

The Information Technology Career Cluster Initiative: Demystifying IT

BY JOYCE MALYN-SMITH

More than 25 years have passed since computer courses and programs emerged in our schools. Still, educators struggle to make sense of the many IT resources available to help build high-quality education programs leading to careers that require strong information technology skills. With hundreds of IT certifications on the market, thousands of pieces of software available, and numerous program vendors offering IT curricula, taking control of the program development and improvement process in order to meet local community needs is often difficult. Business educators responsible for IT career development initiatives in many states find this issue of particular significance.

The Information Technology Career Cluster Initiative (ITCCI), one of the 16 Career Cluster projects funded by the U.S. Department of Education, Office of Vocational and Adult Education (DOE/OVAE), has developed several simple tools and useful resources to help education policymakers and practitioners develop and improve IT education programs. These tools include (1) a definition of the IT cluster, (2) a program model, (3) IT skill and knowledge statements with accompanying measurement criteria, (4) a Web-based resource center for educators, (5) a brochure that informs learners and parents about careers in IT, and (6) a national network of practitioners and technical assistance/support for implementation. (Educators' Website for Information Technology/EWIT). These

resources are provided to help educators retain control of the basic design and implementation decisions they must make in developing, expanding, and improving IT education programs. Forty-five states and U.S. territories, through the unanimous agreement of the State Directors of Career Technical Education, recently adopted the national model (NASDCTEc, 2002).

The Center for Education, Employment, and Community at Education Development Center (EDC) in Newton, Massachusetts, leads the development and implementation of the ITCCI. EDC, an international, non-profit organization with over 350 projects, is dedicated

to enhancing learning, promoting health, and fostering a deeper understanding of the world. Ten states (Arkansas, Illinois, Maryland, Minnesota, Nebraska, New York, North Carolina, Ohio, Utah, and Washington) joined with EDC to accept the challenge from the U.S. DOE/OVAE to develop, pilot test, and roll out a single national model for IT education. A national advisory committee of IT and non-IT companies, in concert with associations and non-profit organizations developing major IT programs/resources, helps to guide and support ITCCI activities (EWIT, 2003).

Each participating state identified a

ITCCI Consortium States - Planning/Designing/Implementing

- Arkansas
 - Bryant High School
- Illinois
 - Bloomington Area Vocational Center
 - Heartland Community College
- Maryland
 - Western School of Technology
- Minnesota
 - Northwest Technical College
- Nebraska
 - Omaha South High School
- New York
 - George Westinghouse High School
 - New York City Technical College
- North Carolina
 - Guilford County Schools
- Ohio
 - Auburn Career Center
- Utah
 - Davis Applied Technology College
- Washington
 - Pasco High School
 - South Kitsap High School

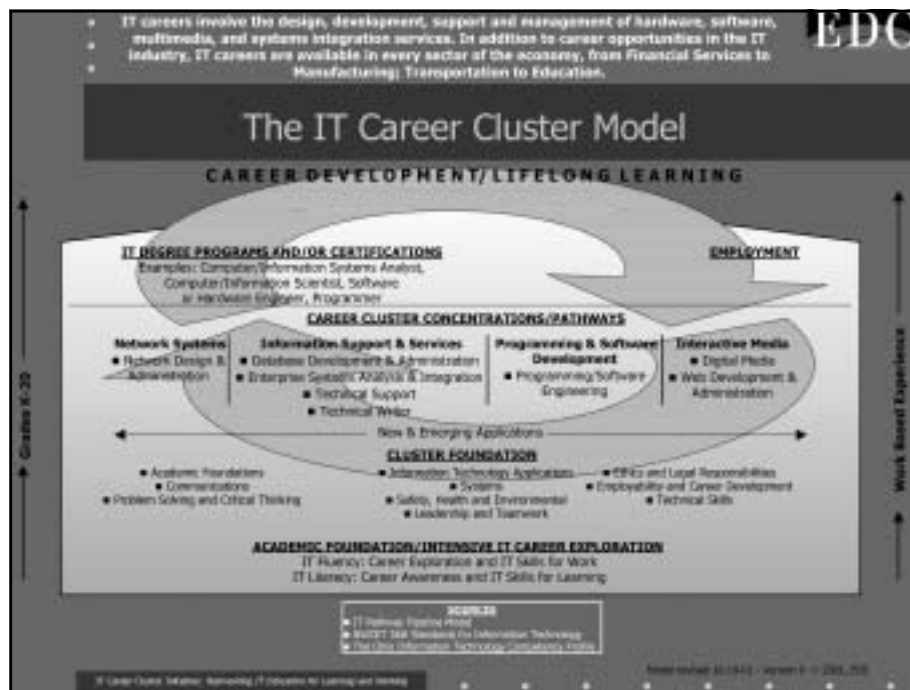
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primary state contact (state prime) and a state leadership team consisting of IT champions from industry, education, and government to provide in-state support and guidance for the ITCCI. In some states, the state primes were individuals responsible for or connected to their state's business education programs. As shown in the illustration, each state also identified a pilot site—high school, technology center, and/or community college—to help develop and test the ITCCI model and supporting resources.

Developing a National Model That Works for Everyone

For the ITCCI to emerge as a true national model rather than a competing program, developing an inclusive model that honored the contributions and reflected the interests of all participating states was essential. All possible IT education providers needed to be able to “see themselves” in the model and recognize it as a useful tool in building IT education initiatives—whether in secondary or postsecondary schools; urban, suburban, or rural settings; or academic, career, or technical education programs. If this could not be achieved, the central mission of ITCCI would fail, and the ITCCI could become one of many competing programs cluttering the IT education landscape.

What made the initial model development both challenging and successful were the differences among the ten partner states, which, with EDC project staff, constituted the design team. These differences are not unlike those found among schools within a state, county, or city school district. The ten partner states reflected the varying stages of readiness to initiate broad-based IT education initiatives. Some were already engaged and heavily invested in an IT education initiative and wanted to ensure that the DOE/OVAE model was compatible with their ongoing initiatives. Others were ready to make a statewide commitment to an aggressive IT agenda and were seeking leadership and a strong network of peers



to support them through the initial development stages. The state primes, which represented these states on the design team, also reflected the varied approaches to IT education. Members represented state departments of education and included a state director of workforce education, a state director of secondary education, several directors or education specialists for business and marketing programs, and some education specialists for IT.

Making Sense Out of IT Education

During the first eight months of the project, as a result of several long and intensive consensus-building work sessions, this group helped clarify two issues important to educators.

Issue one. Because IT has become ubiquitous, how does a school system or individual school or college define an IT education program? Where do courses fit?

The design team arrived at a definition of IT education: IT careers involve the design, development, support, and management of hardware, software, multimedia, and systems integration services. In addition to

career opportunities in the IT industry, IT careers are available in every sector of the economy—from financial services to manufacturing and from transportation to education (EDC, 2001).

This definition makes the distinction between the IT “user” and IT “producer.” For example, a student taking a Computer Aided Design (CAD) course in a manufacturing or engineering program is a manufacturing or engineering student using IT tools, not an IT student. Similarly, an engineer using a CAD program is an engineer who is IT enabled, rather than an IT professional. Business education students learning to use computerized accounting programs and software are business students, not IT students. Similarly, an accountant in a large hospital whose entire workday is spent at the computer is not an IT professional but is an IT-enabled accountant working in a healthcare facility. The distinction, however, is the following: the person who develops CAD or accounting software, provides technical support for the software or develops the networks on which these programs are running is an IT professional. Students learning to develop software programs, provide

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technical support, or configure and administer networks are part of the IT Career Cluster or IT education program.

This definition honors the fact that IT is everywhere and has become part of almost all career and technical preparation programs. All program areas have an important role in preparing learners to be effective “users” of technology. This definition has proved useful in the field to help schools align courses and programs, determine what teachers can and should be teaching in these courses, and inform students on accessing them.

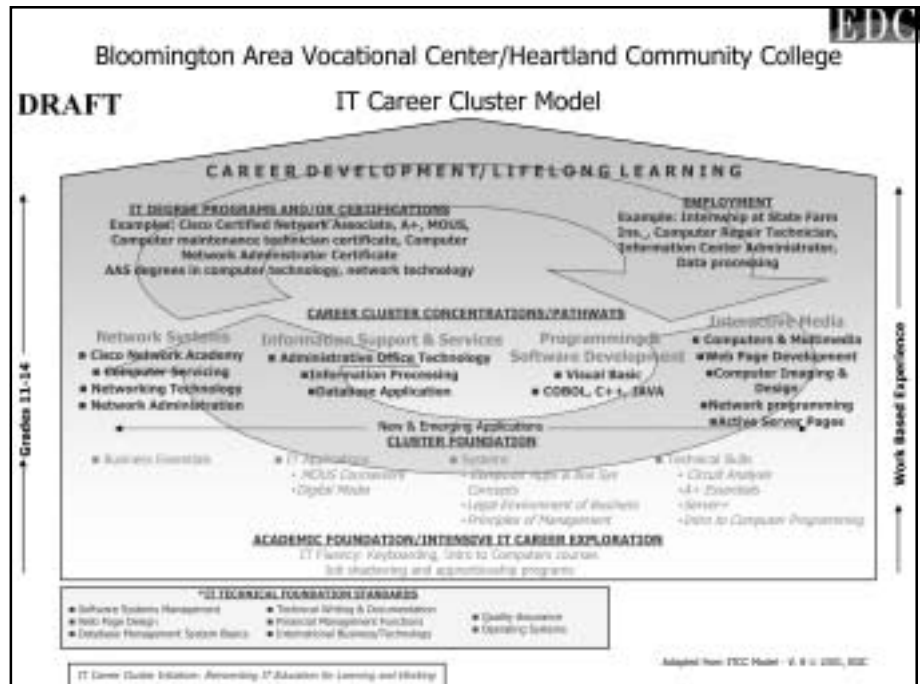
Issue two. What does the IT Career Development Model leading to careers as “IT producers” look like? What does it need to include to ensure that learners in a community have access to the many and varied opportunities available in the IT industry?

The IT Career Cluster model covers IT learning from grades K through 20, with a focus on IT Career/Further Education preparation programs for grades 9-16. This model clearly represents the IT Career Cluster for use by teachers, administrators, business partners, parents, and students.

The structure for this model, developed in spring of 1999, has been refined as a result of the pilot process. The version included here is Version 9, revised in October 2001.

The grade levels shown in the model are guidelines but are not dictated. The model starts at the bottom of the illustration with an academic foundation and extensive career exploration that is expected to be covered in grades K-8, prior to a learner’s selection of an IT education field of study. This includes IT literacy, comprised of IT career awareness and a basic level of mastery of the skills needed to use IT tools for learning. It also expects a level of IT fluency that includes IT career exploration and a solid introduction to IT “user skills” needed for work in various business settings.

Foundation skills are “core skills” that are important for success in any pathway or specialization in the IT



industry. As part of U.S. DOE/OVAE’s Career Cluster Initiative, the topics in this part of the model are found at the foundation level of each of the 16 career clusters. (States’ Career Cluster Initiative, 2002) Many of the specific skills and knowledge sets reflect the special skills needed for success in the IT industry. For example, ethics and legal responsibilities for IT students include ethical Web use and issues related to “cybercitizenry.”

The ITCCI has developed skill and knowledge sets, along with rubrics and assessments for each of the foundation topics (EWIT, 2002). These skill and knowledge sets, developed in conjunction with the ITCCI advisory consortium, have been validated with both national and local advisory committees. All project teams managing one or more of the 16 Career Clusters used a similar format and methodology to create and validate skill and knowledge sets. A cross-cluster group of pilot sites is currently pilot testing the rubrics and assessments.

The model identifies four IT pathways, each containing one or more IT specializations. The pathways are organized around skill sets shared by

related IT occupations. These pathways prepare learners for IT careers or further education in IT. The ITCCI has developed and validated skill and knowledge statements that define basic requirements for each pathway.

Using This Model

Educators may use the model as a framework to guide new program development, program improvement, and program expansion in the following ways:

- to explain the IT program to community stakeholders;
- to map existing courses to the model to assess the full range of current program offerings;
- to map and assess distribution of certifications across pathways;
- to check current courses/programs to ensure that there are opportunities to develop foundation skills/knowledge within existing curriculum;
- to make decisions about new courses/programs to be offered;
- to identify partnerships with other schools/community agencies who can provide courses, programs, and services to help complete the model and offer a full range of IT career opportunities to

their students;

- to develop articulation agreements;
- to recruit students; and
- to provide a common framework for discussion of IT program issues across schools, states, and districts.

The following two examples illustrate how the ITCCI is being implemented in schools across the country. Both schools provide courses that first solidify IT foundation skills, then offer more industry specific courses in the Career Cluster Concentrations or Pathways. The Pathway courses and certifications offered are often determined in response to local area business and industry partners.

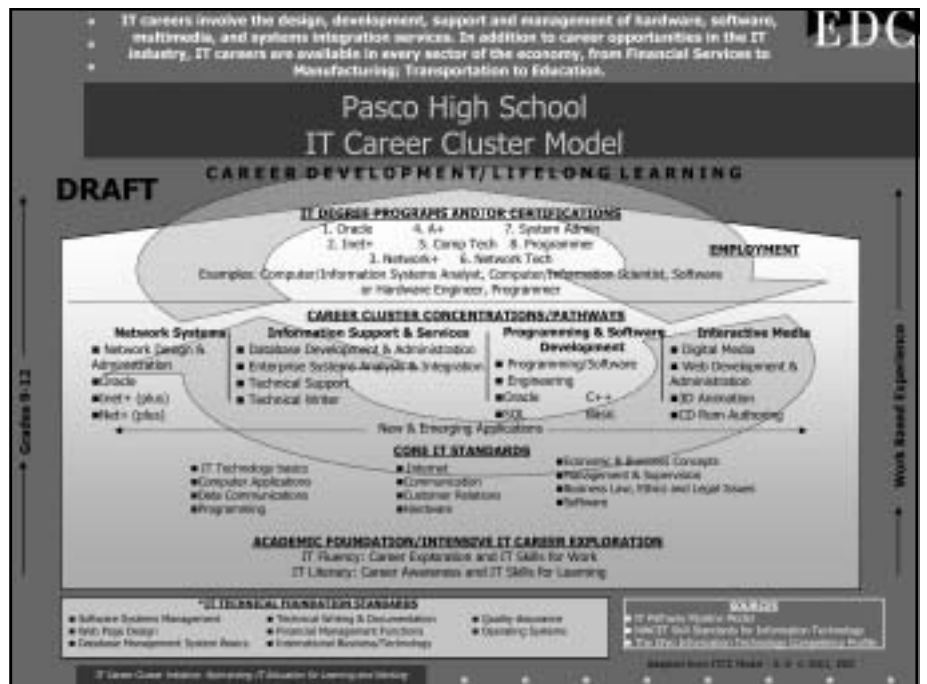
Unsolicited responses received from educators across the country mirror the utility of the model to pilot sites. For example, L. Carlson, Dean of Business Occupations, Albuquerque Technical Vocational Institute, recently commented, "We are interested in helping students understand career pathways in the computer area. We found your model to be extremely clear, helpful, and useful. Can we adopt the model, modify the model, participate in your research, or become a community college partner in information technology?" (L. Carlson, personal communication, January 6, 2003)

Conclusion

Using the ITCCI model, educators can be confident that this tool can demystify the process of both starting an IT education program and enhancing an existing one. Key elements to successful implementation of the model include (1) planning to set local goals, (2) developing an implementation plan, (3) conducting an in-depth orientation to the ITCCI model, (4) curriculum framework and standards, and (5) aligning existing programs to the ITCCI model to see where gaps may exist.

Learning More About the IT Career Cluster Initiative, Its Resources, and Its Networks

The following sites provide additional information about ITCC Initiative



and resources, including standards, rubrics and assessments, and related projects:

- ITCC Initiative, model, skills and knowledge sets, sample assessments, IT resources for educators, and related IT workforce development projects: <http://www.edc.org/ewit>
- Career Clusters: <http://www.careerclusters.org>
- National Association of State Directors of Career and Technical Education Consortium: <http://www.nasdvtec.org>
- Implementation guidebook on developing an IT Career Cluster: Linda Scott, Project Coordinator, lscott@edc.org

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