Aligning Postsecondary Education to State Workforce Needs: A Community College Perspective

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Community and Technical College Roles in Support of Economic Development

- Reactive and proactive roles
- Business and Industry training innovators
  - Customized
  - Modularized, accessible
  - Accelerated learning
- Talent development vs. workforce training (The Pipeline)
- Critical link in alignment between secondary and 4 year institutions (Career Pathways)

Workforce Transformations

- Changing nature of the workplace and workforce demographics
- Globalization and digitization
- Rapid (accelerated) rate of change
- Challenges of an insufficient and under prepared “pipeline” of workers
- The new skills requirements – beyond problem solving and critical thinking to innovation, adaptive expertise and “hyper-human” skills

Key Assumptions

- Create a sense of urgency about the need for system transformation
  - Kentucky Science and Technology Corp. -- Disruptive and transformative behavior or 154 years to the national average in PCI
- **All** Students/Workers Must be Well Prepared for 21st Century Jobs
- Increased Emphasis on Soft Skills, Foundation Skills and Employability Skills
- The Myth of Hands-Only Occupations
  "Not everyone needs high skills and college"
- Increased Emphasis on Standards and Credentials

Three Key Task Forces

- Dual credit
- STEM
- Developmental education

KCTCS: 10 Year Anniversary

- 1997 Higher Education Reform
- "Provide education and training to support economic development"
  - Kentucky WINS
- 2006-07 CEO Dialogues and Benchmark Study of KCTCS' Community and Economic Development Offices

Career Pathways – A Strategic Framework

- Not a program, but a systemic framework for a new way of doing business and alignment
- A strategic tool for institutional and instructional transformation
  - **Mission integration**
- A tool to strengthen and formalize connections to business and the public workforce dev. System (leveraging resources)
- Create a pipeline of skilled workers within a P-20+ framework
- An economic development tool focused on industry sectors

Manufacturing Careers Pathway

Gateway Community & Technical College

NKU

BS in Mechanical and Manufacturing Engineering Technology

Other Degree Programs

Gateway

Manufacturing Degree Programs

Associate of Applied Science

- Manufacturing Engineering Technology (pending approval)
- Industrial and Engineering Technology – Computer Maintenance
- Industrial Maintenance Technology
- General and Occupational Studies
  - Computer Aided Drafting
  - Electrical Technology
  - Machine Tool Technology
  - Welding Technology

COMPASS / ACT

Pathway Entry Points

Adult Ed
Area Technology Centers
High Schools
Incumbent Workers
One Stop

Employability Assessments
Kentucky Employability Certificate (KEC)
Kentucky Manufacturing Skills Standard (KMSS)
WorkKeys

Plant Manager / Manufacturing Executive
$90,000+

Bachelors Degree and/or Experience (with 2-8 years of experience)

Manufacturing Management and Engineer Positions
$40,000 and up

Associate Degree and/or Experience (with 2-3 years of experience)

Technician (Manufacturing / Engineering / Maintenance / Electrical)
First-line Supervisor, Computer Aided Drafting, Machine Operator, Skilled Trade Positions
$23,000 - $36,000

HS Diploma / GED and/or Experience (with 2 years of experience)

General Manufacturing and Laborer Positions
Minimum wage – low $20,000s

Gateway Community & Technical College

Manufacturing Engineering Technology degree with Associated Certificates

General Education Requirements
(10 courses)
- Intro to College
- Writing I & II
- College Algebra
- Trigonometry
- Calculus I OR Elementary Calculus
- Basic Public Speaking OR Intro to Interpersonal Communications
- General Physics OR Applied Physics
- General Psychology
- Heritage / Humanities elective

Manufacturing Engineering Technology Core Requirements
(10 courses and 2 labs)
- Electrical Circuits
- Statics and Strengths of Materials
- Intro to CAD
- Manufacturing Processes
- Intro to Business
- Co-op Education
- Production Mgt
- Manufacturing Capstone
- Intro to Quality Systems
- Statistics for Quality I

Elective Courses (6 -8 credit hours for completion of degree)
Electives can be chosen from a wide variety of disciplines

OR

Electives may be chosen is a particular sequence to earn an additional certificate

Additional Certificates
Earned within the AAS degree by taking elective courses
Can also be earned independent of the AAS degree

- **Electronics Tester**
  2 courses with 2 labs in:
  - Electrical circuits
- **Robotics and Automation Helper**
  3 courses with 2 labs in:
  - Electrical circuits
  - Fluid Power
- **Exploratory Machining**
  2 courses in:
  - Machine Tool
- **Quality Control**
  7 courses (2 electives) in:
  - Intro to CAD
  - Basic Public Speaking OR Intro to Interpersonal Communications
  - College Algebra
  - Metrology / Control Charts
  - Quality Mgt / Statistics / Auditing

EMBEDDED CERTIFICATES
Are earned with the General Education and Technical Core Courses within the AAS degree
Can also be earned independent of the AAS degree

Integrated Manufacturing Technologies Certificate
(6 courses with 2 labs)
- Electrical Circuits
- Intro to CAD
- Manufacturing Processes
- College Algebra
- Trigonometry
- Statics and Strengths of Materials

Manufacturing Operations Certificate
(6 courses)
- Basic Public Speaking OR Intro to Interpersonal Communications
- Intro to Business
- Production Mgt
- Intro to Quality Systems
- College Algebra
- Statistics for Quality I

The Case for Mission Integration

- All students will enter the workplace
- Separation of institutional missions in workforce, academic, remediation, student affairs and categorical programs promotes silos with impact on students and employers

Institutional Transformation

- High leverage policy areas:
  - Award college credit for business training (BIT)
  - Seat time does not = competency
  - Expedited program approval process
  - Create a system of industry-based certifications (including employability skills certifications)

Institutional Transformation

- Alignment and integration:
  - **Align and connect company training requirements with college courses**
  - **Modularize courses / fractional credit / dual credit / Corporate Colleges**
  - **Eliminate internal silos (mission integration)**
  - **Non-traditional delivery (blended learning, simulation, evening and weekend classes, business on-site classes)**

Instructional Re-engineering

- Learner-centered, innovative instruction
- Multiple entry/exit points
- “Chunking” curriculum
- Embedded certificates
- Alternative delivery systems
- Adaptive expertise (reducing cycle time of learning)

Return on Investment

- 22 Pathways (May 07)
  - Allied Health (14)
  - Advanced Manufacturing (3)
  - Construction (2)
  - Transportation (1)
  - Business (2)
- KY WINS (Workforce Training Incentive Funds) commitment of $4.1M
- Projected project revenue of $1.1M
- Cash and in kind contributions of $7.9M
- Approximately 5,333 students served Fall'04 to Spring'07
- Career Pathways students earned 573 credentials
- Career Pathways students had a higher retention rate (Fall 2005 to Fall 2006) 73% to 52%

Examples of Industry Cluster Career Pathways Support

- Toyota
  - On line curriculum
  - Plant advanced technology center
- AMTEC
- Kentucky Coal Academy

Random Acts of Progress => The 5 Ss to Success

Strategic

Systemic

Synergistic

Sustainable

Scalable