IT Pathway Pipeline Model: Rethinking Information Technology Learning in Schools

Executive Summary

This report describes the development of an Information Technology (IT) Pathway and Pipeline Model. 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.

The need for an IT pathway goes beyond simple economics; everyone in today's complex society must acquire some degree of computer literacy to succeed, even to function, in today's IT-dominated world. Further, although many educators do not view their function as preparing students to enter the working world, they do want their students to be successful in work and life. The IT pathway must meet the needs of both the education and IT worlds. It must also overcome differences in methodologies and styles between these worlds to produce learners who meet the demands of the IT industry as well as their own personal goals.

While the student in the education system is taught IT skills in an orderly and sequential fashion, the IT professional must cope with learning multiple new technologies at a pace much more rapid than education has known in the past. The IT pathway and pipeline model, therefore, must provide learners with a pathway that will give them the foundation IT skills and career awareness that they need to succeed. The model must also provide IT employers with the required pool of talented IT workers.

National IT Issues

Issue 1: There is a severe IT skills gap and worker shortage, and a very unreliable job pipeline.

Goal 1: To create a reliable labor pool of skilled workers, with the required knowledge and skills in technical IT areas, foundations for success in IT (math, science, communications), and soft skills (problem solving, teaming) needed in the workforce.

Issue 2: IT education in the U.S. today is very fragmented; many students do not receive the career information and training they need when they need it to pursue IT careers.

Goal 2: To provide students and educators with the **information**, **career awareness**, **education and training** when and where they need it for an information age economy with IT at its core.

expectations for skilled workers. Most educators view the IT pathway as a sequence of courses and work experiences that prepare learners for high skill, high wage IT jobs. The IT pathway can be found in a career major, a career magnet program, a vocational/technical program at a high school or community college, or a 4-year professional IT degree program.

Informed educators regard this pathway as 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. This road is filled with different types of vehicles and with drivers of all ages. Some drivers know exactly where they want to go; they get in their cars and don't stop until they reach their destinations. Others stop at every scenic overlook and ocean view. The road has several well-marked lanes:

- One lane leads to life as an IT literate producer and consumer citizen—at one point or another everyone travels in this lane.
- Another leads to all jobs in which IT skills are used—a recent National Alliance of Business study tells us that 32 million people are traveling in this lane.
- Another lane leads to careers in technical fields with high IT use.
- Another lane leads to professional IT jobs.

For employers, the IT Pipeline is a multi-lane superhighway that ends in their parking lot. Part of their concern is to keep sufficient cars on the highway so that their parking lot always remains filled to capacity. The Techforce challenge in building IT employer participation in STW (School-To-Work) is to determine how IT employers can fully participate with educators in moving individuals into cars, providing them with maps, steering them to roads and, ultimately, into IT employers' parking lots.

Technological change has raced ahead of attempts by local, state and national educators to design pathways and has cut deeply into every aspect of life and work. Our problem and challenge is that, as a nation, we have moved so quickly into the information age that the education system is still designing and constructing single-lane highways when superhighways are needed.

Our challenge is to examine both the education system and the IT world to create a model that best serves the needs and interests of both educators developing pathways to IT careers and employers seeking a larger pipeline into the IT industry. To maximize the learning and earning potential of all students, we must create IT pathways that reach broadly and deeply into our education system and connect IT foundation skills to learning standards throughout the K through 20 continuum.