WORK-BASED COURSES

BRINGING COLLEGE TO THE PRODUCTION LINE

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JOBS FOR THE FUTURE

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Two students are enrolled in different cohorts of the same Programmable Logic Controller (PLC) course at their local community college. The first student attends a lecture about contact and coil programming, then goes to the lab to write a PLC program that can stop or start a motor using a momentary-contact pushbutton along with a functional emergency stop cable.[1] She asks the instructor questions about what situations might require nonstandard instructions. The second student goes to his job at a manufacturing plant, where he helps his supervisor wire a panel and write a PLC program that trims the excess material off parts created on the production line.[2] He observes part of the process and leads part of the process, asking his supervisor questions about how the PLCs communicate with the drives. When he returns to the classroom, he asks the college instructor follow-up questions about when it is necessary to assign the same bit addresses to multiple coil instructions. The first student is enrolled in a traditional version of the PLC course, while the second is enrolled in a PLC work-based course.

WHAT ARE WORK-BASED COURSES?

Work-based courses are community college courses that have been redesigned in partnership with employers so competencies are taught not only in the classroom or lab but also through the job itself. The students are enrolled for credit at the college, but identify as workers who have the opportunity for intentional learning on the job. College faculty and employers start with an existing course curriculum and work together to determine how to teach the content, with both college faculty and employer supervisors or other employer mentors serving as instructors. Students are assessed on their mastery through both traditional means such as homework and tests and new methods like workplace checklists and hands-on demonstrations at work. The same work-based course will look different from company to company, reflecting each employer's unique production process and equipment.

The process of designing a work-based course begins by working with local employers to select an existing course that aligns with an employer's training needs and potential for learning in the workplace. For example, Owensboro Community and Technical College (OCTC) in Kentucky has been on the cutting edge of adapting many of its manufacturing courses to this model, with Industrial Maintenance Electrical Principles, Maintaining Industrial Equipment, and Electrical Motor Controls among the work-based courses most commonly offered in partnership with employers. Once a course has been selected, college faculty and employer representatives work together to identify the specific competencies that will demonstrate mastery of the course learning objectives, as well as determine the work activities that can be used to develop, demonstrate, and document competencies and skills. The college faculty then converts traditional curricula to work-based curricula to reflect the work-based instruction and develops an assessment strategy to allow employer supervisors to participate in evaluating a student's performance. The college faculty and employer supervisors or mentors jointly function as instructors. As much learning as possible takes place through a student's job responsibilities, which is then supplemented with classroom, online, or lab instruction.

WHAT'S THE BENEFIT OF WORK-BASED COURSES?

The innovative work-based course model offers value to all stakeholders:

- **Students** gain dual opportunities for career and educational advancement while working. Their training helps them perform immediately on the job, while also obtaining college credit and skills that can be transferred throughout the industry.

- **Employers** faced with training and retaining a skilled workforce can provide workers rigorous, academic training in a format that is tailored to their production processes and skill needs. In addition, work-based courses build long-term career pathways without requiring a long-term training commitment up front.

1. Kuphaldt, Tony. Lessons in Industrial Instrumentation. INST23X, Motor Controls and PLCs, pg 57. Downloaded June 2016 from: http://www.ibiblio.org/kuphaldt/socratic/sinst/output/INST231_sec1.pdf
2. Interview with Corey Marchand. October 30, 2015.

- **Community Colleges** can use work-based courses to meet the needs of employers while maximizing the value to students and maintaining their academic standards. Work-based courses also encourage students who might not otherwise consider community college to complete certificate and degree programs. Forty percent of students in OCTC's first three years of work-based courses reported that they planned to continue for a degree after these courses.

Lewis Nall, Program Coordinator for OCTC's Automotive and Diesel Program, explains that community colleges must continue to innovate in ways like this to be relevant in an evolving economy:

> Education today is changing. The students that we're getting are changing. They have to have a reason to be there. They're not going to come and get a degree just to have a degree. There has to be something at the end that they can see... We have to make sure that these students and that the industry realizes we have something very valuable to offer.

HOW ARE THEY DIFFERENT?

Work-based courses build on many strategies found in other forms of work-based learning and most closely resemble apprenticeships, particularly Registered Apprenticeships. Both allow students to learn in the workplace and rely on employers to actively participate in the students' education. Both pay students for their time at work. Both require on-the-job learning and related classroom instruction to form an in-depth technical education that builds both practical and theoretical knowledge. However, while on-the-job and related instruction are offered separately in apprenticeships, in work-based courses they are integrated. And unlike apprenticeships, which prepare students for a particular occupation, work-based courses grow out of the skills and competencies required within a technical degree or other defined academic course of study.

Cindy Fiorella, Vice President of Workforce and Economic Development at OCTC, describes that aspect of work-based courses:

> Our work-based courses are embedded within our industrial maintenance program. They may be embedded in our welding technology program. They may be embedded within our automotive technology program. They're traditional courses that have traditional competencies that, like all community college and technical college programs, have been vetted by industry advisory boards. They've been approved by faculty senates, and it's only the instructional modality that is really changing here.

Community colleges often award general academic credit for work-based learning such as experiential learning, internships, and apprenticeships. Work-based courses, in contrast, award academic credit for specific courses that are required for a degree: A student can take Fluid Power 100 in a classroom or as a work-based course and it will look the same on her transcript.

Another central difference between apprenticeships and work-based courses is that Registered Apprenticeships are prescriptive in order to ensure consistent, in-depth training pathways that are standard across an industry. Work-based courses prioritize flexibility over standardization. Apprenticeships are typically multiyear, with apprenticeships registered with the federal government requiring a minimum of 2,000 hours of on-the-job training and 144 hours of related instruction. In contrast, work-based courses are designed to be approximately one semester long. While employers can choose to stack work-based courses into a multiyear training, they are not required to do so. Employers can customize work-based course combinations for their workers, starting them at different skill levels or filling in different gaps in workers' technical knowledge.

This difference is reflected in the way that the work-based learning is recognized. Companies can register an apprenticeship program through a standardized and formal application process with the state or federal Office of Apprenticeship so that it leads to a national industry-recognized credential. With work-based courses, recognition varies, and community colleges, not companies, navigate and integrate the accreditation process. Students who complete these courses have an option of moving on to a certificate or college degree.

WHAT'S IN THE TOOLKIT

This toolkit provides guidance to community college administrators and faculty who are interested in bringing a work-based course model to their college. Tools and resources walk through the major stages of program design and implementation:

- **Section 1: Assessing Whether Work-Based Courses are Right for Your College** situates work-based courses in the broader context of work-based learning, degree programs, and career pathways to help determine if the model meets a need at your college. In addition, a self-assessment determines whether your college is ready to establish successful work-based courses.

- **Section 2: Building a Team and Institutional Support** guides the first steps of planning for the model with tools to design your work-based course team, build faculty support, partner with employers, and market the program to students.

- **Section 3: Designing the Course and Curriculum** focuses on how to translate an existing technical course into the work-based format, starting with choosing which courses to adapt through developing the course, competencies, and instructional design framework, and finally designing an assessment process. It also considers when to fill a cohort through a single company or employer consortium.

- **Section 4: Training Employer Supervisors and Mentors** helps faculty prepare employer supervisors for their critical role in course instruction. A facilitation guide for a training workshop includes planning tips, slides, handouts, and ideas for adapting the training format to meet employer needs.

- **Section 5: Delivering the Work-Based Course** supports work-based instruction with a variety of strategies for teaching in the workplace and insight into how these courses can look at a manufacturing plant.

- **Section 6: Connecting Workers to College** serves as a starting point for ensuring that work-based courses are an effective gateway to community college, highlighting the resources throughout the community college that can be used to enable the success of incumbent workers at school.