◆ Educators are developing learning models that address different learning styles and encompass everything from new technologies to hands-on learning to technical training.
- ◆ Educational organizations are being structured in a variety of innovative ways. New kinds of schools, such as charter schools, are addressing the educational needs of specific communities or populations, while site-based management is giving educators at the school level more power to shape and change more traditional schools.

**Business:** Depending on their product, client base, and size, businesses—especially in the IT industry—may adopt a wide variety of organizational models.

- ◆ There is no one business model for an IT company. Companies have developed numerous models, ranging in type from small internet start-ups with few of the traditional trappings of business to huge equipment and service providers that have well-established bureaucratic structures.
- ◆ A company's organizational model affects the way that it thinks and does business. For example, some companies are working to build upon proven successes, while others are geared toward developing products or innovations that may be lucrative in the future.

## Project-Based Learning and Working

*As both business and education move away from traditional models, more project-based activities are developing in both settings.*

**Education:** Learning in schools is becoming more contextualized and problem-based. This instructional methodology is found in many education-to-employment programs.

- ◆ Students work in teams to learn about all aspects of an occupation and practice the integration of skills needed to succeed in real workplaces.
- ◆ Students and teachers often take on projects of significance to the community and use these as a venue to develop hands-on skills and to integrate technical and academic learning.

**Business:** Work in the IT industry is also issue- or problem-based, with teams of workers often collaborating on the design, production, and marketing of entire product lines.

- ◆ Teams of employees with different specialties come together to work on developing new products, solving problems, and customizing products and services to meet client needs.
- ◆ Teams can be assembled and disassembled as work projects come and go.

## Learning As a Lifelong Process

*Leaders in both education and industry recognize that in today's rapidly changing world, it isn't enough to master one field of study or skill set; the learning process must be continuous.*

**Education:** There is a shift in emphasis in education from mastering facts to “learning how to learn.” Educators know there is a need to develop students’ capacities to:

- ◆ Seek, assess, and analyze information from a variety of sources.
- ◆ Synthesize information to support new ideas or create new knowledge.
- ◆ Continue understanding and acquiring new skills beyond the school setting.

**Business:** The rapid pace of change in the business community, particularly in the IT world, has created a need for workers who are flexible. They need to be able to:

- ◆ Seek out and synthesize information from different sources and apply it creatively to a problem.
- ◆ Draw upon prior experiences and utilize this knowledge effectively in new situations.
- ◆ Adapt quickly to new equipment, work practices, and responsibilities.

## High Standards and Accountability

*Educators and employers alike must struggle to meet high standards in a climate that often places a great deal of importance on accountability and evaluation.*

**Education:**

- ◆ Educators are now faced with meeting national content standards and state competency standards. Often their students’ future academic development depends on test performance.
- ◆ Teachers struggle to align existing theory and practice with standards requirements. In addition to making sure that all of their students are equipped to do well on standardized tests, they are trying out innovative ways to measure achievement such as performance tests and portfolio assessments.

**Business:**

- ◆ Many companies are seeking ISO 9000 certifications in order to conduct international trade and maintain product compliance with European and Asian markets.
- ◆ IT workers must take it upon themselves to keep up with skills and certifications in their area of specialty and demonstrate their skills on the job. Certifications can play a direct role in determining position and pay, especially in the IT industry.

# The Need for Partnerships and IT Pathway Pipeline Model Implementation

*Both educators and employers know that public/private partnerships are essential to a successful economy. An effective IT Pathway Pipeline Model needs to provide access and opportunity to all students for high skill, high wage IT careers.\**

## Education:

- ◆ Effective public/private partnerships provide educators opportunities for authentic learning, which deepens academic content and provides career transition support for students entering the workforce after high school.
- ◆ In order for educators to help students develop the appropriate skills for future work and learning, they need to have regular contact with industry leaders.
- ◆ An IT pathway creates rich options for students, who can chart their own course into a specific IT career, or develop IT skills that can be used in many careers.
- ◆ Linking technical IT education standards with academic technology standards helps students develop a strong IT foundation for higher education and work.

## Business:

- ◆ Effective public/private partnerships provide businesses the chance to help cultivate a future workforce, and assess prospective workers.
- ◆ Regular communication with educators can give industry leaders the opportunity to communicate what their needs are. It can also give them a deeper appreciation for what it takes to support human development and achievement for all students.
- ◆ An IT pipeline creates a steady stream of well-rounded, well-prepared workers for an industry desperately in need of qualified employees.
- ◆ Promoting a strong IT foundation for all students increases the talent pool for future IT workers.

## Strategy

### Recognizing Synergy and Building a Common Vision

Have each member of the partnership develop one or all of the following lists:

- ◆ What are your organization's interests in building a partnership?
- ◆ Which of the above elements are realities in your organization?
- ◆ What do you hope to gain through participation in this particular partnership?
- ◆ What do you have to offer this particular partnership?

Sit down together as a group and compare lists. What are the points of similarity and difference? What does each partner have to offer and what does each partner hope to gain? Come up with a list of common goals and use this list to develop a vision statement and some action steps that will be important in moving toward that vision.

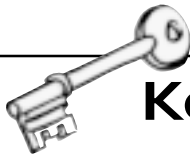
\*For more information on the Pathway Pipeline Model, see Appendix C.

# What Is Culture?

**W**hether we realize it or not, each one of us exists within a culture. Culture is the result of our shared experiences with a group of people, and it influences our attitudes, our actions, and our thoughts. Each culture has its own customs, language patterns, and behavioral patterns. These elements determine, at least in part, how we act in the world and how we perceive what's going on around us.

Although the word *culture* usually brings to mind a shared experience based on national, ethnic, or regional ties,

workplace environments and job specializations also come with their own behavior patterns and way of seeing things. When trying to build partnerships, it's critical to understand that ***each organization brings to the partnership its own unique culture, and different organizations approach work differently.*** Many elements of culture act on us without our awareness. If customs, language, and behaviors are not recognized and valued, they can cause breakdowns in communication between groups, even when both partners have the best intentions.



## Key Aspects of Culture

Here are some things to consider as you think about your own organizational culture and try to develop relationships with partners who may come from very different organizations. These characteristics of culture were outlined by Larry Samovar and Richard Porter in their book *Intercultural Communication: A Reader*.

**Culture is Ethnocentric**—Felix M. Keesing notes that ethnocentrism is a “universal tendency for any people to put its own culture and society in a central position of priority and worth.” *Don't let your passion for your own work interfere with your willingness to collaborate with those working in other fields.*

**Culture Is Not Innate; It Is Learned**—Members of a culture learn their patterns of behavior and ways of thinking over time until they become internalized. All of

this learning occurs as conscious or unconscious conditioning that leads toward competence in a particular culture. *You and your partners have behaviors and knowledge acquired through a long learning process. It will take some time and effort for each to understand where the other is coming from.*

**Culture Is Transmissible**—The symbols of a culture are what enable us to pass on its content and patterns. We can spread a culture through the spoken word

or through nonverbal actions as symbols. *Be aware of how you share your ways of working and knowledge with your partners. Watch and listen to what they are trying to share with you.*

**Culture Is Selective**—Every culture represents a limited choice of behavior patterns from the infinite patterns of human experience. This selection is made according to basic assumptions and values that are meaningful to each culture. *You and your partners may take a different approach to certain subjects. Recognize and respect that there may be reasons for this that make sense within the context of each partner's own organization.*

**Culture Is Dynamic**—As with communication, culture is ongoing and subject to fluctuation. Invention brings new practices, tools, or concepts into the culture. Most members eventually come to accept these innovations. Diffusion, or borrowing from another culture, is another way in which change occurs. Although cultures do change, most change only affects the surface structure of the culture; the deep structure resists alterations. *Your participation in public/private partnerships may lead to some long-term changes in the way that your organizations operate. However, changes may occur slowly or not at all.*

# Recognizing Culture Bumps

**W**hen educators and IT industry leaders come together, there are sometimes frictions that prevent the development of a good working education-to-employment partnership. There may be differences in goals and expected outcomes, unclear expectations for the role of each group in the partnership, difficulty in setting mutually acceptable operational procedures, or miscommunication.

***These differences can be reconciled through understanding and negotiation.***

Organizational differences often grow out of unconscious, deep-seated cultural beliefs that can affect everything from the definition of a word to the understanding of a concept (e.g., time). Culturally based differences in body language, spoken language, and behavior can create tensions or “culture bumps.” If cultural difficulties are recognized and dealt with directly, they are less likely to hinder the development of successful working relationships.

## Identifying and Overcoming Culture Bumps

*If your partnership is already experiencing some tension, here are some steps you can take to overcome these difficulties.*

- ◆ **Recognize that there is a problem and that the problem needs to be addressed.** If you and your partners are experiencing conflict or developing a sense of frustration, don't ignore it or write it off as a difference of opinion. This can cause a small problem to develop into a big one, or, in extreme situations, contribute to the dissolution of a partnership.
- ◆ **Step back and assess the issue.** Unconscious behaviors or feelings often cause culture bumps, and these must be brought to the surface if they are to be dealt with effectively. Each partner must ask: What is really causing the problem? Is it a lack of communication, a difference in expectations, different working styles, a misunderstood word or concept? Using the information on the following pages as a guide, talk with your partners about what the real issue might be. Try to look at the issue from every angle. Step outside of your normal patterns of behavior to analyze the problem as impartially as you can.
- ◆ **Articulate your underlying assumptions and define your framework.** Once you and your partners have decided what the primary issue is (unspoken demands or goals, strategic or operational differences, misunderstood language, etc.), spend some time talking about each partner's own expectations and



assumptions. Even if you think what you're saying is obvious, it may not be. You can also use the examples and strategies on the following pages as a way to talk through these issues.

◆ **Compensate and compromise.**

Once everyone understands that a culture bump exists and why tension developed in the first place, cultivate strategies for moving past it. Have an honest conversation about what each partner needs and what each partner can give, and find a common ground. Make concessions that are effective and mutually agreeable to all parties. If a word or phrase is continually misunderstood, agree not to use it or decide on a single definition as a group. If there are conflicting timelines for program implementation, sit down as a group, decide on a reasonable set of deadlines, and agree to abide by them. Develop a system of accountability that is fair to all partners involved.

- ◆ **Maintain awareness and cultivate sensitivity.** Once you have moved beyond the initial cultural tension, watch out for the issues that caused the problem so that new ones don't arise. Be

*“Once you and your partner have decided what the primary issue is, spend some time talking about each partner’s own expectations and assumptions.”*

sensitive to the fact that you are working with a group of people that may not have the same set of experiences as you and be prepared to modify your behavior accordingly. Alternatively, agree that each party will draw on their particular strength and respect the skills of the other in reaching the shared goal. A strong partnership uses diversity as a strength and enhances the abilities and experiences of everyone involved.

# Key Issues, Examples, and Strategies

**A**lthough there are many factors that come into play when educators and IT industry professionals interact, there are some key issues that can cause tension.

Understanding what these issues are, how to recognize when they are causing difficulty, and having strategies to deal with them will go a long way towards facilitating a strong working partnership.

## Key Issue #1: Language

One of the most common causes of misunderstanding in education/IT industry partnerships is the use of language. Language poses special difficulties for business and education partners who are trying to collaborate on education-to-employment initiatives. Words spoken by one partner, when heard by someone from a different group, may take on an entirely different meaning from that which was intended. They may also mean nothing at all. Both situations can create confusion and mistrust.

### What to watch for:

- ◆ **Jargon.** *When different groups of people try to communicate, jargon can be a barrier to understanding. When using a specialized term, don't assume those outside your organization or culture know what the term means. Many organizations develop sets of specialized words that carry a specific technical meaning, and this is especially true in the IT industry and in education. These words facilitate conversation within the organization, and people who use jargon often feel "in the know." However, these words can be a barrier when used out of context or when used to exclude some partners from the conversation. The IT industry uses words like network administration, Java, and HTML, while educators talk about learning networks, assessment, and standardized testing. Neither may know what the other is talking about.*
- ◆ **Different Meanings.** *Subtle changes in meaning can drastically affect what each partner expects from an education-to-employment partnership. Make sure key concepts are clearly defined. Words may have different meanings for different groups of people. The shift in meaning may be subtle, which can make understanding even more difficult for outside partners. For example, the word *learning*, broadly defined, means the same thing for both educators and employers. However, someone from the IT industry who talks about "learning" may refer to the acquisition of specific skills, while the teacher talking about "learning" is thinking not only about the acquisition of skills, but about the entire context in which the learning is taking place, and about how the process of acquiring those skills is affecting a student's overall development.*

## What to watch for:

◆ **Different Values.** *Different cultures can attach diverging values to the same words. Be sensitive to those differences, and take care when using “loaded” words or phrases.* Words and phrases may have different connotations in different contexts. People attach values to words based on their cultural experiences. For example, “risk-taking” may have a positive connotation for people with an IT background. In such a fast-moving

economy, staying ahead of the game and making money often means taking risks and coming up with innovations. For educators, who work within an established structure in which changes can directly affect students, the possible outcomes of risk-taking must be carefully considered. Also, teachers are not necessarily rewarded for taking risks. “Risk-taking” may thus have a more negative connotation for them.

### Strategy

#### Breaking Down Language Barriers

How do the organizations in your partnership use language? List ten terms that are defined/perceived differently by members of your partnership. Have IT partners list five terms educators use that irritate them. Have educators list five business terms that irritate them. Discuss all of these terms and come to mutual definitions. If there are words or concepts that cause serious difficulty or misunderstanding, come up with alternate phrases as a group.

## Key Issue #2: Presentation

Another area in which educators and IT professionals can differ is presentation. Presentation in this context includes everything from personal attire and speech habits to a sales or project pitch. The way meetings are run, the way communication takes place, and the way information is presented all vary from group to group. Different organizational cultures dictate different presentation styles and habits, and these differences can cause confusion or even offense in the public/private partnership setting.

### What to watch for:

- ◆ **Formal vs. Informal.** *Be aware of the organizational culture of your partner or prospective partner, and respect their need for more or less formal behavior and attire.* There are varying levels of formality in dress, mannerism, and interaction when different groups of people meet. While formality might be a sign of respect and professionalism in some circles, in others, it might seem cold or unnecessary to getting the job done. Although the business world has traditionally been a much more formal setting than the education world, this is changing, especially in the IT industry. However, this varies from organization to organization depending on the level of responsibility held by the person in question.
- ◆ **Level of Detail.** *Partners will often want different amounts of information given to them and may not be willing to agree to something if given too much or too little. Modify your presentation strategy according to the needs of your audience.* Different organizations have different expectations when it comes to the presentation of information. Some people may want to see a great amount of detail about a project before making a decision; others prefer to look at key points and make judgements based on these. There can be many reasons for this. People working in the IT industry may be constantly pressed for time and used to making decisions quickly. They may want to see small quantities of the most useful, relevant information. Educators are often making decisions that affect large numbers of children, and their decisions may have to be approved by administrators or boards. They may want to review detailed plans before agreeing to take action.
- ◆ **Meeting Goals.** *Partners may have different expectations for the same meeting. Clearly establish goals and an agenda to avoid frustration.* There are many reasons that partners might want to come together as a group. They may need to make a decision about a project, plan strategies for future work, or share information and talk about how a project is progressing. Partners will expect a different outcome from the meeting depending on the perceived reason for coming together. Different groups may also have different understandings of what meetings are for in general; some people think of them as a way to “touch base” or discuss things in a deeper way, while others think of them as a way to check progress and generate “action items.” Tension can result if partners come together with different meeting goals. One group may be frustrated if nothing concrete is decided upon, but another may be upset if information isn’t shared.

## Strategy

### Understanding Different Presentation Styles

Have all partners read “The Five-Minute Sell” in Appendix D. Each group, using this document as a guide, should spend 20–30 minutes developing a brief presentation on their organization and what they need from and can give to the partnership (employers should adopt the model to “sell” themselves to educators). Partners should take turns giving this presentation to the group as a whole. When the presentations are finished, consider these questions:

- ◆ Was this exercise difficult or easy for your group? Why?
- ◆ What are the benefits and limitations of this kind of presentation?
- ◆ “The Five-Minute Sell” was designed for educators speaking with employers. What do employers need to do when they are presenting to educators?
- ◆ If you could design your ideal presentation, what would it look like?
- ◆ What new things did you learn about your partner during this exercise? Did the presentations raise any new questions for you, or reassure you about any previous concerns?

# Case Study

## Formality vs. Informality on the Job:

### ITAA Groundhog Job Shadow Day

ITAA hosted two high school freshmen interested in careers in the computer field (pictured here with ITAA Director of MIS Martin Ennis), on National Groundhog Job Shadow Day, February 2, 1999.

One of the differences that students often notice when they job shadow or start an internship is the greater formality of communication and expectations in a business setting. These students, together with their program coordinator at ITAA, typed a thank you e-mail letter to one of the national organizers of Groundhog Job Shadow Day. After

they had quickly written the letter as a group, they were asked: "What do we do now?" "Send it!" was the enthusiastic reply. Upon further prompting, however, they realized that it was a business letter and not like a casual e-mail

between friends. After careful proofreading and a spell check, they finally sent the letter, double checking the correct address. Simple workplace actions can reinforce classroom lessons in doing careful work, sharing only the highest quality documents in



public, and understanding issues related to the proper uses of e-mail and the potentially serious consequences of using it incorrectly.

## Key Issue #3: Organizational Structure

Organizations can be structured very differently depending on their unique histories and needs. Information flow, power structure, authority, and decision making all depend on an organization's culture. When groups come together to form a partnership, differences in organizational styles can create tension. One group may expect work to proceed in a way that may be antithetical to their partners. This certainly can be the case in education/employer relationships.

### What to watch for:

- ◆ **Power Structure.** *When building public/private partnerships, it's important that the right people are engaging in conversations. Knowing your partner's power structure (i.e., who makes decisions, who can commit resources and who can "take on" the partnership) can help you contact people appropriate for the work at hand. Depending on the organizational culture, authority and control are held in different ways by different people. Some cultures have a more hierarchical structure and rigid chain of command, while others have a less hierarchical structure in which many people share power across an organization. Power within an organization can be delegated for various reasons. In some organizations, power is based on seniority, while in others, it may be more a matter of skill or talent in a certain area. Education has tended to take a top-down approach in its organizational structure, although this is changing in some areas with innovations such as peer-teaching and school improvement committees that involve teachers, parents, and community members. The IT industry, given the nature of the work and working style, often has a less hierarchical power structure, although this is not always the case.*
- ◆ **Decision Making.** *Different decision-making styles might seem too slow or too hasty to some partners. Recognize that the decision-making process is not arbitrary, but culturally determined, and try to work out a compromise. Not every group approaches the decision-making process in the same way. Some organizations may try to develop consensus through conversations and group meetings. Others may delegate authority to one person, and some organizations may have a lengthy approval process involving several people or groups of people. Frustration can develop when groups with different decision-making strategies come together to work on a new project. One partner may expect that work and project implementation can be decided upon at a partner meeting, while another group needs to take options back to discuss them with an administrator or board.*
- ◆ **Information Flow.** *Organizations share information in different ways, and your partner may not have ready access to all of the details you need about a project. If you know you need specific information in order to make a decision or prepare a proposal, try to ask for it well in advance of your deadlines.*

Organizations handle the distribution of information in various ways. In some groups, the information flow is highly centralized, and information is given out on a “need-to-know” basis. The process for acquiring information in this system can at times be frustratingly slow. Other

organizations may take a much more open approach to sharing information. The details about a project are readily available, or shared with everyone as a matter of course. Most often, the distribution of information depends not only on the organizational culture, but on the sensitivity of the particular information that is being requested.

## Strategy

### Getting to Know Your Partners’ Organizational Structures

Have each partner chart or map out their organization’s structure on a large piece of paper. Share these “maps” with the group and use them along with the following questions to generate dialogue among your partnership members:

- ◆ In which ways are the organizations in your partnership different? In their power structure, flow of information, decision-making styles? Are there other areas of difference?
- ◆ What is changing in your organization and why are you making those changes? Where will your organization be in relation to these issues five years from now?
- ◆ What elements of your organization’s culture are flexible, and what cannot be changed? What are some ways of working around the issues that can’t be changed?
- ◆ What are effective ways to “break set” and begin to work in new and different ways? Provide some examples.



## Case Study

### Organizational Structure: Building Strength from Different Ways of Working

An intermediary organization was asked to meet with the individual members of a business/education partnership to determine ways to strengthen and build on the partnership. At the time, both business and education partners were feeling some dissatisfaction. The business-people felt that the time they volunteered to the schools, which they saw as very valuable, was not being used in an effective or productive way. The educators, on the other hand, were having difficulties creating “jobs” for the volunteers that fit with what they were trying to accomplish in the classroom.

The businesses were asked to describe some complex problems that their organization had to solve within the past month. The companies were glad to have an opportunity to contribute something meaningful that directly related to their work. They came up with 15 problems that the intermediaries were able to sketch out and take back to the schools. Educators were then asked to describe the concepts and activities that they were trying to teach in the classroom.

The intermediaries used the opportunity to build on each partner’s strengths

and interests. They took the problems from the business community and looked for good “matches” with the ideas that educators were trying to get across in the classroom. They discovered that many of the problems were directly relevant to what teachers were trying to teach. These problems were given to teachers and volunteers, who worked together to solve the problems and see how they might be used in the schools. Through this process they created a bank of real-world problems for students to work on in the classroom, along with some ways to approach solutions.

This process, which utilized each partner’s own skills and area of expertise, produced some very positive results:

- ◆ The schools and businesses developed a new and successful model for working together within the partnership.
- ◆ Employers invited the students on-site to present their solutions to industry representatives.
- ◆ The partnership created new teacher and student internships, which resulted in the development of even more work-based learning problems for the classroom.

## Key Issue #4: Time

The perception and use of time can vary radically from culture to culture. This is an important consideration in public/private partnerships, because the business and education worlds run on different cycles, and there may be different expectations of what an acceptable or even reasonable deadline might be for taking action or for determining how well a program is working. Understanding that a time period does not necessarily mean the same thing to different partners can be critical when developing public/private partnerships.

### What to watch for:

- ◆ **Timeframes in Business and Education:** *It can be frustrating to collaborate with a partner whose organizational timeframe differs from your own. It is critical to the success of new education-to-employment initiatives that their timing meets each partner's needs.* People think about time in different ways. Time can be cyclic or linear, and the perception of time can be highly contextual and directly influenced by organizational culture and realities. An organization's use and understanding of time determines the speed of project development, program implementation, and deadlines. Some partners may need time to digest and "buy into" an idea before taking action. Yearly schedules can also impact program implementation. Educators tend to take a cyclic view of time, working on the rhythm of the academic calendar (September to June). School budgets and staffing for September are planned by the preceding January. The school's master schedule is completed by June. This cycle can influence the degree to which new education-to-employment initiatives can be incorporated into the educational structure. Businesses are more likely to have a linear outlook and may want to move forward with program development right away.
- ◆ **Rate of Change:** *Schools and IT businesses often necessarily move at a different pace. Avoid culture bumps by developing a mutually acceptable timeline at the beginning of a project and agreeing to abide by it.* The rate at which change takes place differs from organization to organization. This can be an especially difficult issue in IT public/private partnerships. In the IT industry, technologies are improved upon or discarded at a rapid pace, and in order to remain financially solvent, businesses have to respond quickly. This means that change happens quickly and frequently. The rate at which schools process change and move forward with new initiatives is often more measured. Approval for new projects can take a long time. Any changes made will impact scheduling of a large number of students, so the effects have to be considered carefully. If both partners talk frankly about these issues, a compromise can often be reached.
- ◆ **Length of Commitment:** *All partners need to be equally committed to staying involved in the program and making sure it meets partner and student needs in a timely fashion.* Because of their perceptions of time, different organizations may find different lengths of time acceptable for taking actions and seeing results.

This can influence the amount of time they feel they should be committed to a certain project. Businesses, especially in the IT industry, often think in terms of immediate needs. While businesses are always thinking about future development, they often have difficulty taking the long-term view. This may make them more quick to abandon programs that are not immediately perceived as successful. Even if they are committed to seeing a project through, businesses want a time commitment that has a clear beginning and end. They may be much more willing to become involved with a project if they know that they'll be

committing to, for example, mentoring a student for one half-hour per week for three months. This lets them know that the project has a beginning, an end, and some clear objectives. Educators usually have no trouble taking the long-term view. Student development is not an instantaneous process, and educators are committed to seeing it through. However, the education system may not always be responsive to the immediacy and changing nature of industry needs. Both sides need to understand the other's position in order for the partnership to be a strong and stable one.

## Strategy

### Developing a Timeframe That Meets Everyone's Needs

First, use the following questions to generate discussion among partnership members:

- ◆ How does your organization perceive time? Describe your yearly schedule and key dates.
- ◆ What are the most common problems connected with time, both at your workplace and within the partnership?
- ◆ How can these problems be resolved?
- ◆ How can your partnership's current timelines and actions steps be modified to accommodate the scheduling needs of the various partners?

Next, draft a timeline for the next six months or year that reflects these modifications, making sure that each organization buys in to the new schedule.

# Case Study

## Business Cycle vs. Education Cycle

**Example 1:** In 1994 the environmental industry in one area of the country voiced a need to the local community college system for more environmental technicians. During the first year of this initiative, the industry and educators worked together to identify the skills and knowledge needed. During the second year, the colleges developed new courses and curricula. It took two years for the state to approve the courses and formally initiate the new programs. Students completing the new program in 1999 found that there were no jobs because the industry had stabilized. Clearly, the time needed to develop and approve new programs and courses within the state community college system were not aligned with the rapid changes of local industry. To resolve this situation, the state developed a flexible technician-training program

that allows decisions on specialty courses in state-approved programs to be determined at the local level, thereby responding more quickly to needs of industry for new types of technical workers.

**Example 2:** A successful education-to-employment partnership produced top-notch employees in a timely manner. Suddenly, the market took an unexpected downturn, leaving many people unemployed. Although educators had done everything the industry had asked for, their students were left with no job prospects in the field for which they had prepared. To combat the problem in the future, a joint board that crosses industries was created. Members of the board “share” the labor pool, ensuring that if employees aren’t needed in one area, they can be quickly moved into jobs in another area.

# What to Consider When You're Building a Partnership

## Learning and Working in Our New Society

### The IT Industry...

- ◆ *is critical to the functioning of modern society and to our economic future.* The IT sector supports a critical infrastructure of computer networks and information systems that is essential to modern society. A Commerce Department report, *The Digital Work Force*, states that IT contributed more than a third of the real U.S. economic growth between 1995 and 1997. Between 1998 and 2003, U.S. business-to-business commerce over the Internet is projected to grow from \$48 billion to \$1.3 trillion, with an additional \$1.8 to \$3.2 trillion in global e-commerce.
- ◆ *is transforming the cultural landscape.* There is an ongoing explosion in the types and varieties of products and services possible in this new digital economy, including wireless communications, personal computers, the Internet, and smart machines. These products are changing the ways that we think and communicate. For example, a Nobel Peace Prize was recently awarded to the Committee to Ban Land Mines. Thanks to e-mail, this

organization was able to quickly organize a worldwide community of people with common interests.

### Education...

- ◆ *has been crucial to the rapid gains that the IT industry has made over the last 50 years.* Although the long-term results of education are not always immediately apparent, the education system has helped to develop and nourish the critical and innovative thinkers who are today's leaders in the IT industry. Consequently, the IT industry has a vital stake in supporting and improving the educational system to ensure future gains.
- ◆ *has been the source of some of the most revolutionary and dynamic new ways of learning and working—and these ideas are often adopted by businesses.* These ideas include: project-based learning, which integrates basic and academic skills with technical skill development; competency based learning; the practice of teaching to the “big ideas”; and the shift towards teaching what the learner needs to know and do in order to achieve high standards.

### Together we must work on . . .

*The Digital Opportunity.* Although pockets of excellence are seen in many communities across the country, there is a great concern over the lack of access to technology in schools and communities, particularly in poor and urban areas. There is a recognized and growing digital divide that has the potential to create a new class system separating technology “haves” from “have nots.” This disparity in technological access has the potential to have a significant impact on the future of both education and business.

# The Changing Face of Education

## The IT Industry...

- ◆ *has created totally new environments, including simulated or virtual worlds and complicated networks.* Computers, and the related multimedia technologies they make possible, are allowing us to simulate almost everything, from medical training and building design to flying airplanes and fighting wars. These technological advances hold exciting possibilities for education. Networked databases allow art students in isolated rural areas to take virtual visits to the world's finest museums. The Internet also gives students the opportunity to interact with peers and experts from all over the country, or even the world. However, this technology also raises a multitude of issues related to intellectual property protection, computer security, and privacy.
- ◆ *enhances the ability of workers, consumers, and learners to become active participants in selecting training, news, entertainment, and education.* As opposed to the traditional passive model, where learners were often spoon-fed information, the modern learner is an active participant in the education process. Increasingly, the consumer can be the publisher,

picking and choosing on an interactive basis what he or she most needs or is interested in exploring.

## Education...

- ◆ *is transforming the way we learn as student demographics and needs grow more varied.* Schools have adopted a variety of new techniques and theories, such as multiple intelligences, differentiated instruction, and distance learning, to meet the needs of a changing student population. At all levels, education is at the forefront in responding to the increased diversity in our national population and the various languages used in the classroom. Education, however, has not routinely asked how technology can best support these approaches.
- ◆ *must still meet a broad range of human development needs for its students.* The pace of change in education is necessarily slower than in the IT industry because of the depth and breadth of human development needs that educators must consider. Rather than training to a specific skill, educators must meet the needs of the whole person and make sure that person is adequately equipped to face all future challenges.

## Together we must work on . . .

*IT Training for Teachers.* Teacher training in IT is woefully lacking in light of what we know about the IT expectations for graduates transitioning to the world of work. Opportunities for professional training and advancement for teachers in areas outside their content specialty are limited. Those teachers who do obtain advanced technology training often leave education to work in the IT industry. In addition, many teachers are relatively isolated from new trends and technology. These teachers, consequently, may need considerable orientation, feedback, and information from the IT industry. Education often lacks the tools and resources to enable teachers to become as competent in IT as they need to be without the support of industry.

# Workforce Development

## The IT Industry...

- ◆ *is currently in the midst of a worker shortage.* According to the Information Technology Association of America's recent "Bridging the Gap" study, employers will have about 1.6 million IT positions open this year, but only half of them are likely to be filled. Both government and private industry worry that not enough people are trained in technology skills. Public awareness regarding our educational system has not caught up to the new realities of our heavy reliance on computer networks of all kinds.
- ◆ *requires that high tech workers today must regularly update their IT skills as new jobs are created to keep pace with the latest opportunities in the job market.* Some of the most lucrative IT jobs, such as web design, e-commerce, or Java programmer, did not even exist a few years ago. Knowledge workers, many of whom can contract or outsource on an individual basis with firms, present new paradigms for working. Computer enabled technologies have made long-distance learning and training and telecommuting attractive options for a rapidly growing number of people.

## Education...

- ◆ *is perfectly poised to help the IT industry overcome its worker shortage.* Educators want to see their students succeed in work and life. Developing IT skills gives students the chance to do both. There are many schools that are working toward developing strong IT programs that will prepare students to enter the IT workforce directly or work toward an advanced degree. Some of these programs are already in place. Education-to-employment programs and public/private partnerships have a significant role to play in this emerging area of education.
- ◆ *wants to know what the IT industry needs from the workforce of today and tomorrow.* For years, educators heard that if they prepared students with literacy and numerical skills, employers would train people for jobs, or students would get employability skills in college. Now schools are also expected to provide technology skills and employability skills as well. In addition to having to cope with this shift, educators often feel that they are not given enough information about what skills students will really need, or worry that these skills will have changed by the time students graduate. Without this critical information, teachers cannot adequately prepare students for high-skill IT jobs after high school.

## Together we must work on . . .

*Sustainable, Flexible IT Education-to-Employment Programs.* IT education-to-employment programs need to be flexible enough to meet employers' changing needs and stable enough to be sustainable over the long term. Although the business community is praised for its rapid response and flexibility, businesses are also noted for quickly giving up on systems that are not producing required results. If employers give up on IT education-to-employment programs before they get a chance to run smoothly, educators (along with students and parents) will lose trust, support, and, in time, the whole program. On the other hand, educators are not always known for their rapid response to changing needs. In order to maintain employer support and program viability, educators need to listen to what IT employers need and make changes to their programs as quickly as is possible.



## Market Pressures and Employment

### The IT industry...

- ◆ *is incredibly dynamic, and high tech firms must constantly reinvent themselves to keep pace with rapid technological change.* Who could have predicted the rapid technological advances that have occurred in recent decades? IT firms are under relentless pressure to keep their technology up to date and to keep abreast of emerging market conditions. Those firms that fail to update their technology or to keep pace with changing markets do not survive for long. Witness the fate of major PC makers of the 1980s such as Prime Computer, Data General, and Wang. These companies failed to understand market realities and, consequently, have failed, been sold, or greatly reduced in size.
- ◆ *has fluid employment patterns driven by the bottom line.* The technology sector is one of the driving forces in the U.S. economy. Giant companies like Cisco, Oracle, and Microsoft all have relative short histories, but have made astounding profits in today's economy. All businesses are governed by profit and loss, and this determines employment patterns, especially in the IT industry. If the business grows, new people are hired, and the firm prospers. If profits slow, people are laid off, and the business could fail. Workers in the business world, especially within the IT industry, change jobs frequently, selling their services to the highest bidder. If someone fails to produce results, that person may be fired.

### Education...

- ◆ *has rewards that are often primarily intrinsic rather than monetary.* Education cannot offer the kinds of compensation found in the IT industry, such as bonuses, stock options, and high salaries. However, teaching comes with intrinsic rewards that have nothing to do with money, and many teachers are just as committed, if not more so, to their jobs as those working in the IT sector. However, teachers often have to compensate for low wages by working second jobs to supplement their income.
- ◆ *cannot choose or "fire" its students.* While the IT industry can be and is selective in its choice of its workers, schools must educate *all* students within their geographic area, regardless of multiple barriers that students and their families encounter. These barriers include poverty, physical, mental and emotional disabilities, language, legal problems, and health and housing issues.

## Together we must work on . . .

*A Common Mission and Scope of Commitment.* Educators, whose mission is legislated, see themselves as committed to people. They are responsible for raising the skill and knowledge levels of all students within a designated geographic area in all required subjects. Business, on the other hand, has more control over the input into its system. Driven by the profit motive, industry has a comparatively narrowly defined mission to produce specific quality products and services. However, both education and the IT industry are interested in well-prepared students who are able to successfully enter the workforce. This common interest can serve as the basis for a strong partnership that meets the needs of educators, the IT industry, and, most of all, students.

# Conclusion

Every group in an education-to-employment partnership brings a different organizational culture and perspective to the partnership table. By maintaining cultural awareness, using appropriate strategies, and setting common goals, partners can minimize cross-cultural conflict. Effective partnerships respect and appreciate the diversity brought to the table by each organization, maximizing each group's value by using differences as strengths. Over time, successful partnerships develop an interculture, a safe and comfortable space where elements of the various organizational cultures within the partnership merge into commonly accepted customs and language, and shared patterns of behavior and work. Partnerships that work through cross-cultural issues and achieve a comfortable interculture increase their potential for effectiveness and sustainability. These education-to-employment partnerships have a strong and lasting impact on the communities they serve.

# Appendix A

## Useful IT Terms and Resources for Educators

The websites, books and other resources listed below provide general as well as detailed information on important terms and concepts in the IT sector. Please let us know about additional resources that can assist educators seeking to learn more about information technology.

### IT Websites

- ◆ *All About the Internet*. A very informative site maintained by the Internet Society. [www.isoc.org/internet](http://www.isoc.org/internet)
- ◆ *CNET.com*. Technology news and reviews. [www.cnet.com](http://www.cnet.com)
- ◆ *Common Jobs in the IT Sector*. A definition of Information Technology and a list of common jobs in the IT sector. [www.itaa.org/workforce/resources/forjob.htm](http://www.itaa.org/workforce/resources/forjob.htm)
- ◆ *Computers: History and Development*. Excellent overview by Jones Telecommunications and Multimedia Encyclopedia. [www.digitalcentury.com/encyclo/update/comp\\_hd.html](http://www.digitalcentury.com/encyclo/update/comp_hd.html)
- ◆ *Hobbes' Internet Timeline*. An authoritative history of the major technical and personal milestones in the Internet's development. [www.zakon.org/robert/internet/timeline](http://www.zakon.org/robert/internet/timeline)
- ◆ *ITAA's Website*. Visit the Information Technology Association of America's website to learn about key public policy issues and concepts related to information technology. Click on "Workforce" on ITAA's home page to find links to many useful sites, including the Commerce Department's "Go4IT" IT workforce-related web index. [www.itaa.org](http://www.itaa.org). Within the website, look at *IT Workforce and Education—Useful Links*. This page offers links to many websites dealing with important issues such as industry partnerships and women and minority involvement in IT. [www.itaa.org/workforce/resources/partner.htm](http://www.itaa.org/workforce/resources/partner.htm)
- ◆ *Nerds 2.0.1—A Brief History of the Internet*. This PBS site, the companion to one of its television specials, offers some useful background on the Internet, as well as a timeline and links to information on computer industry leaders. [www.pbs.org/opb/nerds2.0.1](http://www.pbs.org/opb/nerds2.0.1)
- ◆ *NetLingo*. An online dictionary of Internet-related terms. [www.netlingo.com](http://www.netlingo.com)
- ◆ *The Educators' Website for Information Technology*. Information and resources for IT educators and those interested in IT and education. [www.edc.org/ewit](http://www.edc.org/ewit)
- ◆ *The Techforce Website*. Information about the Techforce Initiative and IT School-to-Work. [www.itaa.org/workforce/programs/stw.htm](http://www.itaa.org/workforce/programs/stw.htm)

## Sample Online IT Magazines

- ◆ *CIO Magazine*. [www.cio.com](http://www.cio.com)
- ◆ *Computer World*. [www.computerworld.com](http://www.computerworld.com)
- ◆ *Information Week*. [www.informationweek.com](http://www.informationweek.com)
- ◆ *PC Magazine*. [www.pcmagazine.com](http://www.pcmagazine.com)
- ◆ *Wired*. [www.wired.com](http://www.wired.com)

## Books on the Digital Economy and Computers

- ◆ *Being Digital*, by Nicholas Negroponte (Knopf, 1995). A collection of essays that Negroponte, founder of MIT's Media Lab, wrote for *Wired* magazine.
- ◆ *How Computers Work: Millennium Edition*, by Ron White, Timothy Down, and Stephen Adams (MacMillan, 1999). Includes detailed illustrations. A national bestseller.
- ◆ *The Digital Economy: The Promise and Peril in the Age of Networked Intelligence*, by Don Tapscott (McGraw-Hill, 1995). Excellent overview of the development of the "digital economy" and its impact on business, education, and government.
- ◆ *What Will Be: How the New World of Information Will Change Our Lives*, by Michael L. Dertouzos and Bill Gates (Harper, 1997). "Dertouzos (Director of MIT Laboratory for Computer Science) refreshingly attempts a return to basics, eschewing hype and spectacle. He envisions the emerging world of information as a '21st-century village marketplace where people and computers buy, sell, and freely exchange information and information services'" (New York Times Book Review).

# IT Definitions

The following are some IT terms and concepts that may be helpful for educators involved in IT education-to-employment partnerships. For more information, visit a website such as netlingo.com.

**Cross-platform.** 1.) Available for more than one type of computer. For example, a cross-platform program might be available for PC, OS/2, and Macintosh. 2.) A computer that can understand and run programs in different operating systems. For example, a PowerPC that can run Macintosh and Windows programs.

**Cyberspace.** A term coined by author William Gibson in his novel *Neuromancer*. The prefix *cyber* comes from the Greek word *kybernan*, which means to steer or govern, and is used with words related to cybernetics (communication and the control of complex systems, especially in comparing automatic control systems such as computers with the human nervous system). Cyberspace refers to the electronic space created by computers connected together in networks like the Internet.

**Data warehouse.** A very large database designed for fast processing of queries, projections, and data summaries, normally used by a large organization.

**Digital information.** Information stored in binary form that a computer can understand. Text, graphics, and sound are all stored as ones and zeros in a computer.

**E-commerce.** (EC) Electronic commerce—the use of computers and electronic communications in business transactions. E-commerce may include the use of electronic data interchange (EDI), electronic money exchange, Internet advertising, websites, online

databases, computer networks, and point-of-sale (POS) computer systems.

**Enterprise network.** A network for a large business enterprise. This kind of network may comprise a number of local area networks which have to interface with each other as well as a central database management system and many client workstations. The design and management of an enterprise network can be very complex.

**Entrepreneurial.** Organizing, operating, and assuming the risk for a business venture.

**Information Technology.** The study, design, development, implementation, support, or management of computer-based information systems, particularly software applications and computer hardware. IT workers help to ensure that computers work well for people. Nearly every company, from a software design firm, to the biggest manufacturer, to the smallest mom & pop store, needs IT workers to keep their business running smoothly.

**Internet.** A global system of linked computer networks that enables the transfer of data. With a small “i”, refers to interconnected local area networks (LANs).

**Network.** A group of interconnected computers, including the hardware and software used to connect them.

**Search engine.** A program on the Internet that allows users to search for files and information.

## A Sample of IT Career Disciplines

**Network administrator** (also referred to as **system administrator**).

A person who manages a communications network within an organization. Responsibilities include network security, installing new applications, distributing software, monitoring daily activity, enforcing licensing agreements, developing storage management programs, and providing for routine backups.

**Programmer.** A person who writes, tests and debugs software programs for computers.

**Software engineer.** A person who designs and programs system-level software, such as operating systems and database management systems.

**Systems analyst.** A person who designs or modifies an information system to meet the requirements of its end user. Systems analysis includes investigating a program's feasibility and cost, producing documentation, and testing a prototype of the system at several stages of its design. Systems analysts are the architects of an information system.

**Technical writer.** A person who writes documentation for software and hardware for use in manuals and online help.

# Appendix B

## Useful Education Terms for IT Industry Workers

These are some education terms and concepts whose connotations may not be familiar to business people operating in IT public/private partnerships.

**All students.** School systems developed through federal dollars are intended to enable and encourage *all students* to participate. This includes males and females from a broad range of backgrounds and circumstances, all cultures, all languages, students with disabilities, limited English proficiency, migrant children, school dropouts and academically talented students.

**Carnegie Unit.** A credit signifying the completion of one of several core high school courses. Named after the Carnegie Foundation for the Advancement of Teaching.

**Connecting activities.** Program and human resources that help link school and work-based education programs.

**Equitable.** Education should provide equitable services and quality programs for all students without regard to race, gender, religion, or social class.

**Holistic.** Education prepares the whole person for challenges he/she will face as an adult. In schools students learn basic skills, specialty skills, career skills, health topics, physical education, social development and civic responsibilities; specific content skills as well as technology skills.

**Industry skill standards (or skill standards).** A listing of what workers entering an industry need to know and be able to do to succeed. Many communities are adapting national voluntary industry skill standards to structure their local school-to-work systems.

**Internships.** Paid and nonpaid student experiences in business and industry. Internships are usually associated with a particular school course or program.

**Learner centered.** Curriculum that builds skills and knowledge from each student's previous learning.

**Legislated.** School districts are required to accept all students within specific geographic boundaries.

**Linear.** Schools are organized by grades, with students moving through the progression of grades at anticipated intervals.

**Mandatory.** Participation in schooling is required for students ages 6–12.

**Nationally portable credentials.** The organizations of elementary, middle, and high schools across the nation allow for transferability of courses, grades, and promotions.



**Reliable.** Schools will not go away when the economy changes. They work on academic calendars familiar to the community, families, and the public. Procedures/policies for entering and leaving schools are similar nationally.

**Scenarios.** Workplace problems developed by teams of front line workers and educators. Scenarios require students to integrate academic, technical, employability, and interpersonal skills as they solve problems that face front-line workers in the first three years in an industry.

**SCANS skills.** Five competencies or skills needed for workplace success and three foundation skills (skills and qualities that underlie competencies) as defined by the Secretary's Commission on Achieving Necessary Skills (SCANS) in 1991. To meet the five workplace competencies, workers must be able to productively use resources, interpersonal skills, information, systems, and technology. The foundation skills include basic skills, thinking skills, and personal qualities. For more information, see the SCANS 2000 website: [www.scans.jhu.edu](http://www.scans.jhu.edu).

**School-based learning (SBL).** A program based on high academic and skill standards that includes career exploration and counseling and instruction in a career major.

**School-to-work.** School-to-Work Opportunities Act of May 1994 established a national framework for development of school-to-work systems in states. This includes school-based learning, work-based learning, and connecting activities for all students.

**School-to-work local implementation plan.** Usually refers to a local partnership's federally funded plan to establish and run a local school-to-work system.

**School-to-work local partnerships.** Formal agreements among local stakeholders to set up and to carry out school-to-work activities within a defined geographical area. Businesses might participate in more than one local partnership.

**School-to-work state implementation plan.** Usually refers to a state's federally funded plan to establish and run a statewide school-to-work system.

**Shadowing.** Students follow an individual for a day to see what it is like to work in that job.

**Standards-based.** Schools offer Carnegie Units for high school programs, identifying nationally recognized courses needed for college entrance. Schools are responsible for teaching to state content standards and, in some states, to ensure students pass state tests.

**Tech Prep.** A national movement to link secondary and post-secondary technical education and training programs. Tech Prep uses articulation agreements to link programs and curricula.

**Work-based learning (WBL).** Learning that takes places in a work setting that includes long- and short-term experiences. Work-based learning is tied to school-based learning through connecting activities.

**Workplace mentors.** Mentors are role models for youth. Workplace mentors dedicate a few hours each month to familiarizing their student with the workplace, offering information on skills needed for workplace success, or assisting with school projects and personal issues.

# Appendix C

## **For Both Educators and IT Industry Workers: The Pathway Pipeline Model**

Most educators view the IT career pathway as a sequence of courses and work experiences that prepare learners for high skill, high wage IT jobs. It can be compared to a well-paved, well-lit road with on and off ramps, rotaries so that learners can change direction, exit, and re-enter the pathway, and clearly marked travel lanes and exits leading to different places. For employers, the IT pipeline is a multilane superhighway, filled with cars that all end up in their parking lots, providing them with employees. The Techforce Initiative has developed an IT Pathway Pipeline Model that meets both of these needs.

The IT Pathway Pipeline Model lays out an IT skills progression for learning, living, and working, and incorporates benchmarks for IT literacy in grade 4, IT fluency in grade 8, IT for all work in grade 10, and IT employability in grade 12. This model supports the IT industry's need for a pipeline of talented workers and the education system's need for a pathway that provides learners with a foundation of IT knowledge and skills to use and build on in the future. You can read the Pathway Pipeline Model online at the Educators' Website for Information Technology at the suggested reading page: <[www.edc.org/EWIT/reading.htm](http://www.edc.org/EWIT/reading.htm)>. You can also order copies of the Pathway Pipeline Model. For more information on ordering, visit the publications page of EDC's website: <[www.edc.org](http://www.edc.org)>.

# Appendix D

## “The Five-Minute Sell”: Tips for Educators Working with Employers

**E**ducators often have difficulty garnering business support for their initiatives. The reasons lie not in the worth of the educational opportunity nor in the willingness of employers, but in the approach toward employers. Business participation is necessary to your success. It’s an immediate need on your part. However, the outcomes of your programs may not directly impact the businesses you work with for two or more years, after students exit programs with academic and employability skills. Here are some hints on approaching employers:

### *One-to-One*

Capture your program on one page, emphasizing outcomes and how the program grows over time. Use bullet points in simple language, not educational jargon. Mention exactly how many students you will reach. List opportunities with as much detail as possible so employers clearly understand the resources needed and can determine what available resources they may have. For instance, if you have a high school academy that requires employer mentors, describe the responsibilities of the employer mentor, including length of time, content, training, reporting, and goals. Be clear and concise. See the National Employer

This document was adapted from the National Employer Leadership Council. The original product was developed with input from Gwen Maeda and Nora Whitford of McKinley High School in Honolulu, Hawaii and LEED Sacramento, a regional school-to-careers intermediary organization in California.

*Most employers work with students in your community already – from high school, community college or the university – everyday. It is important to build on their community outreach programs and help them see the links to your system building efforts.*

Leadership Council Employer Participation Model (EPM) for definitions and the NELC website ([www.nelc.org](http://www.nelc.org)) for examples. Prepare the materials in a folder you can leave with your prospective partner.

### *Meet With Decision-Makers*

Try to meet with senior management, preferably the CEO of the company. It’s important to meet with people who can become champions for IT education-to-employment partnerships within the community. Make a 30-minute appointment. Only 30 minutes. Your “call” team may include a student or a

parent, a teacher, and a committed employer. Decisions about the use of personnel time and company resources will be made at this level. You will implement your program—most likely—with line managers and other members of the staff.

### *The Speech*

Employers spend 95 percent of their time running their business and 5 percent on other things. If you have their attention for 5 percent of their time (24 minutes on the day of your appointment to be exact), how best do you use that opportunity?

Make the speech short and follow a logical format.

1. One minute on what your program is.
2. One minute on the employer role and responsibilities.
3. One minute sharing the menu of opportunities for employers.
4. One minute sharing the support from other employers in your community.
5. The last minute, ask which menu opportunities match their interests and resources.

Your presentation will encourage questions and comments. Be mindful of time. Mention that you want to be respectful of time. If you have been clear, the employer will know exactly what you want and how to respond to the opportunity.

### *A Menu of Options*

Create a menu of employer options that is directly tied to program outcomes. For instance, if your program's success depends on job shadows, mentors,

internships, worksite tours, career fair presentations, employer materials and employers to sit on curriculum committees and partnership boards, then list each item and its resource commitments in matrix fashion. Be specific. If you need 25 mentors, say so. If you need job shadows each quarter for 150 students, say so. Know your resource needs.

Extract activity definitions matching the ones used in your program. Try to use the same definitions if possible. Although the details of the participation may vary, the type of activity will likely be similar. Using this common language for your employers will allow them to access information on how to implement activities from their peer employers across the regions and states where they have an active business presence. Just as important, employers will be able to talk to their peers using a common language about the value or return on their investment that will strengthen employer commitment. Have a list of local companies signed up for the activities and keep it current.

The menu should be a checklist so the employer you are meeting can make a commitment on the spot. The menu should also have a contact name, fax number, and address, in case the employer sends this list to another department. Always ask for a contact name so you can follow up on the commitment and take the next steps necessary to implementation.

When your activities are well organized, with clear roles, responsibilities, and outcomes, that 5 percent of their time is worthwhile and well spent. One of the most promising returns-on-investment

for businesses is the increased employee morale accompanying such work-based activities. While working with others, sharing expertise and experience, builds self-esteem, we often don't see the link between working with students and increased productivity.

### *What Matters*

Employers care about community. They watch to see what their peers are doing in the community, what employer leadership is committed to, and what the community is committed to. They are concerned about high standards and strong basic skills for all students. They clearly see the relationship between quality education and a quality workforce. Most employers work with students in your community already—from high school, community college or the university—everyday. It is important to build on their community outreach programs and help them see the links to your system-building efforts.

However, it's also important that you be able to answer these basic questions quickly and clearly: What is this program really about? What's in it for me? What do you want from me? Who is involved? For example, is the governor behind the program, or is this just the good idea of an individual teacher? Companies need to clearly see the benefit of your program and like to know that others in the community are

already involved. An existing coalition may make or break the potential involvement of a new company.

### *An Intermediary*

Employers are concerned that too many community programs are coming to their door for support. If your community has not considered the value of organizing resources and matching responsibilities at the regional level, now may be the time to start. Think about your employer community as the resource pool for the applied experience you want all students in your community to have. What would it mean for your school districts, non-profit programs and other agencies who need employer support to work together? For a more in-depth look at the role of the intermediary, request the NELC brief on intermediaries.

### *Time*

Remember the 95/5 principle. With only 5 percent of their overall time available for all of their commitments not directly related to business, employers may have a limited amount of personnel time to allocate for support. Large businesses may have staff that can serve on your policy boards. Medium and small businesses may have less time to work on time-intensive activities but be willing to participate in working directly with students and teachers in the workplace.

# Appendix E

## Getting the Most Out of an Internship or Work-Based Learning Experience

When good working partnerships are developed, many employers and educators find themselves engaging in cross-cultural student and teacher internships in industry. Connecting school-based and work-based learning can strengthen the internship learning experience for both students and employers. As a way to minimize potential cultural problems, the following guidelines are suggested.

**Match.** Appropriately match the intern with the internship situation. This ensures that worksite experience will help the intern meet learning goals and that the skills of the intern will add value to the worksite. Providing learners the opportunity to work in a variety of departments can facilitate a successful match.

**Reflection and Feedback.** Build time in the work experience for the intern and worksite supervisor to reflect on what has been learned and to ask and answer questions. The worksite supervisor and intern should review progress weekly.

**Clarify.** Orient both the intern and the worksite supervisor to the goals and objectives of the work-based learning experience and the expected behaviors of both the intern as a learner and the worksite supervisor as a mentor. The intern should have a learning plan that provides a checklist of the skill and academic standards intended to be developed at the internship site. This checklist should include a sampling of the types of problems the intern should be able to solve as a result of the work experience. The learning plan should be reviewed during the orientation.

**Communicate.** Keep communication open and continuous between the classroom teacher or education representative and the worksite supervisor. Progress on learning goals should be reviewed. Weekly phone calls or worksite visits can help to keep communication flowing and address potential cultural difficulties before they become problems.

**Assess.** The worksite supervisor should sign off on the skills developed and provide examples of the intern's work.

**Extended Learning.** The intern should conduct an independent research project while at the worksite on a broad topic of workforce significance identified by the intern and classroom teacher (e.g., role of the company within the industry, the importance of customer service). This project report should be provided to the worksite supervisor and the classroom teacher.

**Continuous Improvement.** Debrief to identify what went well and what could be improved upon to prepare for the next student learner.

# Appendix F

## The Three Stages of Developing Intercultural Competence

Intercultural competence is necessary to function effectively in more than one culture. These skills are critically important to directors who are responsible for leading local education-to-employment partnerships that include both education and business stakeholders. Intercultural competence is crucial for educators and employers at the table who are responsible for developing effective education-to-employment school- and work-based learning and connecting activities. It is also vital to the success of the students participating in these programs. Increasing intercultural competence can help public/private partnerships be more effective and operate more smoothly. In addition, being more aware of how culture influences behaviors and how to create culturally friendly environments will enhance a person's ability to communicate effectively with people from a wide variety of backgrounds—a key to success in business and at all levels of schooling.

Effective intercultural competence occurs in three stages. At each stage critical action steps should be performed before, during and after the cross-cultural experience. If some of the steps are left out or trivialized, the partnership risks serious miscommunication, possibly leading to a failed partnership or the forming of stereotypes that get in the way of effective collaboration. Students undertaking an internship in a company, teachers assigned to

coordinate activities with a new IT business partner for their school, and IT professionals given the task of supervising, training, and mentoring high school or college interns will all need to go through the following three stages if they are to maximize the potential benefits of their interaction.

### *1) Preparing for the Intercultural Experience: Orientation, Preparation, Screening*

People involved in education-to-employment activities need to learn as much as they can about the working cultures of organizations in their partnership. This advance preparation helps to align personal expectations with the realities that they will find when confronted with the new culture through education-to-employment activities or in partnership meetings.

Also important at this stage is some type of selective screening of potential participants by experienced coordinators. Some students, business representatives, or educators may initially lack the key skills, awareness, or sensitivity needed to participate in a program that demands they build bridges of understanding and cooperation with people representing different groups.

Making personal and professional requests or requirements known in advance at this stage can go a long way toward avoiding future problems. For example, if a student communicates fully

with the supervisor at his paid internship about his unavoidable family commitments, then there will not be any unpleasant surprises later for the supervisor when a worker he has come to rely on is absent for a time.

### **2) *During the Intercultural Experience: Feedback, Discussing Cultural Differences***

One of the key elements of successful interaction between different groups is for all concerned to have a formal opportunity to process what they are experiencing. Without this chance for feedback, the likelihood is greater that new information could be incorrectly labeled.

Ways to provide feedback at this stage in an education-to-employment partnership might include:

- ◆ a weekly debriefing for student interns and their supervisors;
- ◆ additional learning for students in the form of guest speakers;
- ◆ a learning journal for students that bridges the work- and school-based components of their experiential learning, or regular meetings where all partners have an equal chance to comment on progress to date; and
- ◆ ending all partnership meetings with a recap of the meeting's purpose, what agreements and decisions were made, next steps, and who is responsible for what and by when.

Even if things seem to be going well, the reality is that serious problems could be developing below the surface. The goal of feedback is to bring thought processes and feelings to the surface before they harden into inaccurate

stereotypes based on a limited sample. All sides in a partnership should have a chance to share and comment on how the experience is going for them.

### **3) *Follow Up***

Within a successful partnership, some degree of integration of the old and new may take place. A new cultural identity can develop out of an intensive intercultural experience, incorporating elements of the new experience and the old, familiar culture. This can help to facilitate the development of partnerships, but it can also make living and working within one's own group more difficult. Imagine a high school student, fresh from a summer-long internship at an IT company, starting up school again with his old friends who have had no such life-changing experience; the science teacher who has worked in a chemical laboratory for the summer; the business person who has team taught one class weekly for a year.

Each new learning experience creates distance between the learner and others who have not learned. People returning from an intensive intercultural experience need to be given constructive avenues for sharing and evaluating what they saw and learned. Debriefing other staff on partnership activities, sharing internship experiences with peers, incorporating new ideas into lesson plans, and developing reaction papers can all be ways to process and share new information. Participants also need to be encouraged to continue learning, following up on their experience so that they continue to expand their knowledge and awareness.



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**The Techforce Initiative Website:**  
[www.ita.org/workforce/programs/stw.htm](http://www.ita.org/workforce/programs/stw.htm)

**The Educators' Website for Information Technology:**  
[www.edc.org/ewit](http://www.edc.org/ewit)

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