



# "Onboarding Work-Based Learning Students in the Manufacturing Sector: A Best Practice"

'Five Steps to a Successful High School Student Experience'

Thursday, October 6, 2016 - 1:15 to 2 p.m.

J. W. Marriot - Room 101

Rod Lytle, Dean of the School of Technology  
Jan Bailey, ITEP/YCC Manager  
Ivy Tech Community College - Kokomo





# Youth CareerConnect Grant Program

## Supporting the Integrated Technology Education Program ITEP/YCC

- ▶ The Youth CareerConnect grant program is designed to encourage America's school districts, institutions of higher education, the workforce investment system, and their partners to scale up evidence-based high school models that will transform the high school experience for America's youth.
- ▶ Initial Grant Focus - <http://www.doleta.gov/ycc/>
  - ▶ Integrated Academic and Career-Focused Learning
  - ▶ **Work-Based Learning and Exposure to the World of Work**
  - ▶ Robust Employer Engagement
  - ▶ Individualized Career and Academic Counseling
  - ▶ Integration of Post-secondary Education and Training

# ITEP/YCC - What does this mean?

## ▶ ITEP (Integrated Technology Education Program)

### ▶ Industrial Technology Degree Program Pathways

- ▶ Industrial Robotics and Automation – Certification, TC, AAS, 75 Credit AAS, Transfer
- ▶ Industrial Electrical - Certification, TC, AAS, Transfer
- ▶ Industrial Mechanical - Certification, TC, AAS, Transfer
- ▶ Quality Assurance - Certification, TC, AAS, Transfer
- ▶ Process Operations - Certification, TC, AAS, Transfer
- ▶ Machine Tool - Certifications, Certificates, TC, AAS, Transfer
- ▶ Welding - Certifications, TC, AAS, Transfer

### ▶ Industrial Technology Status

- ▶ Implementation of new curriculum – Fall 2014
- ▶ Employer driven
- ▶ Permanent programs continuously reviewed to meet employers needs

### ▶ Industrial Technology Program Values

- ▶ Embedded nationally recognized, industry-led certifications appropriate to industry sector
- ▶ Stackable credentials with visible pathways
- ▶ Multiple exit and entry points

# Employer Partners

- ▶ FCA Fiat Chrysler Automobiles - Tipton/Kokomo, IN



- ▶ Red Gold, Inc. - Elwood, IN



- ▶ Patriot Porcelain - Kokomo, IN



- ▶ The Dilling Group, Inc. - Logansport, IN



- ▶ Carter Fuel - Logansport, IN



- ▶ Jeff Kellam Construction, Wabash, IN



- ▶ Small Parts, Inc., Logansport, IN





- ▶ Engaged Employer Partner
  
- ▶ Employer Driven Objectives
  
- ▶ Developed Program Approved by Corporate Office
  - ▶ High School Students
  - ▶ 18 years of age
  - ▶ Corporate Approval
  
- ▶ Willing to Encourage Other Employers to Engage in Work-Based Learning

# Work-Based Learning Program Background

- ▶ Basics of the Integrated Technology Education Program High School Program

- ▶ Industrial Technology Dual Credit Course Enrollment

- ▶ Sophomore or Junior Program Entry

- ▶ Dual Credit with Embedded Certifications

- ▶  American Welding Society (AWS)

- ▶  National Metal Working Skills (NIMS)

- ▶  Manufacturing Skills Standards Council (MSSC) Certified Production Technician (CPT)

- ▶ Work-Based Learning

- ▶ Second Semester Senior Year Experience

- ▶ Minimum of 64-Contact Hours

- ▶ Hands-on Applied Experience

- ▶ College Credit/High School Credit



# Five Steps to a Successful Student Experience

- ▶ Step 1: Entry-Level Qualifications
- ▶ Step 2: Selection and Orientation
- ▶ Step 3: Schedule and Learning Objectives
- ▶ Step 4: Continuous Improvement
- ▶ Step 5: Celebrations

# Step #1: Entry-Level Qualifications:

- ▶ Achievement of A Nationally Recognizes Certification
  - ▶ MSSC Certified Production Technician (CPT)
  - ▶ NIMS Credentials - Embedded in Precision Machining/Machine Tool Courses
    - ▶ Measurement, Materials & Safety Certification
    - ▶ Job Planning, Benchwork, and Layout Certification
    - ▶ Turning Operations with Chucking Skills Certification
    - ▶ Turning Operations: Turning Between Center Certification
    - ▶ Manual Milling Skills I Certification
    - ▶ Grinding Skills I Certification
    - ▶ CNC Milling: Operations Certification
    - ▶ CNC Turning: Operations Certification
    - ▶ CNC Milling: Programming Setup & operations Certification
    - ▶ CNC Turning: Programming Setup & Operations Certification
  - ▶ AWS Credentials - Embedded in Welding Technology Courses
    - ▶ SMAW All Position Certification - American Welding Society (AWS)
    - ▶ Any AWS Certification



## CERTIFIED PRODUCTION TECHNICIAN

### CRITICAL PRODUCTION FUNCTIONS COVERED BY MSSC COURSES AND ASSESSMENTS:

The Manufacturing Skill Standards Council (MSSC) credentialing system leading to a CPT covers the four critical production functions, as defined by MSSC's industry-led, nationally validated skills standards, common to all sectors of manufacturing: Safety, Quality & Continuous Improvement, Manufacturing Processes & Production, and Maintenance Awareness. Each area is addressed with a separate assessment. MSSC training and assessments are organized around those four modules. An individual can earn a "Certificate" if they pass one or more assessments. However, they must pass all four assessments to earn the full "CPT" certification. MSSC strongly recommends that individuals be at the 9<sup>th</sup> grade level of math and 10<sup>th</sup> grade level of English before attempting MSSC courses and assessments. The four critical functions and their related key activities are described below:

#### SAFETY

1. Work in a Safe and Productive Manufacturing Workplace
2. Perform safety and environmental inspections
3. Perform emergency drills and participate in emergency teams
4. Identify unsafe conditions and take corrective action
5. Provide safety orientation for all employees
6. Train personnel to use equipment safely
7. Suggest processes and procedures that support safety of work environment
8. Fulfill safety and health requirements for maintenance, installation, and repair
9. Monitor safe equipment and operator performance
10. Utilize effective, safety-enhancing workplace practices

#### MANUFACTURING PROCESSES & PRODUCTION

1. Identify customer needs
2. Determine resources available for the production process
3. Set up equipment for the production process
4. Set team production goals
5. Make job assignments
6. Coordinate work flow with team members and other work groups
7. Communicate production and material requirements and product specifications
8. Perform and monitor the process to make the product
9. Document product and process compliance with customer requirements
10. Prepare final product for shipping or distribution

#### QUALITY PRACTICES & MEASUREMENT

1. Participate in periodic internal quality audit activities
2. Check calibration of gages and other data collection equipment
3. Suggest continuous improvements
4. Inspect materials and product/process at all stages to ensure they meet specifications
5. Document the results of quality tests
6. Communicate quality problems.
7. Take corrective actions to restore or maintain quality
8. Record process outcomes and trends
9. Identify fundamentals of blueprint reading
10. Use common measurement systems and precision measurement tools

#### MAINTENANCE AWARENESS

1. Perform preventive maintenance and routine repair
2. Monitor indicators to ensure correct operations
3. Perform all housekeeping to maintain production schedule
4. Recognize potential maintenance issues with basic production systems, including knowledge of when to inform maintenance personnel about problems with:
  - Electrical systems
  - Pneumatic systems
  - Hydraulic systems
  - Machine automation systems
  - Lubrication processes
  - Bearings and couplings
  - Belts and chain drives

**NOTE:** MSSC assesses core understanding of the key work activities and core technical knowledge and skills needed in high-performance manufacturing, as defined by MSSC Production Skill Standards. Given online, MSSC Assessments also help measure basic computer, problem-solving and analytical skills and one's ability to apply knowledge to specific situations identified in the assessments. There are no experiential or hands-on requirements for MSSC certification as it is expected that individual employers will determine those requirements based upon their own specific needs. MSSC does not require that individuals take MSSC courses prior to testing.

# Step #1: Entry-Level Qualifications: (cont.)

## ▶ Prior attendance at the facility's Safety DOJO

▶ Prior to the fall semester of the senior year, students from partner schools will visit the Safety DOJO. This visit will consist of a pre- and post-test for each student prior to and directly after the 2-hour experience. The students will have a mini-experience of what a new employee encounters for initial safety training at this company. Some of the outcomes expressed by the students from this initial visit are the following:

- ▶ Always be aware of your surroundings to be aware of unsafe conditions and report unsafe conditions to your supervisor
- ▶ Different gloves are used for certain type of jobs
  - ▶ For example cut protection vs. heat protect
- ▶ There is a correct way to wear a safety harness and a correct way to recover if you fall in one
- ▶ Don't catch a part when it falls out of a machine to avoid an injury to the machine operator
- ▶ Colors and symbols for environmental warnings on containers have certain meanings to workers
- ▶ Make sure to make eye contact with fork truck drivers to ensure they see you throughout the plant
- ▶ Basic Personal Protective Equipment (PPE) is required for all



# Step #1: Entry-Level Qualifications: (cont.)

## ▶ Job Readiness Preparation

- ▶ A minimum of a 2.0 grade point average in all high school classes is required. If the grade point average is lower than a 2.0, a determination is made that the student is absent, tardy, a non-contributor to the class, and a non-team member.
- ▶ Community Service and extra-curricular activities represent desirable traits in youth to indicate levels of responsibility
- ▶ Teacher recommendation for the work-based experience is sought
- ▶ Students prepare a resume which is submitted with consent from the student/parent to the employer for review prior to offering an interview
- ▶ Students meeting criteria are interviewed for the potential work-based learning experience



# Step #2: Selection and Orientation

## ▶ Interview Committee

- ▶ A committee is established consisting of human resource personnel and maintenance supervisors from the plant(s) to interview the students
- ▶ A standard set of questions is asked of all of the students
- ▶ Selection for the work-based learning experience is based on all of the entry-level requirements and the results of the interview

## ▶ Selection

- ▶ Students are notified regarding the outcome of the interview committee by the employer and the ITEP/YCC staff
- ▶ A parent night is arranged by the employer
  - ▶ Time is allowed to mingle and talk with the general manager, plant managers, human resource officials, team leaders, and direct supervisors/mentors
  - ▶ Parents learn of their student's opportunities and responsibilities
  - ▶ Students meet their direct supervisor and their mentor team
  - ▶ An additional hour is spent with the students to provide details of their first days as work-study students and expected protocol to follow at the beginning of their experience



# Step #2: Selection and Orientation - (cont.)

- ▶ First week's experience
  - ▶ Students report to an assigned central location to begin their orientation
  - ▶ Company badges are provided to the students for entrance and exit to the facilities
  - ▶ The General Manager of the organization spends two days emphasizing opportunities and expectations
  - ▶ An intensive day is spent in the safety dojo
  - ▶ Presentations are made to the students regarding attendance, dress, communication protocols, etc.
  - ▶ A gate tour is provided by a member of the ITEP/YCC staff to familiarize students with location entrances for their assignments



# Step #3: Schedule and Learning Objectives

- ▶ Students are assigned to two 6-week rotations each at a different facility
- ▶ The student background through their resume is provided to the team who will supervise the student(s) at the different facilities
- ▶ The student is welcomed at the assigned facility by a company official, introduced to their team, and provided insight into this particular facility, protocol, expectations, and training opportunities
- ▶ Mentors who have varying career backgrounds and expertise in the areas of the rotations are provided as a team for the students
- ▶ Mentors are to be with the students at all times during their assignments

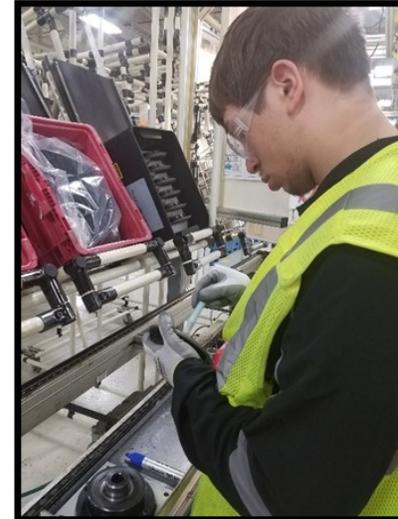


## Step #3: Schedule and Learning Objectives - (cont.)

- ▶ A determination was made that when schools were closed for snow days, the students would not report to the facility but were expected to communicate this to their immediate supervisor through text messaging
- ▶ During the 6-week rotation, three 2-week experiences provided exposure to different elements of the industry
- ▶ Specific learning objectives are written by the employer for each of the three rotations and the student(s) are given a booklet to record their outcomes relating to each specific learning objective
  - ▶ Example Learning Objective for Department 5490 - Green Gears & Heat Treat - Rotation #1
    - ▶ Describe the flow of a part from start to finish in the department
    - ▶ Diagram the production line, identifying each operation, and circling any bottlenecks
    - ▶ Describe at least 3 threats to meeting the production schedule
    - ▶ Explain the function and importance of heat treat
    - ▶ Describe at least 2 gear features that change during heat treat
    - ▶ Differentiate a good and bad Peco chart and briefly describe the features that cause a part to fail
    - ▶ Define the term "tolerance" and list the three tightest tolerances that must be held in the department
    - ▶ Explain the functions of a Hob and Broach machine
    - ▶ Explain who is responsible for completing Autonomous Maintenance activities and why they are important

## Step #3: Schedule and Learning Objectives - (cont.)

- ▶ At the end of each rotation, the student prepares a PowerPoint presentation delivered to their team and when available their plant manager
- ▶ At the end of each 6-week rotation, the students delivered a PowerPoint presentation to Corporate Officials, all plant managers, supervisors, teachers, etc.



# Step #4: Continuous Improvement

- ▶ ITEP/YCC staff visited the industry midterm of the student experience
- ▶ During this visit the students were on the job and were able to explain processes they had learned to ITEP/YCC staff
- ▶ Students were able to demonstrate what they were doing
- ▶ ITEP/YCC staff has the opportunity to talk with immediate supervisors about the progress of these students
- ▶ Mid-term evaluation and finals evaluation forms were completed by immediate supervisors with contributions from the mentor team
- ▶ Student oral evaluations were based on the evaluation forms with the supervisors providing assessments of the jobs they were doing emphasizing areas of improvement
- ▶ At the end of the experience, the students provided insight into their experiences with the program, the benefits they gained, and feedback on areas to emphasize for future students

# Step #5: Celebrations

- ▶ At the end of the semester, the company hosted a luncheon for the students which included the general manager and other corporate officials, parents, superintendents, principals, teachers, ITEP/YCC staff, company plant managers, supervisors, team leaders, and mentors
- ▶ A summary of this experience from the company's perspective was provided by the general manager
- ▶ Each student presented their experience through a PowerPoint presentation to approximately 120 people
- ▶ Students were supported by their mentoring team which provided for them an official company shirt
- ▶ A group picture of the students was presented to the general manager of the facilities in appreciation for the experience

# Next Steps:



# Timeline

## ▶ Step 1: Entry-Level Qualifications

- ▶ 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup> Grade - Industrial Technology Dual Credit Course in High School
- ▶ 10<sup>th</sup> and 11<sup>th</sup> Grade - Tours to Industry, Subject Matter Expert/Classroom Mentors Visits to Classrooms
- ▶ Fall Semester of 11<sup>th</sup> or 12<sup>th</sup> grade year - Visit to the Safety DOJO

## ▶ Step 2: Selection and Orientation

- ▶ Fall Semester of 12<sup>th</sup> grade - Resume and Interviewing
- ▶ November of 12<sup>th</sup> grade - Interview for Work-Based Learning
- ▶ January 12<sup>th</sup> grade - Selection, Parent Night, Student Orientation

## ▶ Step 3: Schedule and Learning Objectives; Step 4: Continuous Improvement; & Step 5: Celebrations

- ▶ 12<sup>th</sup> grade - Spring Semester

# ACKNOWLEDGEMENT

- ▶ Our thanks to our partner **FCA Fiat Chrysler Automobile** for their continued support and engagement in the Integrated Technology Education Program (ITEP) through the Youth CareerConnect (YCC) Grant Program.

The logo for Fiat Chrysler Automobiles (FCA) is displayed in a bold, blue, sans-serif font. The letters 'F', 'C', and 'A' are connected, with the 'C' being particularly prominent.

FIAT CHRYSLER AUTOMOBILES

# Documents Available to Share

## ▶ Student Preparation Documents

- ▶ Resume Template
- ▶ Reference Template
- ▶ Interview Preparation Documents
  - ▶ 10 Good Ways to “Tell Me About Yourself”
  - ▶ Things to do a few days before the interview
  - ▶ Questions for “You” to Ask
- ▶ ‘Mock Interview” Questions
- ▶ Employer Interview Prep Sheet

## ▶ Work-Based Learning Documents

- ▶ Work-Based Learning Program Requirements
- ▶ Work-Based Learning Application
- ▶ Student Code of Ethics
- ▶ Work-Based Learning Contract
- ▶ Work-Based Learning Evaluation
  - ▶ Mid-Term
  - ▶ Final
- ▶ Work-Based Learning Student Weekly Report

# “Onboarding Work-Based Learning Students in the Manufacturing Sector: A Best Practice”



‘Five Steps to a Successful High School Student Experience’

## Questions and Answers

