
Competency Models In Action:

Priming the Energy Pipeline: Missouri University Leads the Way

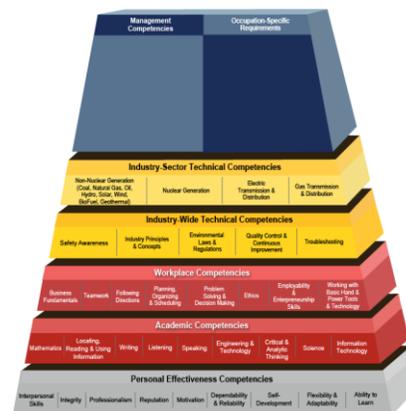
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- Collaboration addresses needs of an aging workforce in Missouri’s energy sector.
- DOL industry competency model for Energy/Generation, Transmission and Distribution is used to inform a curriculum gap analysis.
- Curriculum changes and articulation agreements at Missouri University and community colleges meet demands for a skilled energy sector workforce for the future.

Introduction

The University of Missouri-Columbia (MU) received nearly \$3 million of a \$6 million State Energy Sector Partnership (SESP) grant awarded to the Missouri Division of Workforce Development to help displaced workers learn skills needed for occupations in the energy sector. MU rolled up its “institutional sleeves” and went to work. The university lost no time in bringing four community and technical colleges – Crowder, Metropolitan (MCC), Saint Louis (STLCC) and Linn State (LSTC) – to the partnership table.

The partners conducted a groundbreaking gap analysis of all sustainable energy and energy efficiency curricula using the industry-informed Energy/Generation, Transmission and Distribution (EGTD) Competency Model as the standard.



Energy/Generation, Transmission and Distribution Competency Model

STLCC discovered curriculum gaps in seven of their energy related-courses. For example, in the Technical Computer Applications course, gaps emerged in such areas as Personal Information Management (PIM) applications; electronic calendaring; recordkeeping logs; and program management forms. STLCC modified their curriculum to conform to the skill requirements of the EGTD model (depicted in a graphic below).

Workforce Development Strategy

Industry data indicate that as many as 50% of Missouri's current utility workforce will be eligible for retirement within the next five years. It was in the state's interest to get their utility companies to work together to foster a future workforce that will have the skills needed by energy industry employers. The partner institutions used the EGTD model as a tool to realize this goal by retrofitting their curricula to meet industry-informed skill requirements.

The EGTD model was developed by the Center for Energy Workforce Development (CEWD), a national non-profit consortium of electrical, natural gas and nuclear utility companies and their respective associations. CEWD was formed to help utilities work together to develop solutions to the impending workforce shortage in the utility industry. CEWD is the first partnership among utilities, their associations, contractors and unions to focus on the need to build a skilled workforce pipeline that will meet workforce needs.* To create the EGTD, CEWD used DOL Competency Model Clearinghouse resources. The Clearinghouse offers User Guides to help organizations such as CEWD to develop curriculum aligned with a competency model. See http://www.careeronestop.org/CompetencyModel/userguide_curricula.aspx.

How They Did It

MU and their four partners collaborated with the Missouri Energy Workforce Consortium (MEWC), a state affiliate of CEWD. MEWC's mission is to engage industry, education and government in strategic unified and results-oriented efforts to ensure a qualified and skilled workforce that will meet the energy needs of the state.† MEWC served as a robust resource for the participating institutions and provided timely information on the supply of and demand for utility workers in the state.

It took a lot of effort and teamwork to accomplish the goal. "The sheer number of competencies in the EGTD model was daunting," says William Miller, Professor Emeritus, at the MU Research Reactor and Principal Investigator for the MU SESP grant. MU and its partners used various forums, conference calls and individual faculty efforts to review gaps. Participants discovered that some of the competencies that initially appeared to be redundant were, in fact, overlapping. "We 'tweaked' the list in analyzing the adjustments that needed to be made, creating the wheel as we worked," notes Gayla Neumeyer, MU's SESP Grant Manager, MU Research Reactor Education Group. "We also found that the Building Blocks Pyramid framework was a very good visual aide that helped audiences that were unfamiliar with the competency model concept understand what we were trying to accomplish."

* Center for Energy Workforce Development Web site, <http://www.cewd.org/>

† Missouri Energy Workforce Consortium Web site, <http://missourienergyworkforce.org>

The Solution and Results

The table below provides some examples of the how STLCC updated its Technical Computer Applications course by comparing course content to the EGTD model.

EGTD Model/Identified Curriculum Gap	Resolution/Change
Tier 2: Academic Requirements Section 8 Information Technology	
<ul style="list-style-type: none"> • Uses Personal Information Management (PIM) applications to increase workplace efficiency 	A new lecture was developed to discuss PIM applications and to discuss specifically Microsoft Outlook as a PIM
<ul style="list-style-type: none"> • Employs technological tools to expedite workflow including word processing, databases, reports, spreadsheets, multimedia presentations, electronic calendaring, contacts, e-mail and Internet applications 	Word processing, databases, reports, spreadsheets, and multimedia presentations are already covered in existing course. Electronic calendaring, e-mail will part of the PIM and outlook lecture. A new lecture on Internet applications has been developed.
<ul style="list-style-type: none"> • Employs computer operations application to access, create, manage, integrate and store information 	This is already covered in existing course.
Tier 5: Industry Specific Technical Competencies Section 1: Non-Nuclear Generation	
<ul style="list-style-type: none"> • Is knowledgeable of procedures to access, file and use recordkeeping logs 	Accessing and file Management are already covered in existing course. Students will have a new assignment to develop a recordkeeping log.
<ul style="list-style-type: none"> • Is able to use Microsoft Office software to prepare spreadsheets for data analysis and reports for management review and approval 	This is already covered in existing course.
Engineering Technician	
<ul style="list-style-type: none"> • Uses CADD software for generating 2-D and 3-D working drawings and solid model drawings for use in other programs and to update company records with new and replacement equipment 	2-D AutoCAD is already included in existing course but will be enhanced to include more information
<ul style="list-style-type: none"> • Prepares charts and graphs 	This is already included in existing course
<ul style="list-style-type: none"> • Prepares project authorizations, work orders, requisitions, retirement forms, letters and memos 	A project authorization, work order and requisition form will be added as examples in either Microsoft Word or Microsoft Excel

Return on Investment

MU and its partners continue to transform their energy-related curricula. There is now an undergraduate minor in Energy Engineering at MU's College of Engineering. One new course offered as part of the minor, Sustainable Electrical Energy Resources, has attracted an overflow of student enrollees. Articulation agreements have been finalized between MU and MCC and Crowder College that enable students to make a seamless transfer from an A.A.S. in Engineering to a B.S. in Mechanical or Electrical Engineering. Agreements with the two other partner colleges have been drafted and are in review.

"The gap analysis was very helpful in terms of fostering an environment of continuous improvement," says Ms. Neumeyer. "MU and its partners will continue to enhance energy sector education after grant funding has ended. We are committed to sustaining this critical initiative."

Related Links

Center for Energy Workforce Development

<http://www.cewd.org>

Missouri Energy Workforce Consortium

<http://missourienergyworkforce.org>