Why Exemplary Automotive Career Pathway Programs Work: 5 Case Studies

Dr. Stan Chase, Senior Management Consultant & AMTEC; Beverly Hilderbrand, Beverly Hilderbrand, CARCAM Director, Gadsden State Community College, Craig Hopkins, AMTEC, and, Dr. Federico Zaragoza, Vice Chancellor, Economic and Workforce Development, Alamo Colleges

AMTEC is supported by a National Science Foundation Grant
What We Are

Organization:
• An NSF ATE National Center of Excellence that consist of community colleges and auto industry partners in 12 states with a common, vision, mission, and goals inaugurated in April of 2005.

Vision:
• A recognized collaboration of colleges and companies working to strengthen the competency and global competitiveness of the automotive workforce.

Mission:
• Create and sustain an innovative, responsive, and standards-based workforce education development system that meets industry skill requirements.
Dr. Annette Parker

Principal Investigator & CEO

KCTCS’s Kentucky Center of Excellence
Jefferson CTC & Ford Louisville (2 plants)
Bluegrass CTC & Toyota Kentucky (TMMK)
Pellissippi State Community College & Aisen
Danville Community College & Goodyear
Alamo CC District & Toyota Texas & Avanzar
Spartanburg Community College with BMW
Henry Ford Community College & Ford Motor
Alabama CARCAM & Alabama AMA
Cuyahoga CC & Ford Engine
Macomb CC & General Motors Tech Center
Lansing CC & GM Delta Plant & Grand River
Capitol Area Manufacturing Council

AMTEC is supported by a National Science Foundation Grant
autoworkforce.org

National Industry & Community College Network

Automotive Manufacturing Technical Education Collaborative
To help industry meet the following challenges:

- Develop current workforce standards for Multi-skilled Maintenance Technicians
- Develop competency measurement tools
- Prepare the workforce to be globally competitive
- Increase workforce productivity
- Develop a pipeline for the future workforce
AMTEC National Center Goals

Goal 1 – Create business/industry partnerships in delivering core technical education that meets the high priority needs of automotive manufacturers and suppliers.

Goal 2 – Increase secondary to postsecondary transition and from postsecondary to employment to meet industry needs.

Goal 3 – Implement a collaborative support system to sustain and replicate the AMTEC model.

Goal 4 – Create and sustain the program with assessments, credentialing and continuous improvement.
# Our Journey into Career Pathway/Pipelines

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
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<tr>
<td>Phase 1</td>
<td>Conduct Review of the Literature on career pathway programs - 2010</td>
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<tr>
<td>Phase 2</td>
<td>Identify Characteristics of effective pathway programs and create an AMTEC Career Pathway Model – 2011</td>
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<td>Phase 3</td>
<td>Identify and conduct case studies of exemplary career pathway programs - 2012</td>
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<td>Phase 4</td>
<td>Create Tool Kit and promote implementation of AMTEC Career Pathway Best Practices amongst members – 2013</td>
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Part 1
Review of the Literature

A. Typology
B. Promising Practices
Methodology

- 2010 comprehensive literature review
- Commissioned by Goal Team Two
- Conducted by Dr. Heather Wathington, University of Virginia
Literature Review Models

1.0 Secondary Models

- 1.1 Career Academies
- 1.2 Tech Prep
- 1.3 Career and Technical Education (CTE)
- 1.4 STEM Based College Prep/Transition Pathways
- 1.5 Career Clusters – Pathways

2.0 Post Secondary Models

- 2.1 Dual credit/concurrent enrollment technology
- 2.2 Early & Middle College
- 2.3 Vertical Articulation (2+2) Models

3.0 Employer Models

- 3.1 Career Industry Certification Pathways
- 3.2 Employer and Cluster Boot Camps
- 3.3 Career Pathway Internships
- 3.4 Apprenticeship / Pre Apprenticeship
Six Characteristics of Promising Career Pathway Models

1. Employer Engagement
2. Institutional and Instructional transformation
3. Warp around support services
4. Partnerships
5. Continuous Improvement
6. Sustainability
Part 2

Emerging AMTEC Career Pathway Model
Requires a model that supports the automotive manufacturing sector and other advanced manufacturing to:

• Offer a flexible career pathway to fit unique needs of students, employees, and employers to identify and prepare the current and future workforce
TBPI/fz
(Turbo Best Practice Identification)

1. Identify top Exemplary Career Tech Project in your community.
2. Top reason why you think it works.
3. Top threat to that project if any.
Phase 3
Selected Five Exemplary Models

AMTEC'S NATIONAL CASE STUDY EXECUTIVE SUMMARY

Career Pathway Programs That Work
Part 3

Exemplary Case Studies
<table>
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<tr>
<th>Research Team Member</th>
<th>Role and Affiliation</th>
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<tr>
<td>Dr. Annette Parker</td>
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<td>Dr. Federico Zaragoza</td>
<td>Vice Chancellor at Alamo Colleges (TX)</td>
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<tr>
<td>Craig Hopkins</td>
<td>Project Manager, AMTEC</td>
</tr>
<tr>
<td>Dr. Katherine Manley</td>
<td>Professor, Ferris State University (MI)</td>
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<tr>
<td><strong>Qualitative Study</strong> –</td>
<td>To determine existence of expected characteristics/variable in exemplary automotive career pathway programs”</td>
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<tr>
<td><strong>Sample of Exemplary Programs</strong> –</td>
<td>Five (5) career pathway programs nominated by Team 2 subject matter experts and approved by AMTEC Leadership Committee</td>
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<tr>
<td><strong>On Site Review</strong> –</td>
<td>Team 2 conducted on-site visits and interviewed administrators, students, employers, community stakeholders, and operational staff.</td>
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<tr>
<td><strong>Data Analysis</strong> –</td>
<td>Dr. Manley identifies critical themes, and produced Executive Case Study Report.</td>
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Six Case Study Goals

- To increase knowledge of academic expertise, industry practice and knowledge transfer about industry-education advanced manufacturing and automotive career pathways.
- To describe a set of circumstances, from which lessons can be drawn for other organizations.
- To explore the opportunities and challenges of industry and education partnering with one another with the aim of developing future partnerships.
Case Study Goals, Continued

• To be stand-alone ‘learning’ case study that generates new insights and perspectives, and inspires innovation and improves the effectiveness of industry-education partnerships;

• To present practical examples of AMTEC partnership model and the application of partnership skills for use in creating p-16+career pathways.

• To develop an awareness on the potential of using industry-education partnerships.”
Case Study Methodology

Documentation
- primary sources, i.e., project proposals, press releases, advertising texts, reports
- Memorandum of Understandings

Archival records
- organization charts, survey data, personal records

Direct Observation
- site visit

Interviews with key informants
- with the partnership administrators from industry and education
- with key players and stakeholders
- with college students and industry participants
AMTEC Case Studies

- Alamo Colleges
- Lansing Community College
- Ivy Tech
- Florida-statewide (FLATE)
- KCTCS – Owensboro Community and Technical College
<table>
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<tr>
<th>Alamo Colleges</th>
<th>Lansing Community College and Eaton Intermediate School District’s</th>
<th>Owensboro Community and Technical College</th>
<th>Florida Advanced Technological Education Center</th>
<th>Ivy Tech Community College</th>
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<td>Alamo Area Academies – Dual Credit</td>
<td>Career Preparation Center – Dual Credit/Early College</td>
<td>Discover College – Dual Credit</td>
<td>FL-ATE Dual Credit</td>
<td>Southwest Campus = Dual Credit</td>
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<tr>
<td>Exemplary – Technical Academ workforce development model with dual credit</td>
<td>Model Early college workforce development model</td>
<td>Model Early college</td>
<td>Model industry-driven statewide Engineering Technology Degree</td>
<td>Model Early college</td>
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Eaton ISD and the Career Preparation Center partnered with Lansing Community College for over 35 years to offer Career Preparation programs to area high school students.

Distinguishable Characteristics –

- Contract with LCC to deliver state approved high school CTE programs in 37 high schools and 5 counties.

Career Pathway Focus –

- Dual credit/dual enrollment
Career Preparation Center

Some Promising Practices –

• High School CTE programs offered at community college
• Students earn high school and direct LCC credits
Why It Works
Career Preparation Center

• Strong Leadership
• Industry and Community Support
• Programs offered off campus
• Graduates enrolled in apprenticeship programs, LCC, or transfer to universities
• Ongoing evaluations by partners to insure curriculum up to date
• High degree of student services offered
Ivy Tech Community College

Profile –

• Ivy Tech Community College is the nation's largest state-wide community college with single accreditation and over 200,000 students.

Distinguishable Characteristics –

• History of strong industry collaboration and engagement

Career Pathway Focus –

• Dual credit/dual enrollment
Ivy Tech Community College

Some Promising Practices —

• Career Fairs,
• Parent Involvement,
• Junior Achievement,
• Boot Camps (Jobs for America’s Graduates (JAGS)).
Why It Works

Ivy Tech Community College

• Strong Leadership
• Industry and Community Support
• Articulated Partnership between K-12 and college
• Applied STEM/CTE Pathways (Career Fairs, Parental Engagement, Boot Camps, Junior Achievement, and STEM Camps)
• No Cost Dual To Student (tuition paid by SD)
• Industry-recognized programs
• Proven industry ties with small and large businesses
• Willingness to adopt to industry need to customize programs
• High quality instructors
FLATE
A partnership between industry, community stakeholders, and the Florida Department of Education designed to deliver statewide Engineering Technology A.S. (Associate of Science) Degree.

Distinguishing Characteristics –
• State level governance model that promotes and support systemic high performance workforce solutions.

Career Pathway Focus –
• Dual credit/dual enrollment
Some Promising Practices –

• Statewide curriculum with a common core
• One pathway leads to multiple career options
• Stackable Certificates
• Articulated STEM alignment
• State Level Governance Structure that promotes workforce solutions. Diverse Funding Base
• Exceptional Leadership - Engaged faculty
• High Expectations to National “Best Practice” Community.
• Highly Developed Communications and Dissemination Infrastructure
• Applied STEM/CTE Pathways (Career Fairs, Parental Engagement, Boot Camps, Junior Achievement, and STEM Camps)
• Stackable Certifications Core+Certificate+AAS+Advanced/Transfer)
  • Industry-recognized programs such as MSSC, NIMS, SME
• Facilities and labs aligned to curriculum and industry
Profile – Owensboro Community & Technical College (OCTC)

- is one of the sixteen colleges that make up the Kentucky Community & Technical College System (KCTCS) with enrollment of more than 6,000 students.

Distinguishing Characteristic –

- A Bill and Melinda Gates Breaking Through college with a tradition of engaging underserved and under skilled young adults.

Career Pathway Focus –

- Dual credit/dual enrollment
Some Promising Practices –

- Articulated pathways for CTE and College Transfer students;
- STEM and Robotics Camps;
- On site counselors and wrap around services;
- Industry engagement
  - Through tours and speakers,
  - Hire co-op students and
  - Participate in advisory committee.
Why It works
OCTC

• Strong Leadership (College and ISDs)
• Co-located academic and student “wrap around” support
• Student focused faculty and student service advising
• Comprehensive articulated dual credit pathways for academic and CTE dual credit.
• Dual Credit programs at both college and ISD locations.
• Articulated STEM/CTE Pathways in emerging fields such as Bio-Technology and Mechatronics.
• Industry engaged tours and speakers bureau, provide internships, and serve on program’s advisory committee.
• Facilities and labs aligned to curriculum and industry
• Engaged faculty
Alamo Colleges Academies

Profile –

• Alamo Colleges, Industry, and Community Stakeholders implement a two-year career pathway program for students into critical sector jobs in: (1) Aerospace, (2) Advanced Manufacturing, and (3) Cyber Security.

Distinguishing Characteristic –

• 501 C 3 governance organization with 51% employer board. Employer-driven program that provides students industry-paid internships, mentoring, and tuition assistance.

Career Pathway Focus –

• Dual credit/dual enrollment
Some Promising Practices –

- Employer engagement in all phases of program,
- dedicated recruitment and retention staff,
- internships, and
- articulated pathways into AAS and BASS programs,
- job opportunities
Why It Works
Alamo Academies

• Strong Leadership (Industry and College)
• Dedicated recruitment and retention “wrap around” staff
• Diversified Funding (City, County, Perkins, ISD, College)
• Employer involvement and ownership of all phases including administration (501C3), jointly supervise staff, serve as business advisory committee, provide internships, jobs, and tuition support
• Comprehensive articulated dual credit pathways into AAS Advanced Manufacturing programs (IM, Manufacturing, Mechatronics)
• Dual Credit programs offered at various college and ISD locations.
• Stackable Certificate Pathways (MSSC+Certificate+AAS+BASS)
• High Expectations by faculty, students, and staff (National ITSA Champions, State of TEXAS-STAR AWARD, National Skills-USA)
• Facilities and labs aligned to curriculum and industry
Part 4
Student & Industry Voices
Feedback Loops?
STUDENT VOICES

Automotive Manufacturing Technical Education Collaborative
Student Voices

- I feel like I am more “respected by being in the program” (peers and parents).
- I know what and where I am going with my life while most of my friends do not.
- Most of my friends don’t have a clue about their futures. I do.
- I feel like there is a lot of pressure for me to do good in the program.
- We, the students and teachers, are like a family...we help one another.
- I feel like the hands on training is the most important part of the program.
- My internship was awesome, I applied what I learned in classes.
- I know that I am successful because I am “happy” with my life.
Student Voices

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Industry Voices

• We understand that these programs produce our future workers.
• We are very satisfied with the graduates and have no problem letting other companies know.
• Our Industry is constantly changing so education must do the same.
• We need to attract those students that are not going college. Right?
• For us soft skills and basic skills are still necessary for job success.
• If things are bad now, wait until our valued skilled workers retire...and it will be sooner rather than later.
• We found that the young men and women that we hired are amazing, all they needed was an opportunity.
• Our industry does not understand education but we try to help in anyway we can.
Case Study Site

Common Themes

1. Exemplary career pathways required **articulated** industry, high school, college, and ISD relationship
2. Exemplary programs defined roles, responsibilities, and contributions in Memorandum of Agreements
3. College provided wrap-around services are central to student success
4. Best programs identify customers and have implemented continuous improvement feedback loops (Baldrige)
5. Mature program partnerships created a trust foundation that fostered innovation
Part 5

Study Finds and Recommendations
Exemplary Variables That Played Out in all Exemplary Programs

- Addressed a defined industry need
- Exemplary Programs had identified Internal and external champions with a vision to build the “future” pipeline
- Senior leadership at colleges support for the concept
- Galvanizing vision for exemplary programs came before the dollars
Exemplary Variables That Played Out in all Exemplary Programs

- **Universal programs** all benefit, especially minority students
- **Dual Credit (academic rigor) that addresses the higher industry standards** but may leave unprepared students behind
- The “applied”/contextual learning dimension of CTE programs reinforces learning and relevance
- **Paid internships and Co-Op** can be a game changer for both students and employers
Employer Engagement

General—All Sites

• Advisory committees that guide curriculum, labs, standards, programs
• Recruitment - Plant tours, High school fairs
• Employer Funding - Equipment, scholarships, donors, tuition support
• Job Opportunities, Full and PT
• Paid and Unpaid Coop-Internships
• Program Champions
• Assist to recruit faculty
• Accessibility to schools for school visits and plant visits by students and parents

Site Specific

• Employer MOAs (All)
• Employer or Consortia of Employers – MOA between parties (OCTC Internships/Apprenticeship Opportunities – (All)
• Externships for Faculty (Alamo)
• Retention – Mentoring (Alamo, OCTC)
• 501 C3 - Governance Body (Alamo)
Findings

Instructional Transformation

- Connects high school to college career pathway – (All)
- Connects from workforce to college career pathway – (All)
- Allows for non-credit to credit conversion – (All)
- Values and aligns credits and industry certification – (Alamo, FLATE)
Findings

Exceptional Leadership at all levels

• (1) Policy, (2) Executive, (3) Operational, (4) Instructional, (5) Student Services

Competent and enlightened instruction (open to ideas for improvement)

• Instructors connect with students; strong industry ties; SMEs; wanted to know best practices

Defined articulated pathways to demand occupations

• Students, faculty, and program staff know how programs work. They can explain their career pathway and their next step in the process.
Partnerships

- Employers, Schools, Colleges, Universities, Government, and CBOs codified in MOAs - (All)

Wrap Around Services

- Provides career guidance, academic counseling, mentor financial assistance, internships or apprenticeship opportunities for student success - (All)
Findings

Continuous Improvement

- Utilizes data to improve performance and student success - (All)

Sustainability

- High blending multiple funding sources; Strong Executive Level and Board Support - (All)
Recommendation #1

• More partnerships with regional corporations to provide innovative solutions to business problems.
• Promising practices must be leveraged and researched in order to help other organizations improve their operational excellence.
• More sophisticated research needs to be done to document if the “promising” practices are indeed “best” practices.
Recommendation #2

- There is a need to use the models and promising practices to develop federal and state policies to ensure funding of, and focus on, these innovative programs
Recommendation #3

Research must be done to track participant demographics and performance data within the various career pathway models.

• This might include creating data systems to track student progress across educational levels, institutions, and careers pathways in specific industries.

• There must be clear indicators of college and career readiness with clear standards for those indicators.
Recommendation #4

• As the options increase for high school students to earn transcript postsecondary credits in courses in which they are also enrolled at the postsecondary level, there must be a process to ensure that the credits are accepted at multiple postsecondary institutions.
Recommendation #5

The mismatch between high school graduate requirements and the college entrance requirements must be addressed.

- Even with increasing demand by high school students to enroll in these innovative programs, the case studies reported that most of the high school students are not academically eligible to participate.
- With increasing demand for high skilled workers in these industries, this mismatch must be addressed.
Conclusions

1. We looked for programs that operational the components identified in the literature since there were few examples of exemplary pathways provided. We wanted to explore what was out there.

2. Many of the six AMTEC element characteristics were seen in the sites. We were able to identify what was in place and what was not. However, our findings are limited to observations.
3. Career pathways that utilize the six AMTEC elements can be used by both secondary and post secondary institutions to increase the number of secondary students receiving post secondary technical education.

4. The quality of industry and college partnerships was linked to the level of commitment and engagement of college and industry leadership.
4. The secondary schools, colleges, and industry partners benefit when all aspects of the career pathways model are understood and defined.

5. The case study researchers note that there is no cookie cutter approach to creating exemplary career pathway programs. However, the case studies reinforce the importance of the six effectiveness variables/characteristics reflected in the AMTEC model.

6. Finally – Emerging literature such as the Harvard Pathway to Prosperity Study reinforces the AMTEC observation that Employer Engagement is the X factor in successful Career Pathway Programs.
Any effort to construct a more effective network of pathways to prosperity will require a sea change in the role of business and other employers.

The pathways system we envision would require employers to become deeply engaged in multiple ways at an earlier stage—in helping to set standards and design programs of study; in advising young people; and most importantly, in payoffs in the labor market.

Authors - B. Schwartz, Francis Keppel, and Ronald Ferguson
Congratulations to Dr. Annette Parker

AMTEC is excited to announce that our Executive Director, Annette Parker, has earned her Doctorate of Education degree in Educational Leadership.

AMTEC and Pellissippi State are featured in the "Community College Report"

AMTEC and partner-college Pellissippi State Community College are featured on page 11 of the Tennessee Community College "Community College Report" for Fall 2012.
THANK YOU

• OUR NEXT STEPS
• Publish results of case studies
• Disseminate
• Begin Adoption and Technical Assistance Phase
Supplemental Notes For Tool Kit
Some Best Practices
Some Best Practices

• Community/Technical/Jr. College
  – Uniform policy for non credit to credit conversion
  – Alignment of core and basic foundation with associate level programs
  – Maximize credit alignment from AAS and Level 1 credit certificates with BAAS/BS programs
  – Optimize the use of industry group councils and advisory boards to drive curriculum and set performance standards
  – Minimize barriers that prevent secondary school teachers and industry experts from becoming faculty adjuncts
Some Best Practices

- University
  - Uniform policy for non credit to credit conversion
  - Maximize credit alignment from AAS and Level 1 credit certificates with BAAS/BS programs
  - Optimize the use of industry group councils and advisory boards to drive curriculum and set performance standards
  - Create opportunities for focused training led by industry experts and educators
Some Best Practices

• Employers
  – Involved in Curriculum Development
  – Provide Mentorship and Role Models
  – Provide Internship Opportunities and Pay
  – Commit to Hire and Promote
  – Provide Career Mobility and Pathways
  – Support Colleges
  – Champion Career Pathways in Community
  – Collaborate With Other Employers
Some Best Practices

• Public Schools K-12
  – Create forum for Employer – ISD Leadership interaction
  – Agree on type and extent of supplemental enrichment programs
  – Identify student interests/aptitudes and channel student to explore them
  – Implement job/college ready third party certification at end of 10\textsuperscript{th} grade
  – Use tech. prep. or equiv. to ensure math/science foundation readiness