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Abstract

The proposed Secondary Science, Technology, Engineering and Math (STEM) Master of Arts and ESL endorsement application (Secondary STEM Project) is being submitted by the University of Colorado at Boulder, in collaboration with five Local Education Agencies (LEAs), including Weld County School District Re8, Fort Lupton, Adams County School District 27J, Brighton, Adams County School District 50, Westminster, Colorado, Boulder Valley Schools and the St. Vrain Valley School District. These partner districts have agreed to partner with the University of Colorado in developing and implementing the project. Dr. Barbara Medina, Director of English Language Acquisition, at the Colorado Department of Education has agreed to assist in the infusion of ESL standards into math/science and the ESL elective courses proposed in this project. Over the five project years, the project will provide professional development opportunities to two cohorts of 25 STEM teachers; total of 25 Cohort 1 teachers in years 1-3 and 25 Cohort 2 teachers, years 3-5 (**Competitive Priority 3**). Selected personnel from each of the partner districts will serve on a Selection Committee to select five (5) STEM teachers from their respective district. As a result of their participation in the program, selected STEM teachers will earn a Master of Arts degree and ESL endorsement. The project is unique in that secondary ESL state standards will be infused into all courses within the Master's/endorsement program. Furthermore, the proposed project is unique in that the present M.A. degree program on the University of Colorado campus presently targets elementary teachers. Project staff will revise existing courses within the existing Master's program in Education, Equity and Cultural Diversity to include ESL teaching methods for secondary STEM teachers.

The project will adhere to **GPRA Measures 1.5 and 1.6**. Data on the number of completers will be reported to the Office of English Language Acquisition (GPRA 1.5). Project staff will also report to the Department of Education, the number of teachers who provide instructional services to English language learners (GPRA 1.5). A total of 50 STEM teachers from five partner districts (25, Cohort 1 and 25 Cohort 2), will earn a Master of Arts degree and ESL endorsement as a result of their participation in this program. More importantly, they will gain skills in providing effective instruction to each district's growing ELL population. In order to accomplish its goal and six project objectives, the proposed project will hire a 10% time Principal Investigator, a 50% time Project Director, a 50% time Site Coordinator and a full time Staff Assistant.

As described in the narrative, the Director will be responsible for embedding secondary ESL standards into all courses in the Master's program. He will work with faculty and with the Dean of the School of Education to ensure classes adhere to standards that govern the present Master's program. The need for the proposed Secondary STEM Master's program is highlighted by the fact that the Limited English Proficient (LEP) population in the partner LEAs has increased two-fold over the past ten years, while the number of endorsed ESL teachers is declining. Furthermore, over 50 percent of LEP students in the partner school districts are unable to meet state standards in areas of reading, writing, math and science. This is especially true for secondary students. Given the growing numbers of LEP students, the lack of ESL endorsed teachers in the partner districts and the declining test scores, especially in areas of math and science, demonstrates a need exists to develop a program for secondary teachers.

a. Quality of the Project Design (40 pts.)

Introduction

The proposed project will provide two cohorts of 25 **Science, Technology, Engineering and Math (STEM) teachers** from **five partner school districts** (Ft. Lupton School District Re8, Brighton School District 27J, and Westminster School District 50, Boulder Valley Schools and Saint Vrain Valley Schools) an opportunity to earn a Master of Arts degree and endorsement in English as a Second Language (**Competitive Priority 3**). Over the five years, a total of 50 STEM teachers will participate in the program.

The school districts that will be supported by the proposed project have been selected as partner districts for several reasons. First, the districts have experienced a growth in the number of English Language Learners (ELLs), yet they have no secondary STEM teachers who are skilled in teaching their growing numbers of ELLs. Secondly and more importantly, because STEM teachers have no skills in teaching ELLs, a yearly decline in math and science standardized test scores among secondary students in the partner districts has occurred over the past five years (Colorado Department of Education, 2005-2010). A review of district professional development over the past five years also shows that STEM teachers in each of the districts have not been provided opportunities to engage in professional development opportunities that will provide them skills in teaching English language, let alone academic content to their growing numbers of English Language Learners. In order to provide secondary STEM teachers research-based professional development opportunities, proposed project staff will revise the existing Master of Arts degree program to ensure that K-12 ESL standards are embedded into courses in the program that project participants are provided opportunities to practice learned skills through practicum

experiences that will also be embedded into all courses within the University of Colorado's Master of Arts and ESL Endorsement program.

(a)(1) Extent to Which Goals, Objectives and Outcomes are Specified and Measurable

Students fail in school for a variety of reasons. In some cases, their academic difficulties can be directly attributed to deficiencies in the teaching and learning environment. For example, students with limited English may fail because they do not have access to effective English as a Second Language (ESL) instruction by knowledgeable teachers (Escamilla, 2010; Baca, 2008; Darling-Hammond, 1999). Furthermore, students from lower socioeconomic backgrounds have difficulty if direct instruction, based on standards, is not provided (Escamilla, 2010; McLaughlin, 1999; Andrew & Schwab, 1995). Other students may have learning difficulties stemming from linguistic or cultural differences. These difficulties may become more serious over time if instruction is not modified to address the students' specific linguistic and academic needs (Baca and Cervantes, 2008; Evertson, Hawley, & Zlotnik 2006; Darling-Hammond, 2003 Wise, & Klein, 1995). Unless these secondary students receive appropriate intervention by trained secondary teachers, they will continue to struggle, and the gap between their achievement and that of their peers will widen over time. Improving the academic performance of students who are from non-English speaking backgrounds requires a focus on the prevention of failure and on intervention for struggling learners. According to Jarrett (1999), this is especially true for secondary math and science teachers. While The Improving America's Schools Act (1994) has called for **all** students to meet the same high academic standards, this will not occur (especially for secondary students who possess limited English proficiency and who are being taught by teachers who are not skilled in teaching them) if secondary teachers are not provided opportunities to learn research-based strategies for teaching English language learners (Jarret,

1999). According to Gonzalez & Darling-Hammond (1997), secondary teachers graduate from colleges and universities with little or no training in how to provide instruction for our nation's growing ELL student population. Instead, secondary teachers are provided "one-shot or short-term workshops" or are sent to conferences to learn strategies for working with limited English proficiency students (Darling-Hammond, 2009). This type of training has had little to no effect on change in teachers' ability to teach secondary LEP students (NCTAF, 2010). The American Association for Employment in Education (AAEE), in their wide-scale survey of U.S. colleges and universities that prepare secondary educators, reported a "considerable shortage" of bilingual/ESL teachers at the secondary level, especially in areas of math and science. This shortage was found to be most prevalent in the Southwestern U.S., including Colorado. In their survey of large city school districts and colleges of education, the Urban Teacher Collaborative found that 72.5% reported an immediate shortage of bilingual teachers and 67.5% cited an immediate shortage of teachers. While there is a shortage across grade levels, the greatest demand for both bilingual and ESL teachers is at the secondary level. This trend is part of a larger, nationwide teacher shortage; estimates indicate that some 2 to 3.5 million new teachers will be needed over this decade (NCES, 2010). The primary reasons cited for the shortage of teachers include increased enrollments, early retirement of teachers, new teacher turnover, changing student demographics, high demand for minority teachers, and the lack of incentives to join the profession (Urban Teacher Collaborative, 2010; Darling-Hammond, 1999). Furthermore, the Colorado Department of Education (2010) identified secondary ESL teaching positions as being the number one job need in Colorado for two reasons. First, over the past five years, the number of non-English speaking children entering Colorado's public schools has doubled. In 2005, approximately 43,000 students, statewide, were identified as Limited English Proficient (LEP).

In 2010, just five short years later, this number grew by 51.4%; from 43,000 to 83,659 LEP students. As a result of Colorado's growing LEP population, there is a tremendous need for professional development for secondary content area teachers. More specifically, Escamilla (2010), in her research of ELLs in Colorado found that, while secondary math and science teachers know their content, they are not prepared to provide quality instruction to students who speak languages other than English. According to Escamilla (2010), there is a need for institutions of higher education to develop professional development programs geared at prepared secondary teachers and more specifically, math and science teachers, to provide quality instruction for limited English proficient (LEP) students. The proposed project will fulfill this growing need in Colorado and throughout the country.

This shortage of qualified secondary math and science teachers is exacerbated by the No Child Left Behind Act of 2002, which requires that there be a "highly qualified" teacher in every classroom, in this case, math and science teachers who are prepared to work with ELL students. The profound shortage of math and science teachers prepared to teach Colorado's growing English Language Learner (ELL) population is a concern to both the Colorado Department of Education and the five partner districts that will be targeted for program services. These five partner districts were selected based on low test scores of LEP students and based on the fact that these partner districts presently have **no** secondary math or science teachers who have earned an endorsement in ESL and therefore, are not fully prepared to provide their growing ELL population quality educational services.

The services to be provided by the proposed project are based on the lack of qualified secondary math and science teachers in the five partner districts and the growing numbers of English Language Learners (ELLs) in each of the districts. In March of 2011, 184 math, science

and technology secondary teachers were polled to determine if they were interested in pursuing an advanced degree and endorsement in ESL education. Of those secondary teachers who responded to the survey, a total of 113 secondary teachers indicated a strong desire to participate in the program, if funded. When funded, courses within the existing M.A. degree program that are geared at preparing elementary teachers to teach LEP students will be adapted to specifically target secondary content area Science, Technology, Engineering and Math teachers. Furthermore, all courses in the existing program will be revised so that the content standards for math/science secondary teachers are aligned with the Colorado Department of Education's ESL standards.

Program Goal and Objectives

Following is the goal and six project objectives for the proposed Secondary M.A. degree program in Education, Equity and Cultural Diversity (EECD). The project will provide secondary Science, Technology, Engineering and Math (STEM) teachers in five partner districts strategies for effectively meeting the educational needs of English Language Learners. A letter from Dr. Hopewell Division of EECD is included in this application and shows faculty's commitment.

GOAL 1: ***To provide two cohorts of secondary Science, Technology, Engineering and Math (STEM) teachers from the five partner school districts an opportunity to earn a Master of Arts and ESL endorsement.***

Objective 1 From August 1, 2011 through December 31, 2011, embed a secondary focus into the existing Master of Arts and ESL endorsement program, assuring that K-12 English language standards are embedded into courses.

Objective 2 From October, 2011 through December, 2011, recruit the first cohort of 25 secondary STEM teachers from the five partner districts. January, 2014 through May, 2014, recruit a second cohort of 25 STEM teachers.

Objective 3 Each semester offer courses that accommodate program participants' work schedules.

Objective 4 Yearly, embed supervised practicum experiences into each of the courses within the M.A. degree program.

Objective 5 In year 2, design a study to collect post-training data on the effectiveness of program graduates and completers.

Objective 6 Yearly, build program capacity and disseminate program successes to other IHEs.

Objective 1 speaks to embedding a secondary STEM focus into existing M.A. and ESL endorsement program and to ensure that K-12 standards and assessments, including English language proficiency and content standards are present in all courses in the existing Master of Arts program on the University of Colorado campus (**Competitive Priority 3**).

Presently, the University of Colorado offers a state-approved M.A. and ESL endorsement program for **elementary** teachers but not for secondary teachers. To date, no IHE in Colorado has developed an M.A. degree program, specifically targeting professional development opportunities for secondary teachers, let alone a program specifically targeting secondary science, technology, engineering and math teachers. Therefore, in the fall of the first project year, the proposed Project Director, Dr. Manuel Escamilla, will work with faculty in the Department of Education, Equity and Cultural Diversity (EECD) to develop courses specifically designed for secondary math and science teachers. From August through December of the first project year, the Director will gather all existing course syllabi for revisions. He will conduct extensive research on secondary methods and will then embed these methods within the ten existing courses in the present Master's program. Since all courses offered in the proposed program fall under the Division of Education, Equity and Cultural Diversity in the School of Education, the Director will then meet with the faculty from the Division and with Dr. Barbara Medina from the Colorado

Department of Education to review and approve syllabi. The final step in the process will be to submit all course syllabi to the Dean and the School of Education faculty for final approval. The program will then be offered to 25 secondary teachers from each of the five partner school districts beginning spring of 2012 for 25 Cohort 1 teachers (five from each of the partner districts) and beginning summer semester 2014 for 25 Cohort 2 teachers (also five from each district).

Objective 2 speaks to the recruitment and selection of 25 secondary STEM teachers (five from each of the five partner districts) to participate in the program (**Competitive Priority 3 and Invitational Priority 2**). Cohort 1 will begin their program of study spring semester of 2012 (year 1) and will complete their program in the spring of 2014 (year 3). A second cohort of 25 STEM teachers will be recruited in the spring of 2014 (year 3; the semester when Cohort 1 teachers will graduate) and will begin their program in the summer of 2014, completing their program by the end of the summer semester of 2016 (see program of study, detailed below). In order to select the most qualified and interested teachers, the proposed Project Director, Dr. Manuel Escamilla, will hold a meeting in each of the partner districts to fully explain the program (October, 2011 - Cohort 1 and January, 2014 - Cohort 2). At these meetings, the Director will detail program requirements. Teachers will be told that, if selected, they must agree to teach in classrooms with high numbers of ESL students. In the initial application process, secondary STEM teachers will be asked to write an essay that: 1) provides general information about themselves; and, 2) describes their reason(s) for wanting to participate in the program and their commitment to working in a classroom with LEP students. Candidates will also be asked to submit two letters of recommendation from school staff who possess knowledge of their work with students, especially second language learners. A Selection Committee, consisting of the Principal Investigator, Director, Site Coordinator and a University of Colorado faculty member

will meet with three administrators (selected by the district) from each of the partner districts to select program their own program participants. Using this mechanism will ensure that only administrators from that district have a voice in selecting their teachers. Selected STEM teachers will then meet with the Project Director so that he may explain the process of applying to the University of Colorado's Graduate School and so that he may explain the process of enrolling in courses. Teachers not selected for the program will be placed on a "waiting list'" and, should a vacancy occur, will be invited to participate in the program.

Objective 3 speaks to the development and implementation of a program that accommodates the teachers' work schedule. Courses for this program may be scheduled Monday through Friday. Since a secondary teacher's workday in Colorado usually ends at 4:00 p.m., classes are scheduled to begin at 4:30. In order to schedule courses that accommodate the participants' work schedules and to provide teachers a voice in when classes will be scheduled, the Director will meet with teachers before each semester begins to decide on the day(s) and time(s) for course offerings. Because it is highly unlikely that all members of the cohort will agree on the same time and day for course offerings, a "majority rule" will be used to schedule and offer classes each semester.

Practicum experiences will be embedded into each of the courses in the proposed M.A. degree program (**Objective 4**). In order to accomplish this objective, the Director will review the literature to identify best practices for embedding practicum experiences into courses in secondary classrooms. The Director and the Site Coordinator will then meet to discuss best practices and to embed practicum experiences into each of the required courses in the existing M.A. degree program. All practicum experiences will be monitored by the Director and course instructors and will be evaluated by the Project Coordinator, Ms. Penny Oliver.

Objective 5 speaks to designing a study to collect post-training data on the effectiveness of program graduates in the fall of years three and five **(Competitive Priority 2)**. In June of 2013 (second project year), the P.I., Director and Site Coordinator, in collaboration with faculty from the School of Education's Division of Research Evaluation and Measurement, as well as faculty from the Division of Education, Equity and Cultural Diversity will develop a research design that gathers both qualitative and quantitative data to determine the extent to which teachers have been prepared to meet the academic and linguistic needs of secondary LEP students who enroll in STEM classes. The research design will be shared with partner LEAs for approval and will be cleared through the University of Colorado's Human Subjects Committee. The Director and Site Coordinator will visit classrooms to collect data in the fall of 2014. As an in-kind contribution, the University of Colorado is committed to hiring graduate students to assist with collecting post-training data. Data collected from Cohort 1 teachers will be used to strengthen the program for Cohort 2 teachers and will be used by the evaluator to determine the degree to which the program is producing secondary STEM teachers who are skilled in meeting the linguistic and academic content area needs of secondary LEP students. The instruments used to gather research data will be modified in the summer of 2015 and will be used to gather data from Cohort 2 teachers. While the project will end in the summer of 2016, the University of Colorado is committed to continuing the study, without federal support. As a result of Objective 5, research-based articles will be written and submitted for publication and will be shared with the Office of English Language Acquisition, for distribution to other IHEs seeking to develop a similar M.A. and ESL endorsement program, specifically targeting secondary STEM teachers.

Objective 6 speaks to building capacity of the program and to disseminating program results to other IHEs who wish to develop an M.A. degree and ESL endorsement for STEM

teachers. Dissemination will occur in several ways. First, the Director and the Coordinator will present program findings at the state and regional conferences and at the yearly OELA Summit. In addition, the Director and University of Colorado faculty will present findings at Colorado Department of Education-sponsored summits. Dr. Barbara Medina of the Colorado Department of Education is in close contact with other IHEs in the state. She has committed to sharing program information to IHEs she visits. The BUENO Center and School of Education websites will also be used to disseminate program findings. On average, this website receives no fewer than 60,000 hits each semester. The website will be maintained by the BUENO Center's Technology Specialist, at no cost to the project. Finally, flyers and pamphlets will be developed, describing the program and will be distributed at conferences and meetings attended by program staff of other University of Colorado faculty.

Course of Study, Five-Year Plan – The Master of Arts degree and ESL endorsement program for secondary STEM teachers will consist of 31 hours of graduate course work. Teacher candidates will earn the Master's degree in Education, Equity and Cultural Diversity and a State of Colorado Endorsement in ESL education. The following timelines will be used for Cohort 1 and Cohort 2 teachers.

Timeline and Course of Study – Cohort 1 Secondary Math/Science Teachers

Semester	Year	Prefix	Course Title	Hrs.
Spring	2012	EDUC 5425	Introduction to Bilingual/Multicultural Educ.	3
Summer	2012	EDUC 5615	Second Language Acquisition	3
		EDUC 5625	ESL Methods	3
Fall	2012	EDUC 5035	Pro-Seminar: Parent & Comm. Involvement	3
		EDUC 5535	Diagnostic Testing In ESL Education	3

Spring	2013	EDUC 5435	Materials & Methods in Bil./Multicul. Educ.	3
Summer	2013	EDUC 5445	Curriculum for Multicultural Education	3
		EDUC 5455	Literacy for Linguistically Different Learner	3
Fall	2013	EDUC 5605	Research Issues in Bilingual/ESL Education	3
Spring	2014	EDUC 5595	Practicum in ESL Education	4
			Total Hours	**31**

Cohort 2 students will be recruited in the spring of 2014 and will begin their program of study in the summer of 2014. They will complete their program of study in the summer of 2016. The following timeline will be used for offering courses to teachers in Cohort 2.

Timeline and Course of Study – Cohort 2 Secondary Math/Science Teachers

Semester	Year	Prefix	Course Title	Hrs.
Summer	2014	EDUC 5425	Intro. to Bilingual/Multicultural Educ.	3
		EDUC 5615	Second Language Acquisition	3
Fall	2014	EDUC 5625	ESL Methods	3
Spring	2015	EDUC 5535	Materials & Methods in Bil./Multicul. Educ.	3
Summer	2015	EDUC 5445	Curriculum for Multicultural Education	3
		EDUC 5455	Literacy for Linguistically Different Learners	3
Fall	2015	EDUC 5535	Diagnostic Testing in ESL Education	3
		EDUC 5035	Pro-Seminar: Parent & Comm. Involvement	3
Spring	2016	EDUC 5605	Research Issues in Bilingual/ESL Education	3
Summer	2016	EDUC 5595	Practicum in ESL Education	4
			Total Hours	**31**

Over the five years of this project, a total of 50 secondary STEM teachers will earn a M.A. degree in Education, Equity and Cultural Diversity and a state-recognized endorsement in ESL. In order to ensure that the design proposed in this application was appropriate and would meet the needs of the targeted population, staff first met with school district administrators. In addition to meeting with administrators, a survey was developed and distributed to all secondary teachers. A total of 121 surveys were returned. When asked if they felt they were skilled in meeting the linguistic and content area needs of secondary LEP students, 86% teachers from the districts stated that they were not skilled in this area and were uncomfortable working in classrooms with high numbers of LEP students. Furthermore, secondary STEM teachers reported that they were uncomfortable planning lessons for second language learners and often did not fully understand methods for teaching these students. When asked if they would enroll in a M.A. degree program and ESL endorsement program, 73% of those responding to the survey expressed an interest in the program. In summary, the information gleaned from administrators and the surveys was used in designing the program.

Identity and Role of Each Member of the Consortium

The University of Colorado has entered into a partnership with the following five Local Education Agencies, including 1) Adams County School District 27J, Brighton, Colorado; 2) The Saint Vrain Valley School District; 3) Adams County School District 50, Westminster; 4) Boulder Valley School District, Boulder, Colorado, and 5) Fort Lupton School District Re8. These school districts were selected as the partner LEAs for several reasons. First, these districts are experiencing an increase in the numbers of LEP students, yet they are unable to recruit qualified bilingual/ESL teachers who are equipped to meet the educational needs of their growing English

Language Learner (ELL) population. Second, math and science test scores for the districts' limited English proficiency student population is low and have remained low for several years.

Role of the Partner LEAs – When funded, the partner LEAs have agreed to: 1) Assist with the recruitment of quality program participants; 2) become members of the team who will select the most interested participants; 3) assist in designing a study to collect post-training data on the effectiveness of program graduates; and, 4) allow the Site Coordinator to visit teachers' classrooms to provide mentoring and demonstration teaching.

(a)(2) <u>The Proposed Project Reflects Up-to-Date Knowledge from Research & Practice</u>

The research on effective programs for secondary STEM teachers shows that four basic principles must be considered in developing quality professional development programs for secondary teachers, including: 1) embedding ESL teaching strategies into all courses within the Master's and ESL Endorsement program; 2) providing math and science teachers opportunities to practice skills learned in their classroom through required practicum in each of the courses; 3) collaborating with partner LEAs to assess the value of course work on the educational attainment of secondary ELLs, especially in science and math; and, 4) making the program more accessible to teachers by providing training that adheres to the participants' work schedule (Darling-Hammond, 2008; Genzuk & Baca, 2007; Middleton, Mason, Stilwe, & Parker, 1998). In preparation for the writing of the application, a planning committee, consisting of proposed Principal Investigator and Project Director, the Director of English Language Acquisition at the Colorado Department of Education, University of Colorado faculty from the Division of Education, Equity and Cultural Diversity (EECD), and a member from each of the partner districts met to: 1) develop the program's goal and objectives; 2) design the course path for this project; 3) agree upon how practicum would be conducted; 4) agree that the evaluator would be

allowed access to classrooms for observations and to test scores; and, 5) discuss strategies for offering courses on-site. The development of the on-site program was a critical discussion item, as teachers would have to travel a distance of 20-40 miles to attend courses on the CU campus.

Other research considerations when writing this application revolved around issues of underachievement of secondary ELLs, especially in areas of Science, Technology, Engineering and Math. According to Zeichner, (1999) & Crawford, (1996), one contributing factor for LEP students' underachievement is the mismatch between the needs of secondary students and content area teachers' preparation. As a result, principals are forced to hire teachers who are not prepared to teach students who come to school speaking a language other than English. Cummins (1994), believes that LEP students taught by secondary teachers who are unable to make content comprehensible to them. According to Gonzalez & Darling-Hammond (1997), inservice education—usually conducted as mass-produced hit and run workshops—is not well suited to providing teachers strategies in meeting the linguistic and academic needs of second language learners (Gonzalez & Darling-Hammond, 1997). According to Escamilla (2010), change in teacher behavior will only occur if colleges and universities provide professional development opportunities to teachers that include opportunities for them to make connections between the theories learned in university classes and their own classrooms. As a result of research, the proposed program will develop and implement a M.A. degree and ESL endorsement program that requires supervised practicum and that is specifically designed with secondary math and science teachers in mind. The program will be based on recent research in the area of professional development opportunities for secondary teachers and will include: 1) creating cohort groups, as teachers learn best by collaborating with other teachers (Darling-Hammond, 1998); 2) by providing trainees opportunities to practice teaching strategies and assessments via supervised

practicum embedded in all courses (McLaughlin, 2006); 3) providing sustained, intensive development that includes coaching and problem-solving (Echevarria & Short, 2008); and, 4) providing teachers opportunities to conduct action research so that they may experience the connections between teacher inquiry and real classroom teaching (Darling-Hammond & McLaughlin, 2006).

Student achievement can best be improved by insuring that all public school students, including those who do not speak English, have access to a rigorous curriculum, taught by teachers who are prepared and qualified to teach them (Echevarria, 2009). This project proposes to contribute to the improvement of student achievement by insuring that secondary STEM teachers participate in a quality teacher preparation program, specifically designed with their professional development needs in mind. The existing M.A. degree and ESL endorsement program at the University of Colorado is approved by the Colorado Commission on Higher Education and the National Council for Accreditation of Teacher Education. This program presently focuses on professional development opportunities for elementary teachers. As a result of this project, a secondary focus will be developed in the M.A. and ESL endorsement program. During the fall semester of the first project year, Dr. Barbara Medina of the Colorado Department of Education will work closely with the P.I., Project Director, and University of Colorado faculty to revise course syllabi to reflect the training needs of secondary teachers. It is projected that development of the program will take one semester, with continuous revisions to the program made throughout the five years. As a result of this project, secondary STEM teachers will not only learn methods and strategies for working with second language learners, but through practicum embedded in courses, will be provided opportunities see, first hand, how they can embed and ESL teaching standards in their classes.

b. Quality of Key Personnel (10 pts.)

(b)(1) Position Descriptions and Qualifications of the P.I. and Project Director

The University of Colorado and the partner school districts are committed to equal opportunity in employment and education for all individuals, regardless of age, race, color, religion, gender, national origin, or disability. Statements of nondiscriminatory employment practices are on file in the School of Education at the University of Colorado at Boulder. The project will hire a 10% time Principal Investigator, a 50% time Project Director, a 50% time Site Coordinator and a 100% time Staff Assistant. The individuals that will be hired for the positions possess experience working with underrepresented groups and must have experience working in teacher education programs. If vacancies should become available, preference will be given to individuals who are members of underrepresented groups and/or who have extensive experience working with professional development programs in the field of bilingual and ESL education.

Position Descriptions – P.I. and Project Director

The **10% time Principal Investigator** must hold a Ph.D., must possess experience working with diverse student populations and must possess experience teaching graduate level courses in reading, multicultural education, curriculum development and bilingual and ESL education. The P.I. will be responsible for: 1) overall program management; 2) overall supervision of the Director, Site Coordinator and Staff Assistant; 3) meeting with University of Colorado faculty to review course syllabi to ensure course content is specific to the training of secondary teachers; 4) overseeing the project budget; and 5) participating in meetings between the State Education Agency, University of Colorado faculty, project staff and LEA partners. The P.I. will also be responsible for working closely with the Director in establishing the on-site program.

A Project Director will be hired to work **100% time in year one and a 50% time in years 2 through 5**. A 100% time appointment is needed in year one, as Dr. Escamilla will be conducting extensive research in the area of secondary teaching methods for ELLs, will be

embedding ESL standards in to all course syllabi within the program, will be developing practicum for courses, and will be working with School of Education faculty and the Colorado Department of Education to approve the program. Furthermore, Dr. Escamilla will be designing a recruitment strategy fall semester of year one. The recruitment strategy developed in year one will be used to recruit Cohort 2 STEM teachers.

The Director must hold a Ph.D. and must be experienced in developing and implementing teaching education programs, specifically targeting secondary math and science teachers who wish to earn an endorsement in bilingual/ESL education. The Director must possess experience teaching graduate and/or undergraduate teacher education courses in multicultural curriculum, reading, and bilingual/ESL education. The Director must be bilingual (English and Spanish) and must possess experience working with diverse student populations. He/She will be responsible for the following: 1) the day-to-day management of program activities, including revising course syllabi to ensure K-12 and ESL standards and assessments are present in all courses; 2) meeting with IHE and LEA partners to place trainees in high need classrooms, 3) in collaboration with the Site Coordinator, P.I. and other University of Colorado faculty and Colorado Department of Education staff, review course content to assure secondary state content standards are embedded into all courses; 4) work closely with students to schedule classes and to embed practicum into courses, ensuring a direct and immediate transfer of theory learned in courses to real classroom settings; 5) for meeting with the P.I. and University of Colorado faculty to apprise them of progress made in meeting project objectives; 6) working with the project evaluator on all aspects of the project evaluation; 7) meeting with LEA administrators and Boards of Education to keep them informed on the progress made by the project in preparing their teachers to teach LEP students; 8) meeting with the P.I. and the Colorado Department of Education to gain final approval for the on-site program; 9) working closely with the P.I. and other University of Colorado faculty to develop a research design to conduct post-training data on effectiveness of the program; and, 10) to disseminate the program and to work with the P.I. and other interested

University of Colorado faculty to write research-based articles related to project this project. Published articles will be distributed at state and national conferences.

Qualifications of the P.I. and Project Director

Dr. Leonard Baca will serve as the Principal Investigator for this project. Dr. Baca holds an Ed.D. in bilingual and bilingual special education from the University of Northern Colorado. He holds the title of full professor and tenured faculty member in the Division of Education, Equity and Cultural Diversity in the School of Education on the University of Colorado, Boulder campus. He is credited for developing the present elementary focused M.A. and ESL endorsement programs on the University of Colorado campus. Dr. Baca has published over 40 articles in areas of bilingual, ESL education and bilingual special education. He is the author of the book, *Bilingual Special Education Interface*; a book that is used in colleges and university campuses across the nation. In addition to his faculty appointment, Dr. Baca is the Executive Director of the BUENO Center for Multicultural Education, located in the School of Education on the University of Colorado campus. With his leadership, this Center has developed graduate and undergraduate degree programs for teachers and paraprofessionals. Dr. Baca was also instrumental in the development of the Center's Adult Basic Education program, the High School Equivalency Program and the College Assistance Migrant Program.

Dr. Manuel Escamilla, the proposed Project Director. Dr. Escamilla holds a Ph.D. in Curriculum and Instruction, emphasis in bilingual and ESL education from the University of Kansas, Lawrence, Kansas. He holds a Master of Arts degree and a Bachelor of Arts degree in secondary Spanish from Colorado State University, Fort Collins, Colorado. Dr. Escamilla also holds a valid Colorado ESL endorsement. He has served as a professor at the University of Colorado, Boulder, Metropolitan State College of Denver, Texas Tech University, and the

University of Arizona for over 20 years; teaching classes in multicultural education, bilingual education and English as a Second Language. While at Metropolitan State College of Denver, Dr. Escamilla was instrumental in developing programs for nontraditional students, including a Student Development Center, a Summer Bridge Program, a Student Intervention Services Program, and a Veteran's Upward Bound Program. As a professor at CU, Boulder, he was responsible for not only teaching bilingual and ESL courses at the graduate level, but more importantly, he was instrumental in serving as a consultant to develop course syllabi in bilingual and ESL education. Finally, Dr. Escamilla has served as a Director and Principal Investigator for over 8 federally-funded Title 3 and Title V11 grants and is well versed in evaluation requirements for grants funded through the U.S. Department of Education, Office of English Language Acquisition. In fact, Dr. Escamilla has served as an evaluator for no fewer than 13 Title VII and Title 3 programs.

(b)(2) Qualifications and Experience of Other Key Project Personnel

Position Descriptions – Site Coordinator and Staff Assistant

The **50% time Site Coordinator**, will work under the direct supervision of the Project Director. Ms. Oliver will be responsible for: 1) assisting with revising course syllabi to ensure K-12 standards and assessments are present in all courses; 2) participating in meetings with IHE and LEA partners to place trainees in high need classrooms, 3) working with the Director to review course content to ensure secondary math and science state content standards are embedded into all courses; 4) working closely with the Director to embed practicum into courses, ensuring a direct and immediate transfer of theory learned in courses to real classroom settings; 5) supervising and assisting with the supervision of practicum; 6) collaborating with school district personnel to schedule classes on site; 7) keeping principals informed on the progress made by the project in preparing their teachers to teach math and science concepts to LEP students; and, 8) assisting the

P.I., Director and other University of Colorado faculty to develop a research design to conduct post-training data on effectiveness of the program.

Qualifications of the Site Coordinator

Ms. Penny Oliver will serve as the Site Coordinator for the proposed project. In 1979, Ms. Oliver earned her Bachelor of Science degree in Elementary Education with emphasis in bilingual and ESL education from the University of Colorado at Boulder. She went on to earn a Master of Arts degree in K-12 education, emphasis in bilingual and ESL curriculum, also from the University of Colorado at Boulder. Her endorsement in English as a Second Language covers grades K – 12. Ms. Oliver served as a bilingual and ESL teacher for the Boulder Valley Schools from 1983 through 1998. In fall of 1999, she was hired by the University of Colorado at Boulder to serve as a professor to teach bilingual and ESL courses and courses in reading methods for second language learners. In addition to teaching courses, Ms. Oliver was responsible for mentoring 40 teachers, grades K-12. She was responsible for redesigning syllabi to include content and performance standards to methods courses. In 2001, Ms. Oliver was hired through a collaborative venture between Boulder Valley Schools and the University of Colorado at Boulder to serve as an Induction Mentor and a curriculum coordinator. In this position, Ms. Oliver served as a Mentor/Coach for 45 elementary and secondary teachers. She visited teachers' classrooms where she provided demonstration lessons and where she served as each teacher's bilingual/ELS coach. She also taught literacy and ESL methods courses to teachers. Ms. Oliver's extensive experience teaching and coaching teachers, as well as her skills in teaching bilingual and ESL courses at the undergraduate and graduate level make her uniquely qualified to serve as the Site Coordinator for the proposed project.

A **100% time** **Staff Assistant** will be hired to assist with all administrative functions of the project. The individual must hold an Associate of Arts degree or higher, must be bilingual (English/Spanish) and must possess computer experience and experience operating standard office equipment (copier, fax machine, etc.). The Staff Assistant will be responsible for: 1) all correspondence associated with the project, including answering the phone and providing project

information to clients; 2) developing and maintaining student files; 3) ordering books and materials; 4) working with the Director, P.I. and the Office of Contracts and Grants on the University of Colorado campus to ensure that program expenditures are legitimate; 5) will attend meetings and transcribe minutes of all meetings; and, 6) to provide secretarial support to project staff and to faculty who will teach courses.

The proposed **Program Evaluator**, Dr. Tom Adams is a retired educator. Prior to his retirement, Dr. Adams taught elementary school, served as a bilingual curriculum development specialist in District 6 and taught undergraduate teacher education courses at the University of Northern Colorado and graduate level courses in literacy and ESL education at the University of Colorado, Denver and Boulder Campus. He is experienced in developing bilingual and ESL curriculum for use in public school and has published articles on writing assessments for students who are participating in dual language and early/late exit bilingual education programs. Dr. Adams has served as an evaluator for Title VII and Title 3 programs for both public schools and for institutions of higher education. In fact, Dr. Adams was consulted when writing this application and, based on the program goal and objectives, designed this evaluation plan.

c. Quality of the Management Plan (20 pts.)

(c)(1) The Adequacy of the Management Plan to Achieve the Objectives

The Management by Objective Matrix below provides detailed information on: 1) the activities used in accomplishing each proposed project objective; 2) the timeline for accomplishing each objective; and, 3) person(s) responsible for accomplishing each objective. The anticipated milestones for this program are as follows: (a) Revise the existing program with focus on embedding STEM standards and ESL standards into existing courses (12/11); (b) recruit and admit secondary STEM teachers to the program (12/11 and 6/14); (b) Finalize training plan with the partner LEA on 12/11 and continue modifying the program yearly, as needed; (c) Begin offering courses 1/12 and each semester thereafter; (d) Infuse practicum into education and ESL

courses (yearly); (e) Assist in placement of graduates into high need classrooms (8/14 and 8/2016); (f) Publish project outcomes the summer of years 2 – 5; and, (g) graduate 25 secondary math and science teachers (25 spring 2014 and 25 summer of 2016. In order to ensure achievement of the objectives an internal **organizational management** of this project will be used. Dr. Leonard Baca, the proposed P.I., will report to Dr. Lorie Shepard, Dean of the School of Education. He will be responsible for overall project management. As full professor, Dr Baca will be in direct contact with faculty members in that department to assure the program is developed and approved by faculty and the Colorado Department of Education. The proposed Project Director, Dr. Manuel Escamilla, will report to Dr. Baca. He will supervise the Site Coordinator and will be responsible for the day-to-day management of the program. The Site Coordinator, Penny Oliver, will be the link between teachers and the training program. She will supervise all practicum experiences for teachers, assist professors in embedding practicum experiences in courses, and will model ways in which trainees may utilize research-based teaching strategies when teaching content to ELLs. She will report to the Director. The Staff Assistant (to be named) will also work directly under the direction of the Project Director. She/He will be responsible for assisting with secretarial support and will be the link between the project and the Office of Contracts and Grants. The External Evaluator will report to the P.I. and Director and will be responsible for implementing a sound evaluation system, based on the evaluation design, proposed in this application.

Management by Objective Matrix

The following pages provides information on the activities that will be implemented to accomplish each project objective, the persons responsible, the evaluation aspects and the timeline to be used in accomplishing each objective.

MANAGEMENT BY OBJECTIVE MATRIX

Objective 1: Embed a **Secondary** focus in the M.A. program, and embed that K-12 math/science standards into existing courses.

Activities to Accomplish Objective	Evaluation Strategies	Person Responsible	Timeline
1.1 Collect M.A. and ESL course syllabi.	1.1 All syllabi on file	-P.I. & Director	-7/1/2011
1.2 Research K-12 Content & ESL Standards.	1.2 Documented research on file	-CU Faculty, Director	8/1/2011
1.3 Embed ESL standards into all courses.	1.3 Syllabi	- Dir, Coord., Staff Asst.	-8/1 – 9/30, 2011
1.4 Share courses developed by staff at EECD Faculty meeting. Seek approval.	1.4 Agenda & minutes of meeting(s)	-P.I. & Director, Coord., EECD Faculty, Staff Asst.	10/2001
1.5 Share course syllabi with CO Dept. Ed. Staff	1.5 Minutes of meeting w/ SEA		11/2011
1.6 Share with LEA partner district staff.	1.6 Minutes of meeting w/ LEAs	-P.I. & Director, Coord.	11/2011
1.7 Meet with Dean of the School of Education at CU, Boulder to discuss courses.	1.7 Letter from Dean showing final approval.	-LEA, Dir., P.I., Coord. -P.I, Director, Dean	12/2011
1.8 Each fall, review and update course syllabi.	-1.8 Syllabi updated and on file	- Dir., P.I., Coord.,	Yearly
1.9 Each year, share revisions to syllabi with SEA and CU faculty.	1.9 Minutes of meetings held with SEA and CU faculty	-P.I., Director, Coord., CU faculty	Yearly

Objective 2: Recruit 25 STEM secondary teachers from the five partner districts.

Activities to Accomplish Objective	Evaluation Strategies	Person Responsible	Timeline
2.1 Notify Faculty/Dean & Partner districts of funding. Meet with LEA partners.	2.1 Letter of Notification on file. Agendas of meeting with LEAs	-P.I. & Director, Staff Asst., LEA partners	7/1/11 & yearly Yr. 1 & Yr. 3
2.2 Develop & approve recruitment application	2.2 Approved plan on file	-P.I., Dir, LEA partners	Yr. 1 & Yr. 3
2.3 Meet with partner district admin. & staff to finalize application process to be used.	2.3 Agendas of meetings on file & application used on file.	-P.I., Director, Coord., Staff Asst., LEA staff	9/2011 (cohort 1 & 1/2014 (cohort 2)
2.4 Meet with interested STEM teachers. Provide program information and distribute applications. Applications due one month from date of meeting.	2.4 Agenda of meetings held in each of the partner LEAs. Student applications on file.	-Director, Coord., Staff Asst., Interested Teachers, LEA partners	9/2011 (cohort 1 & 1/2014 (cohort 2)
2.5 Convene Selection Committee to select 6 participants for participation in the program.	2.5 Agenda of meetings. Lists of selected trainees on file.	-Director, Coord., Staff Asst., LEA staff	9/2011 (cohort 1 & 1/2014 (cohort 2)
2.6 Notify participants of acceptance/non-acceptance. Meet with participants to enroll in courses.	2.6 Letters sent to applicants on file. Agenda of meeting.	-P.I & Director, Staff Asst., selected teachers	9/2011 (cohort 1 & 1/2014 (cohort 2)

Objective 3: To offer courses each semester that accommodates program participants' work schedules.

Activities to Accomplish Objective	Evaluation Strategies	Person Responsible	Timeline
3.1 Meet with faculty to approve course offerings for program participants.	3.1 Agenda of meetings, Letter of approval on file	- P.I., Director, Coord., Faculty	Yearly
3.2 Identify course instructors. Review course syllabi with instructors to ensure standards are embedded.	3.2 List of instructors on file Meetings with instrs. documented	- P.I., Director, Coord., course instructors	Each Sem.
3.3 Meet with participants to agree on course schedules. Yearly, course offerings with students.	3. 3 Meetings held with students. Plans for course offerings on file	- P.I., Director, Coord., trainees	Each Year
3.4 Meet with LEA administrators to secure classrooms to offer courses.	3.4 Agenda of meetings held and list of locations for courses.	-Director, Coord., LEA administrators	Each Semester of each year.
3.5 Develop an instrument that will be used to evaluate the effectiveness of practicum.	3.5 Evaluation tool developed on file	-Director, Coordinator	Each Semester
3.6 Supervise trainees' practicum experiences each semester of each project year.	3.6 Evaluation rubrics on files for each program trainee.	- Director, Coordinator, trainees	Each Semester of each year.

Objective 4: Embed supervised practicum experiences into each of the courses within the M.A. degree program.

Activities to Accomplish Objective	Evaluation Strategies	Person Responsible	Timeline
4.1 Work with faculty from the Division of Educ., Equity and Cultural Diversity (EECD). Gather information on practicum infusion strategies.	4.1 Agenda of meeting held. List of suggestions gathered from EECD faculty	-P.I. Director, Coord., EECD faculty	8/1/2011 - ongoing
4.2 Based on suggestions from EECD faculty, embed practicum experiences in each of the courses within the M.A. and endorsement program.	4.2 Suggested practicum experiences embedded in each of the Master's/endorsement courses.	-P.I., Director, Coord., Staff Asst.	Each semester of each year
4.3 Each semester, meet with faculty who will teach courses. Discuss practicum strategies embedded in the class and make final revisions to the suggested practicum experiences.	4.3 Minutes of meetings held with course professors. Final revisions to course syllabi on file and ready for use by instructors	-Director, Coordinator, Course Instructors.	Each semester of each year
4.4 Upon completion of each course, meet with professors to determine the extent to which practicum was meaningful to students.	4.4 Minutes of meetings held with professors and changes to syllabi noted.	-Director, Coordinator, Course Instructors.	Each semester of each year

Objective 5: Design a study to collect post-training data on the effectiveness of program graduates and completers

Activities to Accomplish Objective	Evaluation Strategies	Person Responsible	Timeline
5.1 Design a framework to conduct a study to determine the effectiveness of the program.	5.1 Minutes of meetings held with staff and the evaluator.	- P.I. & Director, Coordinator, Evaluator	Begin 8/1/2011 and on-going
5.2 Meet with School of Education from the Division of Research Evaluation and Measurement to share plan for the study. Gather suggestions for improvement of the evaluation design.	5.2 Minutes of meetings held with REM faculty. Suggestions from REM faculty are noted in evaluation design.	- P.I. & Director, REM Faculty, Coordinator, Evaluator	Begin 8/1/2011 and on-going
5.3 In collaboration with the external evaluator, develop evaluation instruments to assess the degree to which training for teachers is positively affecting secondary students' growth in math/science.	5.3 Instruments to be used are on file. Letters of approval from REM and EECD faculty also on file.	- P.I. & Director, REM Faculty, Coordinator, Evaluator	Each semester of each project year
5.4 Meet with LEAs administrators to seek approval for study. Seek approval from Human Subjects department	5.4 Minutes of meetings on file. Approval from Human Subj. on file	P.I. & Director, Coordinator, Evaluator,	September of each project year
5.5 Share plan with CU faculty LEA administrators	5.5 Minutes of meetings LEA staff	LEA administrators	

Objective 6: Build program capacity and disseminate program successes to other IHEs.

Activities to Accomplish Objective	Evaluation Strategies	Person Responsible	Timeline
6.1 Review program results & modify the program as needed. Courses become regular course offerings on the CU campus.	6.1 Modifications to program on file. Courses offered each semester	-P.I, Director, Coordinator, Staff. Asst. Evaluator	On-going throughout the 5 project years
6.2 Develop presentations to disseminate the program. Seek out conferences where staff may disseminate the program via presentations.	6.2 Presentation materials on file. Evaluations of presentations from those in attendance	-P.I., Director, Coordinator, Staff Asst., Evaluator	On-going throughout the 5 project years
6.3 Present findings of program success at the yearly OELA Summit. Meet with other IHE staff in attendance to provide one-to-one information on the program.	6.3 Participant evaluations of file. A list of other IHEs that were provided one-on-one services on file.	-Director, Coordinator, Evaluator	Yearly
6.4 Assist other IHEs who are interested in developing a similar program at their IHE.	6.4 Agendas of scheduled meetings with IHE faculty	-Director, Evaluator	Yearly
6.5 Work with non-participating school districts to offer program services to other STEM teachers.	6.5 Minutes of meetings w/ LEAs	-Director, Coordinator	Yearly

(c)(2) Time Commitments of Project Staff are Appropriate and Adequate

The following table provides time commitments of each of the proposed project staff.

Staff	% of Time Commitment
Principal Investigator – Dr. Leonard Baca	10% Time
Project Director – Dr. Manuel Escamilla	100% yr. 1 - 50% time yr. 2 - 5
Site Coordinator – Ms. Penny Oliver	25% Time
Staff Assistant – To Be Named	100% Time
External Evaluator – Dr. Tom Adams	20 days

The time commitments of each of the proposed project staff are based on the job descriptions described in the pages above. It must be noted that Dean Lorrie Shepard will provide overall leadership for this project, at no cost to the project.

d. Quality of the Project Evaluation

(d)(1) Methods of Evaluation are Thorough, Feasible, and Appropriate

The Context, Input, Process and Product (CIPP) evaluation model will be used in evaluating the proposed Secondary M.A. and ESL endorsement program, specifically designed for secondary Science, Technology, Engineering and Math (STEM) teachers. Developed by Stufflebeam, Gullickson & Wingate (2003), the CIPP evaluation model is a comprehensive framework for guiding formative and summative evaluations of federally-funded programs, which is based on guiding principles of evaluation set forth by the U.S. General Accounting Office's *Government Auditing Standards* (2003) and on the U.S. Department of Education's document titled *Practitioner's Evaluation Guide*, developed at the University of Virginia. The model's core concepts of evaluation are denoted by its acronym, CIPP; evaluation of a program based on Context, Input, Processes, and Products. In this model, **Context** evaluation assesses the needs, problems and positive aspects of a

program to help program staff determine whether program goals and objectives are being met and to provide information to partner school districts and collaborating IHEs on the training provided to trainees so they may also judge the effectiveness of coursework in providing STEM teachers skills in teaching English and academic content to English Language Learners. In order to determine the effectiveness of the program, the evaluator will track yearly test scores of students from each of the partner districts.

Input evaluation is used to assess whether alternative approaches should be used in the evaluation process and to determine the cost-effectiveness of the project. During each evaluation cycle, the evaluator will interview all those affected by program services (program staff, LEA administrators, teachers) to determine their satisfaction with the program. In addition, the evaluator will review program budgets each year to determine whether program funds are being used appropriately and per federal guidelines. **Process** evaluation, or the formative stages of evaluation, is used to assess the implementation of project activities and to judge whether the activities are leading to successful completion of the intended outcomes. The Management by Objective matrices located on pages 22 – 27 lists all activities that will be completed in order to accomplish each project objective. Each year, the evaluator will assess the degree to which each of the activities is leading to successful completion of the objective.

Finally, **Product** evaluation, or the summative stage of evaluation, is used to identify and assess overall outcomes, both intended and unintended, to help project staff and partner LEAs assess the project's ability in meeting the training needs of teachers, thus positively affecting LEP students' ability to speak, read and write in English and to do well on standardized tests in areas of math and science. In order to judge the yearly and overall

effectiveness of the project, the evaluator will gather formative data each year. Based on formative data, he will write a summative report of findings that will be submitted to the U.S. Department of Education each year. At this phase of evaluation, the external evaluator will also report on the degree to which the project is meeting the following GPRA Measures – GPRA Measure 1.5 – The percentage of in-service teacher completers who complete State and/or local certification, licensure, or endorsement requirements in EL instruction as a result of the program; and Measure 1.6 – The percentage of in-service teacher completers who are providing instructional services to ELS students. In addition to meeting GPRA requirements, the effectiveness of course content and practicum experiences in each of the courses will be evaluated via course evaluations and observations by the Coordinator and Evaluator. The Director will also meet with Dr. Barbara Medina of the Colorado Department of Education, who will review courses to determine the extent to which K-12 State ESL standards are embedded into courses.

Throughout the five years of the project, the External Evaluator will evaluate the degree to which courses within the program meet state standards for K-12 licensure and endorsements in ESL education for secondary teachers. This will ensure that courses are preparing secondary teachers with the skills needed to meet NCLB Highly Qualified Teacher requirements.

(d)(2) <u>Methods of Evaluation Include Objective Performance Measures</u>

The CIPP evaluation model requires the use of quantitative, qualitative and triangulation procedures in evaluating the worth of a program. During the formative stages of evaluation, the evaluator will provide project staff and partner agencies qualitative data, following guidelines recommended in the Context, Input, Process and Product (CIPP)

model; including 1) describing the Context of the project and to identify potential problems that may exist and provide suggestions for meeting identified needs; 2) providing Input data that describes day-to-day operation of the program and provides suggestions or alternative strategies for strengthening the program's design; 3) providing information on the Process used in meeting program goals and objectives and provide suggested activities that will meet the project's goals and objectives; and, 4) providing Product, or end of the year information, and make suggestions for modifying, adopting or discontinuing certain aspects of the program. During the summative stages of evaluation, the evaluator will utilize quantitative methods in analyzing the overall effectiveness of the program, again following guidelines recommended in the CIPP model. A review of formative data will be used to conduct a statistical analysis to measure the extent to which the goal and objectives have been achieved. The matrix on pages 22 - 27 provides information on evaluation criteria to be gathered in evaluating program activities.

Formative and Summative evaluation will occur throughout each year. Questions to be addressed during the formative phase of evaluation include: 1) What needs to be done? How should it be done? Is it being done? Is it succeeding? The evaluator submits interim reports addressing these questions to keep stakeholders informed about findings, help guide decision-making, and strengthen staff work. In finalizing a summative report, the evaluator will address the following questions: 1) Were important needs addressed? Was the effort guided by a defensible plan and budget? Was the service design executed competently and modified as needed? Did the effort succeed? The Formative stage of evaluation will be to study how the program operates on a day-to-day basis, how it is influenced by various situations in which it is applied, and what those people directly affected by this program

regard as its advantages and disadvantages. Throughout this process, the evaluator will "illuminate" the most significant features of the program and determine how these features relate a complex array of questions, including "hidden" as well as visible variables. The methodological strategies to be used during the Formative stage of evaluation are: observations; interviews with staff; questionnaires; and analysis of project documents including information on student progress. These methodological strategies, in combination, will help to uncover any problems that may exist in the project. Furthermore, it will assist in determining: 1) secondary teachers' understanding of research-based ESL teaching strategies; 2) secondary teachers' success in coursework; 3) their satisfaction with program management; 4) their ability to utilize learned skills from university courses with LEP students in real classroom settings; and, 5) each partner's perception of the project in meeting the goals and objectives of the project. The external evaluator will meet with project staff and partners each semester to apprise them of the project's success at addressing the above questions. Program participants, LEA staff, university faculty, and project staff will be involved during this stage of evaluation. Individuals will freely express their perceptions of the project. This information, along with observational data, will determine the extent to which the program is meeting needs.

The Summative stage of evaluation will include an analysis of overall program results, which are based on information gathered during formative evaluation stage. The external evaluator will submit the summative evaluation report 30 days after the end of each project year. The report will include comprehensive data (qualitative and quantitative), including: 1) an analysis of the programs' ability to meet the professional development needs of secondary teachers, based on surveys and interviews gathered during the formative

evaluation state, and provide recommendations for program improvement; 2) a comprehensive analysis of secondary teachers' progress in completing coursework, including grades earned in completed courses; 3) an analysis of project staff's management of the program, based on surveys and questionnaires; 4) a detailed analysis of how the program goals and objectives are being met; and, 5) a detailed analysis of the cost benefits of the program and an analysis of how project dollars were spent each year.

(d)(3) Extent to Which Evaluation will Provide Performance Feedback

The overall purpose of the evaluation is to provide feedback to assess the overall worthiness of the project. The formative stages of evaluation to be used in this project will be used to study how this professional development program for STEM teachers operates, how it is influenced by various factors in which it is applied, and what those people directly concerned with the program 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. The methodological strategies that will be used by the evaluator during the formative stage of evaluation include: observations, interviews with participants; questionnaires, and an analysis of student records to assess the degree to which participants are succeeding in courses. In combination, these formative evaluation strategies will help to "illuminate" problems, issues, and significant program features that need attention during each semester of each project year or those features that are providing successful. Each year, a summative report will be submitted to the U.S. Department of Education, Office of English Language Acquisition. In this phase of evaluation, the external evaluator will measure the extent to which the program has met its objectives. In order to accomplish this, the evaluator will

review records to assess the degree to which the activities associated with each objective were met. In essence, the summative report that will be submitted to the U.S. Department of Education each year will include: 1) a description of the program design as planned. This description includes the resources of the program, the related activities and operations and the anticipated products or results; 2) information on the degree to which STEM teachers are practicing learned skills in their classrooms with ELLs; 3) the degree to which assistance from the Site Coordinator is leading to more effective practices among trainees; 4) information on test scores of students whose teachers are involved in the program; and 5) to determine the cost benefit of the program

The formative and summative evaluation report will be prepared by the program evaluator in collaboration with project staff and will then be submitted to the Department of Education, Office of English Language Acquisition (OELA). The evaluator will be contracted for 20 days each year. Twelve days (4 days each semester) will be devoted to formative evaluation processes, including observing in classrooms, conducting interviews with project trainees, partner agencies and program staff and for summarizing data collected during this stage. In addition, the evaluator will devote three days to develop an interim report (end of fall, spring and summer semester of each year) and will meet with project staff and partners to report formative evaluation findings and to make recommendations for program improvement. The evaluator will use the final five days of evaluation each year to develop a comprehensive summative evaluation report and to meet with project staff and partner agencies to summarize findings and to make recommendations for program improvement.