

Flathead Valley Community College

Case Study Report

Consortium for Healthcare Education Online

Education and Employment Research Center

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RUTGERS
School of Management
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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.

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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 Consortium for Healthcare Education Online (CHEO) is a United States Department of Labor (USDOL) Trade Adjustment Assistance Community College and Career Training (TAACCCT) funded grant project intended to develop new or redesigned online and hybrid courses leading to credentials in health care fields in high demand across the West and Midwest. CHEO is an interstate consortium consisting of eight colleges across Colorado, Wyoming, South Dakota, Montana, and Alaska. The consortium includes Pueblo Community College (PCC), Otero Junior College (OJC), Red Rocks Community College (RRCC), Laramie County Community College (LCCC), Lake Area Technical College (LATI), Great Falls College Montana State University (GFC MSU), Flathead Valley Community College (FVCC), and Kodiak College (KoC).

Each of the eight colleges is required to integrate the following components into its program/course design/redesign: 1) open education resources (OER), 2) use of the North American Network of Science Labs Online (NANSLO), 3) a CHEO-funded career coach, and 4) use of the CHEO Health Career Hub.

Open education resources (OER) are teaching tools and resources that are licensed for free, public use. They include teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge.

Under the CHEO grant, consortium colleges are encouraged to use OER resources in the creation/redesign of their online or hybrid courses. Consortium colleges are also required to create or redesign their courses/programs so that they can be packaged and licensed OER for use by other educators and institutions. The CHEO colleges will package, license, and post their course material during the course of the grant. OER materials will be uploaded to a skills commons repository under MERLOT. The MERLOT skills commons repository consists of discipline-specific learning materials, learning exercises, and web pages, designed to enhance the teaching experience.

The North American Network of Science Labs Online (NANSLO) is a remotely operated robotic lab designed to innovate the distance lab experience for students through a web-based portal. CHEO partners will collaborate to develop lab exercises to be used in health- and science-related courses. Faculty in the designed/redesigned CHEO programs will incorporate the developed labs into courses, using one of the three NANSLO nodes. Nodes are equipped laboratories that remotely run the specified labs for consortium colleges. Three total nodes exist, one newly created under the CHEO grant at GFC MSU. The other two nodes are located at North Island College in Vancouver, British Columbia, and RRCC in Denver, Colorado.

The NANSLO science lab network is managed by the Colorado Community College System (CCCS). For the purposes of the CHEO grant, the Western Interstate Commission on Higher Education (WICHE) in Boulder, Colorado serves as the public's primary resource for information about NANSLO. WICHE coordinates communication among the network's lab partners and coordinates the faculty discipline panels that plan and develop individual science experiments for the nodes.

WICHE additionally serves as CHEO's professional development coordinator, scheduling webinars and workshops for instructional designers, faculty and career coaches through three years of the grant. Specifically, in the first year of the grant, WICHE was responsible for one face-to-face workshop that included instructional designers and faculty members, a separate face-to-face workshop for career coaches, and four webinars (two for faculty and two for coaches). In the second year of the grant, WICHE was responsible for a face-to-face workshop for faculty and one for coaches, as well as six webinars (three for faculty and three for coaches). In the third year of the grant, WICHE is responsible for one face-to-face workshop for faculty and one for coaches, in addition to six webinars (three for faculty and three for coaches). If subsequent support during any grant-funded year is deemed necessary, the PCC CHEO administration team is responsible. For example, based upon project needs relative to employer engagement and job placement, a second face-to-face workshop was provided for coaches in year three. The PCC CHEO team also provides organization and facilitation of annual face-to-face meetings for project leads. Additionally, 10 trainings for the CHEO Health Career Hub are the responsibility of College in Colorado. Hub trainings began in year two and extend into year three.

Each college in the consortium is required to employ a career coach to collaborate with employer partners, local workforce centers, community and nonprofit organizations, and students to ensure student access to CHEO resources. Within each of these areas of collaboration, coaches work according to their institution's needs to build CHEO programs, recruit and retain students for CHEO programs, and assist students in multiple ways as each institution designates. Coaches also track their interactions with students to report outcomes based on a model of "intensive advising," assisting students throughout their education with multiple interactions and points of intervention to ensure student success and, ultimately, employment.

The CHEO Health Career Hub is a sophisticated regional and web-based portal that promotes and supports those pursuing a career in health care fields with a wide variety of high-impact interactive tools and services. PCC, the lead applicant and fiscal agent for the CHEO grant, has worked with College in Colorado hub development and Kuder, a company that designs online career planning systems, to create the CHEO hub. The hub is to be used as a case management tool by coaches and as an interactive career management tool for students in CHEO programs across all eight consortium colleges.

This report is one of eight created to highlight each individual college's contributions to the CHEO project to date. The purpose of this case study is to provide a summary of FVCC's activities, successes, and challenges to date and to identify the best practices, innovative strategies, and unique contributions of the college to the CHEO project to date. This case study begins with an overview of its methodology and data sources and then moves on to the contextual frame—demographic and socioeconomic background information about FVCC, its student population, and its service region. These sections are followed by a) a summary of the goals of FVCC's CHEO program, b) a discussion of the baseline targets and subsequent changes relative to the CHEO project, c) the identification of FVCC's emerging best practices, innovative strategies and unique contributions to CHEO, and d) a summary of successes and challenges to date along with next steps.

METHODOLOGY/DATA SOURCES

This report examines the development and implementation of the first two years of the CHEO grant at FVCC, including experiences of the project team members and participating staff, faculty, and students. As such, this report uses qualitative data and analysis. Subsequent EERC evaluation reports will include outcome measures and report on quantitative data collection and analysis.

The qualitative methodology for this report includes content analysis of consortium goals and activities to date, relevant proposals, and project- and college-specific statements of work, quarterly reports, career coach tracking spreadsheets (also called "stitched-in reports"), strategic plan information and materials, and websites developed by individual colleges. EERC team members have also conducted phone and in-person interviews with the CHEO coordinator, grant administrators, senior WICHE administrators, college project leads, NANSLO Discipline Panel participants, and faculty and career coaches. EERC team members have also been participant-observers at many project workshops including those for faculty, project leads, instructional designers, and career coaches. Finally, members of the EERC team have "observed" conference calls with project leads and career coaches and joined in webinars.

Most interviews were taped and transcribed; non-taped interviews involved extensive note taking. These transcriptions and notes as well as the documents cited above have been coded through the use of NVivo qualitative data management software and analyzed by EERC team members to represent each college's individual story relative to the CHEO project.

As noted above, while quantitative analysis will be presented in subsequent reports, this summary is meant for contextual purposes only and will only utilize data from qualitative analysis. For this reason, grant targets relative to each college, student counts, course counts, NANSLO lab counts, industry- and workforce-related targets, and other quantitative objectives will not be discussed as part of this report.

COLLEGE DESCRIPTION AND OVERVIEW OF STUDENT POPULATION

FVCC, the largest comprehensive two-year public community college in Montana, was established in 1967 and offers a wide range of associate degrees and certificates in over 50 career and technical fields, as well as community tailored education programs. FVCC is a rural college extending over two campuses; its primary campus is in Kalispell and its second campus is in Libby, located in the northwestern corner of Montana.¹ FVCC offers very limited residential opportunities at the Spruce Wood Apartments, located one mile from the Kalispell campus; the smaller campus in Libby is a commuter campus. Since the college is so rural it offers a range of online and hybrid courses, also called “extended learning courses.”²

FVCC served 1,170 full-time and 1,225 part-time students during the academic year 2012-2013, offering 53 associate degree programs and 48 certificate career programs in 16 fields.³ About 62 percent of the student population in that academic year were female (N=1485) and about 47 percent were 25 years or over (N=1126), indicating that the college serves more non-traditional students than traditional students, as is common among community colleges.⁴

FVCC’s CHEO GOALS

FVCC’s primary goals for the CHEO grant were to expand their allied health programs and to restructure courses to increase online access. The college pursued these goals in two ways: 1) by adding a new pre-health certificate program and 2) by enhancing existing hybrid and online components of pre-existing allied health certificate programs and incorporating NANSLO labs, allowing greater access to rural students. The college also added an entrepreneurial certificate, which allows students across all four of the colleges’ TAACCCT grants to learn business-related skills.

Labor market need prompted the addition of the pre-health certificate to FVCC’s allied health program. The program offers two tracks, one leading to a Certified Nursing Assistant (CNA) certificate, and one leading to an Emergency Medical Technician (EMT) certificate. Both areas have high labor market need in the area, as does the health care industry as a whole. Nursing occupations represent the top four of the fastest growing and the most in-demand health care occupations in Montana. CNAs in Montana had an annual mean wage of \$24,810 in 2013, while those in Flathead and Lincoln counties made slightly less (\$24,750). EMTs and Paramedics rank number nine among fastest growing health care occupations in Montana. In 2013 they made \$34,870 nationally (annual mean wage), \$28,010 in Montana, and almost the same amount (\$28,320) in Flathead and Lincoln counties.⁵

¹ *Flathead Valley Community College 2014-2015 Academic Catalog*. 4, 6.

www.fvcc.edu/wp-content/uploads/2011/07/FVCC_Catalog_2014-15.pdf?61d1e1

² *Online Education: FVCC Online*. (n.d.). www.fvcc.edu/academics/online-education.html

³ *Community Colleges: Flathead Community College*. (U.S. News & World Report website).

www.usnews.com/education/community-colleges/flathead-valley-community-college-CC02818

⁴ *Ibid*.

⁵ *Occupational Employment Statistics*. (Bureau of Labor Statistics, April 1, 2014).

www.bls.gov/oes/current/oes_mt.htm#29-0000 and www.bls.gov/oes/current/oes_3000004.htm#31-0000

Health care is one of the leading industries with respect to job growth in Montana: future projections suggest 26.6 percent growth resulting in 73,311 new positions between 2010 and 2020.⁶ The large population of elderly in Montana, one of the oldest states in the nation, and the increasing life expectancy of the population will create greater demand for health care services.⁷

Aside from developing the new pre-health certificate under CHEO, FVCC also enhanced its existing allied health AAS programs: the Radiologic Technician, Health Care Office Management, Paramedic, and Medical Assistant programs.

Radiologic technicians and MRI technologists had an annual mean wage of \$56,760 nationally in 2013, and \$52,070 in Montana.⁸ Nationally these jobs are expected to increase by 24 percent over the next ten years, and by 21 percent in Montana between 2010 and 2022.⁹

Health care office managers do not have a direct correlation in the Bureau of Labor Statistics data, but medical and health services managers, a similar position, had an annual mean wage of \$88,580 nationally in 2012¹⁰ and \$77,990 in Montana in 2013.¹¹ Nationally, the number of jobs in this position is expected to grow 23 percent between 2010 and 2022.

Paramedics had an annual mean wage of \$34,870 nationally in 2012 and \$31,190 in Montana in 2013.¹² Nationally this position is expected to have 23 percent job growth between 2010 and 2022.¹³

Medical assistants had an annual mean wage of \$29,370 nationally in 2012 and \$31,190 in Montana in 2013.¹⁴ Job growth for this position is expected to increase by 29 percent nationally by 2022 and 31 percent in Montana in the next ten years.¹⁵

FVCC's entrepreneurial certificate is available to any student at the college, but was initially developed to serve students across the colleges' TAACCCT grants. The courses are general, covering business skills applicable to general manufacturing or health care. The certificate is meant to help students create their own business, and can apply to health care if students are

⁶ Kristin Juliar, *Healthcare Workforce: An Important Part of Montana's Economy* (Montana Department of Labor & Industry, spring, 2014).

⁷ William Connell, *Healthcare Labor Shortages and Potential Solutions* (Montana Department of Labor & Industry, Research & Analysis Bureau, January 2013).

www.doleta.gov/performance/results/AnnualReports/PY2012/Healthcare%20Labor%20Shortages%20and%20Potential%20Solutions.pdf

⁸ www.bls.gov/oes/current/oes292034.htm

⁹ www.bls.gov/oes/current/oes_mt.htm

¹⁰ www.bls.gov/ooh/management/medical-and-health-services-managers.htm

¹¹ www.bls.gov/oes/current/oes_mt.htm

¹² www.bls.gov/oes/current/oes292041.htm

¹³ www.bls.gov/oes/current/oes292041.htm

¹⁴ www.bls.gov/ooh/healthcare/medical-assistants.htm

¹⁵ www.bls.gov/oes/current/oes_mt.htm

interested in doing their own home health care or other wellness-centered health care business. Students are able to take the entrepreneurial certificate courses after they have completed their primary certificate (for example, a CNA certificate); it can be finished in one semester. In addition to teaching the specific skills students need to create their own wellness business, the courses also teach general business skills.

Given that FVCC is dedicated to making courses available in a hybrid (and in the case of one course, fully online) format, the college's aim is not just to convert the courses to a virtual format, but to make the students' experience with their hybrid course just as good as—if not better than—a traditional course in the same subject. FVCC has developed several strategies to meet this goal, which will be discussed in more detail below.

CHEO Programs and Processes

Given that FVCC has so many CHEO programs, their development and implementation has been extensive. Considering this, it is extremely impressive that they have been able to accomplish so much in such a short time.

Development and Implementation

Pre-Health Certificate

FVCC has developed a new pre-health certificate as part of the CHEO project. There are two tracks to the program; an Emergency Medical Services track that results in an Emergency Medical Technician (EMT) certificate, and a nursing aide track that results in a CNA certificate. Most of these courses already existed at FVCC, but were redesigned with employer input and packaged as a certificate program, which did not exist previously. An "opportunities in health professions" course was also converted from a face-to-face course to an online format and added to the pre-health program.

The college also replaced a course on personal health and wellness with Medical Terminology in the newly packaged certificate program. Employers were instrumental in the inclusion of this course, stating that while medical terminology is required in associate's degree-level education, it is normally not included in certificate-level education. Therefore, employees with certificates are generally less able to grasp the medical terms than their counterparts with associate degrees. Having the medical terminology course as part of their certificate education makes students more competitive and employable. The course existed previously at FVCC, within the health care AAS degree programs. It was already offered as an online course, and was therefore a perfect fit for the certificate program without needing to be redesigned.

For both tracks of the pre-health certificate, clinicals are embedded in the program and taken on campus. The pre-health certificate program is meant to be taken in one semester, and both the EMT and CNA tracks of the program contain courses that are prerequisites for AAS degree

programs. After completing the program, students are eligible to sit for either the national written and practical exam for certification as an EMT–Basic or the Montana State Competency Skills and Written Exam for certification as a CNA. Students may take multiple paths after completing their EMT or CNA certificate: they may leave FVCC and join the workforce full time; they may join the workforce part time and further their education while working, continuing into an AAS degree program such as the paramedic or LPN nursing programs; they may work toward a bachelor’s degree, such as nursing; or they may take the entrepreneurial certificate program to gain an additional certificate. After completing the entrepreneurial certificate program, students may also continue into an associate’s or bachelor’s degree in health care, or they may choose to focus on business-related AAS programs. CHEO students completing the entrepreneurial certificate may also decide to “be their own boss” as a wellness coach or home health caregiver, or start another type of health care oriented business.

Additionally, FVCC is hoping the pre-health certificate program will interest people who already have their CNA or EMT certificate and want to go back to school. These students could take the additional courses and get their pre-health certificate. This would theoretically make them more employable, since their pre-health education includes additional coursework and the medical terminology course, which employers like to see.

CNA Track (Pre-Health Certificate)

The CNA track of the pre-health certificate program has been redesigned under CHEO to a hybrid format, offering the students a choice of taking it in person or hybrid. Historically, the CNA program has always been full; however, this semester (fall 2014) the hybrid version of the program did not run due to low enrollment. The college administration believes this was part of a larger downward trend in CNA job interest as a result of economic recovery. Since CNAs are generally not paid well and more jobs are available, people are seeking education that will help them to find better-paying work. FVCC’s thoughts on this are echoed across the consortium, as many colleges are finding their enrollments in programs leading to low-paying jobs have decreased recently.

EMT Track (Pre-Health Certificate)

The EMT track of the certificate has also been redesigned to a hybrid format. Generally, students like the option of taking the program hybrid since it allows more flexibility. During fall semester every year, however, a community-based EMT course is offered free of charge. Because of this, enrollment for FVCC’s EMT courses is generally lower in the fall than in the spring. In addition to the competition for enrollment, students taking the free course are also competition for FVCC’s EMT students in finding jobs. The state of Montana historically relies on volunteers for EMS, both at the EMT level and at the paramedic level. Most people get their EMT certificate either to become a firefighter or to gain some experience and then go on for their paramedic certificate. The paramedic certificate, however, is a national certification and there are only three accredited programs in the state. These are all two-year programs, so

people spend two years of time and money on a college education that the state considers a volunteer service. Therefore, many students do not want to invest the time and money to receive the paramedic certification.

The pre-health certificate program director feels the EMT track of the program at FVCC has some benefits over the free course offered by the community. The medical terminology course, for example, is a huge benefit. Also, since EMTs can work in hospitals and medical clinics in Montana, some students prefer to try the hospital environment to see if it's a good fit for them before attempting a certificate or degree in paramedic or other health fields. In Flathead Valley there are actually quite a few places that employ EMTs and paramedics as well, which is not the case in the rest of the state.

Allied Health Certificate Programs

In order to fully meet their CHEO goals of expanding and restructuring their health-related programs, FVCC also focused efforts on their allied health programs. Four of FVCC's allied health programs—Radiologic Technician, Health Care Office Management, Paramedic, and Medical Assistant—have been modified under the grant by utilizing some of the CHEO-purchased equipment and shared courses that underwent conversion to a hybrid format.

Process

FVCC has focused more on redesigning courses than redesigning the programs as a whole, and as such has redesigned several courses that either fit into one or more of the CHEO programs, or feed the CHEO programs, such as prerequisites. The original writers of the grant proposal for FVCC (who are no longer at the college) chose to redesign courses that fed as many of the allied health programs as possible. For instance, courses in areas such as human biology and chemistry were chosen to be redesigned to hybrid formats; these courses are required for virtually any allied health-related track.

Originally, two programs—the Rad Tech program and the Paramedic program—were selected to be redesigned to hybrid format under the CHEO grant; the CNA and EMT courses were selected to be repackaged into a certificate program, specifically, the pre-health certificate. However, after some staff turnover at the college, new CHEO staff realized that the three programs would not meet the completion numbers specified in the proposal. In addition, some of the courses being redesigned were suitable for other health care programs. At that point, the Healthcare Office Management and Medical Assisting programs were added to the grant, and finally the entrepreneurial certificate was added. None of the core courses in the Medical Assisting program have been redesigned, but program prerequisites have been redesigned, and medical assistant students are supported by the CHEO career coach.

The Medical Assistant program is a difficult program with a fairly high attrition rate, and therefore the college is focused on ways to further support the students and increase retention. They are currently discussing creating some community-building opportunities into the

program, such as creating a cohort community where students would progress through the program in a cohort instead of individually. Paramedic, Rad Tech, and the pre-health tracks of CNA and EMT all operate quite successfully as cohort programs, so the thought is that the Medical Assistant program could possibly be more successful if it operated in this way as well. The career coach is currently working with the program director to develop these ideas to enhance the Medical Assistant program with retention in mind.

While there has been some resistance to redesigning particular courses to a hybrid format—such as Anatomy and Physiology—faculty have been overall supportive of the move and have “really stepped up” to participate in hybrid redesigns. As one administrator commented, “They’re really into it. They totally support it. They are philosophically aligned. They really appreciate the support of the grant and they really want to produce high quality products.”

If faculty feel they can’t make the hybrid version as good as or better than the traditional version, they are reluctant to attempt it. Staff found that after some money was freed up to help faculty purchase technology and tools, this change was much easier. One staff member noted that the purchases helped to acquire the tools needed to effectively make the changes: “In order to teach online interactively and innovatively, you need tools and you need software programs and you need all this stuff.” Once equipment such as iPads, the material to build the light board, and LearningSpace audiovisual system and associated technology was purchased, faculty redesigned their courses with innovation, creativity, and zeal.

CHEO money was also used to purchase some equipment for online science courses that feed the allied health programs as well as other programs at the college. The equipment was used to create science kits, which are rented by students for \$40 and then returned after their course is complete. This allows students to take a science course online and only purchase one lab kit instead of two. The rental kits contain \$400 worth of equipment; therefore students are able to use the equipment for a fraction of the price. Currently a chemistry instructor is using the kits, and a biology instructor is considering doing something similar.

Given that most of these instructors had never taught online prior to CHEO, their excitement and ingenuity regarding the redesign of their courses is impressive. A staff member recounted what one faculty member told her, early in the redesign process:

He’s told me from the get-go...I'm not willing to put anything out there that isn’t the best thing out there...if I can’t make the best online...course, then I don’t want to make one at all.

Redesign

Five core program courses have been redesigned under the CHEO grant. Chemistry 121 and two biology courses, 101 and 160, have been redesigned from a traditional classroom (face-to-face) version to a fully online version. ECP 130 (an EMT course) was redesigned to a hybrid

format, as was Biology 104. These courses are all also offered in a face-to-face version, giving students a choice between the online/hybrid version and the in-class version. In addition to the five core courses redesigned for CHEO, several other program courses were redesigned to hybrid format, but were not part of the original CHEO plan for redesign.

An EMT training course (ECP 130) was redesigned under CHEO. It was traditionally taught in person, two nights per week, four hours per night. Under the redesign, all lecture content is online, so students have to read the chapter, listen to the lecture, and then come to class prepared to discuss what they have learned. They then go through case studies that leverage the information they have learned. The EMT instructor feels the change in format has benefitted students because they are able to engage in critical thinking:

We've found that that really has helped in that critical thinking piece and how to get students to think critically. Instead of sitting and lecturing on the canned content for four hours, we bring it into a real life application. Then the rest of the class time, when they're in the classroom is spent in the lab, other than the case-based discussions.

Quizzes are also done online, as are pre-class discussion questions. The instructor feels students are coming to class better prepared than previously, when the class was all in person. This is a great example of emerging promising practices relative to course hybridization. Transitioning the course has also decreased the amount of time students need to come to campus by half: "It's cut the total time in half and we've found that the students are much better able to discuss concepts, as opposed to just being told about them."

The redesigned human biology course has also cut down the amount of time students spend on campus. With the new hybrid version, students only need to be on campus once per week; the rest of their work is done online with open sourced material, presentations, and videos. The instructor feels the hybrid course has been going very well, and that some students seem to do better in a hybrid environment:

...Some of them get a lot of extra time with doing this online work and then coming face-to-face and the face-to-face part of that hybrid... I think is a very beneficial part of it, because they review the material and they come and I just ask them a whole bunch of questions, basically, in various different ways.

Faculty feel the level of innovation they are able to use with their online/hybrid courses exceeds what they can do in person, in many ways. One faculty member stated:

[The] online format really enables more robust resources, because in a face-to-face course, I can say hey, go check this out. In an online course, I say here's the link, go chase this, go use this and it's really been able to leverage that learning to a more value because of the platform. ...And some of the state universities, Utah

State has some tremendous genetics resources, and some of that other stuff, and it's all sitting out there and...I feel bad not using it in my face-to-face course, honestly.

Redesign of CHEO courses has continued as faculty “tweak” their courses. For example, the enhanced online version of Biology 101 ran in the fall of 2013, was further enhanced and redesigned, and the newest and most improved version was launched in the fall of 2014. Nearly all faculty reported they plan to continue to modify and enhance their courses over time.

Recruitment and Enrollment

FVCC redesigned and offered the first pre-health certificate course, ECP 130, which is the EMT certification course, in fall 2013. However, low student enrollment caused the course to be cancelled. The course ran in summer 2014 for the first time, and has had high enough enrollment to run since then.

One of the ways FVCC's career coach recruited students for the pre-health certificate was to contact students who had already completed some of the courses that would count toward the certificate. She gathered a list of about 100 students from the FVCC data analyst and called each student to let them know about the new certificate program and tell them that they were already very close to receiving the certificate—most had already completed three or more of the prerequisites needed. One student in particular already had taken everything he needed to earn the certificate and only had to declare his major in order to graduate. He is graduating this semester. The coach thinks calling the students helped a great deal: five students were enrolled in the pre-health certificate program as a result. The process was “arduous” and time consuming, since the coach had to look at each of the students' records to determine whether they had completed a number of the prerequisite courses and that their grades in those courses were sufficient for them to continue in the program.

The entrepreneurial certificate program was also ready to be launched this fall but did not launch because of low enrollment. Staff think it is likely to run in spring 2015 because that particular program will serve other TAACCCT grants as well as the general student population.

NANSLO

Reception

The adoption of NANSLO has been much slower than FVCC had wanted. A couple of things have kept the integration of NANSLO from occurring at the pace they had originally planned. At the outset of the grant, two instructors began looking into the labs that were available for students to use and were “less than impressed.” They felt that more technology and labs were needed and so did not embrace the idea. These two instructors chose not to participate in the

CHEO redesign at all, expressly because they did not feel that NANSLO was developed enough to integrate.

Staff at the administrative level sense that faculty are somewhat reticent to go fully online with science-based labs. Faculty have been involved in investigating NANSLO, and several faculty members were present at the faculty workshop in Boulder, CO in May 2014. After touring the Colorado node and discussing options with NANSLO staff at the workshop, they left feeling that NANSLO was still not a good fit for their courses, partly because FVCC already had quite advanced equipment on site.

Several faculty members told EERC team members that they think NANSLO is a great idea on paper, but in reality has been difficult to implement. Some faculty are not entirely convinced that NANSLO is the best choice for labs in some of the hard sciences, such as chemistry.

Overall, faculty at FVCC are not overly impressed with the image quality available through NANSLO. When students take pictures of their slides the image is not as clear as it could be, and is nowhere near as clear as other images they can find online. Some faculty mentioned even when they visited the Denver node and saw the slides in person they felt some of the slide images were not high quality.

One staff member feels faculty have been challenged by trying to envision how NANSLO will work for them and fit with their classes:

From my perspective, I think the NANSLO labs have been a challenge for a lot of people. They want to incorporate them, but... it's not an easy fit for a lot of classes and I think that teachers have been challenged by that.

Use to Date

Although the college can use the Denver node, the primary node serving FVCC's needs is the Great Falls, Montana node (GFC MSU). Development at Great Falls has been far slower than originally anticipated. The node was finally up and running with remote access capability in fall 2014 and is currently being used at FVCC. Before FVCC was able to use the GFC MSU node, the college used the Denver node to run a lab for Chemistry 143 in January 2014. Faculty were invited to observe the lab; the CHEO instructional designer hoped that seeing students operating the lab would help faculty get excited about using NANSLO in their own courses. Students were put in a computer lab and worked in groups. Having the students all in one lab accessing the node at once actually overloaded the system and caused severe delays and lags. As a result, most faculty were not impressed with the capabilities of the lab. Some faculty, however, did see the benefit to remote students and since then more faculty have either used the labs in their classes or at least have become open to the idea.

One of the major difficulties both faculty and students have had relative to NANSLO use is the process of scheduling the lab, and then actually downloading and using the interface. Students report their names have been spelled incorrectly in the scheduler, and therefore when they try to log on they are told they are “not in the system.” The time it takes the GFC MSU lab techs to locate them in the system manually decreases the time they can spend on their lab. This issue will likely be mitigated once the primary scheduling system at WICHE is being used for the GFC MSU node. That will eliminate the need for the GFC MSU lab manager to manually enter students, which creates a larger margin for error.

In addition to the scheduler issues, students most often do not read the preparation material before they take a lab. Because of this, they are not aware of how to download or use the interface, or what buttons to click and when. With no prior knowledge of the lab, they are unable to use the interface until lab techs help them. This creates waiting and confusion among the group attempting to use the lab.

Much of this difficulty and confusion could be avoided if the students were better prepared before attempting their lab; most of the students readily admitted this themselves. Being unprepared, however, is common among some students, so whether or not this issue could ever be fully resolved is questionable. One faculty member said he feels that the process could go better if he took the time to make sure the students were reading the pre-lab material, but time is precious and he really can't spare it. Besides, he noted, in the “real world” preparation is necessary before remote microscopes are used, so they are getting a good real-life experience whether they prepare or not.

To some degree, faculty feel that so much preparation is needed before students use the lab that it doesn't make sense to offer it. They feel the lab is extremely valuable, given the expensive equipment and the overall conceptualization, but it's so valuable it's nearly useless to the students, many of whom can't even figure out how to post discussion comments online without step-by-step instruction. One faculty member summed this up succinctly when he said, “It's [like] trying to drive a Ferrari and you only know how to drive a Volkswagen.”

Another issue has been the interface, which can freeze and lag when students log on. Several students interviewed by EERC team members reported frustration over their screens freezing, the interface crashing, and long lags between when they tried to move the microscope and when it actually moved. Some students grew so tired of the process they simply Googled what they were looking for and downloaded pictures of slides off the internet rather than finishing the lab. Other students patiently waited for lab techs to help them but had to sign on for additional lab time because their entire lab time was taken up with technical issues and they were unable to complete the assignment. EERC team members asked every student where they logged on to access their lab, and every student who had technical problems had logged in from the campus internet. It is possible that firewall issues are causing the delays; this should be investigated by campus administration and the GFC MSU NANSLO node staff. When EERC team members visited the GFC MSU node, the lab manager mentioned that campus firewalls

can slow down the system and cause lagging and freezing. Students taking labs from their home internet connections rarely have issues with the interface, she said. When students at FVCC were interviewed, however, most said they used the school internet (and some the school lab computers), primarily because they wanted to work as a group with their classmates. Groups met together at the school to complete their labs.

One of the biology faculty members gave students the option of using NANSLO labs or finding another microscope to complete their microscopy lab. Some students used their local high school to complete the lab, “borrowing” a microscope and lab time; some that live out of town went to other colleges or universities nearby; others worked in places that had microscopes and were able to use one there; still others bought their own microscope; and four students chose to use NANSLO. Of the four, only one student was able to complete the lab, due to computer and technology issues. The one who was able to finish found it to be useful and enjoyed the experience. NANSLO labs are offered to students for the microscope portions of three labs during the course.

Students in Biology 105 are required to take two NANSLO labs as part of the hybrid course. Biology 105 students who met with EERC team members had mixed feelings about their NANSLO experience. At the time of the focus group meeting, students had completed their first lab; a second one was planned for the end of the semester. Many students were frustrated because they were unable to log on due to scheduling errors (the most common problem was that their names were spelled incorrectly in the scheduler), or experienced technical difficulties. None of the students in the focus group (N=11) had completed the pre-lab material before attempting to log on. The group of students taking the lab last stated that, by the time they took their lab, the lab techs were voicing frustration about the students not having watched the pre-lab video: “They were real upset at us because we didn’t watch the video. We didn’t know what to do.” While most students cited technical issues as the primary barrier to enjoying their lab experience, a couple of students did not like the group setup where they were connected to others via teleconference. Background noise interfered with the exercise, they said. Several students were unable to complete their lab due to technical issues. Those who were able to complete the lab spoke positively about the lab experience:

The experience was more than satisfying and we were extremely pleased to be able to do this remote lab activity.

We took turns to do all four exercises by ourselves and it was very challenging and interesting but we did it. We were able to do microscopic examinations, analyze and observe. At the end we photographed the tissues.

We will definitely do it again, what a great experience that was! And so much fun, too!

I thought it was pretty cool.

The concept is really good, moving the slides around, but my problem started with not knowing how to log in. I should've been better prepared.

I think the second time, when I know what to do, it will be better.

If you know what to do, you can get on and it's fine.

My lab time ran out because of technical issues. But I asked the lab tech if I could do another lab time and she said yes, so I went back later and did it again and that time I liked it.

Future Plans

As mentioned above, one of the biology courses has already used the lab this semester (fall 2014) and the instructor plans to use it again at the end of the semester. The instructor is hoping students will be better able to manage the lab since they have already been through the process once.

One of the chemistry faculty members planned to use a lab that was later dropped from development and therefore never created. The instructor plans to switch to a different lab and run it by the end of this semester (fall 2014).

One of the EMT/paramedic instructors is planning to use the osmosis diffusion lab in one of the paramedic courses. She thinks the lab is a little too advanced for the EMT students, but plans to have them go through the lab, not as a graded assignment, but to give the instructor feedback as to whether or not it was useful to them. Since there is a small group of EMT students this semester she feels it's a good opportunity to have students do a "test run" of the lab so she can evaluate its effectiveness. She plans to have the paramedic students take the same lab in spring 2015 as a graded assignment, so the EMT students will also help her gauge how much pre-lab guidance students may need.

OPEN EDUCATION RESOURCES

As discussed above, open education resources (OER) are teaching tools, lessons, interactive activities, recorded lectures, or any other teaching element that can be shared openly without copyright or licensing. As part of the requirements for the CHEO grant, the colleges are to integrate as many open educational resources as possible into their courses and to design/redesign their courses in such a way that the pieces can be shared as open education resources. Some of FVCC's redesigns completed under CHEO involved a major "revamping," especially in terms of creating the courses as OER as possible. For example, Biology 160 had been taught online about four years prior, but the structure and material for the course needed to be updated and redesigned. In addition, the old course was largely centered on a proprietary textbook and presentations. In order to create the course OER, all of that material had to be replaced with OER-licensed material, or material had to be created by the faculty member and licensed OER. Faculty found the OER material posted on the internet to be abundant and some of it very good. The challenge was to sort through the copious amount of material to find the best quality resources. Two faculty noted that, at least for anatomy and physiology (A&P), a good quantity of high-quality OER material is coming from high school teachers; they are by far the innovators in the field for creating quality A&P material OER.

FVCC's instructional designer has been instrumental in helping faculty find material suited to their courses which, due to faculty time constraints, is highly beneficial. As one faculty member noted, it's imperative to find the right kind of OER material:

The trick with OER is there is OER that is not particularly useful, because it's not technical enough. And then there is OER that is kind of the diamond in the rough, that is really valuable and if you can get that valuable [material] and it's seeming to show up more and more, then the students like that.

Some courses have been redesigned to almost entirely OER, such as Biology 101. The instructor described the process he used to create the hybrid course:

What I did is I took an open stacks book, which is actually a two-year semester book, and I've used all the open source materials from that, generated my own PowerPoints, so it's all basically original, and then made videos of all of those. So I've narrated through all those videos and they're all video presentations, with a little quiz in each video, which turned out to be a monstrous task, because there's about a hundred videos in it now.

While the course was time consuming to create, he feels the result has been rewarding, and since it's completely open source students do not need to purchase a textbook.

Instructors who are not currently using OER textbooks are looking into them and most plan to make the transition to using one in their courses. One instructor found one he planned to use

but had spent so much time looking for it that he had to run his course with his proprietary textbook this semester. He plans to switch to the OER textbook next semester (spring 2015). Another instructor has not found an OER textbook he likes, but instead is planning to incorporate OER homework problem sets into his course.

The instructional designer is proud of the creativity and dedication of FVCC faculty, and feels her role has been primarily to guide them in their search for the content they need in an OER format:

The faculty [are] thinking outside the box in how to deliver online content, especially for science, which can be a challenge when you get to the lab component of it. And so my role has been to show them what's possible, what they can do, and then also they come to me with ideas and I've been the one to say, well, I'll see what I can do to make this happen.

It has been the most difficult to incorporate OER elements into the ECP 130 course, an EMT/EMS certification course. The instructor is open to using OER resources, but since the course is based on a state-mandated curriculum there is very little room to add additional sources. Likewise, the curriculum is proprietary and thus cannot be licensed OER. The instructional designer and the instructor are still working to find at least one OER element that can be used in the course.

As will be discussed in more detail below, one of FVCC's innovative strategies is being developed as an Open Education Resource (OER). This teaching tool will be a huge benefit to instructors teaching online courses and a powerful aid to the learning ability of students who attend via virtual classrooms.

Courses will be uploaded to the CHEO repository by March 2015. The instructional designer is planning to upload the syllabi, a course schedule, and anything the instructor has created OER for each course. Any proprietary material will be referenced so other educators could locate the source, such as a textbook, and use it if they desired.

CAREER COACH

Background

FVCC's career coach was originally hired at the college in 2011 under a Strengthening Our Indigenous Nursing, Emergency, and Workforce (SINEW) grant. She served in a similar position under that grant, participating in advisement and support of students in nursing and paramedic programs. Her previous role did not include any outreach or networking, however, and so the workforce development and employer outreach portions are new to her in the CHEO role. She was officially transitioned to the CHEO role in the summer of 2013.

Role

The career coach has a fairly large caseload, around 500 students, and she initially spent some time determining how best to reach out to them, given their large number and her multi-faceted role with workforce center outreach, employer outreach, advising, and other various responsibilities at the college. Initially she tried sending emails to all program participants suggesting they come visit her and offering her assistance. When that was not successful, she started appearing in classes with the students, introducing herself and having students fill out an “intake” form in which they circled areas of interest to them. She also distributes her cards and talks to students about turning to her if they need assistance.

...I set up with the instructors or directors, depending on who teaches the bulk of the students, and touch base with the students about once – like I do the classroom thing about once a year with the new cohorts coming in and then when students might be coming second year. So they’re getting ready to graduate, and talk about CHEO resources available through CHEO, and do an intake with them. When I go to their classroom, is when I do the intakes. And then I talk about mostly the resume writing and career writing, that kind of stuff. That’s what gets most of them to bite. Some really want help with the interview process. They haven’t done interviews before and, so, some of that preparation.

The classroom visits have been far more successful than her previous attempts at sending introductory emails, and often students will seek her out from those visits before she is able to follow up with them about the items they circled on their intake form. This is consistent with a finding across the multiple rounds of the TAACCCT grants to date: whenever coaches are able to meet students in the classroom students are able to “get to know” the coach on a more personal level and are more likely to meet with them afterward. Additionally, EERC researchers have found when coaches give a tool like the student intake form to all students, or when a coach meeting is a mandatory part of a program or class, this normalizes the intensive advising experience and takes away the stigma of “getting counseling” or seeking help.

The director of the math, science, and health science divisions also helped the coach reach out to students by asking faculty to involve their classes in projects that required students to meet with the coach.

...she [the coach] was having a hard time getting in touch with students about the pre-health certificate or involved with CHEO classes and so I asked different CHEO faculty, can you put a project into your course that would require your students to visit with [the coach] to do some resume writing and some follow-through with that? And they were like, great idea, because my students need that, but I don’t know how to do it. I don’t want to do it.

Additionally, the career coach offers assistance with applications and financial resources, and also offers help writing up personal budgets for the student. This is another technique that helps normalize the students' meeting with the coach—if a good number of students are seeking her out to develop a budgeting plan, going to see her for other issues is no longer intimidating.

Because she is also a school counselor, the FVCC career coach offers personal counseling to her students in addition to her CHEO responsibilities. This is important, since career coaches can often end up in situations where they are doing “emergency coaching” that is not academic in nature.

FVCC's career coach serves a multi-faceted role at the college and fills many positions simultaneously. She feels she has gotten off to a slow start, but is now finding the tools and techniques that work for her and her CHEO students. By far, she is most comfortable working with students, and has found her role relative to industry and the workforce center “awkward.” Because the coach was pulled in so many different directions, the CHEO project lead assigned two other people at the college to help the coach by assisting with her industry and workforce roles. Both of these staff members work on other TAACCCT grants at the college and were able to incorporate the work with industry and workforce into their regular roles. For a time this worked fine, but both staff members ended up getting too busy and were unable to continue. Workforce and industry relationships are now back on the career coach's plate.

One of the reasons it seems so difficult to build employer relationships is that the coach is not quite sure what success would look like. She knows she needs to focus on career readiness with the students, which she is doing; she is helping her students prepare for job placement. But employers already like FVCC students, and they already hire FVCC graduates. In many cases industry representatives report that FVCC students are better applicants than those educated elsewhere, and they are eager to hire them. In this respect, employer relationships are already strong.

One of the coach's roles at FVCC is advising prospective students, enrolled students, and students changing majors, as part of the college advising system. Her office is located in the Learning Center, with all the other advisors. This puts the coach in a central area where students come for a variety of things, which has given her greater access to students:

...The advising role is really small, but it's also what gives me access to students in a lot of ways. So my office is in the Learning Center, which is really the one-stop-shop for students. When they need something, they go to the Learning Center to see an advisor. So it could be anything that they're coming there for.

FVCC has an early alert system that monitors student progress in their programs. When a student falls below a C in a class, has excessive absences, has low homework or test scores, or shows up late repeatedly, the instructor of the course triggers a notification. These students are

then sent to the career coach if they are CHEO students, another healthcare student, or one of the coaches' advisees. She generally sees about six to ten of these early alert students per semester.

The coach plans to use the CHEO Health Career Hub as part of each CHEO program's requirements. The director or instructor will require students to set up an account, and then the coach will follow up with them and show them the tools available through the hub. Nothing has been done to set these plans in motion yet, however, since the hub was not fully operational at the time of the EERC site visit (October 2014). The coach is excited about the tool and is hoping it will be available soon. The first hub training took place in early December 2014, so it is expected to be available to students in spring 2015.

The college is planning to keep the career coach a year longer than required, although they are not sure this will be sustainable. They feel her involvement with the students and faculty has been a great benefit to the students, the programs, and the college as a whole. The coach feels there is a particular need for a coaching role at the school because so many students need help with professionalism as they prepare to enter the workforce:

They're not coming from that professionalism. The idea of professionalism is ...new, and I think that is a big need for our student body in general. So that would be where I think the biggest service to our students would be.

The coach also feels that many students just need the extra help and coaching to help them get through school while balancing other responsibilities:

...these aren't traditional students. These aren't people coming from backgrounds of families that went to college. They don't have college knowledge. And they have families and they have jobs and they're adding this into their life.

INDUSTRY/EMPLOYER/WFC INVOLVEMENT

FVCC has involved industry to a great extent in the process of redesigning program curricula. They have created an advisory board for the new pre-health certificate program, which meets formally once per year. Informal meetings and phone conversations take place throughout the year, whenever changes to the programs or curricula are being made, or when industry input is needed. For instance, when the pre-health certificate program was proposed by FVCC, industry representatives, especially those from Kalispell Regional Medical Center and A Plus Healthcare, two large employers in the area, were consulted to find out what they would want potential employees to learn through the program. The EMT and CNA program directors were also consulted, and the two sets of needs were merged into the program concept. After the program was organized, some marketing materials outlining the program were created, and once again industry was consulted. The college was also interested in finding out if employers would send

current employees to the program for further education. At that point, industry representatives mentioned they would like to see a medical terminology course added to the certificate program. The college works closely with community employers, and conversations take place on an ongoing basis, outside of regular advisory committee meetings. And, since the major employers around Kalispell generally hire both EMTs and CNAs, the employers on the pre-health certificate advisory committee inform both tracks of the program.

Although employers were initially very excited about the prospects of using the pre-health program to train incumbent workers, even stating in letters of support that they would offer incentives to employees who wished to take the certificate program, this has not yet come to fruition. In spite of being deeply involved in the creation process, playing the role of subject matter experts, they have not supplied students for the program to date. They have, however, continued to be active employers of FVCC's students.

The coach is working on a plan to bring employers to campus to visit all of the CHEO programs, come into the classrooms, and discuss what each job entails, how to make the transition from college to career, and skills employers like to see in employees. The intention is to help students overcome the intimidation they often feel when job-seeking. The coach feels that if employers meet students on "their turf" and talk about the kinds of skills they value, give them real advice, and walk them through the process – who to call, how to apply, what to say – students will understand the path to employment. Engaging employers in this way will also help with employer buy-in. The coach feels this plan will be difficult for some programs to execute, since they have such limited time to spend on areas outside of direct curriculum requirements. The CNA track of the pre-health certificate program, for instance, is designed around a required number of minutes of direct instruction, with very little time left beyond these requirements.

FVCC's career coach has been part of a committee for an annual job fair. The job fair committee includes local workforce and industry representatives, and has helped create awareness of FVCC's programs and of her role as career coach. She has also made group presentations at the Community Action Center and workforce center. The coach feels that outreach and networking with industry partners has been challenging and particularly noted that the three employers that originally agreed to recognize the pre-health certificate as an additional qualification for employment at the outset of the CHEO proposal are not actually committed to doing so. Although FVCC had not yet graduated anyone through the program at the time of the interview, she believed that these employers would not pay employees any more for the additional qualification.

Employers in the area are definitely hiring CNAs, given the high turnover rate. However, students can take a comparable CNA certificate program in five weeks, which is considerably shorter than FVCC's pre-health certificate program (which includes the CNA training). While there is no direct competition in the area for the FVCC CNA program (the closest program is about two hours away), anyone moving in with the five-week certificate is in the same

employment pool as FVCC's students. Employers state they appreciate the additional education, but are not willing to pay a higher rate for it. While the career coach has tried multiple times to explain the benefits of hiring someone with the additional education, professionalism, and other soft skills that go along with it, it has seemed to fall on deaf ears and she feels "awkward," as if she is "trying to sell something and they're not buying it."

Part of the reason relationship-building with employers is not going as well as CHEO staff had hoped may be that better relationships are simply not needed. FVCC already has a strong relationship with industry in terms of involvement in program design and curriculum, and industry representatives are willing—and eager—to be involved in program changes and ongoing conversations about what students need to succeed in the industry. Employer partners also already hire FVCC students continually. The lack of fit here is likely to be in the programs themselves and the nature of the labor market: there simply is no labor market need for employers to pay more for CNAs who have more education than other CNAs. Also, since the turnover rate for CNAs is so high, employers have no incentive to pay more for FVCC's CNAs if they feel the FVCC CNAs are no more likely to stay on the job longer than any other CNA. They also have no compelling reason to offer incentives for their own CNAs or EMTs to return to school to receive their pre-health certificate. In fact, employers fear their employees may leave in search of other jobs if they are more educated.

The coach is working with two local workforce partners, Community Action and Job Services. Both of these organizations refer people to the programs, although at this stage there is no system for documenting these referrals. An FVCC staff member used to work at the Job Services workforce center, and she continues to work with them, informing the workforce center of programs across all of the colleges' TAACCCT grants. She and the coach have several contacts at both organizations. Again, this relationship was already fairly strong before CHEO. Given that the college has four rounds of TAACCCT grants, both industry and workforce center relations have been fostered throughout.

PROFESSIONAL DEVELOPMENT

FVCC's focus on delivering quality online and hybrid education is evident not only in the strategies they have developed to teach their students, but also in the methods the college employs in preparing the faculty. FVCC requires two professional development classes for faculty members, centered on teaching online. The first course orients faculty to the college's learning management system and broadly discusses instructional design and online teaching. The second course provides detailed instruction on how to design and teach a class online. During the course instructors actually build their class, so that once the professional development course is completed, each instructor has built a real class that can be taught online. At the end of the course there is an approval process to make sure the instructor's class meets FVCC's criteria for a good online class. The approval committee consists of the CHEO instructional designer, the e-learning instructional designer, and other faculty and staff. The two

required classes help faculty understand the basic platform for teaching online and how to incorporate technology into effective teaching.

FVCC'S INNOVATIVE STRATEGIES

FVCC has maintained a strong focus on creating an online and hybrid-based learning environment that is successful and able to serve students in the same dynamic ways that traditional classes can do. The college is currently implementing two strategies to accomplish this objective.

LearningSpace™ Audiovisual Integration

The first is the use of a LearningSpace lab audiovisual system. This dynamic system allows its user to create a simulation lab and record it from multiple camera views and pans with a web-based interface. It also allows for live streams of multiple rooms and can create a simulation environment for students as they work through various health-related situations.¹⁶ The LearningSpace system was first used at FVCC in the fall of 2013. It was first used to record video allowing student to see a lab in completion prior to actually doing it; this was used to prepare students for biology labs. One biology faculty member reported that providing students a simulation of the lab prior to performing it themselves made the in-class lab run much more smoothly than in the past. Additionally, the instructor was pleased he only had to demonstrate pricking his finger once for the blood-typing lab, rather than multiple times as previously. He could simply replay the scene for multiple groups of students rather than repeating the procedure.

In spring of 2014 the LearningSpace lab was improved by adding a mobile unit so the technology could be utilized outside of the allied health labs. Over the summer the CNA program director used the LearningSpace to develop actual simulation labs. Simulations were integrated into the hybrid CNA course in fall 2014. In addition, FVCC is now showcasing the LearningSpace mobile lab in the technology portion of their fall faculty inservice to encourage its use campus-wide.

The CNA program coordinator created several case study videos with the system, each one a different patient scenario. She dressed as a patient and recorded different scenarios in which the patient was confused, agitated, and depressed. They were recorded using the LearningSpace system and uploaded into FVCC's learning management system. Students then watched the case study videos on their own at home, and came to class ready to discuss each scenario and how they would handle it. Because the videos were uploaded into the college's learning management system, the coordinator was able to easily share them with the other CNA instructors, who then used them in their classes as well.

¹⁶ caehealthcare.com/images/uploads/brochures/LearningSpace.pdf

The LearningSpace audiovisual system has been instrumental in the redesign of the EMT courses. These courses are not easy to transform to a hybrid format, since EMT coursework requires a large quantity of hands-on learning. The LearningSpace system enables students to participate in simulations and then review their performance via an online interface. The interface also allows students to take online quizzes while they watch their video, rating themselves and “grading” their responses during the simulation.

The nursing program at FVCC is already using the LearningSpace system, and it is planned for use by other programs as well. In addition, the system is planned to be further utilized at FVCC’s extension campus in Libby, a rural community in northwest Montana near the Idaho border. FVCC’s round four TAACCCT grant will make a nursing program available to Libby, and large portions of the program will be provided remotely. The LearningSpace system will be used by these students in the same manner the nursing students at the FVCC campus use it, to remotely record and review simulations.

Although CHEO students have first priority, the system has also been used by the community; a group of nurses from the local hospital came to campus during the summer of 2014 and used the system to record some simulations. They then were able to use the videos at the hospital for training:

This summer the nursing department had a group of nurses that came over from the hospital and they worked with the simulators, the nurses did, and they were able to record that using LearningSpace and then they were able to share that with the hospital so that people who are not able to go through the training were able to see what went on and knew that. So it’s even kind of reached out into the community a little bit too.

The system has given the school the ability to leverage CHEO resources across the campus and community.

Light Board

The second strategy for improved online learning at FVCC is an innovative light board creation spearheaded by an associate professor of chemistry at the college. The light board was created by purchasing building materials with CHEO dollars and adding a whole lot of ingenuity. Concerned with increasing the ability of students to learn online and tackling the challenge of duplicating the classroom learning environment for students removed from the classroom, this professor developed a way to bring face-to-face, eye-to-eye learning to an online environment.

Studies indicate that students learn better in a classroom setting, and that non-verbal communication is just as important as verbal communication in learning.¹⁷ In addition, the more students perceive the instructor *cares* about his students and what he is teaching, the more they tend to learn.¹⁸ A student's perception of caring is directly linked with the number of teaching tools, visual stimulation, voice fluctuations, and facial expressions an instructor uses.¹⁹ In one study students stated that "effective teachers are visibly and actively involved in the learning" and "work hard to establish trusting relationships."²⁰ All of these strategies that positively affect learning are problematic when it comes to online teaching. The light board was developed with these concepts in mind. It allows for non-verbal communication, increases the number of visuals, "props," and teaching styles the instructor can use, and supports voice inflection and writing on a board—a long-standing teaching tool for the traditional classroom.

With the light board, the instructor stands behind a glass board, which enables him to make eye contact with the student (camera) and make gestures—non-verbal communication. He can also write on the board, and the technology then "flips" the writing so it can be read by the student. This is actually an improvement over what normally occurs in a traditional classroom, where instructors generally have their back to the students while writing on the board. With the light board, the instructor is able to write while facing the students.

Finally, the board allows the instructor to integrate visual aids into lectures, such as models of chemical compounds, examples of molecules reacting, and endless possibilities of visual stimulation. The combination of computer-generated visuals and instructor communication creates an environment that brings students "in" to the classroom—no matter where they may be.²¹ Another benefit of the light board teaching tool is that students can access the recorded lectures and watch them at any time. Students generally like the ability to revisit material, especially if they are having a hard time grasping certain concepts.

The faculty member who developed the board is interested in investigating the effectiveness of this new teaching tool, and has begun some initial research using eye-tracking technology to track where people are looking when they watch the light board videos. The recorded eye-tracking research showed the viewer's eyes following the instructor writing on the board, his

¹⁷ Stella Muchemwa, "Use of Nonverbal Communication in the Classroom as a Way of Enhancing Classroom Teaching: A Case Study of Solusi High School, Zimbabwe," *Social and Behavioral Sciences* 103, no. 26 (November 2013): 1279-87.

¹⁸ Jason J. Tevena and James C. McCroskey, "The Relationship of Perceived Teacher Caring with Student Learning and Teacher Evaluation," *Communication Education* 46, issue 1 (1997): 1-9.

¹⁹ Along these same lines, social presence of the instructor—the "being present" of the instructor during communication with the individual—is found to directly correlate with satisfaction of online information-sharing, through classrooms or computer conferencing. Charlotte N. Gunawardena and Frank H. Zittleb, "Social Presence as a Predictor of Satisfaction within a Computer-Mediated Conferencing Environment," *American Journal of Distance Education* 11, issue 3: 8-26. Social Presence Theory has been part of much additional research centered on online/distance learning and computer-based conferencing.

²⁰ Suzanne Young, "Student Views of Effective Online Teaching in Higher Education," *American Journal of Distance Education*, 20:2 (2006): 65-77.

²¹ To view a video of the FVCC instructor and the light board, see: www.youtube.com/watch?v=shluRe1HCZU

face when speaking, and the objects he “placed” on the board throughout the video. This certainly seems to reinforce the concept that students can engage through this technology, much the same way they would engage in a classroom. The instructor is planning future research and hopes to also hold focus groups with students to understand their perceptions of the board and how they feel the board affects (or does not affect) their learning.

Developing ways to communicate with students effectively through an online interface has been a priority for faculty teaching online and hybrid courses at FVCC. As one faculty member stated,

One of our challenges is having dialogue with students, particularly with chemistry, probably mathematics, physics, because you can't easily type chemistry in the way that you might even biology, perhaps, or certainly psychology or something. It's hard for students to communicate with us. So a lot of our effort has gone into figuring out and determining ways in which we can better communicate with these students online.

One solution to this communication challenge is to have the tools and time available to allow students to ask questions, such as through document cameras with synchronized communication capabilities. But the other part of this communication process is actually being able to present the subject matter in such a way that students can engage with it. Since research shows communication is key to learning, faculty saw improving communication as a key priority. The light board is a way to do this interactively. They also hope the tools they create, including the light board, can be duplicated and used by other education institutions:

So you know, the Community College Research Center, all this data, suggests that it's difficult to communicate. And I've seen it and we're all learning, you know. We want a chemistry course suitable for community college students that is basically one of the best...So we're hoping to export methods and tools and really contribute in a way that's transferrable to other colleges of our types.

The instructor has created protocols that will enable others to replicate the light board and understand best practices in delivering instruction when using it, and included suggestions for improving the student experience in the do-it-yourself instructions for building the board. The protocol and instructions for building and using the light board are currently being created OER.

The light board is being used by multiple faculty in various programs across the college. Two math instructors, an electrical technology instructor, and an English instructor are among the faculty who regularly use the board to record lectures for their online courses. Instructors are also able to use the board for their face-to-face classes, to record and post elements that students can access later from home, such as test reviews. Faculty are very excited about the light board and it's expected that its usage will spread into other courses and programs next year.

SUMMARY OF CHALLENGES

As discussed above, the career coach has found that employer/industry outreach has been challenging, particularly getting employers to make commitments and follow through on them, and developing ways for students to best connect with employers.

Likewise, the coach had trouble connecting with students early on, feeling that at first the students did not “recognize the value of what I have to offer.” This is probably one of the reasons she had to shift her strategy for student outreach. Even though she had previously worked in a similar role with a similar group of students (also health-related—nursing) through another grant at FVCC, CHEO students’ perceptions of her role and how it would benefit them seemed quite different from her previous experience. She mentioned that in her previous coaching role it helped that faculty presented her as a resource to their students. She has since discovered ways to better engage with students, such as going into the classroom.

The coach believes that the difficulty of integrating the coach role into the CHEO program is partly due to the multi-faceted role of the CHEO coach. Outreach to multiple employers, industry representatives, and workforce center representatives, as well as supporting activities such as the job fair, leave her little time to focus on students and their needs. She also notes that the other grant involved a scholarship, and comments drily, “Money is always a good motivator.”

She is hoping to find the right way to create a “system” that students associate her with; at present, she feels that this is slowly developing. In her previous coach role there was a system for the students and she became “the go-to for nursing students, whether they were in programs or preparing for the program.” She is hoping the same can become a reality for CHEO.

One of the biggest challenges FVCC faculty have encountered relative to moving their courses online or hybrid has been students’ inadequate level of computer skills. Students are unable to navigate the online platform, don’t know how to post discussions, don’t know how to download programs or material, and aren’t sure how to access materials. Faculty have brainstormed different ways to tackle this problem, such as the possibility of putting together a video that is emailed to students when they first sign up for the course that walks them through screen shots of the process and what they will need to do.

The LearningSpace audiovisual system has an associated yearly warranty/maintenance fee of \$20,000, which is a considerable expense for a community college to assume. CHEO staff is uncertain how the fee will be handled after the grant period has ended.

FVCC carries the largest obligation to the CHEO consortium relative to unique participants and the remaining participant deliverables. Consequently, this creates some challenges, such as increased need for internship sites and job placement options, especially in rural areas.

SUMMARY OF ACHIEVEMENTS

When asked about FVCC's greatest achievement relative to CHEO, every person answered resoundingly, "the light board!" The excitement over this ingenious creation is palpable. Faculty and staff at FVCC have embraced the concept that quality education can be taught online, and their creativity and desire for excellence is evident. Especially considering that many faculty were reticent about moving education online at the outset of the grant, this has been a huge achievement for the college. In addition, the light board project was presented at the 2014 Conference on Chemical Education at Grand Valley State University in Michigan and the professor who developed the board is planning to submit at least one article to the Journal of Chemical Education this semester. The light board and other innovations like it will help improve the quality of online education for students across multiple institutions.

The way in which faculty have embraced creating quality education online has been a big achievement for FVCC. One staff member mentioned that the way faculty have created their online or hybrid courses has actually improved the level of education students are getting.

When you think about putting a lab science online, there's so much – because you can do it in a really poor way. But I'll say one thing about our faculty is they really want it to be dynamic. They don't want to settle for just do[ing] a bunch of videos or something. They really want it to be dynamic, and to see it come to fruition has been really cool. ...I think it's actually enhanced some of those classes because before, you came to class and it was a lot of dissemination of information. So a lot of it was, before, just a lot of, I'm going to teach you all this stuff. Well now, with that being hybridized, a lot of the teaching part is, I'm going to do those videos online and when they come to class, they're doing more problem-solving, more case studies, more analysis, and so that classroom experience has actually been enriched in my opinion by turning it around that way. And I think it was a surprise. I think it was a surprise for the teachers, as well as the students.

The career coach feels students are beginning to realize the benefit of her services, especially since she shifted direction and began meeting with students in the classroom. With the addition of the intake form at the time of introduction, she able to reach out to students afterward to discuss their needs with them, based on their form responses. She has found, however, that students will often come to her after the classroom meeting before she even has a chance to contact them about their form. Finding workable techniques like this one are promising practices for coaches across the consortium.

The career coach also mentioned that bringing in the students' perspective and focusing on student needs has been a successful part of the CHEO project for FVCC:

There are these big ideas about what the community needs and employment needs and all of these, but really my focus is on students and student success. So contributing that perspective more, I think is important to me and I think I'm plugging their needs a little bit.

Identifying and meeting student needs is an important part of student retention, as research on intensive advising has shown.²²

Getting all the courses redesigned and up and running has been a major achievement for FVCC. Not only the redesigned courses, but the quality of the courses, and the innovation and excitement seen in the faculty have all been a source of pride for the administration:

It's been really exciting this semester to just get all those programs, just all those courses rolling and to get the instructors actually doing it because they worked for so long, getting ready and trying to figure things out and figuring out how they were going to incorporate this and learning...how to find OER and all that stuff. And so seeing it all come together to happen this fall has been really great and they've really been enjoying it. They're doing such a good job. They're producing a high quality product and I think they're really having a good time. They're learning a lot. They feel like they're growing and engaged and that's been really fun.

NEXT STEPS

Moving forward, FVCC will further develop workforce and industry relationships. One way they plan to do this is to involve employers directly with students through classroom visits. They also plan to bring employers to campus to tour FVCC facilities, with the objective of creating further employer buy-in and engagement.

CHEO staff are working to expand the usage of CHEO equipment, such as the light board and Learning Space audiovisual system. Although CHEO staff have priority, several faculty in other programs are already beginning to use the light board, and others are planning to in the near future. The Learning Space system is planned for use in the TAACCCT round four grant extension of the Libby, Montana nursing program. It is also planned for use in the rest of allied health programs on campus. By leveraging equipment in this manner, FVCC is able to provide quality education across programs.

²² TAACCCT *Career Coaches: Findings and observations* (New Brunswick, NJ: Education and Employment Research Center, Rutgers University, January 2014, p. 16). smlr.rutgers.edu/eerc/coetc

Roll-out of the CHEO Health Career Hub at FVCC has begun. The school plans to incorporate it into their CHEO programs by enrolling students as users as soon as they enter their program. The coach will then encourage students to use the hub throughout their time in the program.

Several faculty members are currently looking for OER textbooks to use in their courses and plan to transition fully to OER material. One faculty member recently found an OER textbook and is adjusting his curriculum this winter to use it in his course in spring 2015.

The instructional designer and EMT faculty are working together to find at least one OER element they can integrate into the EMT coursework. Since the material is so certification-specific, this has been challenging.

Further NANSLO labs integration is planned at FVCC. Several instructors plan to integrate the labs beginning in spring 2015.

FVCC is looking into ways to increase retention in the Medical Assistant Program. Developing cohorts that will progress through the program together is one possibility they are exploring. Discussions about decreasing attrition from this difficult program and increasing retention are currently underway.

Faculty members at FVCC are highly invested in creating high quality hybrid and online courses. As such, they continue to redesign and “tweak” their courses to include more OER material, make them more effective, and create better learning strategies for students.