Certificates Count: Addressing Student Completion in Career Technical Education

Vision 20/20
Los Medanos College

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The Career Ladders Project

fosters educational and career advancement through research, policy initiatives and direct assistance to community colleges and their workforce partners.
CLASP: Policy Solutions that Work for Low-Income People

- CLASP develops and advocates for policies at the federal, state and local levels that improve the lives of low-income people.
- Our Center for Postsecondary and Economic Success seeks to improve policy, increase investment, and strengthen political will to increase the number of low-income adults and youth who earn the postsecondary credentials essential to open doors to good jobs, career advancement, and economic mobility.
College Completion: “The Big Goal”

President Obama asks every American to commit to at least one year or more of higher education or career training.

By 2020:
• America to have highest proportion of college graduates in world.
• CCs to produce an additional 5 million graduates

By 2025,
• Gates: Double low-income adults w/ degree/certif. by age 26.
• Lumina: Increase # with degree/credential to 60% (from 40%)

CC League of CA (“A 2020 Vision”)
• 1 million additional certificates and degrees by 2020
  — ½ certificates; ½ degrees
Certificates Matter . . .

- Middle-skill jobs, requiring > HS degree but < 4 yr degree, will make up largest segment of CA jobs for years to come.

- CA will face critical skill shortages in crucial industries, particularly in middle-skill jobs.

- 3/4s of the 2020 labor force are already past the reach of K12.

- One year plus a certificate was “tipping point” in WA.
Certificates Count . . .

- “High-quality certificates offer substantial labor market returns”
- “Consistent, unambiguous evidence of positive, strong labor market returns to certificates of at least 1 year.”
- Earning gains from certificates < 1 year varies by industry
- “… certificate completers can earn more than associate completers.”
- “… returns lag for those who walk away with no credential.”

## CA: Certificates by Sector

<table>
<thead>
<tr>
<th></th>
<th>California %</th>
<th>National %</th>
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</thead>
<tbody>
<tr>
<td>Public</td>
<td>43.3 %</td>
<td>53.1%</td>
</tr>
<tr>
<td>Proprietary</td>
<td>50.0 %</td>
<td>42.9%</td>
</tr>
<tr>
<td>Other</td>
<td>7.0 %</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

Source: Complete College America, IPEDS 2009
What matters most for student success?

• Clear, tightly structured paths through basic skills, noncredit and credit postsecondary coursework.
  – Align curricula between basic skills, noncredit and credit; expand credit transfer for career technical programs; pare down to what is truly essential.

• The sooner students enter a program of study, the more likely they are to complete a credential.

• New approaches can speed entry into programs of study and support students while enrolled in postsecondary coursework.

• Financial aid critical for access and success; other benefits for low income students can supplement it.

• Student services also critical and can be embedded into transitions efforts.
New approaches to basic skills especially needed because . . .

• Assessment as sole measure of “college ready” flawed
  — Overreliance on single cut score keeps out of college courses students who could succeed (especially those who score near cut score). Poor predictive power of current assessments.
  — Ignores other important predictors of whether students can succeed such as motivation and perseverance.

• Current sequences of adult basic education and developmental education take so long that few students complete, especially those who referred to multiple levels.

• “Exponential attrition.” Important to look at how many students move through entire educational pathway over time, not just pass rates within single course or single year.
Community College Research Center
research on completion of Dev. Ed. sequences

Math In-Order Course Completion and Enrollment

- Sample: 2001-2005 cohorts, tracked for three years

TOTAL: 10%

GK Algebra

Enrolled 12%

Passed 17%

Not enrolled 5%

Not completed 2%

1 level below

Enrolled 22%

Passed 29%

Not enrolled 7%

Not completed 5%

2 levels below

Enrolled 40%

Passed 55%

Not completed 11%

3+ levels below

Enrolled 79%

Passed 55%

Not completed 24%

Not enrolled 21%

Referred to Level 3+ 96,653
Community College Research Center
research on completion of Dev. Ed. sequences

Reading In-Order Course Completion and Enrollment

- Sample: 2001-2005 cohorts, tracked for three years
Core components of Career Pathways

- **Strategic partnerships** of employers, education and training providers, community-based organizations, etc. in key industries and occupational groups.

- **Multiple ways to enter and exit** postsecondary pathways, with marketable credentials at each step. (e.g. high school, one-stops, basic skills, colleges)

- **Active participation by employers** — might be in pathway development, worksite training, internships, and/or financial support for worker learning — to address regional workforce needs

- **Innovations in program content and delivery** (e.g. new technical certificates and diplomas, contextualized basic skills, flexible class schedules, combinations of online and face-to-face instruction).

- **Support services**, such as career and academic coaching, financial aid, etc. provided by a range of partners, including community groups
Entrance Requirements
Application
Questionnaire
Interview with Instructor
Tour of Lab
Math Test

CNC Operator Certificate
6 Credits
Contextualized ABE

CNC SetUp Certificate
6 Credits

CNC Programmer Certificate
6 Credits

CNC/Machine Tool Operation Diploma
16 additional credits if successfully completed 3 certificates

AAS Degree or 4-year Program
Additional Education/Training

CNC Machinist Career Pathway
DRAFT

CNC Operator
Production operation of CNC machines, quality emphasis

CNC Set-Up
CNC machine setup, operation and fixtureing

CNC Programmer
CNC machine programming – CAM, Codes

CNC Machinist, General Machinist, Tool & Die Apprentice, Toolmaker, Moldmaker Apprentice

Production Supervisor/Manager
Automotive Technology

Jobs & Wages*

- General Service Technician
  - $12.00 - $16.00
- Field Technician
  - $13.00 - $18.00

Short-Term Training

- General Service Technician Certificate
  - 2 Quarters
  - 30 Credits
  - (+8 non-degree credits for SJI)
- Optional Internship for SJI

Class Topics

- Intro to Auto Tech
- General Service
- Tires, Wheels, Alignment
- Basic & Advanced Brakes
- Intro to Electricity
- Intro to Drivability
- Steering/Suspension

Plus for SJI

- Applied Auto Math
- Soft skills

NATEF GST Certification and ASE Exams in Brakes and Steering & Suspension

Entry Requirements

For SJI
- CASAS test: 220 in Math & Reading
- Low-income Seattle Resident
  - COMPASS test: 41 Writing, 65 Reading, 28 Pre-Algebra

Start Here

- Low-Wage Job Unemployed
- GED / ABE / ESL
- Career Change

Tech Prep / High School
- Work Discovery/Cornerstone
- First Step Program
- TANF/Food Stamps

Jobs & Wages*

- Line Technician
  - $19.00 - $23.00
- Mechanic
  - $13.00 - $18.00

1 Year Certificate

- Minor Automotive Technology Certificate
  - GST + 2 Quarters
  - 62 Credits (GST + 32 credits)
- Class Topics
  - The 3 modules below:
    - Electrical/Electronics
      - Advanced Electrical Systems
      - Automotive Electronics
      - Basic Power Accessories
      - 10 Credits / < 1 Quarter
    - Heating & Air Conditioning
      - Air conditioning and heating
      - 6 Credits / < 1 Quarter
    - Engine Performance
      - Advanced Drivability & Fuel System
      - Engine Computers
      - Emission Controls & Diagnostic Equipment
      - 16 Credits / 1 Quarter
- ASE Exams in 3 Modules

Automotive Technology AAS or AAST Degree

- Major Certificate + 2 Quarters
  - 93 Credits
  - (1 Year Certificate + 29 credits)
- Class Topics
  - The 3 modules below:
    - Manual Transmission & Transaxles
      - Manual Transaxles & Clutches
      - Manual Transmissions, Transfer Cases, Drive Axles
      - 6 Credits / < 1 Quarter
    - Automatic Transmissions
      - Automatic Transmission Diagnosis & Service
        - Advanced Automatic Transmission Service
      - 10 Credits / < 1 Quarter
    - Engine Repair
      - Engine Diagnosis/Repair & Replace
      - Engine Rebuild
      - Automotive Welding
      - 15 Credits / 1 Quarter
- ASE Exams in 3 Modules

2 Year Certificate

- Major Automotive Technology Certificate
  - 1 Year Certificate + 2 Quarters
  - 93 Credits
  - (1 Year Certificate + 29 credits)
  - Class Topics
    - The 3 modules below:
      - Manual Transmission & Transaxles
        - Manual Transaxles & Clutches
        - Manual Transmissions, Transfer Cases, Drive Axles
        - 6 Credits / < 1 Quarter
      - Automatic Transmissions
        - Automatic Transmission Diagnosis & Service
        - Advanced Automatic Transmission Service
        - 10 Credits / < 1 Quarter
      - Engine Repair
        - Engine Diagnosis/Repair & Replace
        - Engine Rebuild
        - Automotive Welding
        - 15 Credits / 1 Quarter
  - ASE Exams in 3 Modules

Jobs & Wages*

- Shop Foreman
  - Assistant Shop Manager
  - Service Advisor
  - Service Manager
  - $24.00 - $34.00

Developmental Education

- COMPASS Writing 57, Reading 77, Algebra 71
- COMPASS Writing & Reading 77, Algebra 71
- COMPASS Writing 57, Reading 70
- COMPASS Writing 57, Reading 70
- COMPASS Writing 57, Reading 70
- COMPASS Writing 57, Reading 70
- COMPASS Writing 57, Reading 70
- COMPASS Writing 57, Reading 70

Additional Requirements

- For AAS
  - Composition
  - College Algebra
  - General Psychology
  - Distribution Requirements

For AAST

- Composition
- College Algebra
- General Psychology
- Distribution Requirements

*Job title and wage information was derived from annual wages reported in the Occupational Employment Survey, Bureau of Labor Statistics for the Seattle/King County Workforce Development Area. The web address to produce this report is: http://www.workforceexplorer.com/lig/dataanalysis/AreaSelection.asp?TabName=Oeswage
It is important to note that actual job titles and wages will vary depending on demonstrable skills and experience.
**You do not have to take the COMPASS test if you have an official transcript listing college-level English 101 and Math 102 with a grade point of 2.0 or higher.
Academic quarters are 11 weeks long and begin in January, March, June, & September.
Pathways and bridges growing

• At least 10 states have significant career pathway efforts aimed at adults or out of school youth.
  – AR, CA, KY, IL, MA, OH, OR, VA, WA, WI
  – Perkins: every state must have pathways for high school students.
• Half a dozen states have career pathway bridge initiatives
  – IL, IN, MD, MN, OH, OR, WA, WI
  – New Gates’ Accelerating Opportunity grants will expand this.
  – Some states have focused state adult ed plans/RFP’s on this. IL, IN
  – CA new ABE strategic plan moving in this direction.
• Hundreds of local, career-focused bridge programs, according to 2010 WSC bridge survey. Little uniformity.
• Career pathways and bridges becoming a focus of federal policy.
  – E.g. recent DOL TAA and Career Pathway SGAs. I-BEST approach part of President Obama’s new jobs proposal. Likely focus in Innovation Grants (will be launched later this fall).
Stackable Certificate and Degree Programs

- Liberal Arts Courses Required to Satisfy AA/AS Degree Requirements or for Transfer to 4-Year University
- Focuses on Advanced Technical Skills, Management/Professional Skills
- Includes Competencies to Pursue Multiple Career Pathways
- Focuses on Occupation-Specific Technical Skills and Competencies
- Focuses on Industry-Wide Skills and Competencies
- Typically Includes Applied Mathematics/Algebra

Prep Programs - Trade Bridge Academy
Student Voices Video

Overview of the Career Advancement Academies initiative:

Student perspectives on pathways programs, contextualized learning, integrated academic and career technical education, the cohort experience and student supports.

http://www.careerladdersproject.org/videos/career-advancement-academies/
Basic skills bridges to postsecondary

• **Combine basic skills and career-technical content**, including general workforce skills, pre-college academic and English language skills, and specific occupational knowledge and skills. Might be ABE/ESL, might be developmental ed.

• **Contextualize basic skills and English language content** to the knowledge and skills needed in a specific occupation or group of occupations.

• **Use new or modified curricula**, with identified learning targets for both academic and occupational content, articulated to next level in college and career pathway.

• **Change how classes are delivered**, e.g. dual enrollment in linked basic skills & occupational courses; integrated, team-taught basic skills & occupational courses; enrolling students in cohorts.

• **Support student success through enhanced student services**. Often includes single point of contact to help students navigate campus processes and access services, connect students to other public benefits, help troubleshoot issues that arise, and arrange internships in field of study.

• **Connect to local employer and community needs by engaging key partners** in design and implementation of bridges, such as employers, unions, workforce development boards, community-based organizations and foundations.
Washington’s I-BEST programs

• I-BEST (integrated basic education and skills training) helps adult ed/ESL students earn occupational credentials and college credits (GED not required unless job requires it). Currently serving about 2,800 students.

• I-BEST programs range from 1-3 quarters, are part of degree pathways, and pair ABE/ESL instructors with prof./tech instructors to co-teach basic skills and job training half the time; basic skills and technical skills taught separately too.

• Columbia University impact report found I-BEST students earned more college credits and occupational credentials than similar students in traditional adult education classes.
WTC CNC Machinist Bridge
CNC Operator Certificate

ABE Math (CNC Pathway) NRS 5 (2 Credits)
ABE Reading and Study Skills (1 Credit)

Integrated and/or paired with--
Manufacturing Math 1 (1 Credit)
Blueprint Reading (1 Credit)
Measurement and Inspection (1 Credit)
Introduction to Machining (1 Credit)
CNC Production Lathe: Operation (1 Credit)
CNC Production Mill: Operation (1 Credit)

Figure 6. CNC Machinist Career Pathway at Western Technical College
Source: Western Technical College
South Texas College Accelerated Electrician Career Pathway

On Ramp:
- Foundation ESL for Electricians
- Spanish for Electricians
- GED Prep

6th Grade Ready in Reading, Writing & Math

Electrician Aide MSAA:
- ELPT 1419
- ELPT 1325
- ELPT 1429

JOB

GED

GED Complete

Electrician Assistant Certificate:
- Electrician Aide MSAA +
- ELPT 1411
- ELPT 1420
- Elective
- ELPT 1445
- ELPT 2325
- ELPT 2447

JOB

Electrician Aide MSAA:
- ELPT 1419
- ELPT 1325
If pass, apply for financial aid; then
- ELPT 1429

JOB

South Texas College Accelerated Electrician Career Pathway

On Ramp:
- 6th Grade Ready in Reading, Writing & Math
- High-Interm/Advanced ESL

6th Grade Ready in Reading, Writing & Math

Contextualized ESL
- Contextualized Technical Spanish
- Contextualized Math

8th Grade Ready in Reading, Writing & Math

High-Advanced/Exit ESL

Electrician Aide MSAA:
- ELPT 1419
- ELPT 1325
- ELPT 1429

JOB
Portland Community College: Students attend academic courses plus an ESOL Support Course.

<table>
<thead>
<tr>
<th>Pre-requisites:</th>
<th>Bridge Term</th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CASOL:</strong> ESOL Level 5 (placement into or previous enrollment through Level 4)</td>
<td><strong>ESOL Support Class (Credit or non-option available)</strong></td>
<td><strong>ESOL Support Class (Credit or non-option available)</strong></td>
<td><strong>ESOL Support Class (Credit or non-option available)</strong></td>
</tr>
<tr>
<td><strong>CASOL:</strong> Intro to Keyboarding (CAS 121)</td>
<td><strong>CASOL:</strong> Keyboarding (CAS 122); Basic Computer Skills/MS Office (CAS 133)</td>
<td><strong>CASOL:</strong> Beginning Excel (CAS 170) and Beginning Word (CAS 216)</td>
<td><strong>Internship</strong></td>
</tr>
<tr>
<td></td>
<td><em>Internship – begin or explore</em></td>
<td></td>
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Portland Community College: Students attend academic courses plus an ESOL Support Course.

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<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>VELAC: ESOL Level 6 (placement into or previous enrollment through Level 5); Math 20 or test into Math 60</td>
<td><strong>ESOL Support Class (Credit or non-option available)</strong></td>
<td><strong>ESOL Support Class (Credit or non-option available)</strong></td>
<td><strong>ESOL Support Class (Credit or non-option available)</strong></td>
</tr>
<tr>
<td></td>
<td>BA 131 – Computers in Business</td>
<td>BA 228 – Computerized Accounting</td>
<td>BA 101 – Intro to Business</td>
</tr>
<tr>
<td></td>
<td>BA 111 – Intro to Accounting</td>
<td><em>Internship – begin or explore</em></td>
<td><em>Internship</em></td>
</tr>
</tbody>
</table>
New approaches to developmental education

- Career Pathway Bridges can integrate developmental education with career-technical education.
- Fast track (accelerated or compressed) and modularized courses. (Baltimore Accelerated Learning Program).
- “Mainstreaming,” i.e. concurrent enrollment in pre-college and postsecondary coursework
  - Basic skills support course paired with an occupational or academic course in program of study.
  - Basic skills content contextualized and customized to support success in that postsecondary course.
- Contextualized instruction.
  - Basic skills content contextualized for academic course OR for an occupational course, OR for college success and career exploration
- Collapsing levels of remediation with additional support and creating more customized developmental tracks.
  - Statpath. No minimum placement score, complete all math in 1 year. Lowest level students (arithmetic) 7 times more likely to pass college math.
  - Los Medanos piloting a similar approach here.
Contextualized Teaching and Learning (CTL)

Many people learn better and faster, and retain information longer, when they are taught concepts in context.

- Makes it relevant
- Engages and motivates hard-to-reach students
- Increases learner confidence & enthusiasm
- Enhances interest in long-term goals & education

Center for Student Success, Research & Planning Group. *Basic Skills as a Foundation for Student Success in CA Community Colleges*, p. 58.
Contextualized Teaching and Learning (CTL)

- Strategies to link essential skills & academic or occupational content
  - concrete applications
  - specific context of interest to the student

Includes:
- Design of curricula
  - integration of essential skills & content
- Teaching
  - use of cases, project-based learning and other student-centered practices
- Assessment
  - examining application of knowledge and the transfer of skills
Different ways to accomplish CTL

- Infused academic courses
- Infused career technical courses
- Linked courses or learning communities
- Team teaching of integrated academic and occupational courses

D. Perin. *Academic-Occupational Integration as a Reform Strategy for the Community College: Classroom Perspectives*. Teachers College Record, vol. 103 2010

Contextualized learning in the CCCs

Students in contextual math compared to standard math courses:

- 327% more likely to pass contextual course

In the same semester:

- 1,424% more likely to take a degree applicable course
- 284% more likely to pass degree applicable coursework
- 400% as likely to pass transfer-level courses

Effects are the most pronounced for Black and Hispanic students.

In the next semester:

- 167% as likely or 67% more likely to pass degree applicable courses
- 228% as likely or 128% more likely to pass transferable courses

CCC Career Advancement Academies

- Establish pipelines to college & high wage careers for low-income young adults w/ multiple barriers (18 –30 years old)

- Utilize range of approaches, but have common key elements:
  - Contextualized Teaching and Learning as core strategy
  - Cohort based learning communities combine basic skills and CTE
  - Integrated student services
  - Partnerships leverage resources (business/labor, WIBS, CBOs, adult ed)
  - Attention to transition strategies and ongoing pathways

- Demonstration projects:
  - 31 colleges in 4 regions (East Bay, Central Valley, LA, SF Peninsula)
  - $20 million investment over 4 years; > 6,200 students to date
  - Contra Costa CC District: lead for EBCAA
  - Public/Private Partnership between CCC system and philanthropy
  - CLP: TA/support; P/PV: evaluation; RP Group: data

- 90% retention; 74% course success*
SMCCD  Allied Health Career Advancement Academy

Skyline College
Respiratory Therapy
Associate Degree Program

College of San Mateo
Nursing
Associate Degree Program

Cañada College
Radiologic Technician
Associate Degree Program

Prerequisites
Participants may complete prerequisites at any college
and go into any of the three higher level healthcare programs

Students earn certificates in one or two semesters, and go directly into high paying Allied Health jobs and careers.

Gateway to Allied Health Careers: CAA Bridge (1)
Student learning community cohorts
Contextualized basic skills including Math and English or English Speakers of Other Languages Course
Orientation to Allied health Careers/ Healthcare Gateway, involving employers and worksites
College success and student support services integrated with WIB Services
Participants enter Gateway at Cañada College or Skyline College then go up the career ladder at any of the three colleges.
(1) or (2) represent the number of semesters required for accelerated certificate completion.
Growing momentum for CTL in CA

- CAAs refunded for 2010-11 ($5M)
- CCC CTE and basic skills initiatives cut but survived
- ASCCC collaborates on Faculty CTL Primer (RP Group, CLP) with Student Perspectives Video (CLP)
- LINKS3 regional events focus on Acceleration and CTL
  - 3CSN with CLP
- “Linked Learning” endorsed by CA Dept. of ED as the high school transformation strategy:
  - “rigor and relevance”
  - “college and career”
2020 Vision Recommendations . . .

• Develop an enhanced Basic Skills funding model that includes clear and expedited pathways for students tied to defined research-based benchmarks or “momentum points” leading up to and including completion.

• Develop alternatives to traditional curriculum sequences using linked or contextualized curriculum across curricular areas.

Imagine you are designing a new program from scratch— and have the chance to incorporate as many effective strategies as you can to maximize student success and credential completion.

Around your table you have all the college leaders you need to design and launch your new approach. (VPs, deans, dept chairs, faculty, classified staff— from across the curriculum, and from instruction and student services. Partners from business/industry, labor, K-16, community orgs)

• Pick a program or program area and develop a model that would focus program design and pedagogy on promoting student completion of credentials.
• Design the program/pathway. Draw a picture or schematic that shows us what it would look like.
• What key elements would you include?
• Discuss what you would need to do to implement and sustain it. How would you get the resources you need?

Do you have anything like this on campus or in your department now? Could you imagine building something like this?
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