

Great Falls College
Montana State University
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 GFC MSU'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 GFC MSU, its student population, and its service region. These sections are followed by a) a summary of the goals of GFC MSU's CHEO program, b) a discussion of the baseline targets and subsequent changes relative to the CHEO project, c) the identification of GFC MSU'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 GFC MSU, 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

Established in 1969, GFC MSU is a small, urban, non-residential two-year institution located in Great Falls, Montana. Part of Montana State University, GFC MSU is affiliated with other MSU campuses, including the main campus in Bozeman, and two other campuses: MSU-Northern in Havre, and MSU-Billings located in Billings.¹ GFC MSU offers 42 associate degree programs and 29 certificate programs in eleven different fields, the most popular of which include health professions, sciences, general studies, liberal arts, and humanities.² GFC MSU offers nineteen health science programs, the largest number of health science programs offered at any Montana college.³

GFC MSU mostly recruits local residents of Cascade County, but also attracts many residents from neighboring, rural counties, including: Teton, Pondera, Chouteau, Glacier, etc. Since the college offers so many health care programs, it is a “go-to” school for all the outlying areas, including areas with other colleges that do not offer the same programs. In addition, GFC MSU prides itself as being a “military friendly school,” helping military and veteran students fulfill their education and career needs.⁴ For example, Malmstrom Air Force Base is located just outside Great Falls, which makes GFC MSU convenient for students from military families. A range of online and hybrid courses offered by GFC MSU allow easier access to education by residents of the surrounding rural communities as well as military members and their spouses. During the 2013 academic year, 39 percent of GFC MSU students enrolled in online classes and six percent in hybrid format classes.⁵

According to the enrollment data for fall 2013, the majority of students attending GFC MSU did so part-time (53 percent, N=983). GFC MSU serves far more female than male students; 72 percent of the student population were female in 2013. Just over 50 percent of students (N=942) are considered to be of “non-traditional” college age (25 years or older), and about 13 percent (N=238) of students identified themselves as racial minorities, the primary category being American Indian (N=139).⁶

¹ “About Us: GFC MSU,” Great Falls College MSU, accessed September 5, 2014, <http://www.gfcmsu.edu/about/index.html>.

² “Community Colleges: Great Falls College Montana State University,” *U.S. News & World Report*, accessed September 5, 2014, <http://www.usnews.com/education/community-colleges/great-falls-college-montana-state-university-CC03303>.

³ “Fact sheet,” Great Falls College MSU, accessed September 5, 2014, <http://www.gfcmsu.edu/about/CollegeRelations/PDFs/Factsheet.pdf>.

⁴ “Military and Veteran Students,” Great Falls College MSU, accessed September 5, 2014, <http://www.gfcmsu.edu/webs/military/index.htm>.

⁵ *Great Falls College: Fact Book 2013-2014*, Great Falls College MSU, accessed September 5, 2014, http://www.gfcmsu.edu/about/CollegeRelations/PDFs/GFCMSU_Factbook_1314.pdf.

⁶ *Great Falls College: Fact Book 2013-2014*. Great Falls College MSU, accessed September 5, 2014, http://www.gfcmsu.edu/about/CollegeRelations/PDFs/GFCMSU_Factbook_1314.pdf.

GFC'S CHEO GOALS

GFC MSU felt the CHEO grant was well-aligned with its goals already in progress: building strong health care program offerings for students, and serving an online population. Eight of the nineteen health care programs the college currently offers are completely online. The CHEO grant offered GFC MSU the opportunity to further expand its health care programs and bring in more technology and innovations to improve the student experience.

Within this overarching concept, GFC MSU had two primary goals at the outset of the CHEO grant. The first was to improve and expand its allied health program capacity at the college, and the second was to build off previous NANSLO experience to create a new NANSLO node housed at GFC MSU. Health care is one of the leading industries in terms of job growth in Montana; future projections suggest 27 percent growth between 2010 and 2020.⁷ Montana follows national trends in that the aging population of baby boomers is approaching the retirement age. The large population of elderly in Montana, which has one of the oldest populations in the nation, and the increasing life expectancy of the population all create more demand for health care services.⁸ Additionally, job growth in the health care industry outpaces job replacement, creating a shortage of health care workers, especially in rural areas.⁹

Job growth for phlebotomists is expected to be 27 percent nationally between 2010 and 2022, and 25 percent in Montana, over twice the state average of projected occupation growth in non-health care fields.¹⁰ In 2013, phlebotomists in Montana made an average of \$29,040, just shy of the national average (\$31,410).¹¹ Job growth for EMTs and paramedics is also projected to be much faster than average job growth: 27 percent nationally and 25 percent in Montana. An increased demand for these occupations will continue in rural areas and smaller metropolitan areas.¹² EMTs and paramedics made \$34,870 in 2013 nationally, although these positions made less in Montana (\$28,010) and even less in the Central Montana nonmetropolitan area (\$27,340).

⁷ *Health Care Workforce: An Important Part of Montana's Economy*, Juliar, K., Montana Department of Labor and Industry, last modified Spring 2014, accessed July 31, 2014, <http://assets.dli.mt.gov/dli/Publications/dli-msm-042014.pdf>.

⁸ *Health Care Labor Shortages and Potential Solutions*, Connell, W., Montana Department of Labor and Industry, Research and Analysis Bureau, last modified January 2013, accessed August 1, 2014, <http://www.doleta.gov/performance/results/AnnualReports/PY2012/Health%20Labor%20Shortages%20and%20Potential%20Solutions.pdf>.

⁹ *Health Care Labor Shortages and Potential Solutions*, Connell, W., Montana Department of Labor and Industry, Research and Analysis Bureau, last modified January 2013, accessed August 1, 2014, <http://www.doleta.gov/performance/results/AnnualReports/PY2012/Health%20Labor%20Shortages%20and%20Potential%20Solutions.pdf>.

¹⁰ "Phlebotomists," *Occupational Outlook Handbook*, Bureau Of Labor Statistics, last modified January 8, 2014, accessed September 8, 2014, <http://www.bls.gov/ooh/health%20care/phlebotomists.htm>.

¹¹ "Occupational Employment Statistics," Bureau of Labor Statistics, last modified April 1, 2014, accessed September 8, 2014, http://www.bls.gov/oes/current/oes_mt.htm#29-0000.

¹² "EMTs and Paramedics," *Occupational Outlook Handbook*, Bureau Of Labor Statistics, last modified January 8, 2014, accessed September 8, 2014, <http://www.bls.gov/ooh/health%20care/emts-and-paramedics.htm#tab-1>.

The average wage in Montana, especially in the rural areas, may be a result of the numbers of volunteers that engage in such positions.¹³

It should be noted that students graduating with their AAS in medical assisting can then go on to virtually any health care program, including nursing, at MSU. Students can go straight through, or they can exit with their AAS, test, work for a period of time, and then go on to MSU or come back to GFC MSU, stack another certificate if they wish, and go on to MSU. Also, once a student has his or her AAS in medical assisting, there are many paths to employment that do not require continuation of education. Medical assistants can take x-rays, run equipment, do bloodwork, and work with medications. With these skills, they are more hireable than prospective employees that can do only one of those things, such as radiologic technicians. While the rate of pay for medical assistants is lower than a radiologic technician could expect, the number of jobs are higher and employers are happier to have someone who can do a range of duties.

GFC MSU was involved with the Next Generation Learning Challenges (NGLC) grant, which expanded the capacity and reach of NANSLO labs. GFC MSU played a small role in this grant project by serving on the advisory board and some faculty members were engaged in the creation of labs. When the opportunity arose for GFC MSU to house a NANSLO node at the college through the CHEO project, it jumped at the chance. The new node would serve the Montana area consortium colleges for the CHEO grant and would expand for future projects to serve as a node for other education institutions. GFC MSU is now the third NANSLO node, joining the nodes at Red Rocks Community College in Denver, Colorado, and the node at North Island College in Vancouver, British Columbia.

By housing the node at the college, not only is GFC MSU involved in expanding the reach of NANSLO labs to a geographic area previously untouched by the remote labs, but the college will also be able to expand its own online and hybrid course offerings through its allied health programs by using the lab. Currently, both GFC MSU and its Montana CHEO counterpart, FVCC, are using the GFC MSU node, but the college has plans for expanding it to other schools and for community use in the future.

GFC MSU is independently accredited, but is organizationally aligned with MSU Bozeman. GFC MSU hires, trains, and evaluates its own faculty, sets its own learning objectives, assessments, program outcomes, etc., but the college works closely with MSU Bozeman, which is the flagship university. Some purchasing and IT-related issues go through MSU Bozeman, and some campus policies are handed down, although GFC MSU is able to make modifications to fit its own campus. The relationship is beneficial in many ways, including the ability to purchase software licenses for less since fees are often based on "head counts," and, when GFC MSU is included with MSU Bozeman, enrollment numbers are high. Also, students have access

¹³ 2014-2015 Catalog, Great Falls College MSU, accessed September 5, 2014, <http://www.gfcmsu.edu/catalog/Programs/EMT%20Pre-Paramedic%2014-15.pdf>.

to all the MSU system resources, which includes the MSU library. The schools also share articulation agreements in multiple programs. Although Montana went through a common course numbering process three years ago, GFC MSU still puts articulation agreements in place in many programs to be sure the articulation is clear. The college does not have articulation agreements with MSU for its CHEO programs, but it does for other health care programs, such as nursing.

CHEO PROGRAMS AND PROCESSES

Development and Implementation

GFC MSU originally planned to offer a health care “core” certificate program that could stack into various health care-oriented AAS degrees through the CHEO grant. However, the program was deemed not feasible by the curriculum committee. Therefore, after deliberation and market research, the college chose to restructure its plans and submit a changed statement of work (SOW) to better align its programs with the grant and with the programs already in place at the college. One of the major problems associated with the health care core program was the inability to make it broad enough to fit multiple health care associate degree programs without being too broad. For instance, core education for nursing programs may contain different elements than core education for dental programs. Also, there were limited avenues for employment if a student were to decide not to stack the program and instead graduate with the certificate alone. There are very few jobs a health care core certificate aligns with.

GFC MSU’s proposal went through modifications and changes until July 2014; until the SOW proposal was finally accepted, it was still unclear what courses/programs GFC MSU was going to offer. The changes to the proposal created a situation of uncertainty, so GFC MSU was unable to market to students or industry, utilize its career coach in the intended manner, or design/redesign CHEO courses until after the final decision was made. The college was therefore unable to make real progress on CHEO until after July 2014; this will certainly affect the college’s ability to report outcomes and graduates for the grant.

After the original SOW was deemed not feasible by the GFC MSU curriculum committee, the college decided that instead of adding something completely new to its program list, it would be more beneficial to the college and the students to redesign and repackage something that was pre-existing. One administrator commented:

So we started to really think, all right, what do we have that can work, that can serve displaced workers, but that we can also build pathways....from adult basic education, for adult workers who wanted to do some things and help them to stack....credentials together. So you could do this, for example, if you just lost a job, or if you were trying to upgrade.

The college also wanted to choose programs that it could offer as eligible for the Big Sky Pathways program after the grant period is over. Big Sky Pathways is an integrated dual credit program that allows high school students to attend college and high school simultaneously.

GFC MSU chose to offer pre-existing courses redesigned to a hybrid format and formally packaged as certificate programs under CHEO: a phlebotomy/pre-medical assistant certificate program and an emergency medical technician/pre-paramedic certificate program. There is an industry need in the area for both of these credentials. Prior to CHEO, the courses were not combined in such a way as to be a certificate program, and were not easily stackable into the medical assistant or paramedic AAS degree programs. While the courses offered in these programs are not new to GFC MSU, they have been redesigned so more elements of the courses are online and they are now packaged as phlebotomy and EMT certificate programs. GFC MSU is highly invested in making its programs accessible and stackable for better student success.

After graduating from either certificate program, students may continue their education to become medical assistants or paramedics respectively; both are AAS degrees. Any student in the phlebotomy/pre-medical assistant program who chooses not to continue into the AAS degree portion of the program may exit after completing the 18 certificate credits and become a certified phlebotomist by completing additional clinical lab hours and 75-100 blood draws. After students complete the clinical requirements, they are qualified to sit for a national exam to become certified registered phlebotomists.¹⁴

Likewise, students in the emergency medical technician/pre-paramedic program may either choose to continue their education to receive a paramedic AAS degree, or they may exit the program after completing their certificate hours. Those who exit the EMT certificate program are eligible to prepare for and take the National Registry EMT examination administered by NREMT (the National Registry of Emergency Medical Technicians).¹⁵ The EMT program consists of 18 credits, which are usually taken in two semesters. The clinical experience portion of the EMT certificate program actually occurs on campus, in the simulation hospital. Students work through their simulated scenarios on campus and do not need outside clinicals or internships.

EMT positions outside the Great Falls area tend to be with volunteer services, which are in great need of volunteers. The program allows students to get their EMT certificates, do some volunteering to gain the experience they need, and then return to the paramedic program. Some students who wish to be firefighters get their EMT certificate first, since firefighters in the Great Falls area are required to be EMTs as well. Students may also continue straight through to the paramedic AAS program after finishing the EMT portion.

¹⁴ 2014-2015 *Catalog*, Great Falls College MSU, accessed September 5, 2014, <http://www.gfcmsu.edu/catalog/Programs/Phlebotomy%20Pre-%20Medical%20Assistant%202014-15%20.pdf>.

¹⁵ 2014-2015 *Catalog*, Great Falls College MSU, accessed September 5, 2014, <http://www.gfcmsu.edu/catalog/Programs/EMT%20Pre-Paramedic%202014-15.pdf>.

The certificate programs are beneficial on their own because employers are happier to hire those who have had well-rounded training, but what makes them most beneficial is that they are designed to be stacked into the paramedic and medical assisting AAS degree programs.

Technically speaking, however, a person does not need an education in phlebotomy to become a phlebotomist or to be employed as a phlebotomist. A person can be hired as a phlebotomist without any prior training. Likewise, a student can come to GFC MSU, take just the phlebotomy course without completing the entire certificate program, receive certification, and enter the job market. However, the phlebotomy certificate program does make students more employable. In fact, employers in the Great Falls area are excited about the program, stating that they would gladly “pick them [students who had completed the program] over someone who just had phlebotomy [one class] or hadn’t had any training.”

The same is true for the EMT certificate program at the college — a person is able to take just the EMT course at the college and sit for the certification exam without completing the entire certificate program. However, EMT services in the area are much happier to hire students who have taken the entire program.

GFC MSU’s CHEO programs were in existence prior to the grant; however, they are being redesigned under the grant. The college has an instructional designer who works closely with faculty to make changes to its courses. Some courses in the programs have been redesigned from a traditional, face-to-face format to a hybrid format, in which students read material, watch lectures and use interactive resources online, and then attend class on campus for labs and other hands-on activities. For example, the phlebotomy and EMT capstone courses have quizzes, lectures, and some reading material online. More redesign of these courses is planned for the future. Some courses in the CHEO programs, such as math and college writing, were already fully online, and thus those courses were not further redesigned.

GFC MSU has created CHEO team meetings which meet every month. All faculty and staff at the college who are involved with CHEO in any way are also involved in the meetings, so the group is quite large. Initially the group used the meeting time to brainstorm program changes and challenges; currently the meetings focus on touching base and considering changes and improvements to courses and how best to include new ideas. The next big idea that faculty and staff are working to integrate into the CHEO programs is how to connect the NANSLO lab and the college’s teaching hospital. GFC MSU is very focused on fostering a team concept within the college, and it has carried this through to the CHEO grant. “We’ve pulled everybody together, we’re all on the same page, and it’s a great brainstorming opportunity to get everybody moving in the right direction for what’s best for students,” says one CHEO team member.

Recruitment and Enrollment

At the time this case study was written, GFC MSU was offering its first run of the redesigned programs. Therefore, student recruitment has been minimal and more focus will go into recruitment as spring 2015 nears. The redesigned phlebotomy/pre-medical assistant program began with a total of eight students for fall 2014, and had retained five students as of November 2014. These students heard about the program through the registrar and/or academic counseling services, or were referred through the local workforce center. No EMT students are currently enrolled in the redesigned program, but it is being offered in spring 2015.

GFC MSU's career coach actively informed the student services department about the addition of the program certificates, and was instrumental in disseminating information about new offerings internally to the college. Most of the outreach the coach has done has been internal to the college, since each of these departments and centers must first become aware of programs and opportunities before they can present them to potential students. She talked to college recruiters and advisors about the programs and created talking points they could use to inform students about the programs and about reasons students might want to pursue CHEO program careers. The coach also went to the Great Falls Public Schools Adult Education Center, located on the GFC MSU's campus, to discuss the CHEO programs with them. They were very excited about the programs and asked her to come back and give a presentation about opportunities for students. Students using the Education Center are non-traditional students who are interested in coming back to college and who are taking free English and math classes the center offers to prepare for school again. The coach also reached out to the college's veterans' center.

The college is planning to put together some additional marketing and promotional materials for the phlebotomy and EMT programs. It has created a handout promoting the NANSLO lab node and its capabilities, but hopes to create more marketing material for that as well. The college staff is also looking forward to the creation of marketing material that CHEO coaches will have access to after the completion of the CHEO career hub, in order to do some outreach and marketing more broadly.

NANSLO

Originally, CHEO staff planned to focus NANSLO usage on the prerequisite science courses that would feed the health care core certificate program; once the original certificate program was turned down, they realized they needed to instead consider how best to utilize NANSLO for the newly redesigned medical assistant and EMT programs once they were approved. The focus of NANSLO labs is still on prerequisite science courses, especially biology and chemistry, although plans are in the works to diversify this focus to better include NANSLO usage within the allied health courses in the redesigned programs.

Since the programs have been tied up in SOW changes, the majority of efforts at GFC MSU to date have been aimed at developing and bringing the NANSLO node live. GFC MSU hired a

NANSLO lab manager and began the equipment acquisition early in the grant process. A room at the college was remodeled and repurposed to allow space for the node, but the space did not have enough data ports or technical components to house the lab. In addition, modifications in the college's computer network had to be made to allow for off-campus access without compromising security. Necessary changes were made, but the process was time consuming because contractors had to be hired and costs needed approval.

Reception

After the first CHEO consortium faculty workshop, faculty and staff at GFC MSU reported that there was a lot of excitement about the capabilities of NANSLO as a whole. However, after faculty and staff left the workshop and sent in their learning objectives and ideas for new labs, quite a period of time went by before anything was done. It seemed to some that there was little forward progress in developing labs and facilitating communication at the consortium level. The delay between the first workshop and the date when the faculty received the deliverables was long and frustrating for faculty. Since that time, the Denver node and discipline panels have created more labs than were actually required, but initially, at least, faculty felt that the excitement from the first workshop largely waned. They feel it's likely that some faculty members never regained that excitement. One faculty member expressed frustration because it was difficult to "convince coworkers to do this" without giving them something "tangible to look through and try out."

Once the GFC MSU node was completely set up in summer 2014, the college began running some labs in-house, "borrowing" students from health courses and beta-testing the process. At the beginning of the node acquisition process some faculty were reticent to embrace the NANSLO concept and felt that having science labs online would not be an effective way to teach science. After completing some test runs of the node, however, faculty members have expressed more interest in the idea. The node's lab manager set up groups of students in a common area at the college and had them run through some of the lab's procedures. Faculty walking by the demonstrations stopped to watch and talk to the lab manager and students. According to the manager and career coach, faculty members are beginning to "see the light" and get excited about what the labs can do.

Use to date

Although the lab has been set up physically at the college since early summer 2014, the remote capabilities of the lab were not operable until August 2014. As a result, the lab was being used within the college, but was not able to be operated remotely. Flathead Valley Community College (FVCC), the other Montana CHEO college that GFC MSU is serving with NANSLO labs, was not able to use the node until it was set up to be remotely accessed. Therefore, FVCC did not begin using the node until fall 2014. Even with the delays, the lab is up and running now and, according to the lab manager, the node has had 200 users in the two months prior to EERC's site visit in October 2014.

The phlebotomy capstone course used NANSLO slides in a lab in the classroom during fall 2014, and the instructor plans to use the lab remotely in spring 2015 so students can access the lab from home.

NANSLO labs are being used in a fully online chemistry course which is a prerequisite for many of the health programs. This course instructor is running two or three labs with NANSLO at this point. NANSLO has replaced some elements of the kit labs the instructor previously used.

Several labs are also being used in an organic chemistry course; one as a supplement and one as a replacement for the previous hands-on version. The first time the instructor ran an experiment in his class he chose to have half of the class do the experiment hands-on, and the other half do it remotely using NANSLO through the Denver node. He found the two labs were comparable, and for some students he actually found that:

...it was more engaging for the online part because they kind of hand off control to each other and they were asking the tech questions on what exactly was going on and a little bit more behind the principle. And with the face to face there's only one person that can prep the sample, another person injects it, the other person handles the computer interface. But anybody else that's in the group...is just pretty much just sitting and watching, so it's less of a chance there. But if you were online, you were definitely a part of the action. So I found that to be kind of an interesting switch.

NANSLO labs are also being used in an entry-level biology course, predominantly taken by allied health students as a prerequisite to the programs. Two labs, a microscope lab and a tissue lab, were used in the class as a supplement to other lab-based material. The instructor plans to use these two labs as a complete replacement in spring 2015.

GFC MSU's lab manager reports that, overall, students have responded positively to using NANSLO labs. The biggest challenge they have had, relative to student use, has been a lack of computer skills; some have difficulty downloading and installing the application necessary to use the lab. Even students who are taking online courses struggle with the technology because of a general lack of computer skills. After students work through general computer issues, however, they seem to enjoy the lab experience. The lab manager notes:

Once we get through that and they are connected and they can use the instruments, everything has gone really smoothly. Students really like the experience...some of them have even asked to do additional lab time so they've scheduled another time and they've come in and got to redo part of their lab because they enjoyed it and wanted to spend more time, but we couldn't let them the first time because we had other students coming in...we've also had students go to other instructors and say, well, you should do

this because NANSLO does it this way and it's working really well and rather than having to go and use microscopes in the lab or that kind of thing.

One of the biggest overall challenges the NANSLO node has had is interfacing in some situations, due to other colleges' firewalls. Students operating the labs from home, where they are likely to have a fast internet speed and no firewalls, have had very few problems with the interface. When students access the labs from another school's Internet connection, however, there is a high probability that schools' firewalls will slow the lab system down, causing interface issues and lags in the real-time connection. The lab manager observes:

The biggest problem we've actually had is when people are accessing us from institutions and there's firewall problems. So if they have too many rules in place, it will basically ramp our speed down and so then the students have a lot of lag. And that's been a bigger problem actually than the rural students.

Future plans

There are plans for more courses into which to integrate NANSLO in spring 2015, including an anatomy and physiology (A&P) and another biology course. One faculty member, who was originally opposed to using NANSLO in his courses, is planning to integrate labs into three of his classes. Faculty are also in the process of developing new labs for use at their node and in their classes. For example, a radiation lab is being developed that should be ready to be piloted in spring 2015.

GFC MSU also houses a teaching hospital on campus. The lab manager and hospital faculty are working together to develop plans for the integration of the NANSLO remote equipment at the teaching hospital:

If we get the sim hospital to work with integration within the NANSLO lab, then that's going to open up way more options for the allied health courses, specific program courses, and for even biology A&P case study like application processes. So if that doorway gets opened, I would foresee us utilizing it quite a bit more.

The college will use NANSLO in a majority of its pre-existing health care courses that are particularly suited to the entirely online programs.

Unlike the other NANSLO nodes, GFC MSU's lab manager did use the lab to do wet mounts for students; therefore, the lab was able to run a urinalysis lab. Faculty were excited about this option, but it is a time consuming process and will likely not be offered regularly; it requires lab techs to be present to handle the fluids and mount/remove the slides.

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. GFC MSU's instructional designer has been instrumental in working with faculty to integrate OER resources and technology into their courses. Faculty members feel she has been extremely helpful in creating OER elements and packaging courses in a way such that they can be freely shared. For the most part, the instructional designer finds that faculty members usually prefer to create their own OER material rather than use something that is already licensed. The instructional designer notes that the primary reason for this is that the quality of available material that has been licensed as OER is not always up to faculty standards. Faculty members echo this view as well: "it's been time consuming to find the resources that I want at the quality that I want. That's probably why I haven't completely gone online yet, but it will happen." This instructor has been switching more and more of the material in his course to OER content, either by finding it online or creating it. At first he only included OER for about 10 to 15 percent of the course, but now his course is about 50 percent OER. Converting to OER content is a slow process, however; trying to find OER resources is often difficult because of the sheer number of items that are licensed and posted. One faculty member commented: "It's just the overwhelming number of things that pop up...there's a lot of stuff out there, but...I feel like some of it's really old stuff." This faculty member struggles to find material that is just as, or more engaging than, proprietary material. At times, he feels the proprietary material is of better quality: "honestly, I have to say that some of the stuff that's...put out by the publishers is — they've done some major overhauls on it and it's really good stuff."

He does plan to switch his entire class to OER, including the textbook, partly because it makes the course so much more affordable to students when they don't need to purchase a textbook. Another faculty member, however, is reluctant to change her textbook to OER because there just isn't a textbook out there that meets the quality standards she feels that paid textbooks offer.

...when I know what's available for what's been paid for versus not paid for, sometimes it's worth them paying for the stuff. Knowing that most of this needs to be OER-compliant, I am trying to find other alternatives. And that's probably the hardest struggle for me right now.

Faculty members at GFC MSU and across the consortium as a whole find that searching for OER content is a slow process. But faculty members at GFC MSU also feel that students really like the OER resources:

They really liked them. In fact, we did a blood typing game that was on the Nobel Prize.org that was presented at the conference, and they had a blast with that. A blast.

And we did some other simulations too that [another CHEO consortium faculty member] had mentioned. And this was in addition to some other things. They were like “bring it on!” Or they would even go out and find stuff and say hey, I found this, and then they’d share it with the course. So they were really good about sharing what they found with each other as well.

Faculty members have been converting the courses from a traditional face to face format to a hybrid format. The courses are also being packaged so that as many elements as possible can be posted as OER for other educational institutions to use. The instructional designer at GFC MSU has put out a call to faculty to fill out a form that describes the material in their courses. The form can then be uploaded and licensed as OER. First faculty upload the form with the material into a folder with everything labeled. The instructional designer will then go through that folder and categorize the information to have it ready for uploading to the consortium platform by March 2015.

The instructional designer believes there will be some difficulties in trying to make the EMT course OER because the course is designed with certificate testing in mind. The texts and resources needed for this testing are proprietary. This is a similar challenge that other colleges in the consortium are facing.

CAREER COACH

Background

GFC MSU’s career coach has a background in teaching; previously she worked for a program that helped returning students to finish high school. In that role, she developed a background in teaching career exploration and life skills. The students she worked with in her previous role experienced many of the same barriers that GFC MSU’s students are experiencing; therefore, the coach has been able to apply much of her previous knowledge to her new role at GFC MSU.

Role

Because of the slow start to the CHEO programs caused by the delay in the SOW change, the coach did not have a cohort of CHEO students to work with until fall 2014. She spent most of her time prior to fall 2014 doing general outreach and working in other areas where the college needed her. She also taught as an adjunct at the college part-time, which has helped her connect with students in other ways. As one CHEO staff member commented,

She’s a teacher. And I think the more we do this, the more I find that when they have that teaching or faculty background, that background in education, that really, really helps. So that makes her very versatile. She understands what’s going on in the classrooms. She understands how to work the labs. She understands how to coach and work with students directly.

The career coach also helped create a job connections fair to connect students and employers, conducted mock interviews with students, and visited classrooms to discuss résumés.

Another element of her job has been to create a Health Students of America (HOSA) chapter at the college. HOSA is a national student organization recognized by the U.S. Department of Education and the Health Science Education Division of the Association for Career and Technical Education. HOSA provides leadership development, motivation, help, and training for students to become better members of a health care team after graduation. The chapter is helping GFC MSU students stay engaged in their education program and develop a strong career focus.

The acceptance of the programs has changed the way the coach is able to do her job. She has now moved from a general role at the college to knowing specifically who her students are, and what types of careers her students will be preparing for. Before, she was reaching out to students in prerequisite courses, such as chemistry and biology, because no matter what the CHEO program turned out to be, her future students were likely to be in those prerequisite courses. The problem with this strategy, however, was that students in these very preliminary courses have not yet been accepted into programs, so they are not thinking about career directions or job readiness preparation. So while she was able to create and build relationships, she was not able to do any career coaching.

Throughout the changes to the SOW, the coach did not know who her students were going to be, so she used her time to connect with all health care students at GFC MSU. She feels her role has positively impacted the health care programs, and many faculty members, even those outside CHEO, are calling on her to continue her career-building activities with their students both in and out of the classroom. She believes that she will continue these activities and that they will be sustainable after the grant period has ended.

After the CHEO programs were accepted, the coach created an intake survey which she distributes to CHEO students in their classroom. The survey helps her collect information about the students, and also allows her to introduce ways she can help the students, such as career readiness and résumé building. She has had students reply to her and ask for help with job seeking and career preparation.

The career coach has made herself a central resource for students. Her office is located in the simulation hospital, which allows students to “pop in” and talk with her near where they are attending class and labs. She has also developed a Facebook page to keep students connected as it can serve as a communication portal for students who may not have a cell phone.

The career coach has also given presentations to students in classrooms, discussing employer expectations and interviewing tips. For example, she dressed up in interview inappropriate clothing and went to classes to discuss with students why what she was wearing was wrong and how she could dress appropriately for an interview.

GFC MSU's career coach focuses on the career element of coaching, and does not work with students during the intake process or as an advisor at all. The intake process is handled by the college recruiter and advisors; thus, she refers students to the recruiter and advisors but does not advise students herself. The college also has free guidance counseling available from the University of Great Falls (UGF), located right next door to GFC MSU. Internship students from UGF come to GFC MSU and offer free counseling services to students under the direction of their supervisor. The career coach will refer students to the counselors as necessary. Since the instructors in the CHEO programs are from the health care industry and most are still working in the industry, faculty are very good at helping students identify jobs. Because of the required clinical component, many students end up with jobs before they have completed their program.

The coach sees her job as additional support for both students and faculty. Faculty do not always have time to do things like help students with résumés and do mock interviews, so she fills in where needed. She also helps students find places they can job shadow, and other types of career-oriented support.

The coach is no longer working as adjunct faculty at the college, but recently took a position at the college as the manager of the simulation hospital. She is currently full-time at the college with two different positions; the management position and the coaching position. She feels the addition of the simulation hospital role is the perfect tie-in for her coaching position because she now gets even more exposure to the health sciences faculty and students. She is also the one in charge of the GoPro cameras, checking them out to courses and helping faculty and students use them, and assisting them with the technology. She is getting to know the students better because she is in contact with them more through the simulation elements of their courses.

GFC MSU is invested in sustaining the career coach position at the college. Within her role as manager of the simulation hospital, the college is allowing the coach latitude to continue many, if not all, of her current coaching duties. Additionally, through another grant program at GFC MSU, the college is outsourcing coaching services for students in that grant-funded program. GFC MSU hopes to see successful outcomes with those students in order to better leverage and assign more resources to coaching activities within the college in the future. The more success the college sees with student retention and success, the easier it will be to appropriate funds for coaching positions in the future.

INDUSTRY/EMPLOYER/WFC INVOLVEMENT

GFC MSU historically has had a very close relationship with the local health care industry. Industry representatives help guide curriculum and advise program structures. For instance, Benefits Health Systems, a large local health care employer, has been helping the college restructure some of the health programs the college offers, because, as the health care industry changes, fewer employees are needed in some jobs while more are needed in others. Radiologic technicians, for instance, are not as in as much demand as they were previously, so discussion is

underway regarding restructuring the program. Medical assistants, however, are in high demand within the industry, which is one reason the college has chosen the program for CHEO. Industry representatives were instrumental in helping the college as they packaged the stackable program.

Each program within GFC MSU has an advisory board which meets about twice per year. The board generally discusses how the college/program is doing, how the students are doing, any programmatic changes that have occurred or are needed, and any curricular changes needed. If a program or course is brand new, the college forms a team and industry partners are invited to participate in developing curriculum. Industry representatives and lead faculty meet, plans are discussed, suggestions are offered, and changes are made. One administrator at GFC MSU commented on how important industry is to the college: "...they're just key to us being able to do what we need to do here and we're always meeting with them and inviting them over here and we just had a big meeting today."

While industry representatives serve on advisory boards for programs within the college, there are also less formal ways the college and industry interact. Faculty and staff at the college engage industry representatives through one-on-one phone calls, working lunches, and other forms of networking. Industry is also instrumental in helping the college stock some of their equipment. Benefits Health Care, for example, donates supplies to the colleges' teaching hospital.

The colleges' Director of Community and Business Development, and each program's program director, are in charge of developing and maintaining industry relationships. Specific program needs, such as curriculum changes in a specific program or course, are coordinated by the program's team, including faculty and project leads. For instance, the CHEO project lead and CHEO staff and faculty have closely worked with industry to develop and modify the CHEO programs. The career coach at GFC MSU has also worked with industry to some degree. She worked with the local workforce center to put together a Job Connection fair, and invited employers to participate. She used the fair as a method of introducing herself and the colleges' programs, and networking with employers and the workforce center. She reached out to all the hospitals in the state and to members of several different medical associations. Employers reported positive feedback from the Job Connection fair, and many employers post their job openings on the colleges' Job Wire board.

As part of the job fair, the college invited employers to talk to graduation-ready students, to make connections with them and help them get jobs. The employers reacted very positively to this opportunity and enjoyed meeting the instructors as well. Employers came from all over the state and the fair was very successful. The college is planning to use this strategy again; another fair is planned for this year.

The coach has also connected with the workforce center beyond the job fair, meeting with them during regularly scheduled workforce staff meetings to discuss and market the CHEO

programs. The workforce center has referred some people to the programs. The coach then passes the students on to the recruiter to follow the admissions protocol. The workforce center staff are very excited about the CHEO programs:

...They're very excited because they feel like it's something that the community needs and is looking for, something that is quick, that people can be employed immediately after and then choose if they would like to get more education, or some people are happy just doing phlebotomy and that's all they want to do. And that's great, and it's a better paying job than whatever they've been struggling with so the job service felt like it was a really good thing.

The coach has also reached out to other assistance-oriented organizations, such as Opportunities, Inc., and NeighborWorks. These organizations help people find housing, training, and jobs. The coach has handed out program flyers and discussed the CHEO programs with representatives from these organizations. She reports "everyone I've talked to is very excited about [the programs] and said, oh, this is great. This is awesome." She believes this outreach will create referrals from these organizations.

While industry relations were already integrated at the college, the coach feels the same was not true of workforce and assistance-type organizations. Because of this, she has made outreach and relationship building with job service organizations part of her role.

PROFESSIONAL DEVELOPMENT

GFC MSU's career coach has attended WICHE's professionalization webinars, including those aimed at instructors. The career coach attends the instructor webinars to better communicate with teachers about what they are doing in their classrooms and uses this information to integrate herself and her career materials into the classroom. Being a teacher herself, it's not surprising that she identifies with the instructor-oriented materials, but the way she uses the professional development materials to better communicate with CHEO staff and faculty at the college is a promising practice.

The "coffee talk" sessions that consortium coaches have participated in monthly have recently become very useful, according to the GFC MSU coach. Initially no one discussed much, but more recently changes have occurred which have improved these sessions vastly. Coaches are given topics to discuss, and each coach takes a turn. The sessions are more directed, and that in turn has made them more interactive and useful. For instance, coaches have been sharing activities they are doing, such as résumé building, workshops, mock interviews, and what elements they feel made these activities successful or not. Sharing these ideas has been very beneficial to the coaches. Some coaches in the consortium have also had completers, so discussing coaching post-graduation has been very interesting to some of the coaches who are expecting completers soon. GFC MSU's coach also feels that getting to know the other coaches

at the May 2014 workshop was highly beneficial — and has probably made sharing ideas among the coaches easier.

CHEO staff at the college feel that many of the resources and information provided are very good and could have been helpful, but sometimes have come too late to be overly useful. For example, the CHEO Health Career Hub, which is something the college and coach have been very excited about, hasn't come to full fruition yet. GFC MSU echoes other colleges in the consortium in its disappointment that such a great tool for the colleges and students will only be useful for a very short period of time because the end of the grant period is rapidly approaching. The Health Career Hub was in the process of being rolled out at the time of the EERC site visit (October 2014).

GFC MSU's INNOVATIVE STRATEGIES

Simulation Hospital CHEO expansion

GFC MSU houses the largest teaching hospital in the state. Although it was in existence previously, the hospital has received supplies and equipment under CHEO, including a vein scanning device, GoPro cameras, and a new simulation manikin. The additional equipment has allowed for increased interdisciplinary teaching across multiple health care programs at the college.

The vein scanner is used by the phlebotomy students and is kept in the phlebotomy classroom, not in the hospital, but was purchased with CHEO dollars and is occasionally used in the teaching hospital as well, including for the paramedic program. The college is very successful at utilizing equipment in an interdisciplinary manner across programs, and this practice has expanded greatly through CHEO. The handheld vein scanner allows students to see veins under the surface of the skin using ultraviolet light. This teaches students confidence by allowing them to “see” veins as they prepare the blood draw. After students have used the machine a few times, muscle memory takes over to some degree, and when the machine is turned off students are more likely to succeed in their blood draw attempts because they know what the process should feel like. In addition, if the student is having a difficult time finding a vein, they are able to use the device in order to “get back on track” and succeed. This also allows for shorter time spent “missing” when drawing blood, much to the delight of the student who offers his or her arm.

When asked about the difference the vein scanner has made, students reported that it had made them more confident because they knew they could do it, and that if they didn't find the vein right away the scanner would show them where it was. That way they could both experience what it felt like to “hit” the vein and what it felt like to miss it. The students said they miss far less now, even when they don't use the machine, because it has allowed them to gain the confidence they need to succeed. The phlebotomy instructor also reported a change in students' abilities after the purchase of the scanner. She noted that students are required to write down

their blood draw attempts and that if they succeed they write “success,” while if they did not, they write “attempted.” Especially when students are first learning how to draw blood, they are allowed to practice, using the vein scanner a few times and then putting the scanner away for the recorded blood draw attempts. She has found that since the addition of the vein scanner, students are recording far more successful attempts than previously.

The GoPro cameras are used by EMT and paramedic students to record simulations to replay for review and assessment. Additionally, simulations can be recorded with the cameras and posted online for students to review, and provide a way to generate activities which students can access and complete at home. CHEO staff are continually coming up with new ways in which activities and knowledge can be shared in online and hybrid courses, and also multiple ways in which the CHEO equipment can be used.

The simulation manikin the college has ordered is a source of great excitement at GFC MSU. The manikin will be used in the CHEO programs but will also be utilized by several other health care programs at the school. Although the simulation hospital already had several manikins, the new one is not only more high-tech than the others, but also has the capacity to operate wirelessly through an integrated Wi-Fi system that utilizes the school’s wireless Internet. This is especially useful for the EMT program, since EMT students need the ability to move the manikin freely, load it into and out of an ambulance, and practice lifting the “patient” in a variety of ways. Previously this was impossible, due to the limited capacity of the manikin to be moved beyond its wired connection ports. One of the simulations planned for students after the manikin’s arrival is a scenario in which an elderly person has tripped and fallen down the stairs. The students will use the GoPro cameras to record their simulation experience, in which they will assess and stabilize the patient, move the patient to a stretcher, and transport the patient to the simulation ambulance in the teaching hospital.

The Wi-Fi capability of the manikin will also allow the instructor to create more realistic scenarios for students. In the past, instructors had to be in the room with the students while they were conducting the simulation, and any time the instructor spoke into the microphone (making a manikin “talk”), the students could see and hear the instructor. The element of reality was not present. With this manikin, the instructor will not be present in the room, will be completely out of eyesight, and will use a video camera mounted on the wall to monitor the students. Likewise, the students will not be able to hear the instructor, only what the manikin “says” when it talks. This creates a more life-like scenario in which the student must ask the manikin what symptoms it has, and respond to the answers in real time. It also allows for impromptu situations and does not allow the student the “safety net” of having the instructor right there in the room.

Plans are underway for the NANSLO equipment to be integrated with the simulation manikin. The NANSLO lab manager, career coach, simulation hospital faculty and IT specialists at the college are working together closely to develop this process. They are still in the beginning stages of this, but there is hope that the simulation manikin and NANSLO equipment can be

integrated in a manner that will allow students to access the manikin and complete simulations remotely. CHEO staff is sure there will be challenges, including being able to integrate the manikin software with their NANSLO infrastructure but they are hopeful it will work, and plan to spend the summer months, when students are not present, working on the integration:

We're working on it and I know...the guys in IT are really excited about the possibility and looking at ways to do it...so if anybody can make it happen, I think we've got the right people working on it.

If they are able to use the NANSLO equipment to operate the simulation manikin as planned, CHEO staff hope to offer this service to other educational institutions, including their MSU companion schools and FVCC. This integration would be another way to sustain the NANSLO component of the CHEO grant after the grant period has ended.

NANSLO node development and expansion

GFC MSU is very excited about the addition of the NANSLO node to its programs, college, and the community. Administrators at the college feel the node has brought a level of creativity and excitement to faculty that did not exist before. Administrators also feel that this addition has helped other MSU institutions to realize that GFC MSU is doing some truly innovative and exciting things. Representatives from MSU Bozeman, for example, attended a demonstration remotely and were impressed with the capabilities. Aside from the possibility of MSU Bozeman using the node in the future, administration feels the demonstration opened up the possibility for more articulation agreements between the two schools and may have opened the door to other possibilities as well.

The excitement about what GFC MSU has done with its health care programs and the NANSLO node has spread beyond educational institutions. Given that Great Falls is a rural community and also has a large and growing health care industry, the college has close ties to its community and is very interested in providing quality education for the community workforce. The community, likewise, is interested in GFC MSU's ability to train and educate quality health care workers. One administrator at the college stated:

...The community...people are just fascinated by this. People want to hear about the [CHEO] project and what we're doing. And people want to see the lab and people want to know how we can get access or are there programs that can serve our communities. So it's really generated a lot of interest and a lot of hubbub.

As part of its sustainability plan for the NANSLO node, GFC MSU is looking into offering labs for other two year colleges in the area, as well as tribal colleges, high schools, and even elementary schools. As a CHEO staff member noted, "they don't have the resources to have that kind of equipment in their classroom. But to be able to maybe, in the future, log on and be able to do that experiment with their students is going to be huge." There is also a possibility of

offering labs to the local air force base. Currently, Park University teaches classes on base. GFC MSU is not able to teach anything already being offered on base, but Park University does not teach science labs. It is not lost on the college administration that the NANSLO node has given the college a competitive edge. There is a good possibility GFC MSU will be able to work out an agreement to offer NANSLO labs for the base.

Staff at the college feel that having access to NANSLO labs is highly beneficial for students, as well:

To see them have that experience is huge, because it affects [them] on many different levels. Not only learning the material that they need to learn, but having this experience where they're collaborating with people from other states, maybe, in one lab experience. ... That helps develop soft skills in students, because if only one person can be manipulating the microscope at one, I might be living in Colorado, [another person is] in Montana, do I say "get your hands off that" or do I say, "gosh, why don't you go first and then I'd like to do it second." I mean, those are the kind of skills you're going to take out to the job.

Innovations in hybrid education

GFC MSU has largely focused CHEO efforts on innovations related to redesigning biology and chemistry courses that are prerequisites to CHEO courses into hybrid, or "flipped" formats and developing inquiry-based learning — a strategy to effectively generate knowledge through learning, usually through interactive and hands-on learning styles — in all its health sciences courses, including those in the CHEO programs.

Summer 2014 was the first pilot of a flipped biology course. The pass rate in the course was very high, and the overall average grade of students in that course was higher than in previous (face-to-face) courses. The course was run again last semester (fall 2014) with some adjustments and improvements made by the faculty member teaching the course. She has been putting even more elements of the course online, and hopes to eventually take the course fully online with the exception of a three or four day visit where students will come to campus to go over some face-to-face lab components that cannot be done online. This would allow students who cannot regularly travel to campus to still be able to receive a high quality biology education. Currently, the course is around half online and half face-to-face.

Initially, the instructor was not convinced online biology courses could be as effective as face-to-face courses, but after talking with other instructors who were successful in moving their courses to a quality online format, she realized there are more resources available than she thought. She feels she has been able to overcome the original hesitation she felt and has really embraced the concept of making these courses more accessible for students while still maintaining high quality. The feedback she has received from students has confirmed this for her.

This faculty member is actually conducting formal research relative to improving success strategies with her students. She applied for and received permission through MSU to conduct the research. She administers a pre-test prior to the course and then works to improve metacognitive ability within her students during the course, by helping them with soft skills such as good note taking practices and study skills. She has found that these soft skills help take the “fear factor” out of human biology and help increase confidence and metacognitive ability in her students. Her initial research results have shown improved attendance, improved participation, an increase in students’ posting on the discussion board, and improved metacognitive skills.

An organic chemistry course has also been redesigned to a hybrid format. The chemistry instructor is also focused on creating a hybrid course with inquiry-based learning. This instructor found that initially students were resistant to the concept of a flipped classroom. They instead wanted a “normal” class where they could come in, sit down, and listen to a lecture. The faculty member feels this is a result of students being “used to” a passive learning style. An active learning style, however, helps students learn and converts that learning into real knowledge.

For this instructor’s flipped course, students read and review material he posts online, using his own created material and OER resources. When students come to the classroom, he finds out what the students have learned and what they now know from their online materials. He then plans his day accordingly and students work in groups on activities and equations. EERC team members sat in on one of his classes, and watched students working in groups. The first noticeable thing about the classroom was it had no clear “front” end. The walls are painted in a white board material, making every wall surface a usable white board surface. Students were spread out in the classroom, working in groups using the white boards. The instructor records his class with a lapel mic and posts it online for students to review. He also video records the PowerPoint slides he uses in the classroom with Camtasia and overlays the voice recording so they are integrated. He posts these on a YouTube channel for his students. The instructor also uses a CHEO-purchased LiveScribe pen to digitally record drawings and notes for his students to access online. He finds some difficult concepts are easier for students to understand if they can review it later. For instance:

...drawing up molecular structures of things or [if] I'm going through a particular calculation. And that way they kind of have a – and they can go back and rewind it if they want to and go through each step of the calculation. It'd be no different from me showing it up on the board in class, so it gives them a chance to just review it at their own pace and to get it in a way that really is coming directly from the instructor.

Both instructors are seeing big changes in their students since they flipped their courses to a hybrid format. One of them commented:

I can definitely tell that when they're much more engaged, they enjoy being there and actually get involved with thinking more critically about the questions as opposed to hey, now that I've talked about this for the past hour and 15 minutes, go over these problems sort of thing. ...it focuses less on regurgitation and more on critical thinking and saying hey, let's think about this in the context of what you've just read about, what we're coming up on.

SUMMARY OF CHALLENGES

Since GFC MSU's original program was not approved by its Board of Regents, it had to backtrack and figure out how to change the program so that it could be approved. The original plan had already been written into the grant; the college then had to submit changes and have them approved for the grant after the Board of Regents approved the new plan. Given that the college as a whole has had a slow start integrating the node and getting programs accepted, the career coach has had a slow start as well. Without programs there were no students for her to see, so she had to involve herself in other ways, including the career fair, working with the health science department, and teaching.

Since GFC MSU is part of Montana State University, the process for purchasing equipment is often long and cumbersome. In order to purchase the simulation manikin the college wanted, it was necessary to seek approval, go through a long approval process, and then go through a state process in order to get the precise manikin they wanted instead of less expensive (and less useful) products. The manikin has finally been approved and ordered, and the college is excitedly awaiting its arrival. Delays of this sort are difficult to avoid and can be highly frustrating, and can also cause delays and inefficiencies in programs the equipment is meant to serve.

Delays in getting the NANSLO node up and running were challenging as well. Upgrading the bandwidth, getting funds approved for the project, and waiting for the renovation to be finished were all time consuming and challenging. Initially, the college did not know where the node was going to be located within the college, so could not anticipate the extent of the renovation and modifications necessary for the equipment. The room used for the lab had to be remodeled from a classroom lab to NANSLO specifications. Because the room was previously part of a classroom, it did not contain enough data ports to run the electronics for the NANSLO lab. Modifications also had to be made to allow for secure off-campus access without compromising the school's network. Additional funds had to be approved for the renovation and technology integration. Approval for equipment purchases and equipment delivery was also a time consuming — and often frustrating — process.

As is common among community college programs that require clinical components, GFCMSU has struggled with not having enough clinical sites for its students. Prior to the phlebotomy redesign, the college had one large clinical site, a local hospital. With the repackaging of the program to become a formal certificate, the opportunity existed for more students to be using

the clinical site than had done so previously. The site was unable to accommodate more students, and, in fact, the phlebotomy courses (prior to the CHEO redesign) did not run for about a year because of the lack of clinical placement availability. In the wake of this, CHEO staff decided to rethink the number of clinical hours they would require for the newly redesigned phlebotomy program, and decided on a smaller credential than they previously had. In addition, the program director found other clinical sites to accommodate their students. Students still need to have a certain number of blood draws, but the time spent at clinical sites is more manageable, and smaller sites are able to accommodate GFC MSU students now as well.

SUMMARY OF ACHIEVEMENTS

Getting the NANSLO node up and running has been a major achievement for GFC MSU. Additionally, the NANSLO lab manager has been adept at understanding faculty needs and helping faculty understand how the labs can assist them and their students. Coming up with creative lab solutions has helped the manager connect with faculty and their needs. The use of wet mounts for the urinalysis labs is a good example of this, even though the lab manager does not plan to continue to offer the wet mount experiments. The lab manager was able to connect with faculty and spend some time working with them to come up with creative solutions. Because of the time the manager is spending with faculty and her creativity in having students test the lab equipment in common areas where faculty can observe, she is overcoming the reticence of faculty to use the labs.

The lab manager and some faculty have created at least one experiment with the NANSLO node that the other nodes do not have; the radiation lab. They will more than likely continue to create additional labs the other nodes do not have. The option exists for colleges using these other nodes to also use the GFC MSU node for specific labs not offered by their usual NANSLO node. For instance, the GFC MSU node just created a radiology experiment the other nodes do not offer.

GFC MSU has greatly expanded its staff due to the CHEO grant. There are solid plans in place for creating sustainability for these new positions, and the college has fully integrated their roles at the institution level, not just the grant project level. Sustainability plans include creating faculty positions, moving staff to other positions in the college and integrating their current roles into the new position, having NANSLO lab techs hired with work-study funds, and creating fee-for-use structures for the NANSLO lab and other elements, such as the teaching hospital, etc. The additional roles have allowed the college to expand its creativity and innovation in teaching in hybrid and fully remote formats.

GFC MSU's CHEO processes, such as moving courses to a hybrid format, purchasing interdisciplinary equipment and technology, and integrating the NANSLO node, have created a spark of creativity in faculty and staff at the college. Faculty who were originally reticent to the idea of moving courses into online and hybrid formats are now actively engaged incorporating

new ideas, moving elements of courses online, and integrating new technology. As one administrator stated,

It's just been wonderful to see, to just watch that happen. And it hasn't taken all that long. Now we have, not only creative faculty, but we've got instructional designers who are extremely talented and creative and have helped us create all these wonderful new opportunities for students. I mean, it just seems like it's having an effect on all of the faculty. They're getting excited about these different ways of doing things.

Another success through the CHEO grant for the college has been the addition of the equipment purchased with the grant. The GoPro cameras, manikin, and vein scanning machine have all extended the interdisciplinary reach of the teaching hospital and CHEO programs.

NEXT STEPS

The CHEO grant brought to light that GFC MSU does not have a specific classification for what it means to make a course hybrid — there was no “formula” for how much of the content needed to be online versus in the classroom. As the college moves toward more hybrid and online courses, it was decided that some policies and guidelines were necessary. A team has been put together in conjunction with the e-learning department to determine what those numbers will be, and a proposal is being presented to the division directors, executive team members, and faculty senate. The proposal was finished at the time of the EERC site visit (October 2014) and was being presented in November 2014. The proposal calls for 50 percent of the material in a hybrid course be presented online.

Currently there is no way for faculty or students to schedule NANSLO labs through a web interface. The lab manager is manually entering accounts and scheduling labs; faculty have to contact her to schedule a lab, which is a time consuming process. In addition, the manual system can result in long lists of names and accounts to enter, and errors occur. When the EERRC team met with students and faculty at FVCC, it was repeatedly mentioned that scheduling a lab was not an easy process and that often names were entered incorrectly. Therefore, when students tried to log on for their lab time they were “not in the system” when in fact the error occurred because their name was spelled incorrectly when scheduled. Part of their lab time was then spent trying to track down their name in the system and fix the error so they could log on. The software developer for the WICHE scheduler is currently working to make the scheduling software being used by the Denver node multi-institutional. WICHE is conducting tests and making changes to integrate the school into the scheduler. The hope is that it will be possible to have the scheduling software up and running for GFC MSU by spring 2015.

The NANSLO node is expecting the addition of more equipment by the end of the year. This equipment will add capacity to the existing microscopes to increase the capacity for different types of labs. This equipment is something the Denver node does not have; therefore, GFCMSU

will be able to run some supplemental experiments for the colleges that Denver serves, if there is a demand for it. The budget amendment was approved and GFC MSU is waiting for the state approval to go through. The NANSLO lab manager is also hoping that if there's enough equipment budget left, they can use that money to purchase some smaller equipment items to emulate more of the labs that Denver is able to provide, specifically, the titration and photosynthesis labs.

As mentioned earlier, GFC MSU is hoping to be able to integrate the NANSLO equipment with the new manikin to create a fully remote simulation experience for off-campus students. Several staff and faculty at the college will be involved in making this a reality, and the college hopes to have the integration complete after summer 2015.