Consortium for Healthcare Education Online

An Interim Report

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RUTGERS

School of Management
and Labor Relations

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ABOUT RUTGERS SCHOOL OF MANAGEMENT AND LABOR RELATIONS

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

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

ABOUT THE EDUCATION AND EMPLOYMENT RESEARCH CENTER

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

INTRODUCTION

The 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. CHEO is an interstate consortium consisting of eight colleges across Colorado, Wyoming, South Dakota, Montana, and Alaska. Partner colleges include: 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).

The CHEO project's organizational structure includes an administrative team led by a project director who reports directly to PCC's president and is the primary contact to USDOL. The administrative team consists of a grant administrator, project accountant, a data analyst, and an administrative assistant, and falls under the supervision of the project director who also has direct oversight of the PCC career coach and instructional designer. The administrative team is responsible for all programmatic activities conducted by partner colleges and contractors as well as fiscal, data and reporting processes. Each partner college hosts an onsite CHEO team and leverages operating resources such as departmental support from Information Technology, Human Resources, Procurement, Accounting, Facilities, Admissions, and Academics.

This report examines the progress toward grant goals made in the first two years of the CHEO project (through November 30, 2014) by individual colleges and the consortium as a whole, including the contracted efforts of North American Network of Science Labs Online (NANSLO), the Western Interstate Commission on Higher Education (WICHE), BC Campus, North Island College (NIC), and College in Colorado (CIC). The first section of the report addresses progress at each college, focusing on the programs and courses developed or redesigned under the grant, participant targets, NANSLO use, creation and incorporation of Open Educational Resources (OER), and the role of the career coach. The second section of the report analyzes evolution and progress made at the consortium level, specifically with the development of the CHEO PlanYourHealthCareCareer Hub, system-wide NANSLO expansion, professional development, and other grant services.

METHODS

The Education and Employment Research Center at Rutgers University was hired to provide a third party implementation and outcomes evaluation for CHEO. This interim evaluation report uses qualitative data and analysis and provides some interim outcome measures.

The qualitative methodology for this report includes content analysis of consortium goals and activities to date; relevant proposals and project, college, and contractor specific statements of work; quarterly reports; career coach tracking spreadsheets (also called "stitched-in reports");

strategic plan information and materials; and project websites. 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. As well, EERC team members have 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.

Quantitative data was received from each of the non-Colorado schools, and the Colorado Community College System. The schools used Pathways documents to pull the courses. These Pathways documents were compiled in conjunction with the project and grant management to identify all classes which were touched by CHEO dollars, and were checked for accuracy by each college prior to pulling the data. Once the data was received by Rutgers, EERC proceeded to ensure that all courses were in the data sets and that all students appeared in each data set. Each data set was then put into either SAS or SPSS for analysis. It is important to note that clients' numbers and EERC's numbers will not match, for several reasons. First, the client may be counting different semesters and/or courses than EERC does; secondly, the client may have made different decisions regarding grade variables or other assumptions; and finally, the client may have used different registration statuses than Rutgers. Only students registered in courses after the add/drop periods ended are included in the analysis.

It is also important to note some definitions. For example, "unique participants" and "unique enrollments" are different. A "unique participant" is any student who has taken any course in the CHEO-redesigned program of study during the study period—a period that is different for each school. A "unique enrollment" is an enrollment in any CHEO-redesigned program course. Thus, one "unique participant" may have three "unique enrollments" if he or she has taken three courses. Passing grades are considered to be grades of "C" or better in courses. Some courses were graded as "P" or "NP" (pass or no pass), "S" and "U" (satisfactory and unsatisfactory), etc. The thresholds for earning these marks and their equivalency to letter grades were not known, and thus were not considered passing, potentially underestimating pass rates slightly. These courses were coded as "other" in the grade tables. However, the occurrence of these grades was very infrequent. For credentials, all credentials earned are counted, not just credentials earned in the redesigned CHEO program of study. Only those credentials earned during the study period of the respective school were counted. Wage data was not available for all schools, and the schools that did have wage data had it for different periods. Thus, some completers could not have wage analyses completed because the data was not available at the time. All reported wages are quarterly earnings.

SECTION I: COLLEGE-LEVEL PROGRESS

Programs and Courses

Under the CHEO grant, consortium colleges were tasked with developing and redesigning identified allied health programs to expand hybrid and online delivery. The intention of the grant was to "develop the interest and aptitude of displaced workers to pursue allied health careers by studying online or in a hybrid environment in their community—building rural areas' capacity to fill jobs with local residents."[1]

Program development and redesigns were to include:
1. Programs targeted to prepare students with employer-demanded credentials in high demand allied health fields,
2. The creation and inclusion of OER resources in the curricula (discussed further in the OER section below), and
3. Where possible, the inclusion of NANSLO lab activities.

For more detailed information on individual colleges' grant activities and related programs, including NANSLO use, please see the college case studies.[2]

Colleges committed to the redesign and development of particular programs during the grant writing phase. Post-award, four of the eight CHEO colleges expanded their work plans and modified the programs or certificates of focus. The original programs proposed and those that were eventually developed or redesigned are listed in Table 1 below. Changes from the originally proposed programs are bolded and italicized.

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[1] CHEO Technical Proposal, p. 3.
[2] Case studies are available at: http://smlr.rutgers.edu/eerc/cheo.

Table 1. Proposed Programs vs. Programs That Were Redesigned

Consortium Member	Proposed Programs	Redesigned Programs
Pueblo Community College	• Emergency Medical Services • Health Information Technology • *Polysomnography*	• Emergency Medical Services • Health Information Technology • Polysomnography* • *Radiologic Technology*
Kodiak College	• Occupational Endorsement in Medical Office Coding	• Occupational Endorsement in Medical Office Coding
Otero Junior College	• Medical Lab Technician	• Medical Lab Technician
Red Rocks Community College	• Nurse Aide • Home Health Care Certificate • Hospice Care Certificate • *Medication Aide Certificate*	• Nurse Aide • Home Health Care Certificate • Hospice Care Certificate • *Nursing Refresher*
Great Falls College – MSU	• *MSU Health Care Core*	• *EMT/Pre-Paramedic* • *Phlebotomy/Pre-Medical Assistant*
Flathead Valley Community College	• Paramedicine • Radiologic Technology • *Pre-Nursing*	• Paramedicine • Radiologic Technology • *Pre-Health—Emergency Medical Services* • *Pre-Health—Nursing Aide* • *Health Care Office Management* • *Medical Assistant* • *Entrepreneurial Certificate*
Laramie County Community College	• Health Information Technology	• Health Information Technology Management • Medical Office Essentials Certificate • Medical Claims Associate Certificate
Lake Area Technical Institute	• Medical Lab Technician • Practical Nursing (LPN)	• Medical Lab Technician • Practical Nursing (LPN)

*Polysomnography was redesigned and offered, but later suspended due to low enrollments.

Colleges had a variety of reasons for changing their programs after the grant was approved:

1. **Pueblo Community College**. Originally, PCC intended to redesign and offer its polysomnography program before moving the resources to its radiologic technology program. The polysomnography program was redesigned and offered for 18 months during the grant period; some students completed the program and obtained jobs in the field. However, demand decreased, and jobs became scarce for the endorsement, so PCC suspended the program two years into the grant and shifted CHEO money to redesigning its radiologic technology program.

2. **Red Rocks Community College**. The medication aid certificate was dropped and replaced by the registered nurse refresher (nurse refresher) certificate after nursing professionals and agencies began to indicate a lack of need to hire medication aides in Colorado. The nurse refresher certificate existed previously at the college, but had been discontinued for some time. The registered nursing profession is expected to grow 37 percent by the year 2020 in Colorado, creating greater demand for nurses, including the return of people who previously left the nursing profession. As a result, RRCC targeted this program for update and redesign.

3. **MSU—Great Falls**. MSU-GFC replaced its plan to develop a health care "core" program with a phlebotomy/pre-medical assistant certificate program and an emergency medical technician/pre-paramedic certificate program. The originally proposed health care "core" program was deemed unfeasible by the curriculum committee. After modifications which lasted until July 2014, MSU-GFC 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.

4. **Flathead Valley Community College.** FVCC originally proposed redesigning its paramedicine and radiologic technology certificates and adding a pre-nursing certificate. Instead, it chose to expand the pre-nursing certificate's scope and turned it into pre-health certificate with two tracks: EMS and nursing aide. It also chose to modify its health care office management and medical assistant programs by utilizing some of the CHEO purchased equipment and shared courses that underwent conversion to a hybrid format. In addition, FVCC added a fifth program to its health care program redesign: an entrepreneurial certificate.

Participants

Another requirement of the CHEO grant was for the entire consortium to serve 3,037 unique participants over the total period of the grant.[3] Each college proposed targets so that unique

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[3] CHEO Technical Proposal, p. 42.

participants were reached collectively. A unique participant refers to a student who has been touched by CHEO dollars. This "touch" can include student enrollment in a course developed or redesigned under CHEO, the utilization in a course of equipment or supplies purchased by CHEO funds, or the use of a NANSLO lab in a course. Any students enrolled in a course affected by CHEO funds in some manner are considered unique participants. A unique participant is different from a program participant. A program participant is someone who is enrolled in a CHEO program of study. The report is only focused on unique participants and enrollments later reports will look more specifically at program participants. Often, CHEO programs may include courses that can have students from multiple allied heath fields, though some programs restrict their courses to only those enrolled in the CHEO program of study. These students are touched by CHEO dollars and thus count as unique participants. Unless they are in a CHEO specific major, however, they are not program participants. Table 2 shows the number of unique participants served to date in the CHEO grant from Spring 2013 through Fall 2014.

CHEO—UNIQUE PARTICIPANTS

Table 2. Numbers of CHEO-Unique Students Who Took CHEO-Redesigned Courses in Each College, Spring 2013–Fall 2014

CHEO College	Number of Unique Students Enrolled
GFC MSU	518
FVCC	1193
KoC	101
LATI	173
LCCC	548
OJC	35
PCC	1746
RRCC	360

LATI
Enrollment

Table 3 displays the enrollments by term as a percentage of the total number of enrollments in the period ending in December 2014. The numbers of enrollments and unique participants do not match because each individual unique participant may have multiple enrollments.

Table 3. LATI: Unique CHEO Student Enrollments by Semester

Term	Percentage of Total Enrollments	Number of Enrollments
Fall 2013	41%	425
Spring 2014	25%	265
Summer 2014	16%	165
Fall 2014	18%	194
Total	**100%**	**1049**

Program Level Outcomes

Table 4 displays students who enrolled in a CHEO-touched course, and who earned a credential, according to the term in which they completed the credential.

Table 4. LATI: Credentials Earned by Students per Semester

	Students Earned 1st Credential			
Semester	Certificate duration less than one year	Certificate duration greater than one year	2-year degree	Total
Fall 2013	44	27	9	**80**
Total	**44**	**27**	**9**	**80**

Student Level Academic Outcomes

The percentage of participants receiving a particular grade enrolled in a CHEO-redesigned course is presented in Table 5.

Table 5. LATI: Grades Earned by Students in All CHEO-Redesigned Program Courses

College Level Grades Value	Percent of Total Redesigned	N (Redesigned CHEO Population)
A	23%	239
B	44%	463
C	12%	131
D	1%	6
F	5%	55
Not Completed	**Percent**	**N**
Other	4%	46
Withdrawn	10%	109
Total	**100%**	**1049**

In terms of unique participant pass rates, Table 6, below, displays the pass rate and enrollment for CHEO-redesigned courses by term. The total enrollment pass rate for the grant period ending with December 2014 is 84 percent (N=886). Passing is defined as earning a "C" or better in the course.

Table 6. Pass Rates of LATI CHEO Student Enrollments by Semester

Term	N of Total Enrollment	Student Pass Rate	N of Enrollment Passed
Fall 2013	425	80%	340
Spring 2014	265	83%	220
Summer 2014	165	99%	163
Fall 2014	194	84%	163
Total	1049	84%	886

GFC MSU

Enrollment

Table 7 displays the enrollments by term as a percentage of the total number of enrollments in the period ending in December 2014. The number of enrollments and unique participants do not match, because each individual unique participant may have multiple enrollments.

Table 7. GFC MSU: Enrollments of Unique CHEO Students by Semester

Term	Percentage of Total Enrollments	Number of Enrollments
Spring 2013	3%	18
Fall 2013	4%	26
Spring 2014	9%	64
Summer 2014	8%	55
Fall 2014	76%	519
Total	**100%**	**682**

Program Level Outcomes

Table 8 displays students who enrolled in a CHEO-touched course, and who earned a credential, according to the term in which they completed the credential.

Table 8. GFC MSU: Credentials Earned by Students per Semester

Semester	Students Earned 1st Credential		Students Earned 2nd Credential		Total
	Certificate duration greater than one year	2-year degree	Certificate duration greater than one year	2-year degree	
Spring 2013	1	1	0	0	**2**
Fall 2013	2	6	0	0	**8**
Spring 2014	2	3	0	0	**5**
Summer 2014	0	3	0	2	**5**
Fall 2014	8	10	1	2	**21**
Total	**13**	**23**	**1**	**4**	**41**

Student Level Outcomes

The percentage of participants receiving a particular grade enrolled in a CHEO-redesigned course is presented in Table 9.

Table 9. GFC MSU: Grades Earned by Students in All CHEO-Redesigned Program Courses

College Level Grades Value	Percent of Total Redesigned	N (Redesigned CHEO Population)
A	24%	162
B	29%	196
C	18%	114
D	6%	44
F	12%	84
Not Completed	**Percent**	**N**
Withdrawn	12%	82
Total	**100%**	**682**

In terms of unique participant pass rates, Table 10 below displays the pass rate and enrollment for CHEO-redesigned courses by term. The total enrollment pass rate for the grant period ending with December 2014 is 69 percent (N=472). Passing is defined as earning a "C" or better in the course.

Table 10. GFC MSU: Pass Rates of Unique CHEO Student Enrollments by Semester

Term	N of Total Enrollment	Student Pass Rate	N of Enrollment Passed
Spring 2013	18	56%	10
Fall 2013	26	73%	19
Spring 2014	64	86%	55
Summer 2014	55	82%	45
Fall 2014	519	66%	343
Total	682	69%	472

LCCC

Enrollment

Table 11 displays the enrollments by term as a percentage of the total number of enrollments in the period ending in December 2014. The number of enrollments and unique participants is not the same, as each individual unique participant may have multiple enrollments.

Table 11. LCCC: Unique CHEO Student Program Enrollments by Semester

Term	Percentage of Total Enrollments	Number of Enrollments
Fall 2013	28%	235
Spring 2014	29%	238
Summer 2014	6%	52
Fall 2014	37%	306
Total	100%	831

Program Level Outcomes

Table 12 displays students who enrolled in a CHEO-touched course, and who earned a credential, according to the term in which they completed the credential.

Table 12. LCCC: Credentials Earned by Students per Semester

Semester	Students Earned 1st Credential 2-year degree	Students Earned 2nd Credential 2-year degree	Total
Fall 2013	3	0	3
Spring 2014	12	1	13
Total	15	1	16

Student Level Outcomes

The percentage of participants receiving a particular grade enrolled in a CHEO-redesigned course is presented in Table 13 below.

Table 13. LCCC: Grades Earned by Students in All CHEO-Redesigned Program Courses

College Level Grades Value	Percent of Total Redesigned	N (Redesigned CHEO Population)
A	49%	409
B	22%	182
C	10%	83
D	3%	22
F	11%	91
Not Completed	**Percent**	**N**
Withdrawn	5%	44
Total	100%	831

In terms of unique participant pass rates, Table 14 below displays the pass rate and enrollment for CHEO-redesigned courses by term. The total enrollment pass rate for the grant period ending with December 2014 is 81 percent (N=675). Passing is defined as earning a "C" or better in the course.

Table 14. Pass Rates of LCCC Unique CHEO Student Enrollments by Semester

Term	N of Total Enrollment	Student Pass Rate	N of Enrollment Passed
Fall 2013	235	80%	188
Spring 2014	238	80%	190
Summer 2014	52	83%	43
Fall 2014	306	83%	254
Total	831	81%	675

OJC

Enrollment

Table 15 displays the enrollments by term as a percentage of the total number of enrollments in the period ending in December 2014. The number of enrollments and unique participants do not match, because each individual unique participant may have multiple enrollments.

Table 15. OJC: Enrollments of Unique Students in CHEO-Redesigned Courses

Term	Percentage of Total Enrollments	Number of Enrollments
Spring 2013	17%	14
Summer 2013	11%	9
Fall 2013	16%	13
Spring 2014	24%	20
Summer 2014	19%	16
Fall 2014	14%	12
Total	101%	84

Program Level Outcomes

Table 16 displays students who enrolled in a CHEO-touched course, and who earned a credential, according to the term in which they completed the credential.

Table 16. OJC: Credential Earning by Semester

Semester	Students Earned 1st Credential		Students Earned 2nd Credential		Total
	Certificate	2-year degree	Certificate	2-year degree	
Spring 2013	0	2	0	1	3
Summer 2013	8	1	1	0	10
Fall 2013	0	0	0	0	0
Spring 2014	1	0	0	0	1
Summer 2014	12	0	0	0	12
Fall 2014	0	0	0	0	0
Total	**21**	**3**	**1**	**1**	**26**

Student Level Outcomes

The percentage of participants receiving a particular grade while enrolled in a CHEO-redesigned course is presented in Table 17 below.

Table 17. OJC: Grades Earned by Students in CHEO-Redesigned Courses

College Level Grades Value	Percent of Total Redesigned	N (Redesigned CHEO Population)
A	55%	46
B	18%	15
C	11%	9
D	1%	1
F	7%	6
Not Completed	**Percent**	**N**
Withdrawn	7%	6
Other	1%	1
Total	**100%**	**84**

In terms of unique participant pass rates, Table 18 below displays the pass rate and enrollment for CHEO redesigned courses by term. The total enrollment pass rate for the grant period ending with December 2014 is 92 percent (N= 84). Passing is defined as earning a "C" or better in the course.

Table 18. OJC: Enrollments in CHEO-Redesigned Courses with Pass Rates

Term	N of Total Enrollment	Student Pass Rate	N of Enrollments Passing
Spring 2013	14	85.7%	12
Summer 2013	9	77.7%	7
Fall 2013	13	100%	13
Spring 2014	20	90%	18
Summer 2014	16	93.8%	15
Fall 2014	12	100%	12
Total	84	91.7%	77

PCC

Enrollment

Table 19 displays the enrollments by term as a percentage of the total number of enrollments in the period ending in December 2014. The number of enrollments and unique participants do not match, because each individual unique participant may have multiple enrollments.

Table 19. PCC: Enrollments of Unique Students in CHEO-Redesigned Courses

Term	Percentage of Total Enrollments	Number of Enrollments
Spring 2013	12%	504
Summer 2013	4%	150
Fall 2013	20%	832
Spring 2014	22%	927
Summer 2014	8%	327
Fall 2014	34%	1390
Total	**100%**	**4130**

Program Level Outcomes

Table 20 displays students who enrolled in a CHEO-touched course, and who earned a credential, according to the term in which they completed the credential.

Table 20. PCC: Credential Earning by Semester

Semester	Students Earned 1st Credential		Students Earned 2nd Credential		Total
	Certificate	2-year degree	Certificate	2-year degree	
Spring 2013	94	16	7	4	121
Summer 2013	29	4	20	1	54
Fall 2013	60	5	2	1	68
Spring 2014	27	6	4	1	38
Summer 2014	32	6	8	3	49
Fall 2014	28	9	7	3	47
Total	270	46	48	13	377

Student Level Outcomes

The percentage of participants receiving a particular grade while enrolled in a CHEO-redesigned course is presented in Table 21 below.

Table 21. PCC: Grades Earned by Students Enrolled in CHEO-Redesigned Courses

College Level Grades Value	Percent of Total Redesigned	N (Redesigned CHEO Population)
A	32%	1318
B	26%	1072
C	16%	663
D	3%	127
F	7%	268
Not Completed	Percent	N
Withdrawn	11%	468
Other	5%	214
Total	100%	4130

In terms of unique participant pass rates, Table 22 below displays the pass rate and enrollment for CHEO redesigned courses by term. The total enrollment pass rate for the grant period ending with December 2014 is 90 percent (N= 3722). Passing is defined as earning a "C" or better in the course.

Table 22. PCC: Enrollments in CHEO-Redesigned Courses with Pass Rates

Term	N of Total Enrollment	Student Pass Rate	N of Enrollments Passing
Spring 2013	504	92.9%	468
Summer 2013	150	98%	147
Fall 2013	832	87.0%	724
Spring 2014	927	90.2%	836
Summer 2014	327	88.4%	289
Fall 2014	1390	90.5%	1258
Total	4130	90.1%	3722

RRCC

Enrollment

Table 23 displays the enrollments by term as a percentage of the total number of enrollments in the period ending in December 2014. The number of enrollments and unique participants do not match, because each individual unique participant may have multiple enrollments.

Table 23. RRCC: Number Enrollments of Unique Students in CHEO-Redesigned Courses

Term	Percentage of Total Enrollments	Number of Enrollments
Spring 2013	17%	118
Summer 2013	10%	71
Fall 2013	18%	129
Spring 2014	26%	179
Summer 2014	13%	94
Fall 2014	16%	111
Total	**100%**	**702**

Program Level Outcomes

Table 24 displays students who enrolled in a CHEO-touched course, and who earned a credential, according to the term in which they completed the credential.

Table 24. RRCC: Credential Earning by Semester

Semester	Students Earned 1st Credential		Students Earned 2nd Credential		Total
	Certificate	2-year degree	Certificate	2-year degree	
Spring 2013	46	2	1	0	49
Summer 2013	39	1	0	0	40
Fall 2013	59	1	6	0	66
Spring 2014	3	0	0	0	3
Summer 2014	33	1	1	0	35
Fall 2014	42	0	3	1	46
Total	**222**	**5**	**11**	**1**	**239**

Student Level Outcomes

The percentage of participants receiving a particular grade while enrolled in a CHEO-redesigned course is presented in Table 25 below.

Table 25. RRCC: Grades Earned by Students Enrolled in CHEO-Redesigned Courses

College Level Grades Value	Percent of Total Redesigned	N (Redesigned CHEO Population)
A	86%	604
B	7%	52
C	2%	14
D	0%	2
F	2%	15
Not Completed	**Percent**	**N**
W	2%	11
Other	0%	3
Total	**9%**	**702**

In terms of unique participant pass rates, Table 26 below displays the pass rate and enrollment for CHEO redesigned courses by term. The total enrollment pass rate for the grant period

ending with December 2014 is 97 percent (N=685). Passing is defined as earning a "C" or better in the course.

Table 26. RRCC: Enrollments in CHEO Redesigned Courses with Pass Rates

Term	N of Total Enrollment	Student Pass Rate	N of Enrollments Passing
Spring 2013	118	97.5%	115
Summer 2013	71	100%	71
Fall 2013	129	100%	129
Spring 2014	179	95.5%	171
Summer 2014	94	96.8%	91
Fall 2014	111	97.3%	108
Total	702	97.6%	685

KoC

Enrollment

Table 27 displays the enrollments by term as a percentage of the total number of enrollments in the period ending in December 2014. The number of enrollments and unique participants do not match, because each individual unique participant may have multiple enrollments.

Table 27. KoC: Enrollments of Unique Students in CHEO-Redesigned Courses

Term	Percentage of Total Enrollments	Number of Enrollments
Fall 2013	20%	39
Spring 2014	21%	40
Summer 2014	11%	21
Fall 2014	48%	92
Total	100%	192

Program Level Outcomes

Table 28 displays students who enrolled in a CHEO-touched course, and who earned a credential, according to the term in which they completed the credential.

Table 28. KoC: Credential Earning by Semester

Semester	Students Earned 1st Credential				Total
	Certificate (less than 1 year)	Certificate (more than 1 year & less than 2 years)	2-year degree	4-year degree	
Fall 2013	0	0	1	1	2
Spring 2014	0	0	2	0	2
Summer 2014	1	20	0	0	21
Total	1	20	3	1	25

Student Level Outcomes

The percentage of participants receiving a particular grade while enrolled in a CHEO-redesigned course is presented in Table 29 below.

Table 29. KoC: Grades Earned by Students in CHEO-Redesigned Courses

College Level Grades Value	Percent of Total Redesigned	N (Redesigned CHEO Population)
A	44%	84
B	23%	45
C	8%	15
D	3%	6
F	4%	7
Not Completed	**Percent**	**N**
Withdrawn	5%	9
Other	13%	26
Total	**100%**	**192**

In terms of unique participant pass rates, Table 30 below displays the pass rate and enrollment for CHEO-redesigned courses by term. The total enrollment pass rate for the grant period ending with December 2014 is 93 percent (N= 178). Passing is defined as earning a "C" or better in the course.

Table 30. KoC: Enrollments in CHEO-Redesigned Courses with Pass Rates

Term	N of Total Enrollment	Student Pass Rate	N of Enrollments Passing
Fall 2013	39	90%	35
Spring 2014	40	95%	38
Summer 2014	21	95%	20
Fall 2014	92	92%	85
Total	192	93%	178

FVCC

Enrollment

Table 31 displays the enrollments by term as a percentage of the total number of enrollments in the period ending in December 2014. The number of enrollments and unique participants do not match, because each individual unique participant may have multiple enrollments.

Table 31. FVCC: Enrollments of Unique Students in CHEO-Redesigned Courses

Term	Percentage of Total Enrollments	Number of Enrollments
Fall 2013	33	885
Spring 2014	33	862
Summer 2014	4	91
Fall 2014	31	809
Total	**100%**	**2653**

Program Level Outcomes

Table 32 displays students who enrolled in a CHEO-touched course, and who earned a credential, according to the term in which they completed the credential.

Table 32. FVCC: Credential Earning by Semester

Semester	Students Earned 1st Credential			Students Earned 2nd Credential	Total
	Certificate (less than 1 year)	Certificate (more than 1 year & less than 2 years)	2-year degree	2-year degree	
Fall 2013	7	7	68	1	84
Spring 2014	2	2	5	0	9
Summer 2014	0	0	3	0	3
Fall 2014	0	0	1	1	2
Total	9	9	77	2	97

Student Level Outcomes

The percentage of participants receiving a particular grade while enrolled in a CHEO-redesigned course is presented in Table 33 below.

Table 33. FVCC: Grades Earned by Students in CHEO-Redesigned Courses

College Level Grades Value	Percent of Total Redesigned	N (Redesigned CHEO Population)
A	45%	1187
B	27%	719
C	13%	332
D	3%	76
F	6%	167
Not Completed	**Percent**	**N**
W	6%	149
Other	1%	23
Total	**100%**	**2653**

In terms of unique participant pass rates, Table 34 below displays the pass rate and enrollment for CHEO-redesigned courses by term. The total enrollment pass rate for the grant period ending with December 2014 is 87 percent (N=2319).

Table 34. FVCC: Enrollments in CHEO-Redesigned Courses with Pass Rates

Term	N of Total Enrollment	Student Pass Rate	N of Enrollments Passing
Fall 2013	885	89%	786
Spring 2014	862	88%	758
Summer 2014	97	87%	84
Fall 2014	809	85%	691
Total	2561	91%	2319

OPEN EDUCATION RESOURCES (OER)

Under the CHEO grant, consortium colleges are encouraged to use Open Education Resources (OER) 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 as OER for use by other educators and institutions. CHEO colleges will package, license, and post their course materials during the course of the grant. OER materials will be uploaded to a skills commons repository and a CHEO project repository.[4] The skills commons repository consists of discipline-specific learning materials, learning exercises, and web pages, designed to enhance the teaching experience.

As of fall 2014, OER development and adoption was in its early stages across consortium schools. Colleges have been asked to take all materials created or adapted during the grant period that qualify as OER, and upload them to the skills commons portal. As of the date of this report, the majority of consortium schools have uploaded some OER resources to the repository.[5]

Two categories of OER resources are available through the repository: learning resources and program support materials.[6] The types of materials CHEO colleges are uploading to repository are displayed in table 35 below. Resources can be considered as more than one "material type."

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[4] The OER repository is available at http://www.skillscommons.org/handle/taaccct/43.

[5] The OER repository is available at http://www.skillscommons.org/handle/taaccct/43.

[6] The OER repository is available at http://www.skillscommons.org/handle/taaccct/43.

Table 35. Resource Material Types by Category

Category	Material Type
Learning Resources	Assessment Tool
	Assignment
	Collection
	Development Tool
	Drill and Practice
	Online Course
	Presentation
	Quiz/Test
	Reference Material
Program Support Materials	Recruitment and Outreach
	Reference Material
	Instructor/Advisor Support Material
	Student Support Materials
	Grant Management Materials
	Partnership Resources
	Program

BC campus in Vancouver, British Columbia, was contracted by the CHEO project for the purpose of locating and adapting three OER e-textbooks for use by consortium colleges. The organization located eight textbooks, and decided to go beyond their three required and adapt all eight for use among CHEO colleges. Several CHEO college faculty members reviewed the texts. The texts included an anatomy and physiology textbook, an introduction to biology textbook, and an introduction to chemistry textbook. The organization worked with consortium members and faculty to find and adapt appropriate e-textbooks. All eight texts are OER resources, which decreases out-of-pocket expenses for students.

A common challenge has impeded the incorporation of OER materials into courses: there are a myriad of resources available, which makes sorting out quality resources that fit individual course needs very time consuming. At GFC MSU, for example, the instructional designer has found that faculty members prefer to create their own OER material, instead of finding something that has already been licensed, because the quality of available material that has been licensed as OER is not always up to faculty standards.

Another challenge for colleges has been the proprietary nature of the programs that are being redesigned. Many of the programs are designed to prepare students to take exams that are proprietary, or include proprietary course information or textbooks. In particular, EMT/EMS courses are difficult to make OER because the course is designed with certificate testing in mind. The texts and resources needed for this testing are proprietary. The same is true for MLT and LPN programs. RRCC packages its courses as OER and simply references proprietary

information, including a full citation of where it can be found. In this way, the college is able to license the course as OER even though portions of it are proprietary.

A significant achievement in the field of OER under CHEO has been the development at FVCC of the light board. To use a light board, the instructor stands behind a glass board, which enables him or her to make eye contact with the student (camera) and make gestures—non-verbal communication. The instructor can also write on the board, and the technology then "flips" the writing so it can be read by the student. The instructor is creating OER-licensed protocols that will enable others to replicate the light board and understand best practices in delivering instruction when using it, including suggestions for improving the student experience in the do-it-yourself instructions for building the board. The CHEO grant provided resources to help develop the light board at a low cost. According to the CHEO project director, the cost of the original light board design provided by Northwestern University was $150,000. FVCC was able to produce the board for $7,000. This low cost has allowed other CHEO colleges to consider replication, and scaling efforts are underway. PCC is planning to develop a light board beginning in Spring 2015.

INSTRUCTIONAL DESIGNERS

For most of the colleges, populating OER is the job of the instructional designer. Instructional designers use college-approved quality assurance tools including Quality Matters[7] and other similar rubrics to map, evaluate, and post materials to the repository. Using Basecamp to house documents and pose process and protocol questions, some instructional designers support one another by offering ideas for embedding best practices of delivery of instruction and pedagogically appropriate content. The instructional designer is often responsible for helping faculty prepare and organize their materials for uploading to the OER repository and for finding and suggesting available OER resources to faculty for their courses. Each of the consortium colleges had a dedicated instructional designer in place as of November 2014, some of whom are also instructors

Through their work, CHEO instructional designers are trying to employ methods that increase student engagement in coursework. They are also working with faculty to help them think about how they can better use technology in their courses, using a variety of technology tools and online resources. The instructional designers have also often been integral for the efficient use of OER resources; for example, OJC experienced delays in fully utilizing OER resources partly due to a lack of instructional designers early in the grant period.

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[7] More information about Quality Matters can be found in the RRCC case study.

CAREER COACH

The CHEO grant required all consortium colleges to hire a career coach; all eight colleges hired one. Two colleges have had turnover in the career coach role. KoC transitioned in April 2014 from two off-campus faculty members who served in the role of career coach on an interim basis to a permanent, full-time career coach based on campus. PCC's original career coach left the position just prior to Fall 2014, and a new career coach was chosen. In both cases, the coaches were able to transition smoothly and began serving the needs of students immediately. Coaches are expected to:

1. Coordinate with workforce centers on referrals, internships and job placement.
2. Provide career guidance, and recruit and screen students.
3. Coordinate assistance for academic support, internship opportunities, and allied health program options, and connect students, the workforce system, and employers to the CHEO PlanYourHealthCareer Hub.
4. Collect and submit data.

Overall, career coaches have successfully engaged with students, fulfilling the student advising, retention, and recruiting functions. Personal counseling is also provided at many schools. For example, OJC's career coach reports that the most common reason students come to her is to find resources to handle financial or personal issues, such as scholarship applications, securing transportation to school, or finding daycare facilities for children.

Across all colleges, career coach caseload is highly varied based on the general size of the colleges and the number of CHEO-affiliated programs. Career coach caseload, calculated by the number of students recorded in their stitched-in report through November 2014, is broken down by college in Table 36.

Table 36. Caseloads of Career Coaches by College

Consortium Member	Career Coach Caseload*
Pueblo Community College	891
Kodiak College	135
Otero Junior College	34
Red Rocks Community College	384
Great Falls College MSU	140
Flathead Valley Community College	529
Laramie County Community College	70
Lake Area Technical Institute	151

*As reported in stitched-in reports through November 30, 2014.

Career coaches interact with students across a number of mediums—both in person and remotely. Both KoC and LCCC's CHEO programs are fully online; therefore, their coaching strategies have had to adapt to an environment in which they may never meet their students face to face. PCC and other colleges are developing responses to this as well, for some of their programs that are fully online. Across the consortium, the primary means of ongoing contact with students has been via email, even for those programs that are not fully online.

Coordination and interaction with employers and workforce centers have been more difficult for career coaches to engage in as a whole across the consortium. The majority of coach time is generally spent with students. There is significant variability across colleges as to their success with workforce and employer relationship outreach. For example, PCC's career coach works closely with the workforce center. These interactions include both working with local industries and providing and receiving referrals for CHEO-funded programs. The career coach has also developed relationships with internship sites for students in PCC's programs. PCC has had a history of working closely with the workforce center, and this has continued through the CHEO project. At RRCC, the majority of the coach's focus is on coordinating with employers for internships and job placement and assisting students with career searches and resume writing. She also engages with the workforce center on a regular basis and has built a strong relationship where one did not exist previously. On the other hand, FVCC's career coach finds employer relationship development difficult; there is already a strong employer relationship with the college generally, which makes measuring success difficult. Other coaches have experienced this as well; where faculty members already have strong relationships with employers or when other staff are already dedicated to the task of building relationships with the employer community, such as at LATI, coaches feel their involvement is unnecessary.

WAGE DATA

Wage data for incumbent and non-incumbent workers for FVCC, OJC, PCC, and RRCC is presented below. Wage data was not available for all schools, and the schools that did have wage data had it for different periods. Thus, some completers could not have wage analyses completed because the data was not available at the time. All wages are quarterly earnings.

Incumbent Worker Wages

Incumbent workers are students who were employed at the time of first enrollment. Note that "employment" does not imply that the student was working in the same field as the field of study but simply was working for wages at the time that he/she enrolled in his/her first CHEO-redesigned course. Further employment at the end of a program of study also does not imply that the student was working in his or her field of study.

At FVCC, displayed in Table 37, 64 percent (N=61) of all completers were incumbent workers, and 52 percent (N=49) of incumbent workers were employed at the time they completed their credential. The mean difference in wages for incumbent workers before and after completing their credentials was $152.

Table 37. FVCC: Mean Quarterly Wages of CHEO Students—Incumbent Workers

Credential	Total
Total Completers	95
Number of Incumbent Worker Completers	61
% of Incumbent Worker Completers	64%
Mean Quarterly Wages of Incumbent Worker Completers at Start of Program	$3897 (n=61)
Mean Quarterly Wages of Incumbent Worker Completers Who Were Employed after Completion	$3745 (n=46)
Difference in Mean Quarterly Wages for Incumbent Workers	$152
Incumbent Work Completers Employed at Time of Completion	49

At OJC, displayed in Table 38, 54 percent (N=13) of all completers were incumbent workers. At this point in the grant, the number of completers is too small to report mean wages.

Table 38. OJC: Mean Quarterly Wages of CHEO Students—Incumbent Workers

Credential	Total
Total Completers	**24**
Number of Incumbent Worker Completers	**13**
% of Incumbent Worker Completers	**54%**

At PCC, displayed in Table 39, 52 percent (N=163) of all completers were incumbent workers, and 60 percent (N=97) of incumbent workers were employed at the time they completed their credential. The mean difference in wages for incumbent workers before and after completing their credentials was $948.

Table 39. PCC: Mean Quarterly Wages of CHEO Students—Incumbent Workers

Credential	Total
Total Completers	**316**
Number of Incumbent Worker Completers	**163**
% of Incumbent Worker Completers	**52%**
Mean Quarterly Wages of Incumbent Worker Completers at Start of Program	**$4018(n=163)**
Mean Quarterly Wages of Incumbent Worker Completers Who Were Employed after Completion	**$4966 (n=97[8])**
Difference in Mean Quarterly Wages for Incumbent Workers	**$948**
Incumbent Work Completers Employed at Time of Completion	**97**

At RRCC, displayed in Table 40, 57 percent (N=132) of all completers were incumbent workers, and 52 percent (N=68) of incumbent workers were employed at the time they completed their credential. The mean difference in wages for incumbent workers before and after completing their credentials was $788.

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[8] Due to the lag time in wage data, the number of incumbent workers employed after completion could be smaller due to a lack of data – especially if they received a credential in Summer or Fall 2014.

Table 40. RRCC: Mean Quarterly Wages of CHEO Students—Incumbent Workers

Credential	Total
Total Completers	232
Number of Incumbent Worker Completers	132
% of Incumbent Worker Completers	57%
Mean Quarterly Wages of Incumbent Worker Completers at Start of Program	$3285 (n=132)
Mean Quarterly Wages of Incumbent Worker Completers Who Were Employed after Completion	$4073 (n=68)*
Difference in Mean Quarterly Wages for Incumbent Workers	$788
Incumbent Work Completers Employed at Time of Completion	68

*Due to the lag time in wage data, the number of incumbent workers employed after completion could be smaller due to a lack of data – especially if they received a credential in Summer or Fall 2014.

Non-Incumbent Worker Wages

At FVCC, displayed in Table 41, 36 percent (N=34) of completers were non-incumbent workers, and of those, 23 percent (N=8) were employed after they completed their credential. Though the number of employed non-incumbent workers is small, which should limit generalizations about this data, the mean wages for this population were $2085.

Table 41. FVCC: Mean Quarterly Wages of CHEO Students—Non-Incumbent Workers

Credential	Total
Total Completers	95
Number of Non-Incumbent Worker Completers	34
% of Non-Incumbent Worker Completers	36%
Mean Quarterly Wages of Non-Incumbent Worker Completers Who Were Employed after Completion	$2085 (n=8)
Non-Incumbent Work Completers Employed after Completion	8

At OJC, displayed in Table 42, 46 percent (N=11) of all completers were non-incumbent workers. At this point in the grant, the number of completers is too small to report mean wages.

Table 42. OJC: Mean Quarterly Wages of CHEO Students—Non-Incumbent Workers

Credential	Total
Total Completers	**24**
Number of Non-Incumbent Worker Completers	**11**
% of Non-Incumbent Worker Completers	**46%**

At PCC, displayed in Table 43, 48 percent (N = 153) of completers were non-incumbent workers, and of those 34 percent (N = 52) were employed after they completed their credential. For non-incumbent workers employed after the completion of their credentials the mean wage was $3047.

Table 43. PCC: Mean Quarterly Wages of CHEO Students—Non-Incumbent Workers

Credential	Total
Total Completers	**316**
Number of Non-Incumbent Worker Completers	**153**
% of Non-Incumbent Worker Completers	**48%**
Mean Quarterly Wages of Non-Incumbent Worker Completers Who Were Employed after Completion	**$3047**
Non-Incumbent Work Completers Employed after Completion	**52**

At RRCC, displayed in Table 44, 43 percent (N = 100) of completers were non-incumbent workers, and of those 33 percent (N = 33) were employed after they completed their credential. For non-incumbent workers employed after the completion of their credentials the mean wage was $3224.

Table 44. RRCC: Mean Quarterly Wages of CHEO Students—Non-Incumbent Workers

Credential	Total
Total Completers	**232**
Number of Non-Incumbent Worker Completers	**100**
% of Non-Incumbent Worker Completers	**43%**
Mean Quarterly Wages of Non-Incumbent Worker Completers Who Were Employed after Completion	**$3224**
Non-Incumbent Work Completers Employed after Completion	**33**

SECTION II: CONSORTIUM-LEVEL PROGRESS

CHEO PlanYourHealthCareCareer Hub

The creation of the CHEO PlanYourHealthCareCareer Hub was one of the three primary goals of the CHEO grant project.[9] The original purpose of the hub was to support "students from program selection to completion as well as transition to jobs in their field."[10] It was conceived as an integral part of meeting the goal of improving employment outcomes for TAA-eligible workers.

The CHEO PlanYourHealthCareCareer Hub is a web-based portal that is meant to promote and support those pursuing a career in health care fields with a wide variety of tools and services. PCC, the lead applicant and fiscal agent for the CHEO grant, has worked with College in Colorado (CIC) 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. It is also meant to be used as a method of engaging employers and local workforce centers.

PCC contracted with College in Colorado to lead hub implementation efforts and provide oversight for the software developer. Additionally, College in Colorado is supposed to provide ten trainings to prepare coaches to use the CHEO health career hub and update them on the progress in its development. Hub trainings began in year two and will extend into year three. As of November 2014, College in Colorado had completed five WebEx focus group sessions

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[9] CHEO Technical Proposal, p. 1.
[10] CHEO Technical Proposal, p. 1.

with CHEO career coaches and project leads[11], several "how to" webinars, and one full day training at the career coach workshop in Boulder, and was on track to meet the grant requirements.

Originally the hub was scheduled to roll-out its first phase in early spring of 2014. Delays in roll-out occurred, however, because of contract issues with the originally intended software developer. The contract had to be rewritten, which meant that College in Colorado had to reopen the time-consuming bidding process. After Kuder was chosen as the new software developer, changes in the contract and some turnover at the software developer delayed the process further. The hub launched in phases, beginning in June 2014. The ability to register students started in August 2014, but the hub had not been populated with historical data at that point. Most coaches did not begin using the hub until after November 2014.

Kuder and College in Colorado presented the hub at the career coach workshop in August 2014, giving the coaches an example of the tool, what it would look like, and how it could work for them and their students. Coaches were able to log on and explore the hub at that point, and begin to envision how to use the tool at each of their respective colleges. Because the hub had not yet been prepopulated with historical data and was thus not yet fully set-up for CHEO, coaches were not using it regularly as of November 2014. Overall, career coaches were optimistic and excited about the possibilities the hub had to offer as of Fall 2014, but since they had not been using it as of that point, there was little for coaches to discuss relative to actual benefits to them or their students.

In addition to being a professional portfolio tool for students and a connection tool for employers and the workforce system, the hub was also meant to be a case management tool for coaches. This included use of it as a data collection tool that would replace the Excel-based "stitched-in report" for coach-student interactions. Because the hub ended up being implemented so late in the grant process, it became unfeasible for coaches to use it as a case management tool until the third year of the grant. Likewise, coaches were not able to use the hub as a comprehensive replacement for the stitched-in reports as of the date of this report.

Coaches at all eight institutions plan to "roll-out" the hub at their respective schools. The roll-outs are meant to introduce students to the tool and show them the variety of ways in which the hub can be used to build their portfolios, connect with employers, and plan their careers. Roll-outs are planned to begin in Spring 2015.[12]

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[11] These were: 1) intake assessment, 2) case management and reporting needs, 3) career pathways/stackable credentials, 4) working with employers, and 5) marketing and promotion ideas.
[12] The hub's location is www.planyourhealthcareer .org

NORTH AMERICAN NETWORK OF SCIENCE LABS ONLINE (NANSLO)

NANSLO is a network of laboratories at colleges in the United States and Canada that offers remote science activities to students through the use of robotics and a web interface. The network consists of three nodes; each node is a laboratory equipped with a variety of science equipment that can be operated over the Internet through a web interface. NANSLO joined the CHEO consortium in order to offer remote science labs to CHEO students to expand and enhance online and hybrid courses for allied health students and for "gatekeeper" basic science courses. The CHEO grant specified that 1) CHEO partners would collaborate to develop 12 lab activities to be used in allied health and science-related courses, 2) faculty in the designed/redesigned CHEO programs would incorporate NANSLO labs into courses using one of the available nodes, and 3) a third node would be developed and added to the NANSLO network, allowing NANSLO to serve more chemistry, biology, physics and health care students.

As of the writing of this report, the NANSLO nodes had created or redesigned 27 lab activities under the CHEO grant. This more than doubles the original grant requirement of 12 new activities. The process of lab creation and the role of discipline panels is further outlined below.

Table 45. NANSLO Labs: Targets vs. Actual Labs Created

Grant Target for Labs Created	Actual Labs Created	Labs Redesigned under Grant*
12	23	4

*These four labs were originally developed as part of the NGLC grant and were redesigned for use under CHEO.

NANSLO use varies by school and is outlined below:

1. **Flathead Valley Community College.** FVCC has incorporated labs into the BIO 160, BIO 105, and CHEM 143 courses offered for Fall 2014. BIO 160 used three labs, while BIO105 included two and CHEM 143 used one.
2. **Great Falls College—MSU.** GFC-MSU included NANSLO lab activities in six of its courses (AHMA 220 and 260, Bio 101, Chem 101, 121, and 141); five were offered in Fall 2014, and one in Summer 2014.
3. **Kodiak College.** KoC was one of the earliest adopters of NANSLO lab activities. It has used activities in at least one course every term since Spring 2013 (excluding summer). It uses labs in its BIOL A100 and MA104 courses.
4. **Lake Area Technical Institute.** LATI used NANSLO lab activities in two courses for Fall 2014: CHEM 107 and MLT 105.
5. **Laramie County Community College.** LCCC incorporated three labs into its Fall 2014 offering of BIOL 1010.
6. **Otero Junior College**. OJC used a NANSLO lab activity for its MLT 241 course in Spring 2014.

7. **Pueblo Community College.** PCC used NANSLO lab activities in two courses for Spring 2014, BIO 202 and BIO 112, and two courses for Summer 2014, BIO 111 and BIO 106.
8. **Red Rocks Community College**. As of November 2014, RRCC had not made use of NANSLO lab activities in any of its CHEO-related courses.
9. **CCCOnline.**[13] As of November 2014, CCCOnline was the only school making use of NANSLO physics labs. It has also used biology and chemistry labs.

For a full list of NANSLO activities and the courses they were offered in by college and term, see the forthcoming NANSLO report. Table 46, below, is a truncated list of courses utilizing NANSLO lab activities by college by term, including the course subject in which the activity was used and the number of enrollments in the course. The pass rate and mean of GPA are for the entire course in which the lab activity was utilized and are not the pass rate of the lab activity itself.

Table 46. Courses Offering NANSLO Lab Activities by College and Term

College	Term	Couse Subject	Title	Number of Enrollments	Pass Rate*	Mean of GPA
Great Falls	Fall 2014	Allied Health MA	Phelebotomy	6	67%	1.50
Great Falls	Summer 2014	Biology	Discover Biology/Lab	17	88%	2.01
Great Falls	Fall 2014	Biology	Discover Biology/Lab	39	77%	2.40
Great Falls	Spring 2014	Chemistry	Intro to General Chem w/Lab	64	92%	2.89
Great Falls	Fall 2014	Chemistry	Intro to General Chem w/Lab	94	84%	2.65
FVCC	Fall 2014	Biology	Principles of Living Systems	104	89%	2.75
FVCC	Fall 2014	Human Biology	Basic Human Biology Lab	50	78%	2.53
FVCC	Spring 2014	Chemistry	College Chemistry II	27	85%	2.67

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[13] CCConline is run by the Colorado Community College system and offers fully accredited Associate of Arts degrees, Associate of Applied Science degrees, and certificates in various disciplines through the Colorado Community College system colleges. Some consortium colleges are included in these counts they include PCC, RRCC and OJC.

Kodiak	Fall 2013	Human Biology	Human Biology	15	80%	2.67
Kodiak	Fall 2014	Human Biology	Human Biology	21	81%	2.40
Kodiak	Spring 2014	Medical Assisting	Essentials of Human Diseases	20	95%	3.40
LATI	Fall 2014	Chemistry	Inorganic Chemistry Lab	2	50%	2.00
LATI	Fall 2014	Medical Laboratory	Urinalysis and Body Fluids	25	88%	2.24
LCCC	Fall 2014	Biology	General Biology	10	60%	1.44
OJC	Spring 2014	Medical Laboratory	Intro to Clinical Chemistry	2	100%	3.0
PCC	Fall & Summer 2014	Biology	Basic Anatomy And Physiology	18	83%	2.29
CCCOnline	Spring 2013, Spring 2014, Summer 2014, Fall 2014	Biology	Gen College Biology I/Lab: SC1	818	52%	2.10
CCCOnline	Spring 2013, Spring 2014, Summer 2014, Fall 2014	Chemistry	Gen College Chem I/Lab: SC1	356	63%	2.61
CCCOnline	Spring 2013, Spring 2014, Summer 2014, Fall 2014	Physics	Physics Alg-Based I/Lab: SC1	233	58%	2.51
CCCOnline	Spring 2013, Spring 2014, Fall 2014	Physics	Physics Calc-Based I/Lab: SC1	151	52%	2.19
Total				**2089**		

* The pass rate and mean of GPA are for the entire course in which the lab activity was utilized and are not the pass rate of the lab activity itself.

As evidenced by the table, pass rates are generally high for courses offering NANSLO lab activities. More information about NANSLO lab activities at consortium colleges, including an analysis of student outcomes, is provided in the NANSLO report.

Discipline Panels

Faculty discipline panels played a role in the creation and dissemination of NANSLO lab activities for the CHEO project. Initially, faculty discipline panels were tasked with identifying the need for and providing advice on the creation of new lab activities which can be used to replace or supplement existing science lab activities offered in courses.[14] These discipline panels were made up of faculty members at CHEO consortium colleges who volunteered to participate in the lab development process. Their work was coordinated by NANSLO staff at all three of the labs[15] and WICHE. Three panels were originally planned to represent allied health/biology, allied health/chemistry and allied health/physics disciplines across all eight colleges. Although there was an indication initially that there would be a need for an allied health/physics discipline panel, no needs for NANSLO lab activities were identified in this area, so this panel was not established. Two discipline panels (allied health/biology and allied health/chemistry), consisting of faculty representatives from the eight institutions involved in the CHEO initiative, were formed. This occurred at the first face to face workshop in Boulder, Colorado. Managers from the three NANSLO nodes solicited ideas from the discipline panels for lab concepts that could: 1) be delivered remotely, 2) meet learning objectives for the intended course(s), and 3) be developed cost effectively. Suggestions for remote lab activities were compiled from both discipline panels and recirculated to gauge relative interest. Input was solicited through emails, teleconferences, online meetings, wikis, and two face-to-face workshops in Boulder, Colorado supported by WICHE.

WICHE contracted with Pueblo Community College to provide specific professional services for the CHEO grant. These services included coordinating the NANSLO discipline panels, providing oversight on the development of the curriculum for 12 new NANSLO lab activities, and providing professional development for discipline panel faculty. Other services provided by WICHE are discussed elsewhere in the report.

The initial workshop held in June 2013 served as an informational introduction to online and hybrid education and NANSLO orientation for instructional designers and for faculty. Here faculty identified 17 NANSLO web-based lab activities they would like to have developed with the idea that faculty would have the opportunity to contribute ideas and best practices for teaching these remote web-based lab experiments. However, faculty involvement at this point was considered minimal. NANSLO laboratory managers have commented that at first the

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[14] More information about lab activities offered through NANSLO is available here: http://www.wiche.edu/nanslo/initiatives-projects/current-initiatives/cheo/cheo-discipline-panels.

discipline panels were not overly effective in generating usable labs. The biggest limiting factor in the creation of lab activities was a lack of concrete learning goals; faculty provided many ideas for possible activities, but few measurable learning goals that could be used to build actual lab activities. Subject matter experts (SME) in biology, chemistry, and physics were contracted to redesign the four existing lab activities and fully develop eight additional lab activities. After the SMEs designed the activities, the activities were posted to the CHEO Wiki, whereby faculty had the opportunity to review and provide feedback for each activity. While involvement by CHEO faculty did not greatly increase, the end process produced quality lab opportunities for students.

At the May 2014 faculty professional development workshop, faculty were provided with a handbook containing 12 NANSLO lab activities developed to date based on recommendations from the June 2013 professional development. During the May 2014 workshop, 15 new suggestions were made for additional NANSLO lab activities, and seven more were later suggested. As a result of the work by SMEs and faculty feedback, a total of 27 NANSLO lab activities have been developed or redesigned for the CHEO initiative. The curriculum is openly licensed and will be posted to both project and DOL repositories.[16] The 2014 workshop allotted time for further exploration of NANSLO lab activities and generated increased faculty interest.

The goals for CHEO discipline panels and subject matter experts were to:

1. Make recommendations for lab activities to be included in specified allied health courses that could effectively use remote Web-based science learning (RWSL) equipment.
2. Prioritize and create timelines for development of the selected lab activities.
3. Review the learning outcomes and curriculum for the lab activities and recommend revisions and adaptations.
4. Convene by conference call as lab activities are developed, to review student outcomes for those lab activities and make recommendations for changes to the activities for the next term.
5. Participate in opportunities to disseminate information about NANSLO to relevant audiences.
6. Provide recommendations for expanding NANSLO to other institutions.
7. Participate in the following:
    - Three face-to-face workshops to be held in Boulder, CO, at a rate of one each year for the first three years of the grant.
    - Conference calls regarding the development of NANSLO lab activities—to review work in progress for suggestions on material revisions and changes in prioritization as timelines for use change.
    - Discussions on the relevant discipline panel list serves on an ongoing basis for the life of the project.

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[16] http://www.wiche.edu/nanslo/lab-activities

- Discussions and posting of documents, and assistance in modifications and revisions of those documents, in collaborative spaces on the project website.

By the end of November 2014, the discipline panels had completed most of their work, assisting in the creation and redesign of 27 lab activities to date under the CHEO project. Three webinars and one faculty workshop were scheduled for Spring 2015, at the date of this report, and remain the only discipline panel/faculty-oriented activities through the end of the grant period.

Professional Development

In the first two years of the grant, instructional designers, faculty, and career coaches were given several opportunities to attend webinars and workshops for professional development. These forums were offered by various grant partners, including WICHE, CIC, and the grant lead college, PCC. The meetings had varied goals and purposes. The table below represents professional development as proposed in grant contracts and what was completed as of November 30, 2014.

Table 47. Professional Development Proposed and Completed

Professional Development Yrs 1-2*	Faculty Proposed/Completed		Career Coach Proposed/Completed		Instructional Designer Proposed/Completed	
Webinars	5	5	5	5	0	0
Workshops	2	2	2	2	1**	1**

*Through November 2014
**The instructional designer workshop was included with the faculty workshop in June 2013. Instructional designers also attended the discipline panel workshop in May 2014.

The face to face workshops have been well attended by faculty, instructional designers, coaches, and project leads. Events run remotely were often attended by fewer people, but were for the most part available both in real time and for viewing after the fact. In further reports we will look at the perceptions faculty, career coaches and staff had about their experiences with these various professional development forums. As a consortium, CHEO institutions proposed targets of eight career coaches to participate in annual trainings each year of the grant, 100 faculty members to participate in professional development activities by year three, and 16 faculty members to participate in discipline panel lab activity development. Each college made the decision as to who could and would attend each of the meetings in order to fulfill this grant goal. As of November 2014, the consortium was on track to meet targets for all three professional development types.

NANSLO Scheduling

In order to schedule lab activities, it was deemed necessary to develop a system for faculty to schedule NANSLO lab activities directly for their courses/students. The scheduler was designed so faculty could see available windows of time for a lab activity of their choice, choose the ones that were best suited to their course schedules, and allow their students to choose slots of time within those windows to log on and complete their lab activities. WICHE was responsible for oversight of the development of the scheduling system and is also working with colleges on its implementation and adoption.

The consortium's original intention was to leverage the efforts of the NGLC grant and the Colorado Community College System (CCCS) NANSLO scheduling system that was developed for use with CCCOnline students. In August 2013, it was determined that the scheduler did not function properly, and a new system had to be built. The first version of the scheduling system was launched in December 2013, in time to begin being used in Spring 2014 for those students using the Colorado laboratory. During its initial use, systems were modified and adjusted as lessons were learned about use and as the needed adjustments arose. Work continued on this version through the middle of 2014. Upon resolution of most issues and implementation of needed enhancements to this initial version, the process of building a more sophisticated version of the NANSLO network scheduling system began—one that would accommodate multiple laboratories, multiple institutions, and multiple faculty members within those institutions. In December 2014, after some testing, a new version of the NANSLO network scheduling system was launched.

For the system to be fully functional across the network, however, each NANSLO node must install its own instance of the network scheduling system. When the GFC MSU laboratory opened in the summer of 2014, it was not yet ready to install the network scheduling system. The NIC node is still testing the installation of the network scheduling system at its location. Once these laboratories have completed the installation of their local scheduling system, additional testing can be conducted. This system and its implementation will be further discussed in future reports. We will also look at work towards the sustainability of the NANSLO lab structure including data collection and the creation of a financial system to be used post-grant.

Project Communications Infrastructure

Due to the geographical challenges of a multi-state consortium, the administrative team at PCC, and contractors for the grant, including CIC, the NANSLO labs, and WICHE, developed a variety of communication methods to work together and with colleges. Communication methods include conference calls and online meetings. Static tools such as quarterly newsletters, monthly executive summaries, and fact sheets are distributed. Websites and social networking accounts are used to share project updates, photos, and progress. The administrative team regularly updates local and project level dashboards and performance benchmarks by college

and consortium level in order to help colleges monitor their progress. The administrative team also hosts annual meetings for leads from partner colleges who stand as the advisory council for the overall grant. Additionally, the CHEO project director and members of partner colleges shared presentations at national venues in the fall of 2014.

RESEARCH NEXT STEPS

The EERC is preparing future, more detailed research reports on a number of topics that were touched upon here:

- **NANSLO Report.** The NANSLO report will provide a summary of NANSLO's activities under the CHEO grant and a discussion of implementation efforts relative to NANSLO adoption across the CHEO consortium, including successes, challenges, promising practices, and innovative strategies in the use of NANSLO.
- **Career Coach Report.** The Career Coach report will provide a summary of career coach roles, activities, challenges, and promising practices under the CHEO grant, including coach-student interactions and the role intrusive advising has played at each college. The report will also consider the roll-out of the PlanYourHealthCareCareer hub as well as coach engagement with employers and the workforce system.
- **Interim Outcomes Report.** The Interim Outcomes Report will discuss student outcomes to date under the CHEO grant.
- **Final CHEO Grant Report.** The Final CHEO Grant Report will provide an update to this report, extending the analysis to the final two years of the CHEO grant. Additionally, this report will include changes in faculty perceptions of online and hybrid delivery of instruction and the impact of CHEO on available OER content.