Career Pathways: The Convergence of Transformations

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Dr. Keith W. Bird, Chancellor
Kentucky Community and Technical College System

Presentation Outline

- Workplace transformations
- Sorting through the reports and critiques
- So what does this mean? What are the implications?
- “No Silver Bullet” – Building a new system through a convergence of transformations
- Where do career pathways fit?

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

"Sorting Through the Critiques" (John Simpson-IHE)

- *Rising Above the Gathering Storm*
  (National Academy of Science, National Academy of Engineering, and Institute of Medicine, 2006)
- Sec. of Ed.'s Commission on the Future of Higher Education
- Reports/Studies by Achieve (ADP); Education Trust; National Conference of State Legislatures

ACT Studies

- *Crisis at the Core: Preparing All Students For College and Work*
- *Developing the STEM Education Pipeline*

*** Ready for College and Ready for Work: Same or Different?*

And More Reports…

- *Are They Really Ready for Work?* Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S Workforce

- 2005 Skills Gap Report—A Survey of the American Manufacturing Workforce (NAM)

And More reports…

- *Tapping America's Potential: The Education for Innovation Initiative*
- In December 2006---*Tough Choices or Tough Times* (National Center on Education and the Economy)

And More reports…

- And in February 2007---*America's Perfect Storm: Three Forces Changing Our Nation's Future* (Educational Testing Service)

So what are the common threads in these reports?

What are the implications?

1. The SYSTEM is Obsolete

- Tweaking at the edges will not be enough

- *The one thing that is indispensable is a new system. The problem is not with our educators. It is within the system in which they work*. [*Tough Choices or Tough Times*]

1. The SYSTEM is Obsolete

America's high schools are obsolete. By obsolete, I don't just mean that our high schools are broken, flawed, and under-funded – though a case could be made for every one of those points. By obsolete, I mean that our high schools – even when they're working exactly as designed – cannot teach our kids what they need to know today. Training the workforce of tomorrow with the high schools of today is like trying to teach kids about today's computers on a 50-year-old mainframe. It's the wrong tool for the times. Our high schools were designed fifty years ago to meet the needs of another age. Until we design them to meet the needs of the 21st century, we will keep limiting – even ruining – the lives of millions of Americans every year. [Bill Gates, National Summit on High Schools, February 2005]

2. The Education Pipeline is Leaking and Broken

- Not enough STEM graduates
- College going and completion rates inadequate
- Sex ratios in college *(Where are the men?)*
- Young Hispanic men drop out of high school at alarming rates (low-income and minority access- *Promise Abandoned*)
- *The inescapable conclusion is that we are losing the race on both the quantity and quality [of educational attainment] relative to our competitors.* *(Tough Choices or Tough Times)*

3. **All** Students/Workers Must be Well Prepared for 21st Century Jobs

- Changing Demographics – fewer in the pipeline
  - Cultural and generational differences
  - Not enough workers with right skill sets and the level of skills needed
- Our workforce and economic competitiveness is dependent on higher skills for all
- Higher skills necessary to earn a living wage (Washington State Tipping Point Study- one year postsecondary plus a credential)

4. The “New Skills” Requirements: Beyond Problem Solving and Critical Thinking

- “Hyper-human” skills – The Futurist (Nov/Dec 2005)
  - Discovery, creativity, implementation, influence, physical action
- Expert thinking / Complex communication
  - Identify the right problem and choose a solution technique – computers can solve the problem
  - Frank Levy, MIT (Oct. 2006)

4. The “New Skills” Requirements: Beyond Problem Solving and Critical Thinking

- “Adaptive Expertise” – Vanderbilt University
  - Goes beyond “routine" problem solving; having flexible knowledge to invent new ways to solve familiar problems and identify and solve new problems (the “Virtuoso”)

- Creativity, innovation and the ability to deal easily with ideas – *Tough Choices or Tough Times*

5. Increased Emphasis on Soft Skills, Foundation Skills and Employability Skills

- "Learning to learn" – flexibility
  - Career Pathways provide a structured mechanism to assist workers in maneuvering job changes as the opportunities change in the workplace
- Increased rigor and relevance in academic skills in K-12– math, communication, science, etc.
- *Berufliche Handlungskompetenz*
- WorkKeys ® - The foundation skills based on SCANS and soon to be released WorkKeys ® Personal Skills Assessment

6. Preparation for Work and Postsecondary Education

- It is the same rigorous skills
  - Many still do not believe this!
- *Ready for College and Ready for Work: Same or Different?* (ACT, Inc., 2006)
- American Diploma Project (Achieve, 2004)

The Myth of Hands-Only Occupations

"Not everyone needs high skills and college"

Program Area	WK Applied Math Level
HVAC	6
CAD	6
Electronics	7
Industrial Technology	6
Electrical Technology	6

Vocational Education "Then"	Career and Technical Education "Now"
For some students	For all students
For a few jobs	For all careers
6 to 7 "program areas"	16 clusters – 81 pathways
In lieu of academics	Aligns and supports academics
High school focused	High school and college partnerships

(Source: S. Hess and A. Benson http://www.nccte.org/webcasts/descriptiona284.html)

7. Increased Emphasis on Standards and Credentials

- Industry Based Credentials
- National Career Readiness Certificate
- CRC Consortium
- Core Content Standards in K-12
- *Develop standards, assessments and curriculum that reflect today's needs and tomorrow's requirements (Tough Choices or Tough Times)*
  - State Qualifying Board Examinations
  - How do you assess creativity and innovation, self-discipline, etc?

A Convergence of Transformations

- "There is no silver bullet"
- Combination of transformational system change strategies – "not flavors of the month"
  - Create a sense of urgency
  - Rigorous standards and credentialing
  - Career Pathways as a systemic framework

Career Pathways

A new national movement…

But what are they – and why are they so important within the context of these transformations?

TECH-PREP
Pipeline CP
Re-Entry CP
CCTI
A new way of doing business!

Career Pathways Definition

A systemic framework for developing a series of connected instructional strategies, with integrated work experience, and support services that enables students to combine school and work and advance over time to better jobs and higher levels of education and training. Career pathways are targeted to regional labor markets, focused on employment sectors, and provide a framework for workforce development by integrating the programs and resources of community colleges and other education providers, workforce agencies and social service providers.

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

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

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

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

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

Pathway Entry Points

Adult Ed
Area Technology Centers
High Schools
Incumbent Workers
One Stop

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

KENTUCKY CAREER PATHWAY/PROGRAM OF STUDY TEMPLATE

COLLEGE/UNIVERSITY: **CLUSTER:**

HIGH SCHOOL (S): **PATHWAY:**

PROGRAM:

	GRADE	ENGLISH	MATH	SCIENCE	SOCIAL STUDIES	REQUIRED COURSES RECOMMENDED ELECTIVE COURSES OTHER ELECTIVE COURSES CAREER AND TECHNICAL EDUCATION COURSES				CREDENTIAL CERTIFICATE DIPLOMA DEGREE
SECONDARY	9									
	10									
	11									
	12									
POSTSECONDARY	Year 13									
	Year 14									
	Year 15									
	Year 16									

Required Courses

Recommended Elective Courses

Other Elective Courses

Career and Technical Education Courses

Credit-Based Transition Programs (e.g. Dual/Concurrent Enrollment, Articulated Courses, 2+2+2)

(⊏ =High School to Comm. College) (• =Com. College to 4-Yr Institution) (▪ = Opportunity to test out)

Mandatory Assessments, Advising, and Additional Preparation

Note: Categories of courses (e.g. Required, Recommended Electives, other Electives and career and Technical Education) apply to both secondary and postsecondary levels.

League for Innovation in the Community College CCTI College and Career Transitions Initiative

Funded by the U. S. Department of Ed
(V051B020001)
Revised Jan. 2005
October, 2006-CTE/Kentucky

Career Pathways – at the crossroads of system transformations

- Not a program, but a systemic framework for a new way of doing business
- A strategic tool for institutional and instructional transformation
  - **Mission integration**
- Policy and funding levers (WIBs)
- Create a pipeline of skilled workers within a P-20+ framework
- An economic development tool focused on industry sectors

Career Pathways (cont.)

- A tool to strengthen and formalize connections to business
- A tool to enhance community strategic partnerships, with particular focus on the public workforce investment system and adult education
- An upward mobility tool for individuals
- An accountability tool

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 student and employer (and society's customers)
- Public policy reinforces these silos; and changes in public policy can improve mission integration

Mission Integration

*…**is what Mission Integration Does*** [John Colburn – Ford Foundation]

- Students starting in one mission area transfer seamlessly to another.
  - High percentage of associates degrees conferred to students who started in remedial and vocational programs.
  - “Credit-izing” non-credit courses.
- Learning is accelerated and high quality.
  - Integrated instruction methods (“learning communities.”)
  - Recognition of prior learning policies.
  - “Chunking” credit courses.

Mission Integration (2)

- Scheduling, student support, and financial assistance support students across mission areas.
- Larger numbers of students are prepared for further education AND the workplace.
  - Pathways enable disadvantaged students to attend four-year institutions.
  - Industry partnership programs place students in career jobs.

Kentucky's Mission Integration Quotient

A tool assessing the status of:

- Employer Engagement
- Partner Engagement
- Student Support Services Integration
- Instructional Transformation
- Continuous Improvement
- Sustainability

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)

And Career Pathways Make Economic Sense: Kentucky's Projected ROI (July 2004 – February 2007)

- 22 Pathways (to date)
  - 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

Kentucky's Career Pathways Outcomes to date:

- Approximately 1,685 students served per year
- Career Pathways students earned 573 credentials since July, 2004:
  - 155 Associate Degrees
  - 91 Diplomas
  - 327 Certificates
- Career Pathway students had a higher retention rate than the KCTCS student population from Fall 2005 to Fall 2006:
  - Career Pathways Students 73%
  - KCTCS population 52%

Career Pathways: Lessons Learned

- Every college starts in a different place, builds upon different strengths and progresses at a different rate.
- Redesign of curriculum and delivery methods (internal issues) more challenging than employer and agency partnership development (external issues).
- Conversations between colleges (academic faculty) and employers were elevated to a new level.

Career Pathways: Lessons Learned (2)

- Workforce development staff facilitate and support while reinventing their role and relationships.
- Be prepared to align pathways with corresponding secondary efforts (Perkins, Tech Prep, High Schools that Work, etc.)
- Colleges initially look to adult ed providers for more flexible and targeted remediation.
- Additional technical assistance and resources needed to engage college faculty in curriculum design and redesign.

Joint Career Pathway Curriculum Alignment Initiative

- KDE/OCTE/KCTCS Partnership
- Using CCTI Curriculum Template
- Perkins Funded
- Six sectors currently being Addressed
  - Construction
  - Education
  - Health Science
  - Information Technology
  - Manufacturing
  - STEM
- Joint Faculty Teams to:
  - Identify Pathways in Sector
  - Align Secondary and Post secondary Curricula
  - Identify Dual Credit Opportunities

The 5 Ss to Success

Strategic

Systemic

Synergistic

Sustainable

Scalable

The Kentucky Journey to Educational Attainment and Economic Success

"Random Acts of Progress"

"Best Practices"

"Strategic Systems"

Web Resources

- *Ready for College and Ready for Work: Same or Different?*
  http://www.act.org/path/policy/reports/workready.html
- *Developing the STEM Education Pipeline*
  http://www.act.org/path/policy/pdf/ACT_STEM_PolicyRpt.pdf
- *Crisis at the Core: Preparing All Students For College and Work*
  http://www.act.org/path/policy/reports/crisis.html
- *Tough Choices or Tough Times*
  http://skillscommission.org/executive.htm
- 2005 Skills Gap Report – A Survey of the American Manufacturing Workforce
  http://www.nam.org/s_nam/sec.asp?CID=202426&DID=235735

Web Resources

- *Are They Really Ready for Work?* http://www.21stcenturyskills.org/documents/FINAL_REPORT_PDF9-29-06.pdf
- *Tapping America's Potential: The Education for Innovation Initiative* http://www.uschamber.com/publications/reports/050727_tap.htm
- *Rising Above the Gathering Storm* http://books.nap.edu/execsumm_pdf/11463.pdf
- *Ready or Not: Creating a High School Diploma That Counts* http://www.achieve.org/files/ADPreport.pdf
- *America's Perfect Storm: Three Forces Changing Our Nation's Future* (Educational Testing Service) http://www.ets.org/Media/Education_Topics/pdf/ExecSummAmPerfectStorm.pdf

Louisiana Community and Technical College System
The Hub (CENTER) Of Education