Colorado Helps Advanced Manufacturing Program

Website Brief

Renée Edwards
Dilafruz Nazarova
Heather McKay

Released February 2016

RUTGERS

Education and Employment
Research Center

Colorado Helps Advanced Manufacturing Program
Website Brief

Renée Edwards
Dilafruz Nazarova
Heather McKay

Education and Employment Research Center
School of Management and Labor Relations
Rutgers, the State University of New Jersey
Janice H. Levin Building
94 Rockafeller Road
Piscataway, NJ 08854

February 2016

ABOUT RUTGERS SCHOOL OF MANAGEMENT AND LABOR RELATIONS

Rutgers' School of Management and Labor Relations (SMLR) is the leading source of expertise on the world of work, building effective and sustainable organizations, and the changing employment relationship. The school is comprised of two departments—one focused on all aspects of strategic human resource management and the other dedicated to the social science specialties related to labor studies and employment relations. In addition, SMLR provides many continuing education and certificate programs taught by world-class researchers and expert practitioners.

SMLR was originally established by an act of the New Jersey legislature in 1947 as the Institute of Management and Labor Relations (IMLR). Like its counterparts that were created in the other large industrial states at the same time, the Institute was chartered to promote new forms of labor-management cooperation following the industrial unrest at the end of World War II. It officially became a school at the flagship campus of the State University of New Jersey in New Brunswick/Piscataway in 1994. For more information, visit smlr.rutgers.edu.

ABOUT THE EDUCATION AND EMPLOYMENT RESEARCH CENTER

Rutgers' Education and Employment Research Center (EERC) is housed within the School of Management and Labor Relations. EERC conducts research and evaluations on education and workforce development programs and policies. EERC research expertise includes community colleges, state and federal workforce developmental systems, skills development, college completion, and innovative and technology-based programs.

INTRODUCTION

The Colorado Helps Advanced Manufacturing Program (CHAMP) is a United States Department of Labor (USDOL) Trade Adjustment Assistance Community College and Career Training (TAACCCT) funded grant project. It is intended to develop new or redesigned online and hybrid courses leading to credentials in the advanced manufacturing positions that are in high demand across the state of Colorado. CHAMP is an interstate consortium consisting of seven community colleges, a technical college, and a four-year university within Colorado. The consortium includes Front Range Community College (FRCC), Aims Community College (Aims), the Community College of Denver (CCD), Emily Griffith Technical College (EGTC), Lamar Community College (LCC), Pikes Peak Community College (PPCC), Pueblo Community College (PCC), Red Rocks Community College/Warren Technical College (RRCC), and MSU Denver (MSU). The Colorado Community College System (CCCS) provides technical assistance and management support for the consortium.

The CHAMP project's overarching goal is to improve employment outcomes through innovative online learning systems for students in consortium colleges, providing future workers with the knowledge expected by manufacturers. In keeping with this goal, the project included the creation of an interactive career education portal for use by employers, education providers, students, and workers. As outlined in the grant's statement of work, the portal, called the Colorado Career Action Tools Website, was developed to help students and educators better understand "the wide variety of occupations across the many segments of the advanced manufacturing spectrum, the many opportunities they represent, and the various education and training pathways to them."

The Council for Adult and Experiential Learning (CAEL) was tasked with building the website. To fulfill this task CAEL created a content working group consisting of advanced manufacturing employers, members from higher education, representatives of firms focused on advanced manufacturing, and members of the CHAMP leadership team. The content group was responsible for sourcing and validating the content of the website as well as testing the site during development.

This brief highlights the development, implementation process, and launch of the interactive career action website, as well as the intense collaboration necessary for its creation. The purpose of this brief is to provide a summary of activities, successes, and challenges to date relative to the creation and launch of the website. It outlines the development and implementation process, the launch of the website, and usage to date.

The brief begins with an overview of methodology and data sources and then moves on to an introduction to the website, including a description of each section and its intended audience. Next, the brief summarizes the site's contextual frame—background information regarding Colorado legislation that led to the formation of manufacturing career pathways and specifically the call to create an online resource for career awareness. These sections are

followed by: a) a discussion of the site's creation, b) an overview of the implementation process, c) a summary of the site's usage to date, and d) next steps/plans for the future.

METHODOLOGY AND DATA SOURCES

This brief examines the development and implementation of the Colorado Career Action Tools website, including experiences of the project team members and participating contractors, staff, and users of the site, including students. As such, this report uses qualitative data and analysis. Qualitative methodology for this report includes content analysis of grant goals and consortium/contractor activities to date, relevant proposals, project- and college-specific statements of work, and Google analytics reports as provided by CAEL. Rutgers Education and Employment Research Center (EERC) team members also conducted phone interviews with workgroup members, CHAMP project management, and CCCS staff involved in the website development and implementation process. Interviews were taped, transcribed, and subsequently analyzed by EERC team members to represent the portal's creation and implementation story. This brief is meant for contextual purposes only and solely utilizes data from qualitative analysis.

THE COLORADO CAREER ACTION TOOLS WEBSITE

The overarching goal in creating the website was to produce a user-friendly, visual, creative, and resourceful tool to help inform users of potential career options and education paths. The website consists of pages delineated by industry, jobs, employers, and education leading to specific jobs. It allows users to interact with the site, choosing certain types of skills or education to see what types of jobs potentially match their selection(s). Built-in "maps" allow users to explore job types and industries to see skill sets required and popular career paths. The interactive site includes a multitude of pages, each with substantial amounts of easy-to-understand information and user-friendly tools. The site's primary pages are briefly discussed here. Following this section, details about the development of the site, the implementation process, and next steps will be provided.

Job types. The "job types" page lists eight types of advanced manufacturing jobs and provides links for more information. In addition to a description of the job, the site allows users to explore a "job type map" by selecting a job. The user then learns about salary, work environment, required critical skills, preferred education, and key responsibilities of the job. The map also informs users of the top regions for employment in that job type as well as top employers associated with that position.

Employers. The "employers" page introduces the user to 33 Colorado manufacturers by providing links to each employer's profile page. Each profile page contains information about the employer, such as a general description of the company, the number of employees, top products, available job types, contact information, and links to employment applications.

Education providers. This page features the profiles of 16 partner schools in Colorado (including all 13 Community College system schools, EGTC, Aims, and MSU, a four-year university). Similar to the employer page, the education page contains contact information and provides direct links to advanced manufacturing programs offered by each school. This page also includes a "prior learning assessment" tool that allows viewers to see if they qualify for education credits for knowledge they have previously acquired and follow links that provide further information about this form of credit acquisition and next steps if they think they may qualify. Another useful feature of this page is the "online learning" section, which includes distance education opportunities offered by manufacturing programs at Colorado schools. In addition, a "savvy strategies for returning to school" guide is embedded in the page, providing answers to commonly asked questions about returning to school. This is especially helpful for adult learners who may be returning to college after some time away. A specific page for veterans is also included, which offers information about transitioning from a military career to a career in manufacturing. This page also provides a link to the American Council on Education's (ACE) *Guide to the Evaluation of Educational Experiences in the Armed Services*, which allows veterans to explore credit recommendations for formal courses they may have taken while in the military as well as a list of military occupations that may serve as credit earned.

Industry crosswalk. This section of the site explores manufacturing jobs that use the same or similar skills as jobs in other industries such as energy, construction, or the military. The user chooses an industry and scrolls over job titles at the bottom of the crosswalk to explore how various skills previously learned may "cross over to"—or match up with—jobs in advanced manufacturing.

Industry map. This interactive map is a tool that tracks available jobs within the entire advanced manufacturing industry, broken out by job type. The map is color-coded by job type, and each job type is given a corresponding "bubble" allowing the user to easily see where current job openings are for individual job types. The larger the bubble appears on the map, the more current job openings there are for that specific job type. By clicking any bubble, the viewer can learn more about the job type and link to employers with available positions. The industry map portion of the site also shows popular career paths within advanced manufacturing. A "hot jobs" section also represents those positions with a strong immediate need or a positive future outlook.

The industry crosswalk and career map portions of the site were meant to prompt users to consider their education and employment options. The interactive nature of these two sections of the career action tool allows users to explore, receive detailed information about, and consider future options in advanced manufacturing. These sections include information covering all aspects of individual job types. Individual pages for each job type also provide alternative job titles, enabling users to become familiar with the various job titles employers use to advertise specific job openings. This is especially useful for users who may be relocating to other regions where certain jobs have different titles than they are used to.

Other pages. The site also includes some basic pages that offer detailed information about advanced manufacturing and its components, as well as a glossary page that defines various industry terms and jargon. The "social impact" page describes the industry's concern for local, national, and international communities and its dedication to sustainability. The page lists specific community projects and organizations employers within the industry are or have been involved with, and links users to internal and external sites that provide details. Finally, a tutorial page explains the main features of the site and navigates users through key elements of the portal.

DEVELOPMENT

Because of the detailed and interactive nature of the site, its development process was one of intense collaboration, involving immense amounts of detail, organization, and knowledge of the advanced manufacturing industry. This section describes the development process from inception to completion, and highlights the various elements of development that led to the site's launch.

Colorado legislation enacted in 2013 (House Bill 13-1165) concerning the creation of manufacturing career pathways served as a framework for the development of the site. The legislation was formed in part to educate the public about Colorado's need for skilled manufacturing employees and the education and career pathways that lead to employment in manufacturing. According to the act, "manufacturing in Colorado is a dynamic and evolving economic engine for the state," and therefore:

> The challenges in preparing a pipeline of skilled employees to work in the manufacturing sector must be addressed, and current and future Colorado workers must be aware of the opportunities in the industry and the career pathway to achieve employment in the manufacturing sector. (Part 10, section e)

The act presented the concept of a manufacturing career pathway resource intended to educate the public about career and education opportunities in advanced manufacturing. The legislation called for collaboration between the State Board for Community College and Occupational Education, Colorado community colleges, the Department of Labor and Employment, the Department of Higher Education, the Department of Education, and the State Workforce Development Council of Colorado in designing the online resource. It also specified certain types of information to be included as part of the website, including:

1. Manufacturing sector career awareness information
2. Salary and wage information for the sector
3. Manufacturing sector employment forecasts
4. Information regarding programs, services, and financial aid opportunities available to students
5. Online student support services

While the legislation was the first step to developing a framework for the site, the CHAMP grant became the engine for moving the concept forward. The CHAMP grant proposal built off this work and expanded the concept to develop an interactive online tool. The inclusion of the career action portal in the grant proposal was intentional, and since CAEL had previous experience creating a similar career map, this organization became the primary contractor for creation of the tool. CAEL envisioned the development process to be highly collaborative, involving grant leadership, leadership of educational institutions, employer partners, and public sector partners. As one committee member stated,

> There were a lot of moving parts connected to this—many, many grant partners. And we did our best to try to engage all of those partners all the way through, so… they were really part and parcel of the process and the build and the philosophy.

Prior to the website's creation, a model was created to guide the process. The process model consisted of several stages, including visioning, discovery, design, development, and delivery (see figure 1). Each stage and its subsequent sub-stages are discussed in detail below.
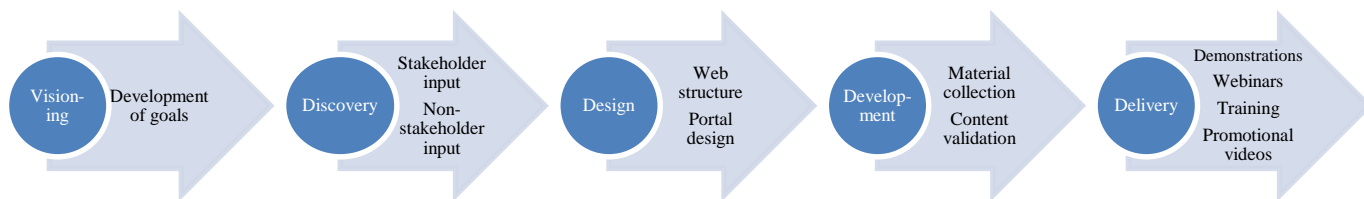
Visioning (Development of goals) → Discovery (Stakeholder input, Non-stakeholder input) → Design (Web structure, Portal design) → Development (Material collection, Content validation) → Delivery (Demonstrations, Webinars, Training, Promotional videos)

Figure 1: Process Model for Colorado Career Action Website Development and Delivery

Visioning. The visioning stage was a period of time used to discuss and define the primary goals of the website, and to identify a success model for the development of the tool. This stage took place in November and December of 2013. By the end of December, five primary goals were established as to the purpose of the site. The site was meant to:

1. Support career pathways
2. Fill current employer demands and decrease skills gaps
3. Prepare current and future employees to meet anticipated needs and skills
4. Support workforce development initiatives
5. Increase retention in advanced manufacturing jobs
6. Promote increased employee engagement and productivity

By identifying the goals of the website, the visioning stage set up the next stages for development and implementation.

Discovery. Directly following goal-setting, the discovery stage was meant to identify the intended primary users of the site and to generally inform site content. The primary users of the website were identified as "incumbent experienced adults" and job seekers, with a special emphasis on veterans. Other users of the site were envisioned to include educators, CHAMP navigators, employers, and industry associates. Sections were envisioned to include particular benefits for each identified user of the site. For example, the benefit of the site to educators would include the ability to connect students to valuable education and career resources and help student visualize education and career paths. Students, job seekers, and incumbent workers would benefit by gaining industry awareness, learning more about education and career possibilities, and learning about avenues for professional growth. Industry representatives and other industry associates would benefit broadly from a resource that would help popularize their field and educate users about manufacturing in the modern world. More specifically, employers would be able to directly advertise available jobs and gain exposure to a potential labor market.

In order to make decisions about content, a preliminary plan was created by the group and interviews were conducted with randomly selected job seekers (the majority of whom were veterans) and incumbent workers. Job seekers were selected from local participating workforce centers; committee members chose job seekers who happened to be on-site the day of the interviews at random. Incumbent workers were selected via a participating employer. A committee member described the interviews as a way to gain concrete input about plans for the site: "We talked to those user groups and said, 'This is what we're thinking about; what do you think about that?'" As one committee member noted, sometimes interviewees affirmed the original vision, but other times they did not: "Sometimes they [said], '…that it is not helpful for me.'" Some decisions, such as whether or not the website would stand alone or be integrated with the Connecting Colorado website, were made as a direct result of these interviews. Interviewees were overwhelmingly in favor of the site existing separately from Connecting Colorado.

Interviewee feedback allowed CAEL to conduct task analyses and identify the needs of job seekers, veterans, and incumbent workers in relation to employment and educational opportunities. Feedback also helped to determine how the site would visually present online content, provide information about job descriptions and pay rates, present alignment between education, skills, and jobs, and provide information about further advancement in the field of manufacturing. Finally, the interviews gave CAEL insight into what would motivate people to use the tool, as well as potential barriers that could prevent users from accessing or using it.

Design. The third stage of the tool's development was the design stage, which involved building the overall structure of the site. Bi-weekly meetings were held with web designers and the content working group members. This stage focused on the functionality of the website as well as identifying and creating proper content, such as user-friendly job descriptions, skills, and education needed for specific job types, employer information, and so on. Not only was the site designed to be informationally accurate, but it was also designed to be interactive and fun.

As one CAEL member noted, after gathering content, "Our folks [went] to work making [it] touchable, usable, actionable, [and] fun, so that people want to get lost on the website."

One goal of the working group was to highlight the advanced manufacturing sector in Colorado. In many cases national data had to be adapted or amended to include Colorado's specific job-related wages or other information. For example, a working group member said, "We have certain sectors of advanced manufacturing that are more prevalent in Colorado than they would be in, say, Detroit." Those specific sectors, then, were added to the website. The process of adapting national data to Colorado was tedious and sometimes time-consuming. One member stated:

> There was a lot of national data, but we wanted to localize it. So we would go out and… get data from national resources, then we would run it through the content working group and see what was applicable [to] Colorado.

Other challenges to the design of the website included developing an advanced manufacturing logo, obtaining good quality (non-copyrighted) photos of advanced manufacturing jobs, harmonizing job titles and descriptions, and checking linked websites for accurate information.

Development. The development stage involved content validation of data points and web-enabled content. This stage was described by one member of the content working group as "the most time-consuming and difficult." One reason for this was that employers working with the group were often represented by human resource personnel, not operation managers. While enthusiastic about the project, these representatives often did not possess the level of technical information about advanced manufacturing that was required.

Delivery. The site was launched in several stages. First, the website was presented to CCCS for approval in October 2014. Next, a webinar was organized for CHAMP partners, including consortium schools and industry representatives. Following this, a "PR toolkit" was released for use by consortium schools, and CHAMP navigators were trained to use the site. CAEL also produced two promotional videos and a social networking campaign. In December 2014, CCCS officially launched the website with a press release. CCCS's president remarked in the press release that "Colorado is in the midst of a manufacturing revolution" with exciting new opportunities and innovative, high-tech careers. She described the website as a tool to help disseminate information about these career opportunities:

> Thanks to a surge of new technologies and innovations, today's manufacturing industry hardly resembles the gritty shop floors of the past. Advanced manufacturing predominantly is centered on innovative technologies and state-of-the art facilities. The industry requires sophisticated skills that translate into rewarding careers and high salaries. We created this site so that users can better understand the opportunities available and the steps they need to take to move into these satisfying and well-paying careers.

The press release also highlighted the goals of the website: to "help articulate and socialize career pathways to build and strengthen our nation's workforce" and to help link "learning and education to enriching careers in viable industries" within advanced manufacturing.

IMPLEMENTATION

Dissemination of the website has generally been the responsibility of the navigator in each of the consortium schools. For some schools, this has meant delayed use of the tool, since some navigators were hired later than others. For most schools, however, use of the tool started immediately after it was launched. Across the nine consortium colleges, use of the website falls primarily into two categories: use by students and use by industry partners.

Most navigators use the website during the advising process to show students what education/ career path(s) make the most sense based on their current skills, to educate students about potential career salaries and necessary skills for specific careers, and to create successful education plans. Overall, navigators and faculty members at colleges visited by EERC staff felt the tool was very useful and could be adapted to fit many situations. One navigator said, "I like it. There's lots of different avenues you can take with it, so it's cool." Navigators at most of the schools felt the tool was especially useful during advising for students who are "not sure what they want to be doing." One navigator also noted that the website was useful for students who were nearing the end of their associate's degree and may be considering continuing their education: "It's useful for students [who are] toward the end of their associate's [degree] to look at further education [paths]." Navigators also reported using the website to springboard students nearing graduation into thinking about what jobs they would apply for. "It's become a very useful tool," one navigator reported, saying, "It's handy to get on and show students" different job possibilities. Overall, navigators and faculty members reported highly positive student feedback about the website. A navigator who showed the website to students in a class felt the students responded positively to the site because of its detailed information:

> They're pretty excited about it because of the information. It's not just, "Here's a job in this part of the state." But this is what the job looks like, this is the salary range. This is the education. It's just so informative.

Although response to the site has been overwhelmingly positive across the consortium, some navigators and faculty members feel the site is limited in its usefulness for their particular field. One faculty member commented that students in his courses learn a particular skill, and that skill only has one or two career paths, so while the website is "fun to play with," he isn't sure how useful it is to his students. Regardless, he posted the website address on the computer lab whiteboard and encouraged students to "go on and play with it" after finishing class assignments.

Some CHAMP staff members are still trying to figure out how best to present and use the tool. A project lead and navigator at one of the consortium schools mentioned they were considering creating a career skills course geared toward student success. In addition to teaching soft skills, the course would promote resources, such as the interactive website. The navigator at this school felt that integrating the site with a course would teach students how to use it and give them in-depth knowledge of its vast amount of information. Without a class, she feels students treat it like "just a website" and either do not look at it or do not engage with it. The navigator at this school feels that, until they can develop a course incorporating the site, its usefulness is limited.

Although the website is designed for general audiences, it has a special use for military personnel and veterans. An entire portion of the site is geared toward military skills, allowing users to enter military codes that the site translates to skills in advanced manufacturing. The site uses codes entered by the user to suggest career paths based on already-acquired knowledge and skills sets. One school in particular, with a high population of military students, has found the site especially helpful, although not all of the military codes users have entered have been in the site's database. Creators of the website noted that while they included the most commonly used military codes, not all of them were originally entered. As navigators, faculty members, and students find codes that the website does not support, they are reported to the committee and the site is updated.

In addition to the site's vast potential for student use, it has also been very useful as a presentation tool geared toward industry representatives and manufacturing employers. One navigator presented the website to her institution's industry advisory board members, who were "very complimentary" about the site. A project lead at another school said the site was introduced to the Colorado Advanced Manufacturing Alliance (CAMA), whose staff have "taken bits and pieces and integrated [them] into their work." He said they have been sharing the link with their manufacturing partners regularly and they are "very impressed."

Usage of the website has also been tracked using Google Analytics, a service that tracks and reports website traffic. The website has been tracked since its launch in December 2014, resulting in multiple quarters of usage data. While the site is considered global, 91 percent of users during this period were from the United States. Of the users within the United States, 70 percent were from Colorado. Further, Colorado users were significantly more engaged in the tool than users from outside the state, which is not surprising given that the website was designed to be Colorado-specific.

Beyond the home page, the top visited pages have been the "job types" page, the "industry crosswalk" page, and the site's career map. The latter two pages also appear to be successful in navigating users to look into education and employment options; users tend to stay longer and almost always further engage by visiting additional pages. For example, data indicates users from the "job types" and "industry crosswalk" pages subsequently visited the "veteran services," "education/training," "social impact," and "education providers" pages. This

indicates that the "industry crosswalk" page and the career map serve their intended purpose—to draw users in and create a starting point for career exploration. In addition, the use of either the crosswalk page or the career map increased the likelihood that a user would explore education paths by 50 to 80 percent.

Usage data also indicated what users were most interested in, relative to industry. For example, among the industry pages, the military page was visited most often, followed by the construction and energy pages. Among job types, the most visited was the quality assurance/control job type, while the sales job type was the least visited. Relatively low numbers of visits to external employer websites and job boards may indicate that the site contains adequate information for visitors to make further decisions.

NEXT STEPS

Despite the successful launch, CAEL's work on this ambitious project is not over yet. There are plans to expand the site's functionality by adding and updating information, such as periodically updating and renewing employer and educator information. CAEL also plans to post quarterly newsletters about advanced manufacturing in general as well as data on the site's usage. Also under discussion is the development of an apprenticeship page.

CCCS is also currently working with the site's working group to provide an employer scorecard for CHAMP-specific students. The scorecard will summarize data such as the annual graduation rate for CHAMP completers, their employment rate, their employment retention rate, average earnings, and transfer rates.

Through the second quarter of 2015, the website outperformed similar sites. However, sustainability of the site is not certain. CAEL believes the site was created with a strong foundation and that future maintenance of the site in terms of updates to content is relatively simple. Although sustainability plans are tentative at this point, the task of content updating will likely go to a manufacturing industry association such as CAMA in the future.