

2016 Annual Performance Report

Submitted:
 U.S. Department of Education
 Title III - Part F - HSI STEM and Articulation Programs

ED 524B Cover Sheet

1. PR/Award #: P031C110184
2. Grantee NCES ID#: 187985
3. Project Title: Project for Inclusive Undergraduate STEM Success (STEM Gateway)
4. Grantee Name: University of New Mexico -- VP for Student Affairs Office Support Effective Teach
5. Grantee Address: 1700 LOMAS BLVD NE
ALBUQUERQUE, NM 87106
6. Project Director Name: Yadeeh Sawyer Title: Program Manager
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Reporting Period Information

7. Reporting Period: From: 10/01/2015 - 09/30/2016

Budget Expenditures (To be completed by your Business Office.)

8. Budget Expenditures:

	Federal Grant Funds	Non-Federal Funds (Match/Cost Share)
a. Previous Budget Period	\$682,770.79	\$0.00
b. Current Budget Period	\$564,335.94	\$0.00
c. Entire Budget Period (For Final Performance Reports only)		

Indirect Cost Information (To be completed by your Business Office.)

9. Indirect Costs
 - a. Are you claiming indirect costs under this grant? No

Human Subjects (Annual Institutional Review Board (IRB) Certification)

10. Is the annual certification of Institutional Review Board (IRB) approval attached? N/A

Performance Measures Status and Certification

11. Performance Measures Status
 - a. Are complete data on performance measures for the current budget period included in the Project Status Chart? Yes
 - b. If no, when will the data be available and submitted to the Department?

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Executive Summary

ADMINISTRATIVE CHANGES

In Year Five, Natalie Robinson Bruner resigned. Dr. Yadéeh Sawyer became the Project Director for STEM Gateway on August 1, 2016, at a 0.75 FTE. Dr. Sawyer has been a part of the STEM Gateway team since September 2014 as the Program Specialist in charge of Outreach and Activities (prev. SSIGs). She has her PhD in Biology, and has been involved with STEM education for 11 years.

PROJECT HIGHLIGHTS:

COURSE REFORM

In the fall of 2015, UNM offered sections of 11 redesigned gateway courses (85 sections), serving 3,422 enrollments (58.59% of were Hispanic or low-income students). In spring 2016, 11 redesigned gateway courses (67 sections) were offered. These sections served 2,744 enrollments (60.56% Hispanic or low-income students). In the summer of 2016, UNM offered sections of 9 redesigned gateway courses which covered 17 sections. Together these sections served 410 enrollments (24.18% of these were for Hispanic or low-income students). For the Course Reform project, two out of four performance objectives were met in Year Five.

PEER LEARNING FACILITATORS

For Spring 2016, 37 Peer Learning Facilitators (PLFs) supported 28 sections of 10 STEM Gateway courses. In Fall 2016, 18 PLFs supported 21 sections of 10 STEM Gateway courses. PLFs were offered in 21 different courses. In 18 of those, UNM offered PLF and non-PLF supported sections. Of these 18 sections, 14 sections experienced higher success rates for the PLF-supported sections than the non-PLF supported sections. There were only four courses where non-PLF section success rates were higher than PLF-supported sections. For the PLF project, five out of nine performance objectives were met in Year Five.

SSIGs

For Year 5, STEM Gateway focused on the Essential Academic Skills Enhancement (EASE) workshop series, additional presentations to select audiences, maintenance of the Blog portion of the re-launched STEM Gateway website, participation in Mock Finals, providing a Calculus Prep workshop, and hosting the STEM Cultural Colloquium. For the SSIG project, all five Performance Objectives have been met.

DATA DRIVEN DECISION MAKING

During Year Five, STEM Gateway completed the (1) Freshmen STEM Project, (2) Essential Academic Skills Enhancement analysis. Key findings are reported under performance objective C.1. For the Data-Driven Decision Making project, all performance objectives have been met in Year Five.

INSTITUTIONALIZATION EFFORTS:

COURSE REFORM

STEM Gateway planned to arrange for ongoing support of course redesign efforts within the Center for Teaching and Learning (CTL), which contains the main campus faculty development office. However, CTL reorganization, starting in Year 4, remained in flux during Year Five, causing a delay in developing and implementing collaborative plans. CTL has hired a new Associate Director for faculty development with a STEM emphasis, in recognition of the importance of ongoing initiatives such as STEM Gateway. The Associate Director will begin work in November 2016. The STEM Gateway PIs have met with the CTL Executive Director and meetings will resume after the new Associate Director is on board and begins establishing connections across campus.

STEM Gateway staff are compiling the resources that have been developed over the course of the grant for course redesign teams in order to archive them for future access. To ensure longevity of the course redesign professional development resources, the documents and resources used for the Course Redesign Institute and subsequent professional development workshops will be merged into a single Adobe Acrobat file that contains everything needed to implement the sessions. The document will be published within the LoboVault system at UNM for access by faculty, staff, and students interested in the content. CTL directors and all members of the Course Redesign teams will be made aware of the resource location.

PEER LEARNING FACILITATORS

The CTL expanded their services from tutors and supplemental instruction through the Center for Academic Support (CAPS) to include PLFs for instructors participating in their Teaching Fellows program, launching in Spring 2017. Additionally, The College Enrichment Program (CEP) initially only serviced the University 102 (Quantitative Reasoning) course and has since evolved in response to the STEM Gateway PLF program.

In Year Five, the funding requests submitted to the Student Fee Review Board (SFRB) through CAPS was not approved. Because of unfruitful partnerships with CTL and CAPS, the no-cost extension year include an application for funding to be submitted to the SFRB by CEP, to include an expansion of their PMT program to assume the roles of the STEM Gateway PLF program.

SSIGs

Since inception of the new SSIG model in Spring 2015, we have preliminary data on the impact of the EASE workshops on student achievement. During year five, conversations with the Dean of Students, Libraries, CAPS, the Biology Department, the STEM Collaborative Center (STCC), Student Affairs Assessment and Research (SAAR), Arts and Sciences, University College, and Continuing Education lead to the conclusion that this resource is valuable to students; but, although the in-person format is preferred by the biology department, the desire for this to be a university wide resource and the financial state of both the biology department and the university as a whole, the format will be shifted to an online video and accompanying assessment in an effort for institutionalization. Additionally, after the Spring 2016 semester, blog topics and templates were transferred to the STCC. Additional Mock Finals contacts were transitioned back to the College Enrichment Program.

In the no-cost-extension year, STEM Gateway staff will work with staff from both the University College and Continuing Education to transition the EASE online video workshop series to a permanent home, as a partnership between these two departments.

DATA DRIVEN DECISION MAKING

STEM Gateway is working with the SAAR (interim) director to continue the university's efforts in data analysis related to STEM. This includes the Murky Middle Project. In the no-cost extension year, efforts will be focused on completing research that can have university wide impacts for all STEM students, beyond the period of the grant.

CONTRIBUTIONS MADE TO PRACTICE / LESSONS LEARNED

COURSE REFORM

Members of the course-redesign teams are strongly dedicated to the vision of improving student success in their courses. In particular, formal and informal discussions about teaching and learning have spread among 6 gateway course instructors in math, biology, and chemistry. Thus changes from the course redesign began to impact other courses and their departments' cultures. This is evident in that it has become increasingly difficult to separate redesigned sections from non-redesigned sections or partially-redesigned sections of a course, as was done in the past. Particular elements of the redesign are being used to varying extents across the course sections without a clear indication to what extent they are being used. Dissemination/expansion across sections has not been consistent, but arguably that all sections have been "touched" by the redesign process for several courses.

PEER LEARNING FACILITATORS

Across campus, there is a strong interest in the PLF approach to course support. Partnerships with the CAPS (tutors), as well as the CEP (Peer Mentor Tutors [PMT]) have led to various joint professional development trainings. The PLF program continues to implement a screening proposal process for instructors who desire PLF support. Success with all of the aforementioned partnerships is maintained through a customized contract, continued through check-ins and end-of-semester semester data analysis. The partnerships between instructors and the PLFs, in addition to the PLFs commitment to guiding student success continues to be the strongpoint of the PLF program.

SSIGS (EASE WORKSHOP SERIES)

The SSIGs model of connecting student support programs to specific courses strengthens buy-in and effectiveness. When implementing the workshops, students felt the greatest value was gained when the focus was on the acquisition of applicable skills for the associated class. For in-person workshops, to maximum attendance, they must be a mandatory component of the course. When workshops were optional, student attendance dropped drastically. When implemented as an online video series, the mandatory approach had the greatest participation, however the optional (extra-credit) methods had greater participation than the in-person workshops. Although in-person workshops are most effective, there is positive reception for the online format from both the established partnership within the Biology department, as well as across campus. This shifted as increased the appeal for implementation within online courses.

INSTITUTIONAL RESEARCH

Freshmen STEM Project (FSP) – freshmen students who participated within the FSP from Fall 2015-Spring 2016 (N=93) were more ethnically diverse, with generally had higher ACT and H.S. GPAs, and higher 1st semester GPAs than their STEM peers. There was a statistically significant relationship between FSP participants' retention to the 2nd semester and their STEM peers, with 91% of FSP students returning compared to 79% of their peers. Lastly, the most important FSP intervention was STEM coaching and was even more predictive of first semester GPA when knowledge of a student's self-management score was factored into the process.

EASE - Overall, there were positive academic outcomes for students that engaged with EASE workshops during the semester. There still is an academic achievement gap between white students and students from traditionally underrepresented groups even when students were engaged in EASE workshops. In order to understand how to address this achievement gap, it is suggested that more information about historical success rates be explored.

Section A: Performance Objectives

Project Objective: A.1 Increase student success and retention by developing twelve (12) faculty-driven STEM Gateway course-reform projects to ultimately reach at least 7200 students annually (three (3) projects during the first year).

Number	Performance Measure	Measure Type	Quantitative Data					
			Target			Actual Performance Data		
			Raw Number	Ratio	%	Raw Number	Ratio	%
a	Each year of the grant period, UNM STEM project will support three (3) gateway-STEM course reform projects. For the first four years, develop 12 projects.	Project	12	/		14	/	
b	The three (3) course-reform projects implemented each year will directly affect at least 1800 student learners initially, and cumulatively more than 7200 by project end.	Project	7200	/		13092	/	
c	Percentage of students completing each reformed course will improve with course completion by Hispanic and/or low income students to 75% by 2nd semester of reform implementation & 80% by 3rd semester	Project	21	/		14	/	
d	Percentage of students completing each reformed course with a grade of C or higher will improve by 2nd semester of reform implementation with an improvement of successful course completion by Hispanic and/or low income students by at least 10% by 2nd semester of implementation and 20% by 3rd semester, compared to the comparable pre-reform statistics for the course.	Project	12	/		7	/	

Explanation of Progress (Include qualitative data and data collection information)

NOTES ON DATA/FINDINGS

Data collected by STEM Gateway staff from UNM student info system (Banner) in Nov. 2016.

(a) Target met. Five courses implemented and are under development/pilots for the year. (BIO 203/203L; CHEM 101; CHEM 131; CHEM132; ENVS 102L). There were 15 projects total because two teams each worked on two courses.

(b) Numbers reported in enrollments, not individual students, including 5 year combined enrollments. Target is based on Year 5 (=7200) as the initial year when the full slate of courses were selected. Target was exceeded.

(c) At the end of Year 5, 13/15 Course Redesign (CR) courses completed a 2nd semester of instruction and 8 completed a 3rd semester. 9 out of 13 courses that completed a second semester met the 75% course completion target in the second semester. Five of the 8 CR projects met third semester target of 80%. Target not met.

DETAIL:

Cohort 1 - CHEM 122: 2nd Sem. Offered 88.1; 3rd Sem. Offered 84.8 MATH 121: 2nd Sem. Offered 74.2; 3rd Sem. Offered 84.4 PHYC 160: 2nd Sem. Offered 66.1; 3rd Sem. Offered N/A PHYC 161: 2nd Sem. Offered 70.4; 3rd Sem. Offered N/A

Cohort 2 - BIOL 204L: 2nd Sem. Offered 94.3; 3rd Sem. Offered 92 CHEM 121: 2nd Sem. Offered 85.2; 3rd Sem. Offered 69.4 PHYC 103: 2nd Sem. Offered 100; 3rd Sem. Offered 100

Cohort 3 - BIO 202: 2nd Sem. Offered 99, 3rd Sem. Offered 94.1 BIO 204: 2nd Sem. Offered 94.3, 3rd Sem. Offered 78.9 MATH 153: 2nd Sem. Offered 82, 3rd Sem. Offered 61.7

Cohort 4 - BIO 203L 2nd Sem. Offered 93.9 Chem 101 2nd Sem. Offered 64.4 ENVS 102L 2nd Sem. Offered 86.3

(d) For all projects, 9 met the target of improving success by 10% the 2nd semester. Only one course (BIO 204) met the target of improving success by 20% for the 3rd semester although four courses met this metric in the second semester.

Success Pct:

COHORT 1

CHEM 122: Baseline Sem. 61% 2nd Sem. Offered 73% 3rd Sem. Offered 63% SUCCESS % CHANGE 2ND SEM. 19% SUCCESS % CHANGE 3RD SEM. 3%

MATH 121: Baseline Sem. 55% 2nd Sem. Offered 58% 3rd Sem. Offered 65% SUCCESS % CHANGE 2ND SEM. 5% SUCCESS % CHANGE 3RD SEM. 18%

PHYC 160: Baseline Sem. 47% 2nd Sem. Offered 40% 3rd Sem. Offered N/A SUCCESS % CHANGE 2ND SEM. -14% SUCCESS % CHANGE 3RD SEM. N/A

PHYC161: Baseline Sem. 37% 2nd Sem. Offered 33% 3rd Sem. Offered N/A SUCCESS % CHANGE 2ND SEM. -12% SUCCESS % CHANGE 3RD SEM. N/A

COHORT 2

BIOL 204L: Baseline Sem. 73% 2nd Sem. Offered 91% 3rd Sem. Offered 83% SUCCESS % CHANGE 2ND SEM. 24% SUCCESS % CHANGE 3RD SEM. 14%
 CHEM 121: Baseline Sem. 70% 2nd Sem. Offered 67% 3rd Sem. Offered 69% SUCCESS % CHANGE 2ND SEM. -4% SUCCESS % CHANGE 3RD SEM. 0%
 PHYC 103: Baseline Sem. N/A 2nd Sem. Offered 100%* 3rd Sem. Offered 100% SUCCESS % CHANGE 2ND SEM. N/A SUCCESS % CHANGE 3RD SEM. N/A
 COHORT 3
 MATH 153: Baseline Sem. 52%* 2nd Sem. Offered 65% 3rd Sem. Offered 54% SUCCESS % CHANGE 2ND SEM. 24% SUCCESS % CHANGE 3RD SEM. 3%*
 BIO 204: Baseline Sem. 69% 2nd Sem. Offered 82% 3rd Sem. Offered 84% SUCCESS % CHANGE 2ND SEM. 18% SUCCESS % CHANGE 3RD SEM. 21%
 BIO 202: Baseline Sem. 79% 2nd Sem. Offered 88% 3rd Sem. Offered 91 SUCCESS % CHANGE 2ND SEM. 11% SUCCESS % CHANGE 3RD SEM. 14%*
 COHORT 4
 BIOL 203L: Baseline Sem. 75% 2nd Sem. Offered 91% 3rd Sem. Offered NA SUCCESS % CHANGE 2ND SEM. 22% SUCCESS % CHANGE 3RD SEM. NA
 CHEM 101: Baseline Sem. 87% 2nd Sem. Offered 76% 3rd Sem. Offered N/A SUCCESS % CHANGE 2ND SEM. -13% SUCCESS % CHANGE 3RD SEM. N/A
 CHEM 131: Baseline Sem. N/A 2nd Sem. Offered N/A 3rd Sem. Offered N/A SUCCESS % CHANGE 2ND SEM. N/A SUCCESS % CHANGE 3RD SEM. N/A
 CHEM 132: Baseline Sem. N/A 2nd Sem. Offered N/A 3rd Sem. Offered N/A SUCCESS % CHANGE 2ND SEM. N/A SUCCESS % CHANGE 3RD SEM. N/A
 ENVS 102L: Baseline Sem. 90% 2nd Sem. Offered 87% 3rd Sem. Offered N/A SUCCESS % CHANGE 2ND SEM. -4% SUCCESS % CHANGE 3RD SEM. N/A
 *Math 153 baseline = average baseline for Math 123 and Math 150 since Math 153 combines Math 123 and Math 150.

STATUS OF PROJECTS

From the 3 Cohort 1 CR teams (Y1), two continued in Y4 and into year 5. Cohort 1 included MATH 121, CHEM 122 and PHYC 160/161. The PHYC 160/161 projects were not continued in Y3 by Physics faculty who felt it is necessary to demonstrate longitudinal evidence of improved student persistence and achievement to support the change effort; thus, no data for PHYC 160/161 in the 3rd semester.

From the 3 Cohort 2 CR teams (Y2), two continued in Y4 and continued into Year 5. The teams included BIOL 204L, CHEM 121 and PHYC103. PHYC 103 is no longer being offered; hence, the absence of data for PHYC 103 in the third semester. However, exercises and assessments that were developed by the CR team are being utilized in other courses.

Three Cohort 3 CR teams (Y3) and continue in Year 5. These CR projects are projected to continue into the future. The projects included MATH 153, BIO 202/202L, and BIO 204. MATH 153 combines trigonometry (3 credits) and pre-calculus (3 credits) into one 5 credit course to remove redundancies from the courses and shorten time to degree completion for STEM students. Notably, CNM CR participants showed little engagement with the CR process after the CR Institute, also seen in some earlier cohorts. CNM faculty have little incentive, working as individuals from their institution, to contribute to CR projects that are likely to have immediate impact at UNM. Isolation of CNM faculty from the multiple UNM participants on each team also limits their impact. However, it is notable that the Math 153 team worked closely with representatives from CNM to transfer content and praxis in order to roll the course out at CNM. This has been a successful collaboration where the course is now being taught in a similar fashion at both institutions.

Five Cohort 4 CR teams (Y4) continued onto Year Five. The projects include ENVS 102, CHEM 101, CHEM 131, CHEM132, and BIO 203/203L. Two of the projects involved a two-person partnership rather than a team of 4-5 members. Teams were not required to include a faculty member from CNM given concerns that arose with CNM faculty participation in Cohort 3. Thus, none of the teams have CNM representation.

Because some elements of CRs are used to varying extents across course sections, it has become increasingly difficult to separate CR sections from non-CR sections or partially-CRed sections of the course, as was done in the past APRs. We have included all sections of several courses in our analysis because it is arguable that all sections have been "touched" by the CR process for several courses. This does create some ambiguity in grade achievement related to the CR since implementation varies by instructor.

YEAR FIVE ACCOMPLISHMENTS

In the fall of 2015, UNM offered sections of the following CR gateway courses: CHEM 121 (7 sections), CHEM 122 (4 sections), MATH 121 (21 sections), PHYC 103 (0 sections) and BIOL 204L (10 sections), BIO 204 (2 sections), BIO 202 (11 sections) and MATH 153 (5), BIO203L (8 sections), CHEM 101 (1 Sections), CHEM 131 (1 Sections), CHEM 132 (0 Sections), and ENVS 102L (15 Sections). These sections served 3422 enrollments, 58.59% were Hispanic or low-income students.

In the spring of 2016, UNM offered sections of the following CRed gateway courses: CHEM 121 (4 sections), CHEM 122 (6 sections), MATH 121 (115 sections), BIOL 204L (10 sections), BIO 204 (4 sections), BIO 202 (10 sections) and Math 153 (4 sections) BIO203L (7 sections), CHEM 101 (1 Sections), CHEM 131 (0 Sections), CHEM 132 (1 Sections), and ENVS 102L (9 Sections). These sections served 2,744 enrollments, 60.56% were for Hispanic or low-income students.

In the summer of 2016, UNM offered sections of the following CRned gateway courses: CHEM 122 (2 section), MATH 121 (5 sections), CHEM 121 (1 sections), BIO 202 (2 sections), MATH 153 (2 sections), BIO203L (1 sections), CHEM 101 (0 Sections), CHEM 131 (0 Sections), CHEM 132 (0 Sections), and ENVS 102L (1 Sections). These sections served 410 enrollments.

Monthly workshops and work sessions were scheduled throughout the 2015-2016 year. Cohort 4 team members joined previous cohort monthly meetings beginning in July 2015. Cohort 1 CR teams (CHEM 122, MATH 121, PHYC160/161), Cohort 2 CR teams (BIOL 204L, CHEM 121, PHYC 103), Cohort 3 teams (BIOL 202, BIOL 204L, MATH 116), and Cohort 4 teams (ENVS 102, CHEM 101, CHEM 131/132, and BIO 203/203L) meet monthly with co-PI Gary Smith and graduate assistant, Audriana Stark, to discuss challenges, accomplishments, and participate in on-going professional development that address a range of relevant topics. Occasional meetings took place between co-PI Smith and team leaders to address specific concerns with each project. In June 2016, individual consultations took place with Cohort 4 to discuss plan for the annual assessment reporting and sustainability of the projects.

The STEM Gateway CR Council, formed Y3, is very engaged with recruiting and selecting CR proposals, and provided support and guidance well beyond endorsement of the rCR projects. As the grant started wrapping up in Year 5 Council members were responsible for generating ideas to help sustain the CR teams after STEM Gateway comes to conclusion.

ASSESSMENT

For Objective A.1, course enrollment and completion data were collected in CRed course sections of the Cohort 1 – 4 courses and grade-achievement data collected. Longitudinal tracking of course completion and grades by course was initiated and continues into Year 5.

Success rates in most of the CR courses vary by semester. Using a single semester as a comparison metrics to a baseline semester does not account for this variability. Therefore there is no significance to the decrease in the success rate for BIOL 204L from the 2nd to 3rd semester or the decreases in success rates from the baseline to the 2nd semester for ENVS 102L and CHEM 101. In the final report for the grant, we will undertake a more rigorous assessment of grade achievement in the CR courses across multiple pre-design and post-design semesters.

Teams in the CR projects also collected various other assessment data to provide further information about their projects. The BIOL 203L, CHEM 101, CHEM 131, CHEM 132, and ENVS 102L teams collected student survey data in CRed sections during Fall 2015 and Spring 2016. The data are being used to determine student perceptions of the CR, and when appropriate, to make adjustments to CR elements.

FINDINGS

Members of the course-CR teams are dedicated to improving student success in their courses (across sections) and expanding beyond their departments and university to create a culture of continuous growth. This is demonstrated by team participation in meetings and workshops, formal and informal assessments that guided mid-stream adjustments, an increasingly collaborative culture of teaching and learning, continued improvement after the financial support provided by STEM Gateway, attending educational conferences, and scholarship in teaching and learning. Formal and informal discussions about teaching and learning have spread among gateway course instructors in math, biology, and chemistry, in particular. Consistent with previous findings, we see varying outcomes from the teams. These findings are described for each team below.

Average grades for Hispanic students enrolled in Math 121 (College Algebra) for 5 semesters preceding CR was 2.11 (C) and in the 5 semesters after onset of CR is 2.40 (C+) and as high as 2.55 (B-), the highest in the 20 years of accessible institutional data. The substantial improvements in the students successful completion highlights how CR efforts can have unanticipated impacts on student success. More than 30 sections of Math 121 are taught semesterly with only 4-6 sections are taught by members of the original CR team. Nonetheless, improved student success occurs across sections led by nearly all instructors. It is likely that at least part of the improvement is related to syllabus changes that were implemented across all sections as part of the CR. The number of topics covered in the course was reduced and revised the exams administered across sections in order to better match the course outcomes developed during the STEM Gateway CR process. These changes impacted all course sections without changing any expectations in how the content was taught by instructors who are not using all of the CR components. Further modifications in the topical coverage in the course are being implemented and will make it easier for other instructors to gradually adopt the pedagogical changes made by the CR team. Nearly all sections of MATH 121 are using at least partially CRed curriculum (worksheets and online assessments) developed by the CR team, and shared resources are on a cloud-based sharing site.

Data collected by the CHEM 121 and CHEM 122 teams have shown measurable impacts of CR on student conceptual understanding of the course content. Pre- and post-testing shows approximately twice as much gain in conceptual understanding of core concepts in the CRed sections versus sections taught in Fall 2012 by instructors not using the CRed pedagogy. Chemistry teams continue to assess and improve the CR elements through analysis of exam results that lead to attention to changing how challenging concepts are taught. These teams are particularly notable for establishing a community of practice among all instructors of these courses regardless of membership in the original CR teams. The Chemistry team meets weekly to continue to refine their CRed sections and have reported a change in culture among teachers of CHEM 121 and CHEM122. Also, an Active Learning Handbook was developed by the team and is a guide for new instructors to adopt the CR curriculum. The chemistry teams continue to modify their courses and provide updated reports to STEM Gateway. There is also increasing collaboration between the CHEM 121/122 and CHEM 131/132 teams.

Three of the four core biology courses underwent CR during the STEM Gateway grant. BIOL 204L instructors developed and implemented CRed curriculum. The animal half of the course was developed and implemented in conjunction with CR efforts to improve and align the lecture portion of the course (BIOL 204). There was an increased interest in CR from the biology departments and BIOL 204 and BIOL 202/202L were added to the list of CR courses for Cohort 3. Biology instructors stated the importance of having STEM Gateway host leading biology educators, Bill Wood (2013) and Robyn Wright (2014), to broaden interest in CR. Building interest among biology faculty led to inclusion of a team to CR BIOL 203/203L in Cohort 4.

BIO 204 implemented CR activities fully in the plant half and partially in animal half in fall 2014. Spring 2015 the team fully implemented CRed curriculum for the entire term and both terms continued with lab reform efforts developed the prior year.

There was significant buy-in from the 204 instructors and adoption of online systems to share and manage resources that are created by the team, shared through Google Drive and UNM Learn, as a way to increase the sustainability, including a syllabus with what activities were tried for each lecture and comments about their successes and failures. The BIO 204 team found generally positive student feedback to attitudinal surveys along with feedback about the value of key instructional strategies that were adopted.

Math 153 combines pre-calculus and trigonometry, two 3-credit courses, into a single 5-credit course. This is intended to remove redundancies in the curriculum and speed the time to degree. Results from spring 2015 showed an improved success rate for students who enrolled in the MATH 153 course as opposed to the MATH 150 and MATH 123 course. There were also fewer withdrawals in the MATH 153 course. Despite the rigor of a 5-credit course, the success rate for Hispanic and low-income students went from roughly 50% in the comparable replaced courses to nearly 66% in the new course. Although teaching resources are shared online, observations of various instructors of the course shows varying adoption of commonly accepted best teaching practices and use of the resources. The MATH 153 team focused on collecting student data to inform their choice of instructional tools that were implemented during the CR. They collaborated closely with faculty members at CNM to coordinate the transfer of the course content to CNM so that students at both institutions would be given the opportunity to take it as a single 5 credit course rather than two 3credit courses.

BIO 202 was partially implemented in the Fall 2014 and Spring 2015, and fully implemented in Summer 2015. Partial implementation used instructional blocks that had been developed in either the Summer or Fall of 2014. By Spring 2015, all blocks were developed and used by the instructor teaching the CRed course. The blocks were all further refined during the Spring 2015. The 202-specific CR includes the collection of material within a Google Docs folder that is easily accessed by both instructors within and outside of UNM. That file holds, for each unit, reading guides, reading quiz question, study guides and PowerPoint slides for all in-class activities. In the future, the team leader will conduct an experiment in several learning environments using various levels of the CR material to isolate the effects of the CR when controlling for instructor. The BIO 202 team found that, on common exam questions, students in the CRed sections performed equally or moderately better than those in the non-CRed sections and that students respond positively to the newly implemented material.

PLANS FOR IMPROVEMENT

CHEM 101 faculty, including a collaborator from English, developed and assessed the effectiveness of a "Writing to Learn" (WTL) approach on increasing student success among STEM-H and non-STEM-H majors enrolled in CHEM 101: Chemistry in our Community. They designed low-stakes writing assignments with corresponding rubrics aimed at helping students build their knowledge of and confidence in each unit topic in preparation for the unit exam. Initial survey data indicates an overall positive increase to no change in students' attitudes about CHEM 101 and students' abilities in the course. In end-of-semester focus groups, students reported that the WTL assignments aided in increased understanding of course concepts, increased engagement with course content, increased transferability of knowledge and skills to other courses, and an increased understanding of real-world applications for chemistry. There was no correlation between students' performance on writing assignments and their overall unit exam or course grades, although students did perform better overall on test items related to WTL assignment content than in previous semesters. This curricular innovation is being expanded into other gateway chemistry courses.

BIOL 203/203L faculty had the goal to create laboratory activities that 1) reinforced lecture material, 2) focused on inquiry-based and active learning, 3) improved quantitative skills, and 4) engaged students in UNM-based or New Mexico-based research. The team created and implemented 14 new teachable units, produced a new 226-page laboratory manual, developed accompanying online resources, instructor resources for TAs, and lab prep notes, and generated novel and potentially publishable student-led data. The team surveyed students for outcomes, successes, and attitudes in May 2015. They found student learning in both ecology and evolution increased following course re-design, with a 2.4- to 7.3-fold increase in success on some concept inventory questions relative to pre-CR scores. Student grades in the lab increased by 4–7% following the first semester of implementation of CR. The team made improvements to the course by continually revising the teachable units based on input from students, faculty, teaching assistants, and prep teams during spring and summer 2016. They plan to distribute teaching units to interested instructors and have already shared materials with another minority-majority institution. Resources are easily accessible to other instructors through extensive documentation that accompanies each teachable unit, including lab manual materials, teaching how to documents, annotated PowerPoint presentations, online quiz banks, and lab prep documents.

CHEM 131/132- This project is the last piece of our CR effort for the UNM general chemistry sequences taken by freshman. The effort started with CHEM 122 in 2012, continued with CHEM 121 in 2013, and was completed with CHEM 131 and 132 in 2015. During 2015-2016 year, the team (1) Established course learning outcomes that align with HED competencies and STEM major requirements, (2) Developed similar class structure as the CRed CHEM 121/122 to help students make an easier transition if they decide to switch between the 121-122 and 131-132 sequences. (3) Administered the same modified chemistry concept inventory tests (CI) given to CHEM 121 and 122 students to CHEM 131 and 132 students to compare student concept learning between the 121/122 and 131/132 sequences, and (4) The placement system using ALEKS was piloted in the summer of 2016, and is ready to roll out in 2016-2017. From assessment data collected from the first group of students taking CHEM 131 and 132, the concept gains from CHEM 131 students outperformed the CHEM 121 students by a significant margin (31% vs 18%, respectively). The passing rates of CHEM 131/132 are also significantly better than CHEM 121/122 (mean: 83% vs 68%, respectively). In addition, since the pilot, the placement in the summer of 2016, enrollment in CHEM 131 was increased by 80%.

ENVS 102L was CRed so the laboratory would help students more effectively learn the fundamentals of environmental sciences as well as to develop materials to help the instructors teach the content with research supported pedagogical techniques. The team assessed the student learning outcomes for ENVS 102L and CRed 14 separate lab activities along with supporting materials: Student learning outcomes, background readings, pre-lab assessments, iClicker questions, post-lab assessments, assessment of outcomes, PowerPoint slides, activity keys, gradebook templates and other associated supplemental materials. The team intends to further modify the lab activities as needed so as to improve the learning experience for our students.

Also notable, is the cross pollination between projects and members illustrated in the launch of a new Freshman Learning

Community that combines Math 153 and Chemistry 121.

Faculty's major concerns throughout the course of the project were about time and work load involved in the CR projects. Last spring, the CR Council recommended that STEM Gateway provide small supplemental grants to existing CR teams in order to increase the likelihood of successful implementation and sustainability of their projects. STEM Gateway provided MiniGrants to three CR teams (ENVS 102L, CHEM 131/132, and BIO 203L) to overcome barriers and challenges they faced throughout the process of CRing their courses. MiniGrants were available in spring and summer 2016. STEM Gateway leadership completed budgeting for FY16 and budgeted \$50,000 for this initiative.

STEM Gateway held the Advancing CR Projects meeting that included updates from cohorts 1 - 3 and emphasized the work that was done by cohort 4, barriers they face and potential solutions to those barriers. This was an important way to communicate the work of the CR teams to the larger UNM community, particularly leadership that can be supportive on campus. Leadership from CTE, student services and several department chairs were present.

UNM's main campus faculty development program was involved in a reorganization during Year 4, which combined it with existing student academic support programs into a single Center for Teaching and Learning (CTL). During Year 5, CTL has hired a new Associate Director for faculty development. The STEM Gateway PIs have met with the CTL Executive Director to lay out a generalized plan for institutionalizing aspects of the STEM Gateway CR projects within CTL. Those plans included compiling the resources to support faculty development in an easily accessible location that will be archived within the University.

STEM Gateway and CR council are encouraging each UNM department that has persisted in CR efforts with STEM Gateway to develop the relationship with CNM faculty that they find most appropriate for their faculty. Chemistry has established twice-a-year, half-day meetings between faculty that teach courses that are offered at both institutions Math faculty at both institutions have already been meeting to discuss common curricula for Math 121 and Math 153 and there are plans to continue such conversations regarding calculus curricula.

Project Objective: A.2 Increase engaging, collaborative classroom learning through the training and deployment of undergraduate Peer Learning Facilitators (PLFs) in large-enrollment STEM gateway courses; to affect at least 3000 students annually (1500 students each semester).

Number	Performance Measure	Measure Type	Quantitative Data					
			Target			Actual Performance Data		
			Raw Number	Ratio	%	Raw Number	Ratio	%
a	Anonymous surveys of students in these classes will show PLF-supported collaborative learning meets needs of at least 80% of surveyed students.	Project	80	1790 / 2201	81	1981	1981 / 2201	90
b	The STEM PLF program will employ 40 Undergraduates per semester	Project	40	/		42	/	
c	STEM PLFs will work in 15-20 STEM class sections per semester	Project	40	/		48	/	
d	STEM PLFs potentially impact more than 3000 students per year	Project	3000	/		2943	/	
e	Faculty in at least one Gateway course in each of the departments that teach a Gateway life/physical science or mathematics course (Biology, Chemistry, Earth & Planetary Sciences, Mathematics & Statistics, and Physics & Astronomy) will adopt a collaborative learning pedagogy supported by PLFs by the end of the second project year.	Project		5 / 5	100		4 / 5	80
f	Percentage of students completing each PLF supported course section with a grade of C or higher will improve by 2nd semester of implementation the completion by Hispanic and/or low-income students by 10% by 2nd semester and 20% by 3rd semester, compared to the prior success percentage in sections of the same course taught by the same instructor.	Project		18 / 18	100		6 / 18	33
g	The following performance measure has been added since the original application to measure impact at the student level: (began in 2013 ARP): Students in PLF-supported sections will attain higher course success rates than students in non-PLF-supported sections.	Project	77	/		83	/	
h	The following performance measure has been added since the original application to measure impact at the student level: (began in 2014 ARP): Withdraw rates for students in PLF-supported sections will be lower than for those students in non-PLF-supported sections of the same courses.	Project	1	/		2	/	
i	The following performance measure has been added since the original application to measure impact at the student level: (began in 2014 ARP): PLF grade point averages will be higher than their peers (Numbers in this table are automatically rounded to the nearest whole numbers. Actual	Project						

Explanation of Progress (Include qualitative data and data collection information)

NOTES ON DATA AND FINDINGS:

All Data was collected from the UNM student information system (Banner) in December 2016. The data were collected and analyzed by STEM Gateway staff.

(a) This measure has been met. Surveys have been administered to all sections supported by the Peer Learning Facilitator program. Through the Fall 2015-Spring 2016 semesters, 89.91% of survey respondents in PLF sections answered that having PLFs available to them was either very important (45.38%) or moderately important (44.52%). The missing .1% comes from a student that answered both very and moderately important. Only 9.99% answered that it was not important at all.

(b) This measure has been met for the Spring/Summer 2016 semester, but not for the Fall 2016 semester. Spring 2016 employed 37 PLFs, Summer 2016 employed 5 PLFs, and Fall 2016 employed 18 PLFs. During the final year, in anticipation for budget restraints for the no-cost extension, the number of PLFs was cut back to slowly decrease employment and courses served to minimize the impact of the grant closure on both PLFs and their associated faculty.

(c) This measure has been met. PLFs served 28 sections during Spring 2016 and 20 sections during Fall 2016.

(d) This measure was not met, but very close, and a result of scaling back for the no-cost extension.

(e) This measure has not been met. The physics and astronomy department is no longer interested in participating in the PLF program.

(f) Target has not been met. During the last four years of this program, only 6 sections meet the following criteria necessary for this performance objective: (1) taught by instructors who also taught sections of the same course prior to their participation in the PLF program, AND (2) have completed teaching and grading at least two semesters of the PLF-supported sections by October 1, 2016. In retrospect, this measure is not particularly effective. It excludes instructors who did not teach these courses prior to their involvement with the PLF program; it excludes instructors who left UNM before teaching their second PLF-supported semester; and it disadvantages instructors who came to the PLF program with already high student success rates. Other measures have been researched by the PLF Advisory Council and have been included in this report.

(g) This measure was added in the Year Two Annual Performance Report. This measure has been met. Students in PLF supported sections had a success percentage of 83.21%, compared to their peers 77.37% in non-PLF supported sections.

(h) This measure was suggested by the Peer Learning Facilitator Program advisory council (composed of UNM faculty and instructors). Target was not met. Withdraw rates for PLF supported sections was 2.46%, and for non-PLF supported sections was 1.24%.

(i) Target has been met. This measure was suggested by the Peer Learning Facilitator program advisory council (composed of UNM faculty and instructors). This measure has been met. The table above shows only whole numbers, but the exact GPAs are as follows: average PLF GPA = 3.63; average non-PLF GPA = 3.15. This measure indicates that the STEM Gateway Program has been successful in recruiting high performing student employees as Peer Learning Facilitators.

PEER LEARNING FACILITATOR PROGRAM: YEAR FIVE ACCOMPLISHMENTS

In Year Five, the PLF program continues to serve courses in the Biology Department. In the Spring 2016 semester, 37 Peer Learning Facilitators supported 28 sections of 10 STEM Gateway courses. In the Fall 2016, 18 PLFs supported 21 sections of 9 STEM Gateway courses.

The services of the PLF program include the academic support of introductory Math, Chemistry, Physics, Biology, and Earth & Planetary Sciences classes. The PLFs' primary duties are to assist faculty members who are interested in enacting more collaborative learning techniques in large STEM classrooms. For the Spring and Summer 2016 semesters, the PLF tasks continued as before, including circulating among students during class to facilitate problem-solving; working with the instructor to assess recurring areas of confusion for students; and low-stakes grading of homework assignment or in-class tasks. To stay on task with the classroom assignments, PLFs also complete preparatory work each week, as well as attend weekly Professional Development trainings. As needed PLFs hold outside tutoring hours for students to work with them one-one-one or in small groups. In anticipation of the grant closure, and to better align with the College Enrichment Program (CEP) Peer Mentor Tutoring model, for the Fall 2016 semester, PLFs no longer graded low-stakes assignments or held office hours.

STUDENT TRAINING

During Year Five, student employees engaged in both Pre-Semester and weekly Professional Development Trainings during the fall and spring semesters. Pre-Semester training took place in the week before UNM classes began and included such topics as navigating the administrative aspects of the PLF job, what to expect during the first weeks of work, explanation of job duties and responsibilities, and a meet-and-greet with faculty members. The weekly Professional Development training expanded on the interpersonal aspects of working in the classroom community. PLFs learned about campus resources, learning styles, study skills, students in crisis, working on teams with different personality traits, and tutoring in an active learning environment.

PARTNERS

Other stakeholders beyond the faculty and students who PLFs serve and who have participated in the program include our sister

grant, STEM UP. Realizing that our student employees share common duties, for the Fall 2015 and Spring 2016 semesters, STEM Gateway and STEM UP collaborate on weekly trainings and hold them together.

Across campus, there is a strong interest in the Peer-Learning Facilitator (PLF) approach to course support. Partnerships with the Center for Academic Support (tutors), as well as the College Enrichment Program (Peer Mentor Tutors [PMT]) have led to various joint professional development trainings.

During both the spring 2016 semester, the PLFs also assisted a fellow department, CEOP, with a large academic event: Mock Finals. The Mock Finals event is held on a Saturday from about 8am - 1pm during both semesters. Gateway was able to offer tutoring after students took mock exams because of the involvement of the PLFs. During that time, students can show up, get an actual previous final and a key and take the exam. Tutors are available from about 8am-1pm if any student wants to de-brief after the mock final. With the assistance of Biology, Chemistry, Math and Physics department instructors, who donated old finals and keys. Several PLFs worked with other CEOP and CAPS staff to tutor. Through this project, STEM Gateway served more than 200 students in Spring 2016.

To strengthen partnerships with the PLF instructors, a PLF Advisory Council was formed in Year Two. Year Five consisted of this group addressing two challenging tasks: (1) developing additional performance measures to evaluate the effectiveness of the PLF program. Their recommended measures have been added to this report as measures A.2.h and A.2.i. (2) in preparation for institutionalization, and in order to cement full commitment from individual instructors, the Advisory Council created a proposal process. Using this process, individual instructors demonstrate their need for PLFs in the classroom, and describe how they will transform their instructional strategies to leverage PLFs to improve student achievement. This process was implemented for Spring 2015. The council was then able to institute criteria for Fall 2015, faculty proposals. In addition to these tasks, the council served as a resource in discussing CAPS alignment changes, advocated for the program in funding requests, determined a sustainable PLF to instructor ratio, suggested acceptable assignments for PLFs to grade, and oriented new faculty members on how to properly utilize PLFs in their classrooms.

Finally, the PLF Program implemented a joint project between STEM Gateway and the UNM Mathematics Department to create the Calculus Prep Workshop. The Calculus Prep Workshop serves as a refresher for students enrolled in calculus for the following semester. The workshop takes place the week before classes begin and covers essential topics in algebra, pre-calculus, and trigonometry. The Spring 2016 workshop completely facilitated by PLFs with the sample problems and student learning objectives provided by the Mathematics Department. Thirty-three students attended the workshop. Plans for the no-cost extension year are to create a video workshop series which will be offered as part of the Essential Academic Skills Enhancement (EASE) video workshops (see SSIG – Objective A.3 for more information).

ASSESSMENT

The PLF Program staff team conducts surveys of all student participants. Once a semester, the students enrolled in PLF-supported classes are surveyed. The PLFs themselves are surveyed twice—once at the beginning and once near the end of the semester. These surveys are utilized by STEM Gateway staff and PLF instructors to assess how well student needs are being met, how well PLF needs are being met, to understand student/PLF concerns for the future and to help instructors improve upon their instruction. In addition, PLFs are evaluated every semester through a classroom observation. For the Fall 2016 semester, this evaluation shifted to an online survey completed by both faculty and PLFs, as a result of re-organization of personnel and duties associated with the move in to the no-cost extension year. Gateway visits each PLF section to determine how the PLF is performing, if they are a good fit for the subject, and how well the PLFs and instructors work as a team.

FINDINGS

As in previous semesters, one of the most successful elements of the PLF Program is the work done by the PLFs in the classroom with students and faculty. The PLFs are skillful students who thrive in their roles as content leaders. They enjoy the work they do, as reflected by their responses to surveys and by their willingness to continue to work as PLFs each semester. PLFs value the opportunities for guidance from instructors and often explore new ways to better serve students. They care about the big picture of the grant and are interested in improving and evolving as students and as PLFs.

An area of improvement for the program involves maintaining consistency in the utilization of PLFs. Various stakeholders have determined this is best accomplished by helping faculty understand the many facets of utilizing PLFs in active and collaborative learning.

Overall, the PLF program has been highly successful. In Year Five, the PLF program met 5 of 9 performance measures (measure A.2.f was not met, but is problematic in its structure. See Year Two Annual Performance Report for full explanation). In Year Five, the PLF program served more than 2943 students, and recruited and retained 39 highly successful student employees (PLFs). Students who enrolled in PLF-supported sections were three percentage points more likely to succeed than their peers in non-PLF-supported sections of the same courses.

PLANS FOR IMPROVEMENT

In Year Five, the funding requests submitted to the Student Fee Review Board (SFRB) through CAPS was not approved. As a result of unfruitful partnerships with CTL and CAPS, the no-cost extension year include an application for funding to be submitted to the Student Fee Review Board by CEP, to include an expansion of their PMT program to assume the roles of the STEM Gateway PLF program.

In the no-cost extension year, as an alternative to SFRB funding, the PLF Program will continue to strengthening its partnership with departments and faculty to facilitate in the best possible approach to a sustainable program within each department.

Project Objective: A.3 Increase student retention and success in STEM gateway courses by developing and piloting STEM Student Interest Groups (SSIGs) to shadow sections of at least four gateway courses (two courses during the first year); impacting at least 700 students (100 students in the first year)

Number	Performance Measure	Measure Type	Quantitative Data					
a	Throughout the five years of this grant, 15 SSIG sections will be offered	Project	Target			Actual Performance Data		
			Raw Number	Ratio	%	Raw Number	Ratio	%
			15	/		18	/	
b	Throughout the five years of this grant, at least 150 Hispanic and/or low-income students will complete SSIG sections	Project	Target			Actual Performance Data		
			Raw Number	Ratio	%	Raw Number	Ratio	%
			150	/		158	/	
c	Throughout the five years of this grant, this SSIG program will impact 700 students	Project	Target			Actual Performance Data		
			Raw Number	Ratio	%	Raw Number	Ratio	%
			700	/		1761	/	
d	Throughout the five years of this grant, SSIG sections will shadow at least four gateway courses	Project	Target			Actual Performance Data		
			Raw Number	Ratio	%	Raw Number	Ratio	%
			4	/		4	/	
e	Anonymous surveys of students in SSIG sections show at least 80% of students identify SSIG experience as supportive in pursuit of STEM degrees and success in STEM-Gateway courses	Project	Target			Actual Performance Data		
			Raw Number	Ratio	%	Raw Number	Ratio	%
			80	/		90	238 / 265	90

Explanation of Progress (Include qualitative data and data collection information)

NOTES ON DATA/FINDINGS:

All Data was collected from the UNM student information system (Banner) in December 2016, or through workshop attendance lists. The data were collected and analyzed by STEM Gateway staff.

(a) Targets for the entire five year period of this grant have already been met.

(b) Targets for the entire five year period of this grant have already been met.

(c) Target for the entire five year period of this grant have been met. This value reflects this reporting period only under the implementation of the new SSIG model EASE workshops only (see narrative below).

(d) Targets for the entire five year period of this grant have already been met.

(e) Target has been met.

To achieve the SSIG learning outcomes, the outreach and activities initiatives over the October 1st, 2015 – September 30th, 2016 year focused on workshop, and services designed to assist students in accelerating their acquisition of skills in key SSIG disciplines.

Between October 2014 and May 2015, Gateway efforts were focused on the Essential Academic Skills Enhancement (EASE) workshop series. Additional initiatives implemented over this past year included participation in participation in Mock finals (in cooperation with CEP), STEM focused presentations to select audiences, the STEM Gateway Blog feature on the program website, and the Spring STEM Cultural Colloquium.

1) Essential Academic Skills Enhancement (EASE) workshop series.

We launched this workshop series Spring 2015. The Essential Academic Skills Enhancement (EASE) workshop series (see specific topics below) is a series of workshops aims to provide undergraduate students with support in basic skills required for success in their STEM courses. Often it is these essential skills that students are expected to have that hold them back in their

course performance rather than content. We hope to alleviate this strain so they can focus on course content.

These workshops also help with the new general education core reform by providing students with transferable skills within both information literacy and quantitative reasoning. These workshops can also help students succeed in their content specific courses.

In preparation for the no-cost-extension year, and institutionalization, these workshops are offered as video links with their accompanying LEARN (Blackboard) assessment (for a grade or as extra credit) to instructors within Biology, and for the Fall 2016 semester, as a step towards the university wide offering, select Psychology courses. The current structure within Biology is, at most, 2 workshops per course for the 4 core courses. Instructors provide a link to the video for students to view and complete a corresponding assessment in a LEARN setting. It can be set up in such a way that they can only complete each workshop within a given time frame, so that they must complete each during the time of the semester you feel they would benefit the most. They see their grade for the assessment, but not receive the correct answers. They are encouraged to visit their TA or professor to discuss those (which we provide).

Spring and Summer 2016 continue to offer in person workshops within the core Biology laboratories, with the exception of Metrics which was offered online. Changes to workshop content are made continuously in response to student feedback.

Between January 25, 2016 and June 16, 2016 we offered a total of 59 in person workshops, and one online offering of Metrics. For August 22 through September 30, 2016, all workshops were offered in an online format, with the addition of four Psychology courses which concluded workshop participation during the no-cost extension year (and are thus omitted from total counts). For Year Five, a total of 1761 undergraduate students, some of whom attended multiple workshops, resulting in 2719 participants. Of those within the non-psychology courses, 67.86% were Hispanic or low-income students.

Workshop topics that had videos for the Fall 2016 semester:

- **Metrics & Scientific Notation:** This workshop reviews the basics of conversions between measurement systems and proper scientific notation that is fundamental to accurate problem solving in STEM fields.
"I wonder why there isn't more of these classes."
"I would improve the way that these workshops are set up by making more of them. I learned more here than I have in lab for a whole semester."
"I would love such workshops to be made available every month to students who are interested."
"What I gained from this workshop is to have an understanding that there will always be someone who will guide me in science courses. I appreciate the chance to attend this workshop."
- **Critical Thinking and Pop-Science:** This workshop discusses how to recognize and cultivate clear, logic-based analyses of controversial scientific topics in the context of modern political and popular culture.
"Thinking critically is crucial. It's also crucial to know how I think and make sure I bend it in ways that set myself up for success. I've always learned well and had a lot of trouble applying it to other related stuff. I've also always been a poor test taker and this class really helped me focus on why I have been having those troubles and how I can go about it. The workshop provided me with skills I can work on."
"The thing I found most valuable was the unique approach to making this workshop different. Even though we all know what critical thinking is, it's nice to be reminded of how we are able to use it in schools."
- **Basic Excel:** This workshop covers the basic functionality of PC based Microsoft (MS) Excel 2013©. MS Excel© is an extremely powerful software package for introductory data entry, manipulation, and creation of figures or graphs.
"This is extremely useful, I wish we had more of these."
- **Scientific Writing:** This workshop is a shorter video than the other workshops and will teach techniques on how to best incorporate scientific literature into their own writing, presented from the perspective of technical sciences, as well as working with others, and citation managers.
"I feel better prepared to work with scientific articles."
- **Advanced Excel:** This workshop covers some basic descriptive statistical methods that can be used through the Data Analysis ToolPak Add-On of PC based Microsoft (MS) Excel 2013©. This workshop moves beyond the Basic MS Excel workshop with an emphasis on descriptive statistical methods that can be executed using MS Excel.
"We should have more than two excel workshops"
"I just felt somewhat humiliated by my struggles with excel before taking this workshop and when I saw how simple everything was I was relieved and humbled."

Moving forward in to the no-cost extension year, workshop topics that will have videos for the Spring 2017 semester:

- **Scientific Reading:** This workshop highlights how to effectively read, understand, & critique primary peer reviewed scientific articles.
- **Calculus Prep:** This workshop includes Math Review, Graph Review, and Problem Solving in an attempt to prepare students for Calculus I (Math 162). This includes a problem set and key.

2) **STEM Gateway Presentations.** STEM Gateway staff presented on the Impostor Syndrome to the McNair/ROP Research scholars, and on STEM at UNM and potential Career Pathways to the UNM Continuing Umbrella of Research Experience (CURE)

Additionally, we provided a Calculus Prep workshop prior to the Spring 2016 semester, which is now being incorporated in the

EASE workshops as we move forward with institutionalization.

3) STEM Gateway website. In addition to maintain the website resources, we completed a full year of our blog, with four reoccurring weekly topics:

- a. STEM Career Profiles. Eight total posts. Our goal is to get students to understand that the path to their careers and success is not always a straight line; to highlight the broad possibilities for them with STEM degrees, outside of the traditional or obvious pathways; to think about their STEM education in a way that they may not realize; and to encourage them to persist despite challenges they will encounter. We want students to realize the possibilities of their STEM education.
- b. Student Survivors. Seven total posts. Our goal is to focus on how students reach their STEM undergraduate aspirations.
- c. Faculty Learning Strategies. Seven total posts. Our goal is to cover faculty members' perspectives and thoughts on what students need to be successful in college.
- d. Two sides of the same coin: Mentor-mentee relationships. Six total posts. Our goal is to show the benefit to mentor-mentee relationships and how they interaction develops and the contribution it can have on student success.

4) STEM Cultural Colloquium: Getting at the Gap. This 1-day event hosted by STEM Gateway aimed to bring together professionals from STEM initiatives across campus, to engage in dialogue about how to best structure and implement STEM programs for optimal levels of student success. The colloquium's purpose was to discuss some of the issues related to STEM education in the state for underrepresented students that do not get addressed like imposter phenomenon, sense of belonging, non-cognitive variables, micro-aggressions, self-management skills, and more. These issues disproportionately impact underrepresented students, specifically those of color, and hinders realization of their capabilities. Thus, the colloquium focused particularly on the success of STEM students from underrepresented populations. Although this event was targeted towards stakeholders with an interest in supporting STEM students, we highly encouraged all individuals interested in these topics or student success to attend.

Goals of Colloquium

- a. To better understand underrepresented populations in STEM.
- b. To increase awareness of issues that lead to the educational gaps in achievement.
- c. To learn new ways of alleviating the gap by developing processes, programs & Mindsets that address these needs.

The event included presentations from esteemed leaders in STEM initiatives from UNM and outside Universities, and aimed to provide a diverse array of perspectives on how to better meet student success objectives.

Colloquium sponsors included: American Campus, STEM UP, STEM Collaborative Center, and Explora!

Program:

9 am - Opening - "A Gateway to Diversity: The role of the research university in transforming the STEM pipeline" - Gabriel Lopez, PhD - University New Mexico, VP for Research & Economic Development and Professor of Chemical & Biomedical Engineering In the United States, the modern research university plays a pivotal role in shaping the future face of STEM fields. Faculty commitment to basic and applied research coupled with federal funding opportunities enable research universities to serve as a springboard for the development of a diverse STEM workforce. To achieve this objective, research universities have to consistently and effectively reach students from underrepresented backgrounds throughout the K-20 continuum. López recounts his personal experiences growing up in a small town in Northern New Mexico and how opportunities in STEM served as a gateway to his success as a student, faculty member, and ultimately as an executive in higher education. He will touch on his own work developing research opportunities for underrepresented groups through the NSF's UNM/Harvard PREM: Leadership in Biomaterials program. Finally, he will round out his talk by highlighting some of the STEM services and programs supported by the UNM Office of the Vice President for Research and its partners.

9:35 am - "How We Teach, Matters" - Gary Smith, PhD - University of New Mexico, PI STEM Gateway & Assistant Dean of Faculty Development, School of Medicine

Compelling evidence has existed for decades that achievement gaps and retention problems in college STEM courses and majors are strongly related to how courses are taught. Recent research demonstrates that inclusive pedagogies substantially reduce achievement gaps in gateway science courses. Furthermore, these pedagogies improve learning for all students, meaning that inclusive pedagogy is the best pedagogy for everyone and is correlated to research on human learning. This observation further emphasizes that cultural knowledge differences across socioeconomic categories lead, for many students, to mismatches with the "rules of the game" in higher education that arguably increase, rather than decrease, degree-earning inequity. Inclusive – best– pedagogy validates cultural knowledge originating outside of higher education. UNM STEM faculty are applying these principles and positive results are emerging.

10:20 am - Panel Discussion – Representatives from successful programs across UNM's campus discuss their approach to helping underrepresented groups, specifically within STEM. They will also address the challenges and reflections. Antonio Bañuelos, MS (Program Coordinator; PREP - Post-baccalaureate Research and Education Program) with Alfredo Bolanos (PREP Scholar), Ricardo Romero, MA (Director; McNair/ROP - Ronald E McNair Scholars Program & Research Opportunity Program), Matthew Moyd (Senior, biology major), Joseph Cook, Ph D (PI/Director; UnO - Undergraduate Research Opportunities) with Donavan Jackson (Graduate - Masters, biology), Elaine Manzanilla, MS (Program Coordinator; UPN - Undergraduate Pipeline Network), Steven Peralta, MSEE (Director & Academic Advisor; ESS - Engineering Student Services) with Erika Yegerlehner (Senior, mechanical engineering), Lisa Paz (Director of Membership & Communications; AISES - American Indian Science and Engineering Society), and Gary Allison, MA (Program Specialist; CAPS - Center for Academic Program Support).

11:40 am - 12:05 pm - Lunch is Served

12:10 - 1:10 pm - Luncheon - "The Importance of Working With A Culturally-Validating, Asset-Based Student Success Framework in STEM" - Laura Rendon, PhD - University of Texas – San Antonio, Professor of Educational Leadership & Policy Studies

This presentation will focus on how low-income, first-generation students of color often succeed against the odds in STEM fields of study. Their success is created with their own cultural assets and ways of knowing that are often unacknowledged by educators who subscribe to deficit-minded thinking about students of color. STEM educators need to recognize and embrace student assets and work with a culturally-validating STEM student success framework to ensure that more students of color are represented in STEM careers and fields of study.

1:15 pm - "Increasing STEM Identity: The Natives in STEM Project" - Lisa Paz (AISES - Director of Membership & Communications), Chelsea Chee (NM EPSCoR - Diversity Coordinator), and Mary Jo Daniel, PhD (Director, Faculty Research Development, University of New Mexico)

Studies show that images affect a person's identity and sense of belonging. From that, individuals may find it difficult to imagine themselves as students or professionals in a STEM discipline because they don't see themselves represented in STEM-related images. The Natives in STEM project is creating and exposing positive images and stories of Native Americans in STEM to tribal schools and communities through electronic and print media.

2:00 pm - "Context Diversity: A New Paradigm for Explaining the Achievement Gap among Underrepresented Populations in STEM Disciplines" - Roberto Ibarra, PhD - University of New Mexico, Associate Professor Emeritus of Sociology
Higher education continues seeking ways to increase the diversity of populations pursuing careers in STEM disciplines. One objective is to eliminate the persistent achievement gap between underrepresented populations (URM) and majority populations with programs that rely on diversity models that seem to work. Most current operating models rely on affirmative action principles of access and/or multicultural principles of retention that promote assimilating and socializing URM populations to fit into the social and intellectual fabric of higher education. These models have demonstrated some success over the years, but progress has been slow and the lack of diversity still persists. Furthermore, even the most successful of these programs lack a deep understanding of what it is they are doing that works. As a result, those few that do enter the academy often do not thrive and feel as though they are outsiders in the academic world.

Context Diversity (CD) is a relatively new paradigm that is systemic, inclusive, and reframes common assumptions about diversity and how it works. It encourages reframing, rather than reforming, academic cultures to meet the needs of all populations and especially underrepresented groups. The basic assumption is that social/cultural elements of research and teaching in higher education are imbalanced or out of sync with the cultural contexts of diverse populations now arriving in greater numbers at our institutions. Recent research indicates that these conflicts can be resolved with application of guiding principles based on a Multicontext theory that fosters enhanced organizational cultures and relationships, creating a foundation for reframing higher education in the 21st century.

2:45 pm - "Mindfulness of Global Learning and Mind-Brain Education in STEM" - Jamal Martin, PhD -University of New Mexico, Director of Peace and Justice Studies

Most of current STEM work remains rooted in the musings of Bacon and resulting efforts that eventually led to abuse of science and technology and equally important, scientific racism. These scholarship traditions have supported slavery, colonialism and imperialism while ignoring a cultural debt from indigenous knowledge and opportunities for eco-survival and sustainability. Decolonizing scientific research as a Eurocentric process of inquiry requires re-evaluation of current theoretical and methodological frameworks proposed by Kuhn, Popper and possibly accepting models proposed by Lakatos and Feyerabend.

A new process of inquiry is required to forestall threats made to humanity partially caused by human aggression and progress made in science and technology. Equity, diversity and inclusion approached through foundations of integrative thought as a focus of serious teacher reflection about paradigmatic and disciplinary boundaries allows for more just than mirroring on social reconstruction obstacles. A new cultural perspective in STEM allows for realizing (1) STEM practices arise out of real need and interests; (2) cultural pride found in appreciation of different contributions made by others; (3) all the disciplines take on new meaning with integrated approaches; and (4) cultural infusion breeds more respect of different heritages.

By reclaiming the importance of the cultural views of thinking about mathematics and science we reinforce the opportunities for improving the quality of the teacher influence that strongly factors in student interest and achievement. Mindfulness towards accepting and implementing transdisciplinary approaches supports systems and divergent thinking, analysis and problem solving. The realization of the power, language, daily practice of cultural views and thinking of mathematics and science comes about with a change in policy thinking related to STEM-capable teachers.

3:30 pm - Closing - "Metacognition: The Key to Changing Mindsets and Closing the Achievement Gap" - Sandra McGuire, PhD - Louisiana State University, Emerita Professor of Chemistry

All STEM students who are admitted to college have the ability to excel in STEM courses. However, many minority students do not have effective learning strategies and resort to memorizing information just before tests. They then lose confidence in their ability after they fail their first round of exams. This interactive presentation will introduce cognitive science research-based learning strategies that will help students develop higher order thinking skills, start acing courses, and change their mindset about their intelligence from fixed to growth. The session will focus on ways to teach students simple, yet powerful learning strategies to ensure success in STEM courses and beyond.

Project Objective: A.4 As a consequence of the above objectives (A.1 – A.3), the number of Hispanic and other low-income students receiving Bachelor’s degrees in life/physical sciences, engineering, and mathematics will increase.

Number	Performance Measure	Measure Type	Quantitative Data					
a	As a consequence of the above objectives, the number of Hispanic and other low-income students receiving Bachelor's degrees in life/physical sciences, engineering, and mathematics will increase.	Project	Target			Actual Performance Data		
			Raw Number	Ratio	%	Raw Number	Ratio	%
			333	/		386	/	

Explanation of Progress (Include qualitative data and data collection information)

All Data was collected from the UNM student information system (Banner) in December 2016. The data were collected and analyzed by STEM Gateway staff and by staff from the STEM Collaborative Center and the Student Affairs Assessment and Research (SAAR) staff.

(a) Target has been met. In Year One, the baseline was established for this measure as the 2011-12 Academic Year. Year 1 had 340, during Year Two, this number decreased to 331, Year Three’s numbers increased to 380, and by Year Four they dropped to 304.

For Year Five the number of Hispanics and other low-income students receiving Bachelor’s degrees in life/physical sciences, engineering, and mathematics has increased to 386.

Note that Year 1 - 3 numbers have changed slightly over last year's report. This is because the data is live, and changes slightly as new degrees or added, or other degrees are deleted. Year 4 number is drastically different due to change in methodology as a result of personnel shifts, and for this year’s APR, the Year 4 we submitted has the same methodology as Years 1-3.

Project Objective: A.5 Improvement of student persistence and degree attainment in STEM fields will improve campus-wide retention and graduation rates as STEM aspirants represent a significant proportion of incoming students.

Number	Performance Measure	Measure Type	Quantitative Data					
			Target			Actual Performance Data		
			Raw Number	Ratio	%	Raw Number	Ratio	%
a	Campus-wide 3rd semester retention rates will increase over baseline (2010-11 Academic Year)	Project	76	/		79	/	
b	Campus-wide STEM graduation numbers will increase over baseline (2011-12 Academic Year)	Project	531	/		809	/	

Explanation of Progress (Include qualitative data and data collection information)

All Data was collected from the UNM student information system (Banner) in December 2016. The data were collected and analyzed by STEM Gateway staff and by staff from the STEM Collaborative Center and the Student Affairs Assessment and Research (SAAR) staff.

(a) Baseline data for this objective was established in Year One as the 2010-2011 academic year . The target number shows the third semester retention rate for the Fall 2010 freshman cohort. Third semester retention rate for each year are: 2010-11=73.4, 2011-12=75.7, 2012-13=77.5, 2013-14=78.6, 2014-15=79, 2015-16=79.7

For years three through five, this objective has been met.

(b) Baseline data for this objective was established in Year One as the 2011-2012 academic year. Since graduation rates for incoming students will not be available for four years, we are instead reporting the number of STEM bachelor's degrees awarded. The target number shows the STEM awards in 2011-12, and the actuals number shows the STEM awards in 2015-2016. Historic numbers are: Baseline 531, Y1=586, Y2=574, Y3=674, Y4=641, Y5=709

For year five, this objective has been met.

NOTE ON BASELINE YEARS: 2011-2012 was selected as the baseline year for graduation because it represented the last set of students who would likely not be impacted by STEM Gateway programming. 2010-2011 was selected as the baseline year for retention because it represented the first cohort of incoming students who would likely be impacted by STEM gateway programming. This discrepancy is due to our initial roll-out of services primarily aimed at first and second year STEM students.

Project Objective: B.1 CNM and UNM departments will concur on learning outcomes and assessment of learning achievement for essential STEM-Gateway courses in order to improve curriculum alignment for transferring students.

Number	Performance Measure	Measure Type	Quantitative Data					
a	CNM and UNM departments will concur on learning outcomes and assessment of learning achievement for essential STEM-Gateway courses in order to improve curriculum alignment for transferring students (3 projects per year for the first four years of the grant)	Project	Target			Actual Performance Data		
			Raw Number	Ratio	%	Raw Number	Ratio	%
			3	/		2	/	

Explanation of Progress (Include qualitative data and data collection information)

NOTES ON DATA/FINDINGS:

All Data was collected from the annual reports submitted by Course Reform Team Chairs, and from conversations with individual course reform team members.

(a) Target has not been met. In Year 1, UNM faculty are partnering with CNM faculty on all three (3) course reform initiatives. In Years 2 and 3 the target was met. Each course reform team included membership from Central New Mexico College. For Years 4 and 5, the target was not met. However, two departments began collaborating across institutions in regards to learning outcomes as a result of STEM Gateway's initiatives.

For this year, Year 5, the target was not met. For Years 2 and 3, Course Reform teams were required to include faculty members from CNM and the target was met. However, for Years 4 and 5, UNM Course redesign teams were not required to include a faculty member from CNM given concerns that arose with CNM faculty participation in Cohort 3. However, due to the culture change prompted by STEM Gateway initiatives, the Math and Chemistry departments have create inter-institutional relationships to facilitate curriculum alignment. The Biology department is open to exploring the possibility, but has yet to do so. STEM Gateway continues to engage departments to build their own connections with CNM counterparts.

For more information on progress towards this objective, please reference the Course Reform narrative under the Objective A1. Additionally, the STEM-Gateway program is closely aligned with the STEM UP program (HIS Collaborative Grant), helping to strengthen the transfer pathway between CNM and UNM.

Project Objective: C.1 To develop sustainable capacity to track student achievement, by race/ethnicity and income level (measured by Pell Grant or similar parameter), through the STEM-majors curricula and based on courses taken at UNM or other institutions. Establish by Grant Year One end, query structures in enrollment data needed to build/analyze data sets for:

Number	Performance Measure	Measure Type	Quantitative Data					
a	Final-grade-achievement distribution of students in STEM Gateway Courses, correlating student course-by-course progress with progress toward a STEM degree (2) Course-retaking patterns of students withdrawing or failing Gateway courses with prior course grades and entrance-exam scores (3) Success of declared or aspirant STEM majors among transfer students (with focus on Hispanic, low-income and students transferring from CNM) in subsequent STEM courses at UNM to identify needs for inter-institutional curricular and assessment adjustments and to guide articulation and transfer agreements.	Project	Target			Actual Performance Data		
			Raw Number	Ratio	%	Raw Number	Ratio	%
			3	/		3	/	

Explanation of Progress (Include qualitative data and data collection information)

NOTES ON DATA/FINDINGS:

This information was collected from reports submitted by Grant Staff and by regular staff meeting updates.

(a) Target for the entire five year period of this grant is met.

YEAR FIVE ACCOMPLISHMENTS

The Data Driven Prioritization completed two data analysis projects during Year Five:

Freshmen STEM Project

In an effort to understand the value added of the Freshmen STEM Project (FSP) at UNM, the following research questions were addressed: (1) Are there differences in FSP participants’ academic preparation and their background characteristics compared to their STEM peers? (2) Is there a difference in persistence to the 2nd semester between FSP participants and their STEM peers? (3) What is the impact on 1st semester GPA of FSP participants compared to their STEM peers? (4) Do non-cognitive profiles vary between FSP participants compared to their STEM peers? And (5) What is the predictive role of STEM coaching, tutoring and mentoring on the academic achievement of FSP participants in their 1st semester above and beyond non-cognitive factors? Freshmen students who participated within the FSP from Fall 2015-Spring 2016 (N=93) generally had higher ACT and H.S. GPAs than their STEM peers. There was a statistically significant relationship between FSP participants’ retention to the 2nd semester and their STEM peers, with 91% of FSP students returning compared to 79% of their peers. What is even more critical, is FSP participants are more ethnically diverse. The results also demonstrated the positive difference in first semester GPA between FSP students who had higher GPAs (M= 3.31) compared to their STEM peers (M= 3.11). The SuccessNavigator® Academic Index score, which predicts how well a student will do within their first semester was statistically significantly higher for FSP participants than their STEM peers. Lastly, the most important FSP intervention was STEM coaching and was even more predictive of first semester GPA when knowledge of a student’s self-management score was factored into the process. Overall, Freshmen STEM Project participants had more positive academic outcomes their STEM peers.

Essential Academic Skills Enhancement (EASE) Workshop analysis

Students who participated within the EASE workshops coordinated with Biology in the Spring and Fall of 2015 (N=1,472) was collected. These data were analyzed to determine the statistical significance of engaging in an EASE workshop and its impact on final course grade and semester GPA. In addition, gender and ethnicity effects were explored. All analyses utilized t-tests and Analysis of Variance (ANOVAs) to explore these effects. Lastly, utilizing evaluations via Opinio, qualitative data was analyzed in an effort to improve the implementation of future EASE workshops. Overall, there were positive academic outcomes for students that engaged with EASE workshops during the semester. There still is an academic achievement gap between white students and students from traditionally underrepresented groups even when students were engaged in EASE workshops. In order to understand how to address this achievement gap, it is suggested that more information about historical success rates be explored.

Of the three major projects planned for Year 5, we were not able to complete the “Transfer Analysis, Phase Two” due to political and personnel challenges. Additionally, the “PLF Educational Aspirations” was not completed due to low response rates. The third project “Understanding university teachers’ perceptions of course design process” is ongoing and will be completed during the no-cost-extension year.

NO-COST-EXTENSION YEAR PROJECTS

Two analysis projects were initiated in Year 5, and are planned for completion in the no-cost extension year.

Course Redesign Research – What was the effect of course redesign on student achievement? And how do college teachers who have participated in a course-redesign program understand the process of course design?

Murky Middle Project – in connection with Student Affairs Assessment & Research – In this study, our objective is centered on first semester Murky Middle (MM) freshmen STEM students (GPA 2.0 – 2.99) for Fall 2010 - 2014. We will investigate the following research questions: Which attribute (demographics and socioeconomic factors) acts as the best predictor to MM STEM students’ long-term performance and persistence within the STEM fields? Does the specific chosen STEM major for the 1st

semester affect long-term persistence (to the 4th semester) within MM STEM students? And, do non-cognitive factors provide additional predictive abilities to performance within STEM for STEM MM students?

Section B: Budget Information

Year One Expenditures: \$469,012
 Proposed Carry-Forward to Year Two \$139,163
 Year Two Expenditures: \$900,797
 Proposed Carry-Forward To Year Three: \$52,951
 Year Three Expenditures: \$898,990
 Year Three Overage: \$8,834
 Year Four Expenditures: \$701,635
 Year Four Carry Forward: \$113,247
 Year Five Expenditures: \$564,165
 Year Five Carry Forward (No-Cost-Extension Budget): \$204,330

EXPLANATION OF YEAR FIVE CARRY FORWARD AND PLAN FOR THE NO-COST-EXTENSION YEAR:

During Year Five, the SSIG/Workshop program specialist took 3 months leave (\$11,250) and returned at a 0.5 FTE rate (\$11,250) until July 31, at which point the program Director resigned and this staff member transitioned in to the position of Director at a 0.75 FTE rate (\$2,276). The PLF Program Specialist resigned at the end of August (\$1,583). Additionally, the move to an online workshop series for EASE (SSIG initiative) allowed for the PLF and SSIG/Workshop Program Specialist positions to be transitioned to a single Graduate Assistant position (\$1,698). The Institutional Researcher resigned September 16, and no replacement was hired until the extension year (\$1,351). In preparation for the no-cost-extension year, we utilized 18 PLF's and one office aid (at reduced hours) for August and September, instead of previous Fall semester numbers of 38 PLF's (\$3,778). The Course Redesign did not initiate a year five redesign team, thus 2016 summer faculty was only for the year four team (\$60,751). This resulted in a total of \$93,937 carryforward. Programmatic changes were all done in an effort to institutionalize grant initiatives while maintaining the scope of the objectives.

This carry forward will be spent in the No-Cost-Extension year, through June 30, 2017 as follows:

Professional Staff: 1 October 2016 through 30-June 2017 \$51,000

- Director at 0.5 FTE: \$27,084
- Researcher (partnered with SAAR) at 0.35 FTE: \$15,120
- Administrative Assistant at 0.5 FTE: \$12,150

Graduate Assistants: 1 October 2016 through 15-May 2016 \$38,500

- PLF/EASE Administration GA at 0.5 FTE (Stipend \$14,080 + Tuition \$1,981)
- Course Redesign/Data Analysis Administration at 0.25 FTE (Stipend \$7,000 + Tuition \$1,981)

Peer Learning Facilitators (fall [18] and spring [18]): \$49,510
 Fringe: \$47,212
 Operating Costs: \$14,754

Total \$141,373

Section C: Additional Information

STEM GATEWAY PARTNER DEPARTMENTS AT THE UNIVERSITY OF NEW MEXICO

- College of Arts & Sciences (individual faculty members, departments and student programs)
- School of Engineering (individual faculty members, departments and student programs)
- Undergraduate College (individual faculty members, departments and student programs)
- Department of Student Services, Division of Student Affairs
- STEM UP program
- Office of Institutional Analytics
- Men of Color Initiative
- El Centro de la Raza (Hispanic student serving organization)
- Graduate Resource Center
- Women's Resource Center
- Office of Support for Effective Teaching
- University Advisement
- UNM Provost Office
- Office of the Vice President for Research
- Center for Academic Program Support
- UNM Human Resources
- Center for Teaching and Learning
- Center for Teacher Excellence (formerly Office of Support for Effective Teaching)
- Center for Academic Program Support
- Student Affairs Assessment & Research

STEM GATEWAY PARTNER DEPARTMENTS AT CENTRAL NEW MEXICO COLLEGE

- Dean's Office, School of Math, Science and Engineering
- Biology Department
- Mathematics Department
- Chemistry Department

There were no major changes in partners between Year Two and Year Three.

STEM GATEWAY PARTNER DEPARTMENTS AT THE UNIVERSITY OF NEW MEXICO

In addition to above:

- University College*
- Continuing Education*
- Centennial Science and Engineering Library

* These additional partners have helped Gateway attain its objectives, especially in regards to institutionalization of the SSIG/Workshop (EASE) aspect of the grant.

Uploaded File:

STEM Gateway Budget (STEM Gateway BUDGET.xlsx)