

# **U.S. Department of Education**

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## **APPLICATION FOR GRANTS UNDER THE**

**NATIONAL PROFESSIONAL DEVELOPMENT PROGRAM**

**CFDA # 84.365Z**

**PR/Award # T365Z110061**

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Closing Date: MAY 09, 2011

## Project SEEDS Abstract

Adams State College, in partnership with several Colorado school districts, Centennial BOCES, the Colorado Department of Education, and the non-profit Space Foundation, proposes Project SEEDS (STEM and Educational Excellence for Diverse Students) to address identified needs of Colorado schools and the English learners they serve.

Over the course of five years, 90 teachers in the following districts and regions will receive in-service preparation leading to the Linguistically Diverse Education (“ESL”) endorsement: Cherry Creek, Roaring Fork, North Conejos, Cortez, and Centennial Board of Cooperative Education Services (a regional education service center encompassing 14 districts). This statewide collaborative partnership comprises 104,000 students, of which 13,500 are English learners, and 7,821 teachers, less than 4% of whom are ESL endorsed.

In addition, 80 teachers from the same districts and regions will receive professional development in STEM content and strategies for English learners. Forty of these teachers will receive a 13-credit certificate in “STEM for ELs”, and forty pre-school teachers will complete a preK2 Early Childhood course. The STEM content will be provided through a partnership with the Space Foundation.

By the end of the Project 170 teachers will have received either the LDE endorsement or advanced professional development in STEM for English learners, and an additional 80 teachers will have received mentoring from the STEM-EL and STEM PreK2 participants.

The major objectives, activities, and outcomes for Project SEEDS are to

- 1) provide training leading to the Colorado Linguistically Diverse Education (“ESL”) endorsement for 90 teachers. The grant will provide tuition and materials for 21 hours of graduate coursework. These teachers will improve EL student achievement and serve as advocates for addressing the needs of linguistically and culturally diverse students in their respective schools and districts.

**PRIMARY OUTCOMES:** a) 90 endorsed teachers; b) higher student achievement.

- 2) provide training leading to a certificate in “STEM-EL” for 40 K-12 teachers. The grant will pay for STEM curriculum review and incorporation of sheltering pedagogies, and tuition and materials for 13 hours of graduate credit. This targeted training will lead to greater enrollment of ELs in STEM-related courses and promote diversity in high-need fields of study. The participating teachers will model inclusive pedagogy and mentor at least 40 peers.

**PRIMARY OUTCOMES:** a) 40 STEM teachers better prepared for ELs; b) increased EL participation and achievement in STEM courses.

- 3) provide training in preK-2 STEM strategies for 40 preschool teachers. The grant will pay for tuition and materials for 3 hours of graduate credit. These teachers will advocate for early involvement of EL students in STEM content in pre-school settings, advocate for similar preK programs around the state, and mentor at least 40 peers.

**PRIMARY OUTCOMES:** a) 40 PreK2 teachers better prepared for ELs; b) increased EL achievement in STEM-related school work.

As a result, this Project addresses Competitive Priority #3: *Promoting Science, Technology, Engineering, and Mathematics (STEM) Education.*

The number of teachers involved, and relevant GPRA measures for each year, are as follows (numbers being served and completing in a given year are unduplicated):

	# in-service served	# in-service completers*	# completers endorsed	# completers serving ELs
YEAR 1	58	0	0	0
YEAR 2	40	18	18	18
YEAR 3	36	40	18	40
YEAR 4	36	76	18	76
YEAR 5	0	36	36	36
<b>TOTAL</b>	<b>170</b>	<b>170</b>	<b>90</b>	<b>170</b>

\*"In-service completers" includes both the STEM participants and ESL endorsement

The Project Director will be Dr. Joel Judd, Director of Graduate Teacher Education at Adams State College: 719-587-7682, [jbjudd@adams.edu](mailto:jbjudd@adams.edu)

Project SEEDS  
STEM and Educational Excellence for Diverse Students

Submitted for Funding Under  
CFDA 84.365Z

National Professional Development Program  
(Office of English Language Acquisition)

Submitted by:  
Adams State College  
Alamosa, CO 81102

## **Section (a) Quality of the Project Design**

### **(a)(1)**

Adams State College, in partnership with several Colorado school districts, Centennial BOCES, the Colorado Department of Education, and the non-profit Space Foundation, proposes Project SEEDS (STEM and Educational Excellence for Diverse Students) to address identified needs of schools and students, and promote advanced academic achievement for English learners in Colorado. Adams State has had a premier teacher preparation program for 90 years, and is a designated Hispanic Serving Institution whose mission includes working with rural schools in Colorado.

Rationale for Proposal - Project SEEDS focuses on identified educational needs arising from schools' efforts to effectively serve students from diverse linguistic and cultural backgrounds over roughly 20,000 square miles, and is designed to further capacity building among the educational and community entities responsible for ensuring that the teachers of EL students in this region are highly qualified. In addition, the project aims to improve the numbers of ELs enrolling, and the quality of instruction in STEM-related coursework—especially advanced coursework in math, science, and technology. Some sample data from the most recent school year exemplifies the persistent achievement gap between ELs and Colorado students as a whole in math and science (math is first tested in 3<sup>rd</sup> grade, science in 5<sup>th</sup>) on the current Colorado State Achievement test (CSAP). Notice the marked decrease in math achievement from 3<sup>rd</sup> to 10<sup>th</sup> grade.

**Table 1 –Combined Percentage of “Proficient” or “Advanced” in Two Grade Levels for ELs and Colorado Students on CSAP 2009-2010**

	<u>MATH</u>		<u>SCIENCE</u>	
	EL	Statewide	EL / Statewide	EL / Statewide
3 <sup>rd</sup> Grade	48%	71%	n/a	n/a
5 <sup>th</sup> Grade			18%	47%
10 <sup>th</sup> Grade	11%	30%	16%	47%

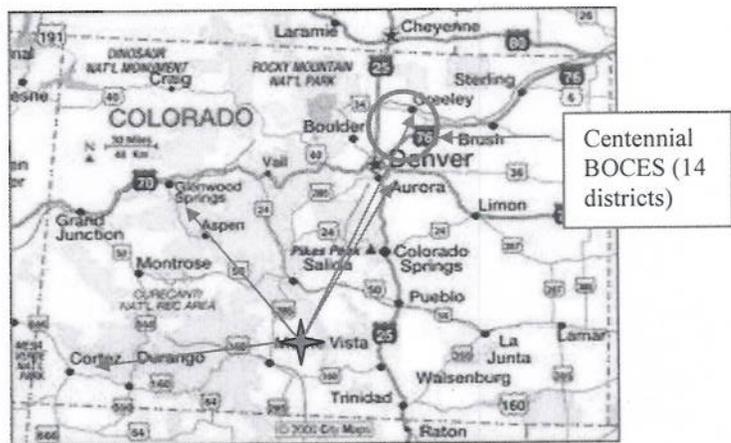
Along with lagging EL achievement is the continued under-enrollment of students of color in advanced secondary coursework such as math and science. One measure of this is the number of students in Advanced Placement (AP) courses. Table 2 samples three AP courses and compares Hispanic (EL enrollment data is not available) and White enrollment across the state. For the school year 2009-10, 57% of the school population was White, and 32% Hispanic.

**Table 2 – ‘White’ and ‘Hispanic’ Enrollment in Three AP Classes 2009-2010**

Course	White	Hispanic
Calculus (both AB & BC)	81%	8%
Physics B	78%	9%
Biology	75%	12%
<b>State Averages</b>	<b>77%</b>	<b>13%</b>

In the year reported there were more White students in Spanish Language AP classes than Hispanic students.

The map to the right places in perspective the location of grant



partners and the geographic area to be served by Project SEEDS (the large star indicates the location of Adams State College):

The partner districts and their city locations are: Montezuma-Cortez (Cortez); North Conejos (La Jara); Roaring Fork (Glenwood Springs); Cherry Creek (Denver); and the Centennial Board of Cooperative Educational Services (“BOCES”, which represents 14 districts northeast of Denver). The Space Foundation, a 501(c)(3) non-profit whose education division is dedicated to promoting the integration of standards-based STEM content into all areas of the curriculum, is partnering on the Project’s STEM goals. Table 3 summarizes student and teacher data for the partner school districts. Notice that the percentage of ELs in these LEAs is much higher than the percentage of ESL endorsed teachers.

**Table 3 – Total and EL Student Enrollment and Teacher Data for Partner Schools 2010-11**

<b>District</b>	<b>Enrollment</b>	<b># EL Students</b>	<b># Teachers</b>	<b># ESL-Endorsed Teachers</b>
Cherry Creek	52,232	5,166	3,521	94
Roaring Fork	5,212	1,442	362	35
North Conejos	1,030	14	80	6 (all K-5)
Cen.-BOCES	43,203	6,617	2,677	131
Cortez	2,929	307	181	26
<b>TOTALS</b>	<b>104,606</b>	<b>13,546 (13%)</b>	<b>7,821</b>	<b>292 (3.7%)</b>

Given the foregoing context and needs, Project SEEDS has three interrelated goals:

- 1. To provide 90 teachers with the Colorado Linguistically Diverse Educator (LDE) endorsement;**
- 2. To provide 40 highly-prepared STEM subject teachers who teach ELs; and,**
- 3. To provide 40 preK-2 teachers who work with ELs fundamental STEM knowledge and skills.**

By addressing each goal with each partner, the Project will impact the educational achievement of ELs (and increase the effectiveness of their teachers) across the grade span and curriculum, with the overarching goal that more ELs will perform better on tests of science and math, enroll in higher level STEM-related coursework, and even pursue related careers after graduation. In addition, each STEM participant will be required to mentor at least one colleague as part of professional development “best practice”, thereby effectively *doubling* the number of STEM subject and preK-12 teachers affected by the Project’s STEM emphasis, and encouraging partner districts to advocate for more diverse student success in STEM-related coursework.

The following matrix provides the Goals, Objectives, and Outcomes of the Project, along with the contributions of the aforementioned partners and individual(s) primarily responsible for attainment of the Objective. Objectives directly related to GPRA and Competitive Priority #3 are indicated by **GPRA** and **CP3**, respectively. Additional details regarding annual timelines, activities, and types of data to be used in evaluating the Project are provided in the Management Plan and Evaluation section.

<b>NEED:</b> Highly qualified teachers of EL students in partner districts.				
<b>GOAL 1:</b> By the end of five years at least 90 teachers will add the Colorado LDE endorsement to their license, including math, science, and technology teachers.				
<b>OBJECTIVES</b>	<b>OUTCOMES</b>	<b>TIMELINES</b>	<b>PARTNER CONTRIBUTION</b>	<b>PERSON(S) RESPONSIBLE</b>
1a. During the first four years of the project, five cohorts of 18 teachers each will be recruited.	Five cohorts of at least 18 teachers each will begin study. Cohorts will be composed of underrepresented groups, and will mix elementary and secondary [STEM] teachers.	Cohorts begin Fall 2011; Summer 2013, Fall 2013, and two cohorts in Fall 2014	<ul style="list-style-type: none"> <li>✓ Identifying teachers</li> <li>✓ Assisting with recruitment</li> <li>✓ Supporting participating teachers (load; substitutes; etc.)</li> </ul>	Principal Investigator (PI)
1b. Each cohort member will be assigned a faculty advisor.	Each teacher has an advisor	Fall 2011; Summer 2013, Fall 2013, and Fall 2014		Graduate Advisor (GA)
1c. At the end of each project year each active cohort member will have completed at least 15 credit hours.	Teachers will receive 'A' or 'B' grades in all classes.	Summer 2012, 2013, 2014, 2015, 2016	<ul style="list-style-type: none"> <li>✓ District facilities for classes &amp; observations</li> <li>✓ Teacher (peer) mentors for practicum</li> </ul>	PI with GA

<p>1d. Each completer will disseminate skills &amp; insights at local, state, or national forums.</p>	<p>Each teacher will document presentation at an in-service, workshop, conference, or similar event.</p>	<p>Starting Fall 2012 and ongoing through end of grant</p>	<p>✓ District support for conference attendance ✓ Opportunities for district in-service, workshops, collaboration</p>	<p>PI &amp; Evaluator</p>
<p>1e. Each participant will take and pass the Colorado Linguistically Diverse Education (LDE) PLACE test [GPRA 1.5].</p>	<p>Each teacher will add the LDE endorsement to his/her license.</p>	<p>Starting Fall 2012 and ongoing through end of grant</p>	<p>✓ District recognition for added endorsement</p>	<p>PI &amp; Evaluator</p>
<p>1f. Each completer will demonstrate effective instructional practices with LEP students [GPRA 1.6].</p>	<p>1) Teachers will exhibit proficiency on all areas of SIOP. 2) Completers ' students will show significant gains on CO English language proficiency and content achievement measures and relevant local tests (e.g., NWEA)</p>	<p>Starting Spring 2013 and annually thereafter.</p>	<p>✓ Districts will disaggregate and provide student assessment and teacher evaluation data</p>	<p>Evaluator with practicum supervisors (college faculty) and school and school districts</p>

**NEED:** More highly prepared K-12 teachers of STEM subjects, particularly for ELs.

**GOAL 2:** By the end of five years, 40 K-12 teachers will obtain a STEM-EL certificate.

OBJECTIVES	OUTCOMES	TIMELINES	PARTNER CONTRIBUTION	PERSON(S) RESPONSIBLE
2a. In Year 1, a "STEM -EL" curriculum will be created, incorporate sheltering strategies for diverse learners.	A 13-credit "STEM-EL" certificate will be created for K-12 teachers.	Fall 2011 – Spring 2012	✓ Space Foundation will provide STEM curriculum and collaborate with Adams faculty on course modifications	PI with Space Foundation
2b. During Year 1, teacher selection criteria will be created for recruitment.	40 K-12 teachers will be selected for participation in STEM-EL certificate program.	Fall 2011 – Spring 2012	✓ Districts will help identify and recruit key teachers	PI & STEM coordinator
2c. At the end of Years 1 & 2 each participant will have completed 2 STEM (6 credits each Summer, plus 1 credit in Spring 2012). [CP3]	All teachers will receive 'A' or 'B' grades in all courses.	Spring/Summer 2012; Summer 2013	✓ Space Foundation provides on-site instruction, materials, and follow-up technical assistance	STEM coordinator

<p>2d. Completers will be placed in instructional settings with English learners [GPRA 1.6].</p>	<p>Graduates will be teaching ELs.</p>	<p>Fall 2013</p>	<p>✓ Districts will ensure effective placements</p>	<p>STEM coordinator</p>
<p>2e. Data will be collected that compares the instructional impact of completers on ELs compared with non-certificated teachers.</p>	<p>1) Certificated teachers will evidence greater effectiveness with LEP students on measures of classroom instruction (SIOP).  2) More EL students will enroll in STEM-related courses.  3) EL student achievement will show gains vis a vis ELs with non-certificated teachers.</p>	<p>Starting Spring 2013 and annually thereafter</p>	<p>✓ Districts will disaggregate and provide student assessment and teacher evaluation data</p>	<p>STEM coordinator &amp; Evaluator</p>

2f. Completers will provide in-service to peers on STEM strategies for ELs [CP3]	At least 40 colleagues will receive and implement STEM-EL strategies by Spring 2014 as measured by classroom observation.	Fall 2012 – Spring 2014	✓ Districts will provide in-service/workshop and mentoring opportunities for completers (e.g., common planning time)	STEM coordinator & Evaluator
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<b>NEED:</b> More preK-2 teachers with STEM subject knowledge and pedagogy.				
<b>GOAL 3:</b> By the end of five years, 40 preK-2 teachers will have completed the preK-2 Early Childhood STEM course.				
<b>OBJECTIVES</b>	<b>OUTCOMES</b>	<b>TIMELINES</b>	<b>PARTNER CONTRIBUTION</b>	<b>PERSON(S) RESPONSIBLE</b>
3a. Prior to Year 3, criteria for teacher participation will be determined	PreK-2 programs that feed partner district schools will provide 40 teachers.	Fall 2011 – Spring 2014	✓ Identification and recruitment of teachers	PI & STEM coordinator
3b. 40 teachers will take preK-2 Early Childhood STEM course [CP3]	Course will be completed with 'A' or 'B' grade.	Summer 2014	✓ Support for and recognition of participation	STEM coordinator

3c. Completers will provide instructional services to EL students. [GPRA 1.6]	Completers will exhibit effective EL instruction as measured by SIOP.	Fall 2014 and thereafter	✓ Districts to provide completer placement data, student demographics, and teacher access	STEM coordinator with Evaluator
3d. Completers will mentor peers in STEM strategies and content	At least 40 preK-2 peers will receive STEM in-service	Fall 2014 until completed	✓ Districts will provide in-service/workshop and mentoring opportunities for completers	STEM coordinator; PI

Training and Course Details

**LDE Endorsement** - The Linguistically Diverse Education (LDE) endorsement is Colorado’s “ESL” endorsement for licensed teachers. Project SEEDS provides support for at least 90 teachers to obtain the LDE endorsement. Adams State’s LDE program, aligned with Colorado’s Teacher Performance Standards, comprises 21 credit hours as follows:

<b>LDE Endorsement Courses</b>	<b>CO Teacher Standards</b>
LLC 510 – Foundations of Literacy, Language and Culture (3 hrs.)	1, 6
LLC 516 – Multicultural Narratives & Educational Reform (3 hrs.)	1, 8
LLC 520 – Language Acquisition (3 hrs.)	1, 4
LLC 530 – Theory to Practice (3 hrs.)	4, 6
LLC 526 – Assessment for English Learners (3 hrs.)	3
LLC 535/45/55 – Internship (Practicum) (6 hrs.)	4, 5, 6
<b>TOTAL HRS.</b>	<b>21</b>

The program takes five semesters to complete, and culminates in a practicum where teachers demonstrate the skills and dispositions considered “best practice” in helping ELs succeed in school. The SIOP model is used as a model for instructional planning and observation, as it has proven helpful and effective with teachers across Colorado. Participants who so choose may take three additional courses which lead to an MA Education. The grant will only pay for tuition and books leading to the endorsement. Coursework will be delivered using a “hybrid” model that combines face to face class work with supplemental online activities. Course instructors and travel is covered by the Adams State Graduate Teacher Education division.

**STEM-EL Certificate** – Project SEEDS provides the majority of funding for 40 teachers to receive professional development leading to a “STEM-EL Certificate.” Additional support for 25% of training tuition will be provided by Adams State. Participants will take the first year’s courses at the Space Foundation facility in Colorado Springs, and the second year’s courses on campus at Adams State in Alamosa. In addition to the course costs, the Project will pay for teacher travel and lodging to these sites.

The certificate program, to be finalized in Year 1 of the Project, will be comprised of 4 Space Foundation courses from the list below—adapted to ensure effective sheltering strategies for ELs are part of the outcomes—along with a 1-credit college seminar, “Effective Pedagogy for English Learners,” that will precede the Summer STEM coursework and place in context the Project’s goal for completers to become better teachers of and advocates for diverse students in their schools’ STEM-related programs:

<b>STEM-EL Certificate (LLC 579 plus four of the five courses: TBD)</b>	
LLC 579 – Effective Pedagogy for English Learners	(1 hr)
ED XXX – Astronomy Principles for the Classroom	(3 hrs.)
ED XXX – Biological and Physical Research	(3 hrs.)
ED XXX – Earth Systems Science	(3 hrs.)
ED XXX – Meteorology and Space Weather	(3 hrs.)
ED XXX – Space Technologies in the Classroom	(3 hrs.)
<b>TOTAL HRS.</b>	<b>13 hrs.</b>

The Year 1 curriculum work will integrate into Space Foundation coursework the six key strategies highlighted by the New Teacher Center at the University of California Santa Cruz for English learner achievement, which are 1) vocabulary and language development; 2) guided interaction; 3) metacognition and authentic assessment; 4) explicit instruction; 5) meaning-based

concepts and universal themes; and, 6) modeling, graphic organizers, and visuals. In addition to being extensively “field-tested,” Space Foundation courses include post training support. Teachers who participate in the STEM-EL certificate will have access to Space Foundation instructors, resources, and networking with peers indefinitely. This access will facilitate the requirement that completers mentor at least one peer in the knowledge and skills they gain from the training. Completers will also have the option of applying the four 3-credit courses to a Master of Arts in Curriculum and Instruction if they choose.

**STEM-PreK2** – Finally, the Project will provide college credit for 40 pre-school and early elementary teachers to take the Space Foundation course “PreK-2 Early Childhood Space Exploration.” They will receive 3 graduate credits for this course, and as with the STEM-EL cohort, commit to mentoring at least colleague in the knowledge and skills gained from the training.

**Articulation** – The idea behind addressing three separate but related groups of teachers is that they will advocate for change *across* the grade spans, and develop a shared conceptual belief about the education of all students, particularly ELs. They will then advocate for the changes needed to improve student achievement and provide graduates with 21<sup>st</sup> century knowledge and skills. In addition to changing fundamental attitudes and instructional practices, students must be provided with high-quality exposure to and experience with scientific and technical content and critical thinking skills from the very start of schooling if they are to be prepared for the kinds of work required by today’s technical careers. If they do not, it is in many ways “too late” to begin such work in high school.

**(a)(2)**

The belief that teachers ultimately have a significant impact on students' attitudes toward and achievement and interest in school has been the focus of much research (c.f., Collier and Thomas, 1996; Cummins, 2007; Garcia, 2002). This is particularly true for students who may be at-risk in school, such as English learners. Current research confirms that successful teachers of ELs not only have extensive skills in teaching the mechanics of language and how it is used in difference contexts and for different purposes (Snow & Wong-Fillmore, 2000; Scarcella, 2005), but they also possess identifiable pedagogical and cultural skills, including the ability to communicate effectively with students and to engage students' families (Garcia, 2002; Good & Brophy, 1994; Gonzalez, Moll & Amanti, 2005; Zeichner, 1996), along with sound understandings of the subject matter. Moreover, good teachers have a sense of competence ("self-concept" or efficacy) regarding their ability to teach EL students (Darling-Hammond, 2000; Garcia, 1996; Villegas, 2002), a finding that corresponds to research on teacher efficacy in general and its positive effect on student achievement (Gandara, Maxwell-Jolly & Driscoll, 2006; Goddard, Hoy & Hoy, 2000; Goddard & Goddard, 2001; Wheatley, 2002).

For these reasons, the in-service and professional development offered through Project SEEDS addresses not only teacher knowledge of and attitudes toward linguistic and cultural differences, but also provides participating teachers with the knowledge, curricular and pedagogical tools, and cultural skills to promote English learner achievement in the partner schools. Effective teachers of culturally and linguistically diverse students demonstrate four key attributes: **knowledge** (experience and coherent teaching philosophy); **skills** (focus on meaningful, integrated, cooperative and active learning experiences); **disposition** (commitment and change); and **affect** (high expectations, communication, and parent trust) in curriculum,

course delivery, professional development and community partnerships (Garcia, 2002; Peregoy and Boyle, 2001; Ladson-Billings, 1994; Villegas, 1991). Following Walton, Baca, and Escamilla's (2002) call for comprehensive programs to prepare pre-service and in-service teachers to teach effectively in diverse classrooms, teachers' critical competencies in functions related to language will focus on developing knowledge of linguistics and language, language and cultural diversity, sociolinguistics, language and cultural diversity, and language development and second language acquisition (Wong-Fillmore and Snow, 2000; Colorado Revised Statute 8.22).

Due to the needs of partner schools and the demands placed upon them to be accountable at a high level for student achievement, participating teachers will learn "sheltered" or "specially designed" instructional techniques in academic English (cf., SDAIE). Such instruction fits well with the mostly rural school settings involved with the Project, where limited funding and non-highly qualified faculty often inhibit effective programs for ELs. A sheltered approach to content instruction also lends itself to existing assessment tools, such as SIOP, which can provide quantitative data on instructional effectiveness.

Project emphases and formative evaluation data will also guide participating teachers in identifying specific foundational academic concepts as well as specific language features that must be taught so that students develop essential academic literacy skills (Scarcella, 2005). The academic language focus of Project SEEDS promotes the cognitive skill development needed to succeed in school and meet high academic standards (Scarcella, 2003; Kinsella, 2005). These skills are essential for success in STEM-related subjects (NCELA, 2011; August, et al., 2010). Finally, the content of the STEM courses aims to provide teachers with the skills and strategies to "break out of their silos", integrate STEM across the curriculum, and identify and involve

more diverse students in STEM-related studies, all critical needs in the partner schools (Space Foundation, 2011; NCES, 2011).

### **Section (b) - Quality of Project Personnel**

#### **(b)(1)**

Adams State College practices a policy of non-discrimination towards and equal opportunity for all persons. Its Affirmative Action program is designed to ensure equal opportunity in both employment and educational programs regardless of race, color, sex, religion, national origin, physical ability, or veteran status. All employment searches encourage applicants from underrepresented groups and require a diverse applicant pool before a hiring decision is made (see also separate GEPA statement).

Other grant partners, including the Colorado State Department of Education, BOCES, Space Foundation, and participating school districts, all have similar policies.

The principal investigator and project director will be Dr. Joel Judd, who holds an MA in TESOL and a Ph.D. in Education (Second Language Acquisition and Teacher Education) from the University of Illinois at Champaign-Urbana. He has over 20 years successful experience with grants and educational program administration, ESL program and curriculum development, and the education of English Learners. This includes directing Title VII and Title III IHE grants, and five years as the Title VII SEA and migrant education director in Missouri. His teaching experience includes secondary ESL, Adult Education, and Immigrant Education and he is fluent in English and Spanish. Dr. Judd has also developed and administered ESL and EFL programs in Korea and Puerto Rico. He is currently Professor of Education and Director of Graduate Teacher Education at Adams State College.

**(b)(2)**

The other key leadership position is that of the STEM coordinator, Dr. Anicia Alvarez. Dr. Alvarez is a veteran teacher of more than 30 years and is currently Assistant Professor of Teacher Education at Adams State. She holds a Ph.D. in science education from Purdue University, and master's degrees in early childhood education and general science. Prior to joining Adams State College, Dr. Alvarez was Principal of Ferndale International School in the Philippines and Dean of Education at the University of Brunei-Darussalam. Her academic experiences include teaching science education at the graduate and undergraduate levels, conducting pre-service and in-service professional development in education and consultancy work in multinational development projects in developing countries in Asia.

The grant support coordinator will be Ms. Andrea Rydgren. She holds a Bachelor's degree in Engineering Technology, and has worked for the Board of Cooperative Educational Services (BOCES) in Migrant and Special Education programs as an administrative and budget administrator. Ms. Rydgren's recent work with Adams State College has given her knowledge of grant administration, campus policies and programs, recordkeeping, budgetary oversight, and activity organization needed for this project.

The grant evaluator will be Dr. Clara Martinez. Dr. Martinez has 30 years experience in Education and a Ph.D. with emphasis in Language, Literacy and Culture. For the past 15 years she has been focused on program evaluation and faculty development in Language Acquisition, on English as a Second Language programs at both the secondary and elementary levels, has conducted internal and external social sciences program evaluations for federal, state, Tribal, county and other local agencies, provided pre-service and graduate level teacher training, and assisted in performance teaching/mentoring and accountability methods.

A site coordinator (one for each district with an active teacher cohort) will serve as liaison between partner districts and project staff, and will be responsible for logistical (e.g., meeting facilities) details and facilitating district contributions.

**Section (c) - Quality of the Management Plan**

**(c)(1)**

The following timeline indicates start and completion semesters (Fall, Spring, Summer) for all proposed in-service and professional development activities by cohort: **LDE** (endorsement), **STEM-EL** (certificate), and **STEM-PreK2** (Early Childhood):

F 11	Sp 12	Su 12	F 12	Sp 13	Su 13	F 13	Sp 14	Su 14	F 14	Sp 15	Su 15	F 15	Sp 16	Su 16
LDE 1														
					LDE 2									
							LDE 3							
									LDE 4					
									LDE 5					
	STEM-EL				STEM-EL									
							STEM-PreK2							

The following matrices indicate major activities, milestones, and responsibilities for each year of the Project, organized by Goal (1, 2, 3) and Objective (a, b, c...). GPRA (GPRA) and Competitive Priority 3 (CP3) indicators are listed with relevant milestones. The staggering of the LDE cohorts is driven primarily by yearly budgetary limitations; however, this schedule will permit two full years of data collection on *all* of the STEM completers, and almost as long for three of the five endorsement cohorts. Following the matrices are some program details for each of the three groups of participants.

**YEAR 1 – 2011-12**

Timeline	Goal/Objs.	Activities	Milestones	Person(s) Responsible
Aug -Dec	<b>1a; 1b</b>	<ul style="list-style-type: none"> <li>▪ Meet with partners; discuss recruitment &amp; articulation</li> <li>▪ Recruit 1<sup>st</sup> cohort</li> </ul>	1) MOUs with partners 2) 1 <sup>st</sup> LDE cohort commences study	Principal Investigator (PI)
		<ul style="list-style-type: none"> <li>▪ Develop STEM-EL certificate curriculum</li> <li>▪ Recruit STEM-EL cohort</li> </ul>	3) STEM-EL cohort recruited	PI with STEM Coordinator, Space Foundation and school districts
Dec - Jul	<b>1c</b>	<ul style="list-style-type: none"> <li>▪ 1<sup>st</sup> LDE cohort continues coursework</li> </ul>	4) 1 <sup>st</sup> LDE cohort completes 15 hours (July)	PI
	<b>2c</b>	<ul style="list-style-type: none"> <li>▪ Recruit STEM-EL cohort</li> <li>▪ Develop STEM-EL certificate coursework</li> </ul>	5) STEM-EL certificate ready 6) STEM-EL cohort takes first three courses (Spring/ Summer 2012)	PI with Space Foundation
7) <b>APR submitted</b>				Evaluator with PI

**YEAR 2 – 2012-13**

<b>Timeline</b>	<b>Goal/Objs.</b>	<b>Activities</b>	<b>Milestones</b>	<b>Person(s) Responsible</b>
Aug -Dec	<b>1a; 1b; 1e</b>	<ul style="list-style-type: none"> <li>▪ 1<sup>st</sup> LDE cohort continues coursework</li> </ul>	1) 1 <sup>st</sup> LDE cohort passes PLACE test [GPRA 1.5] 2) 2 <sup>nd</sup> LDE cohort identified and advisor assigned	PI
	<b>2d</b>	<ul style="list-style-type: none"> <li>▪ STEM-EL teacher placement monitored</li> </ul>		STEM Coordinator with school districts
Dec - Jul	<b>1a; 1b; 1c; 1e</b>	<ul style="list-style-type: none"> <li>▪ Recruit 2<sup>nd</sup> LDE cohort</li> <li>▪ 1<sup>st</sup> LDE cohort data collection begins</li> </ul>	3) 1 <sup>st</sup> LDE cohort completes practicum [GPRA 1.6] & graduates 4) 2 <sup>nd</sup> LDE cohort commences study (Summer) 5) 3 <sup>rd</sup> LDE cohort identified and advisor assigned	PI Evaluator
	<b>2c</b>	<ul style="list-style-type: none"> <li>▪ STEM-EL cohort continues study</li> </ul>	6) STEM-EL cohort completes certificate (July) [CP3]	STEM Coordinator with Space Foundation
	<b>3a</b>	<ul style="list-style-type: none"> <li>▪ Determine criteria for PreK-2 cohort selection</li> </ul>		STEM Coordinator with school districts
			7) <b>APR submitted</b>	Evaluator with PI

**YEAR 3 – 2013-14**

Timeline	Goal/Objs.	Activities	Milestones	Person(s) Responsible
Aug -Dec	<b>1d; 1f</b>	<ul style="list-style-type: none"> <li>▪ Continue LDE cohort data collection</li> <li>▪ 1<sup>st</sup> LDE cohort disseminates skills and insights</li> <li>▪ 2<sup>nd</sup> LDE cohort continues coursework</li> </ul>	1) 3 <sup>rd</sup> LDE cohort commences study 2) 1 <sup>st</sup> LDE cohort present at in-services, conferences, etc.	PI Evaluator
	<b>2d; 2e; 2f</b>	<ul style="list-style-type: none"> <li>▪ Collection of STEM-EL cohort data</li> <li>▪ Monitoring of STEM-EL cohort placement and activities</li> </ul>	3) STEM-EL cohort placed with ELs [GPRA 1.6] 4) STEM-EL in-service and colleague mentoring documented [CP3]	STEM Coordinator with Evaluator and school districts
	<b>3a</b>	<ul style="list-style-type: none"> <li>▪ Recruit STEM-PreK2 cohort</li> </ul>		STEM Coordinator with school districts
Dec - Jul	<b>1a; 1b; 1c; 1e</b>	<ul style="list-style-type: none"> <li>▪ 2<sup>nd</sup> LDE cohort continues coursework</li> <li>▪ Recruit 4<sup>th</sup> and 5<sup>th</sup> LDE cohorts</li> <li>▪ 1<sup>st</sup> LDE cohort data collection continues</li> </ul>	5) 2 <sup>nd</sup> LDE cohort completes 15 hours & passes PLACE test [GPRA 1.5] 6) 4 <sup>th</sup> and 5 <sup>th</sup> LDE cohorts identified; advisor assigned	PI
	<b>2e; 2f</b>	<ul style="list-style-type: none"> <li>▪ Monitoring of STEM-EL cohort activities and student</li> </ul>	7) Student achievement data and activities (e.g., science fairs)	STEM Coordinator with Evaluator

	achievement			
<b>3a; 3b</b>	<ul style="list-style-type: none"> <li>▪ Identification and training of STEM-PreK2 cohort</li> </ul>	<ul style="list-style-type: none"> <li>8) STEM-PreK2 cohort formed</li> <li>9) STEM-PreK2 cohort complete Early Childhood course (Summer) [CP3]</li> <li>10) APR submitted</li> </ul>	STEM Coordinator	
				Evaluator with PI

**YEAR 4 – 2014-15**

Timeline	Goal/Objs.	Activities	Milestones	Person(s) Responsible
Aug -Dec	<b>1c; 1d</b>	<ul style="list-style-type: none"> <li>▪ 1<sup>st</sup> &amp; 2<sup>nd</sup> LDE cohort data collection continues</li> </ul>	<ul style="list-style-type: none"> <li>1) 3<sup>rd</sup> LDE cohort completes 15 hours</li> <li>2) 2<sup>nd</sup> LDE cohort completes practicum [GPRA 1.6] &amp; graduates</li> <li>3) 4<sup>th</sup> &amp; 5<sup>th</sup> LDE cohorts commence study</li> </ul>	Principal Investigator (PI)
	<b>2d; 2e; 2f</b>	<ul style="list-style-type: none"> <li>▪ STEM-EL cohort activities and data collection continue</li> </ul>	<ul style="list-style-type: none"> <li>4) Student achievement and teacher effectiveness data collected</li> <li>5) STEM-EL in-service and colleague mentoring documented [CP3]</li> </ul>	STEM Coordinator with Evaluator
	<b>3c; 3d</b>	<ul style="list-style-type: none"> <li>▪ Placement and activities of STEM-PreK2 completers</li> </ul>	<ul style="list-style-type: none"> <li>6) STEM-PreK2 completers are placed with ELs [GPRA 1.6]</li> <li>7) STEM-PreK2 colleague mentoring</li> </ul>	STEM Coordinator with Evaluator and school districts

Dec - Jul			documented [CP3]	
<b>1d; 1e; 1f</b>	<ul style="list-style-type: none"> <li>▪ 1<sup>st</sup> &amp; 2<sup>nd</sup> LDE cohort data collection continues</li> </ul>	<ul style="list-style-type: none"> <li>8) 3<sup>rd</sup> LDE cohort completes practicum [GPRA 1.6] &amp; graduates</li> <li>9) Student achievement and teacher effectiveness data collected</li> </ul>		PI with Space Foundation
<b>2d; 2e; 2f</b>	<ul style="list-style-type: none"> <li>▪ STEM-EL cohort activities and data collection continue</li> </ul>	<ul style="list-style-type: none"> <li>10) Student achievement and teacher effectiveness data collected</li> </ul>		Evaluator with school districts
<b>3c; 3d</b>	<ul style="list-style-type: none"> <li>▪ STEM-PreK2 cohort activities and data collection continue</li> </ul>	<ul style="list-style-type: none"> <li>11) Student achievement and teacher effectiveness data collected</li> </ul>		Evaluator with school districts
<b>12) APR submitted</b>				
Evaluator with PI				

**YEAR 5 – 2015-16**

Timeline	Goal/Objs.	Activities	Milestones	Person(s) Responsible
Aug -Dec	<b>1d; 1e; 1f</b>	<ul style="list-style-type: none"> <li>▪ 4<sup>th</sup> &amp; 5<sup>th</sup> LDE cohort coursework continues</li> <li>▪ Data collection on 1<sup>st</sup> – 3<sup>rd</sup> LDE cohorts continues</li> </ul>	<ul style="list-style-type: none"> <li>1) 4<sup>th</sup> &amp; 5<sup>th</sup> LDE cohorts pass PLACE test [GPRA 1.5]</li> <li>2) 3<sup>rd</sup> LDE cohort presents at in-services, conferences, etc.</li> <li>3) Student achievement and teacher effectiveness data collected on 1<sup>st</sup> and 3<sup>rd</sup> cohorts</li> </ul>	PI and Evaluator



**(c)(2)**

Adams State College restricts faculty who work with grants to no more than .75 FTE release time. Therefore, one Principal Investigator at .75 FTE and one STEM Coordinator at .25 FTE are proposed in order to adequately manage this Project's two main initiatives. The Principal Investigator (Grant Director) will oversee the activities related to LDE teacher training and STEM curriculum development (Goal 1 and parts of Goal 2). The STEM Coordinator will oversee the teacher development related to the STEM certificate and preK-2 coursework (Goals 2 & 3). A full-time (1 FTE) grant support coordinator will manage the day-to-day record keeping and data management associated with the project and report directly to the PI. All of these positions will be 12-month contracts. Additional faculty and administrative support, such as graduate advising, will be part of the work of existing Adams State staff and faculty. An outside Evaluator will be contracted on an annual basis to collate, analyze, and report on Project outcomes as well as prepare annual and Final reports.

**(d) Quality of the Project Evaluation**

**(d)(1)**

As depicted in the design matrix in Section (a)(1) starting on page 6, each goal and objective in Project SEEDS is associated with one or more specific outcomes that will be evaluated using both formative and summative measures. In order to most efficiently gather and analyze data, the evaluation plan will include survey data and instruments that document the project's success in developing teacher knowledge and skills and in promoting EL academic engagement and achievement, in addition to student achievement data.

Student academic achievement will be measured against state and local standards through use of the Colorado state achievement tests (new tests replacing the CSAP are in development) whenever possible for EL students as well as any district mandated test, such as NWEA. Student English language proficiency progress will be measured by the Colorado English Language Assessment (to replace the current CELA test). Results from language and standardized content assessments, as well as criterion-based assessments, will be used to inform and guide instructional decision-making efforts and to confirm effective elements of the training and courses attended by the teachers in the project. The results will also be used to compare EL with non-EL students within each project school and participating and non-participating teachers.

The Evaluator has been involved with this proposal from its inception, thus ensuring that the evaluation component of this project is consistent with the Department's requirements and is an integral part of Project activities.

**(d)(2)**

The achievement of the goals and objectives for the training activities will be measured through objective performance measures, both formative and summative, that will produce the quantitative and qualitative data needed.

Questionnaires regarding teaching effectiveness will be administered by the project Evaluator, who will review the results. These questionnaires ask teachers to judge their ability to help ELs meet state content standards before and after their participation in the program. Use of similar materials in prior teacher training contexts has shown they are reliably and highly correlated with other subjective (e.g., principal observation) and objective (e.g., student achievement test data) measures. The evaluator

will also collect questionnaire data regarding the influence of project activities from school principals/supervisors, and from personal observations of teachers in the classroom setting using the SIOP observation tool. Project staff will work extensively with the partner schools on an ongoing basis to ensure that the evaluation process is an integral aspect of program development. Evaluation procedures will also be central to the LDE endorsement and STEM professional development programs.

As indicated in the matrices from Sections (a)(1) and (c)(1), the Evaluator will assess progress made towards each of the two GPRA measures and the Competitive Priority #3. This data will constitute the main focus of the Annual Performance and Final Performance Reports and serve as the basis for determining how well each of the three goals are met. The primary evidence (qualitative and quantitative) that will assess outcomes and determine program success are summarized by Goal:

**GOAL 1** (90 teachers will obtain the LDE endorsement) – a) completion of coursework; b) passing score on PLACE test [**GPRA 1.5**]; c) demonstration of EL teaching competencies (SIOP); d) placement with ELs [**GPRA 1.6**]; e) pre- and post-surveys of teaching effectiveness; f) principal/supervisor teaching evaluation; g) student achievement and language proficiency data.

**GOAL 2** (40 teachers will obtain STEM-EL Certificate) – a) curriculum development; b) completion of coursework [**CP3**]; c) placement with ELs [**GPRA 1.6**]; d) provision of in-service or presentation; e) mentoring of colleagues; f) demonstration of EL teaching competencies (SIOP); g) student achievement and data.

**GOAL 3** (40 teachers will complete STEM-PreK2 course) – a) completion of coursework [CP3]; b) placement with ELs [GPRA 1.6]; c) demonstration of EL teaching competencies (SIOP); d) student achievement data.

Qualitative data will be gathered using the Illuminative Evaluation Model, which is useful during the formative stages of project evaluation. The Model's primary concern is description and interpretation. The goal is to study how the program operates, how it is influenced by the various contexts in which it is applied, and what those people directly concerned regard as its advantages and disadvantages. It is important to discern how the program's most significant features relate to how it will seek to address and to illuminate a complex array of questions, including "hidden" as well as visible variables.

Methodological strategies include: observations; interviews with staff; questionnaires; and analysis of program data and background information on student progress, all of which in combination help to "illuminate" problems, issues, and significant program features. For Project SEEDS, these strategies will specifically address the following:

- 1) Teachers' attitudes and knowledge about strategies for working with English learners ;
- 2) Students initial growth in core academic subjects, but particularly in STEM-related courses;
- 3) Students' progress in acquiring [academic] English;
- 4) Principals' and teachers' perceptions of training;
- 5) Transferability of course skills into the classroom settings;

7) Coordination efforts with other federal and state school improvement initiatives.

**(d)(3)**

The evaluator will meet regularly with the project director to discuss findings throughout the formative stages of the evaluation process. Periodic evaluation reports will provide staff, school principals, and project liaisons with updates on how the Project is meeting its stated goals and objectives. The evaluator's feedback, along with that from staff, teachers, principals, and partner members will be used to inform programmatic changes. The formative (annual) and summative (final) evaluation reports will be prepared by the external evaluator in collaboration with project staff and will be submitted to the US Department of Education, Office of English Language Acquisition.

Evaluation activities will be monitored by the Project Director, project staff, and the external evaluator to assure consistency in 1) instrumentation and data collection procedures; 2) administration, timing, and scoring of measures; 3) timely and routine review of results; 4) accuracy and appropriateness of technical methodology; and 5) assistance with procedures and modification as needed. Primary data (e.g., teacher questionnaires; student achievement test scores) will be sent directly to the evaluator, who will maintain strict confidentiality in accordance with Adams State College's IRB policies.

The external evaluator as well as project staff are knowledgeable and experienced in both bilingual and ESL education and possess prior experience in evaluating these kinds of projects and teaching contexts. The evaluator will be contracted for 15 days each year; about 10 days of on-site evaluation and 5 days for data analysis and report

writing. Data dissemination and program progress evaluation will occur regularly as a result of

- monthly meetings between the Director and Evaluator;
- quarterly reports from the Evaluator;
- the Annual Performance Report; and,
- other input, such as course evaluations.

Since the evaluator is not affiliated with Adams State College and is external to the project, she will provide a lateral perspective from which she will produce data on the effectiveness of the program as well as other program services proposed in this application. Through the strategies listed above, the Evaluator will produce both qualitative and quantitative data that will inform program progress, program development, and ultimately determine the effectiveness of the Project.