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Name of IHE: University of Colorado Denver
Title of the Program: E-learning Communities for Academic Language Learning in Math and Science (ECALLMS)
Consortia Partners: Aurora Public Schools, Adams 12 Five Star Schools, Adams 14 School District, Denver Public Schools, Jefferson County Public Schools, and Mapleton Public Schools. For more information on our schools in the Professional Development Network please visit: www.ucdenver.edu/education; click on "Our Role In the Community"
Project Description:
Overarching Goal: Prepare members of the Urban Community Teacher Education (UCTE) community (teacher candidates, university faculty, district personnel, site teams, cooperating teachers, program graduates) to provide linguistically responsive instruction that accelerates ELs' acquisition of language, literacy, and content knowledge, with a particular focus on math and science. We plan to substantially improve curricula and enhance existing networks and relationships by focusing on two levels of initiatives (pre-service and in-service) that are intertwined and sustainable through the continued development of a substantial, high quality, UCTE online learning community.

Pre-Service Initiatives: There are three major outcomes: (1) professional development of pre-service faculty in regards to instruction that accelerates ELs' acquisition of language, literacy, and content knowledge, with a particular focus on math and science, (2) informing teacher education through district-based innovation in practice as investigated by collaborative, action research conducted by pre-service faculty striving to solve local issues around instruction that accelerates ELs' acquisition of language, literacy, and content knowledge, with a particular focus on math and science, (3) cohesive curricular alignment across initial licensure courses and internships in regards to preparing pre-service teachers to engage in instruction that accelerates ELs' acquisition of language, literacy, and content knowledge, with a particular focus on math and science.

In order to meet these outcomes, Professional Learning Communities (PLCs) will be created, sustained, and supported by the Co-PIs and through stipends. Each PLC will be composed of School of Education and Human Development (SEHD) faculty, College of Liberal Arts and Science (CLAS) faculty, and site teams (teacher candidate internship supervisors) and will be tasked with focusing their work on either a partner district and its local needs surrounding effective math and science instruction for ELs, initial licensure courses (either core courses or specialty methods courses), or the internships required for initial licensure. Once the targeted focus has been determined, PLCs will meet regularly both online and in person to gather data and investigate local problems of practice through collaborative action research regarding how to prepare teachers to accelerate ELs acquisition of language, literacy, and math and science content knowledge. Each PLC will be supported by a Co-PI and will be expected to share the outcomes of their work in the UCTE Online Learning Community. Additionally PLCs will attend an annual retreat where all PLCs join together and strive for cohesive program alignment through sharing outcomes, products and accomplishments as well as setting goals and creating plans for further work. Further, PLCs will participate in the testing and improvement of the courses/modules developed and offered through the In-Service Initiatives described below. A major outcome of the PLC work is developing a learning progression that defines the outcomes

Project Narrative: Introduction

Our proposed project, *E-learning Communities for Academic Language Learning in Math and Science* (ECALLMS), aims to provide innovative professional development activities that are designed to improve pre-service and in-service teachers' abilities to provide instruction that accelerates English learners' (ELs) acquisition of language literacy, and content knowledge with a particular focus on math and science. The project meets competitive preference priority 2, "Enabling more data-based decision-making," through the use of action research based professional learning communities (PLCs) composed of university faculty and local district partners who are part of the Urban Community Teacher Education (UCTE) program and Professional Development School (PDS) Network at the University of Colorado Denver (UCD). PLC participants will be tasked with improving the curriculum content, program structures, and program coherence (Lucas, 2011) of the UCTE program to effectively prepare teachers to utilize high quality instruction with ELs, especially in math and science. Further, 27 online instructional modules differentiated by content and grade level spans will be developed and rolled out through a cycle of piloting, data gathering and feedback loops to support continued refinement.

This project also meets competitive preference priority 3, "Promoting science, technology, engineering, and mathematics (STEM) education" through a strategic focus throughout the grant on accelerating ELs' acquisition of language, literacy, and content knowledge, with a particular focus on math and science, including the creation of the 27 sustainable, high quality, differentiated online modules to support professional learning of clinical teachers who mentor teacher candidates in PDSs, district partners, and program graduates.

Further, our proposed project meets invitational priority 2, "Improving preparation of

ALL teachers to better serve ELs" through substantial professional development opportunities that every member of the UCTE program at the university and PDSs can take advantage of both during the tenure of the grant as well as into the future through the development of sustainable, high quality online professional development opportunities through the UCTE Online Learning Community that will be hosted on EdWeb (www.edweb.net), that provides robust web 2.0 tools to support innovative collaboration across space and time. The PLCs will utilize this platform to enhance their collaborative work and the online modules for in-service teachers will be built and sustained on this platform.

Our Context

The UCTE program at UCD prepares approximately 300 teacher candidates per year in elementary, secondary, and K-12 special education. Redesigned with our partners and launched in the summer of 2010, the UCTE program prepares general and special education candidates with the unique knowledge, skills and dispositions to be highly effective in fostering the learning and achievement of urban children and youth from culturally and linguistically diverse backgrounds. Teacher preparation at UCD has always been a highly collaborative process through the partnership of six urban school districts in the greater metro Denver area since 1992 (Aurora, Adams 12, Adams 14, Denver, Jeffco, and Mapleton; letters of support from district and school-level partners included in the appendix). Currently the partnership consists of 30 PDSs that make up the UCD PDS Network where teacher candidates complete a year-long series of internships throughout their program, resulting in nearly 1000 hours of clinical practice. At each PDS, a cohort of 10-12 teacher candidates work alongside master practicing teachers (called clinical teachers) who mentor, coach, and co-teach with candidates while candidates simultaneously take coursework at the university carefully aligned to each internship. In

addition, the cohort of candidates is supported by a "site team", which is a university site professor and a school-based site coordinator, who foster the development of the teacher candidates through intensive coaching and facilitation of a weekly Collaborative Learning Community (CLC) to support teacher candidate inquiry on the improvement of practice and learning outcomes for K-12 students. Also, the site team is responsible for supporting embedded professional learning with clinical teachers and other educators in the building.

UCD has also been an original demonstration site since 2006 for the National Commission on Teaching and America's Future (NCTAF) on a project called Teachers Learning in Networked Communities (TLINC ®). At its core the TLINC® initiative supports the development of innovative online learning communities, with structured, facilitated engagement of teacher candidates and teachers, focused on teacher learning, reflection, and collaboration to improve student outcomes. Beginning Summer 2011, TLINC® will be hosted on the EdWeb platform that will now provide each demonstration site with robust web 2.0 tools (e.g. blogs, synchronous and asynchronous discussion forums, electronic file sharing, video analysis, wiki's, online polls, etc.) to facilitate each site's TLINC® online learning community. At UCD, the UCTE Online Learning Community enables us to develop innovative ways for the many key players involved in our teacher preparation program and PDS Network (e.g., teacher candidates, university and PDS faculty and administrators) to access critical information on demand and collaborate and learn together across space and time. It also is quickly becoming an integrated aspect of the UCTE pre-service experience and graduates will continue to have access to it after completing licensure.

Our ECALLMS project builds upon what we have learned about effective online learning communities through TLINC® (Gutierrez & Bryan, 2010) and our foundational commitment in

the UCTE program to simultaneous renewal of professional practice in schools and university teacher preparation through our PDS model (Teitel, 2003). We have observed and researched the challenges ELs face in acquiring the necessary academic language to be successful. Using an action-research oriented PLC approach, enhanced through innovative web 2.0 technology to support collaboration and high quality, sustainable professional development, ECALLMS will result in the development of new knowledge and instructional approaches to accelerates ELs' acquisition of language and literacy focused on math and science content, while informing the continued improvement of teacher preparation and professional learning of practicing teachers.

Academic Language Learning

While the body of research focused on preparing mainstream content classroom teachers to work effectively with ELs is still relatively small (Lucas, 2011), substantial work has been done that can guide teacher educators who are interested in improving the preparation of general and special education teacher candidates in order to accelerate ELs acquisition of academic language, literacy, and content knowledge, especially in math and science.

Empirical research on teacher education practices aimed at preparing content teachers to effectively instruct ELs provides insights for needed teacher education faculty development (Costa, McPhail, Smith, & Brisk, 2005; Meskill, 2005; O'Hara & Pritchard, 2008), instructional practices in teacher education courses (Minaya-Rowe, 2004; Wade, Fauske, & Thompson, 2008), changes in teacher candidates' beliefs and dispositions (Katz, 2000; Torok & Aguilar, 2000; Virtue, 2009), and the eventual practices of teacher education graduates (Bernhard, Diaz, & Allgood, 2005; de Oliveira & Athanases, 2007). Across this research, various teacher education practices have been shown to be effective and the need to focus on preparation that Lucas, Villegas, & Freedson-Gonzalez (2008) call "linguistically responsive" is a repeated theme.

A framework for linguistically responsive teacher education that supports effective classroom instruction for ELs is offered by Lucas et al. (2008) indicating three types of pedagogical expertise all teachers need: knowledge of the linguistic and academic backgrounds of students, understanding of the language demands of the content-specific classroom tasks students are expected to engage in (i.e. academic language), and the skills necessary to offer the appropriate scaffolding for multilingual learners to successfully participate in classroom tasks.

Drawing on these frameworks (Lucas et al, 2008; Lucas, 2011) and the findings from the above-mentioned studies as well as the scholarship of the Co-PIs, we propose a project aimed at improving our teacher education practices to support effective instruction of ELs. Our project targets what Lucas (2011) calls the "three essential elements of teacher preparation programs that require attention by teacher educators" who are taking on the challenge of preparing all classroom teachers to effectively instruct ELs: "curriculum content, program structures, and program coherence" (p. 6). ECALLMS will create the learning opportunities necessary for various members and district partners of the UCTE program to engage in face-to-face and online professional development that will substantively improve our curriculum content, program structures, and program coherence (Lucas, 2011) as well as prepare all teachers to use linguistically responsive classroom practices through the development of the necessary types of pedagogical expertise (Lucas et al., 2008).

Project Overview

ECALLMS is developed with the overarching goal to prepare all members of the UCTE community to provide linguistically responsive instruction that accelerates ELs' acquisition of language, literacy, and content knowledge, with a particular focus on math and science. The outcomes of this work are focused on two levels of initiatives: pre-service and in-service.

Pre-Service Initiatives

There are three major outcomes of our pre-service initiatives: (1) professional development of UCTE pre-service education faculty, (2) informing teacher education through collaborative, action research conducted by pre-service faculty with district partners striving to solve local issues around instruction that accelerates ELs' acquisition of language, literacy, and content knowledge, with a particular focus on math and science, (3) cohesive curricular alignment across UCTE courses and internships in the interest of preparing pre-service teachers to engage in high quality instruction for ELs' with a particular focus on math and science. Each of these outcomes as well as the proposed activities and products structured to achieve these outcomes will be described in detail below.

Outcome #1 – Professional Development of Pre-Service Faculty.

Six action research based PLCs will be developed and sustained over the course of the grant to include pre-service faculty from the School of Education and Human Development (SEHD) and College of Liberal Arts and Sciences (CLAS) as well as part-time faculty and teaching partners from our 30 PDS school sites (site professors, site coordinators, and other district personnel).

One PLC will focus its investigation on the five core initial licensure courses all general and special education candidates take; one PLC will focus on the math and science specialty methods courses for elementary, secondary and special education teacher candidates; one PLC will focus on the internship experiences of teacher candidates; and the remaining three PLCs will leverage district level partnerships with three of our partner districts in order to investigate and innovate around local problems of practice surrounding effective instruction of ELs, with particular attention to math and science. All of the PLC work will inform improved curriculum

content, program structures, and program coherence (Lucas, 2011) in UCTE. In addition, PLC participants will engage in piloting the online modules developed for clinical teachers and other educators in the PDS network as a way to inform their own professional learning and provide feedback and data to the module design team for refinement before full roll-out.

This professional development opportunity for all members of the UCTE pre-service community will be designed around research-based best practices in professional development. Desiomone et al. (2002) have identified six key aspects of high quality professional development programs:, (1) reform type (more than just sitting in a lecture), (2) duration (the longer the better), (3) collective participation (as many from the same school community as possible), (4) active learning (doing rather than listening), (5) coherence (making connections to the professional lives of teachers), and (6) content focus (more than just pedagogy). In addition, Cochran-Smith and Lytle (1999) discuss creating teacher learning communities involving "knowledge-*of*-practice" where knowledge is "generated when teachers treat their own classrooms and schools as sites for intentional investigation at the same time that they treat the knowledge and theory produced by others as generative material for interrogation and interpretation" (p. 250). PLC participants will be supported in treating their school and university classrooms where they engage with teacher candidates as sites for intentional investigation while also considering the knowledge and theory produced by the other PLCs as important material for interrogation and interpretation, leading to significant improvement of teacher preparation and practice in our PDSs to support ELs.

The PLCs will be facilitated both in person and extended through online collaboration in EdWeb by Co-PIs, Mitchell and Gutierrez and a doctoral student funded yearly through the project. Further, project personnel will ensure the PLCs stay on track to produce expected

products, participate in an annual ECALLMS PLC retreat that will include meaningful collaboration and learning with national experts from our advisory board and the module design team for the in-service initiatives, while collaborating with the other PLCs in order to keep a focus on comprehensive program improvement that prepares linguistically and culturally responsive teachers.

Outcome #2 – Informing Teacher Education Practices Through Innovation

Three of the PLCs described above will focus on solving local partner districts' problems of practice related to the instruction of ELs that accelerates language, literacy and math and science content knowledge. Through our PDS Network, three district teams will be created that will focus on various issues at the PDSs within a district. Our PLCs will work with district teams in order to focus their investigations on solving and engaging with local problems of practice within that district regarding effective math and science instruction for ELs. The work of these PLCs will both help improve teaching practice in the district as well as inform UCTE program improvements. Again, these PLCs will be part of the annual ECALLMS PLC retreats.

Outcome #3 – Cohesive Curricular Alignment

Sharing PLC work through the UCTE Online Learning Community and the annual PLC retreat will provide the necessary avenues of collaboration for cross-PLC conversations around cohesive curricular alignment. One of the products that will be created through the collaborative PLC work is a learning progression (Heritage, 2010) defining the learning outcomes and corresponding learning experiences that support candidates' development of necessary skills and dispositions to provide high quality instruction that accelerates ELs learning of language, literacy, especially in math and science across the entirety of our teacher education program. Other products will include revised syllabi and assignments in each of our licensure courses, as

well as revised program-wide assessments including the Teacher Work Sample and Internship Body of Evidence Assessment tools. Additionally, video of exemplary teaching practices in our PDSs that advance the academic language of ELs in math and science will be produced and made available on EdWeb for use in licensure courses and online modules.

In-Service Initiatives

There are two major outcomes of this work: (1) creation of substantial, high quality, online professional development opportunities for every member of the UCTE community (site teams, clinical teachers, graduates, faculty, district partners, etc.) to engage in that will support high quality instruction that accelerates ELs' acquisition of language, literacy, and content knowledge, with a particular focus on math and science, (2) increased capacity by clinical teachers and program graduates to utilize instruction that accelerates ELs' acquisition of language, literacy, and content knowledge, with a particular focus on math and science.

Outcome #1 – Creation of Online Professional Development Opportunities

Over the course of the ECALLMS project, 27 high quality on-line modules will be developed by a cross-disciplinary design team that includes individuals with expertise on linguistically diverse teacher education, science education, math education, and high quality online learning. The content of each module will represent various perspectives and expertise; therefore, avoiding the disconnect that often occurs among various discourses and communities of practice that Valdés (2004) critiques as limiting the opportunities for K-12 practitioners to work toward agreed upon goals. The design team will reach across academic silos to learn from one another and develop high quality learning opportunities for all members of UCTE. This work will be led by Co-PIs Leonard and Nocon and supported by a doctoral student.

The specific content of the modules will focus on three broad areas: 1) Effective linguistically responsive instruction; 2) Exploring math content and math based academic language instruction, and 3) Exploring science content and science based language instruction. Within each area, nine modules will be developed, some of which will provide an in-depth overview and learning principals relevant to all grade level spans, while others will be designed to target the development of linguistically responsive pedagogical content expertise unique to a particular grade span (e.g., primary, intermediate, middle school). Bowgren and Sever (2010) contend teachers must be provided with appropriate learning experiences that are relevant to their content and grade level as well as acknowledge that teachers come with widely varying needs regarding professional learning. The modules will be built on the EdWeb platform in order to leverage the robust web 2.0 learning tools and enable participants that are physically located across a very wide metro region to collaborate in innovative ways across space and time, while having access to "just in time" professional learning that meets their needs (Dede, 2006). An overview of the content in each major area follows.

Linguistically Responsive Instruction: Following the aforementioned linguistically responsive teacher education framework proposed by Lucas et al. (2008), modules in this area will include specific attention to helping teachers develop the three critical types of pedagogical expertise: knowledge of the linguistic and academic backgrounds of students, understanding of the language demands of the content-specific classroom tasks students are expected to engage in (i.e. academic language), and the skills necessary to offer the appropriate scaffolding for multilingual learners to successfully participate in classroom tasks. Lucas and Grinberg (2008) comprehensive review of the literature also provides direction for specific language-related knowledge that will be embedded in the modules including basic linguistic analysis of both oral

and written texts, cross-cultural and cross-linguistic communicative competence, and the ability to design instruction that supports ELs development of both language and content.

Another important aspect of successful outcomes for ELs involves the school context in which they are educated as school contexts that are governed by negative attitudes and beliefs about ELs can segregate and marginalize (Pappamihiel, 2001, 2002; Sharkey & Layzer, 2000). Drawing on current research by Co-PIs (Mitchell & Nocon) through the recently created Denver Public Schools (DPS) - UCD Research Collaborative, findings from on-going research investigating effective school-wide practices that support high levels of academic achievement for ELs in highly impacted local schools will be utilized in developing the modules in this area. Our findings suggest that the synergistic connection of vision, values, and actions, high expectations for students and teachers, a climate of safety, respect, and supported collaboration for teachers, and a safe community for children creates powerful levers for improving academic achievement in terms of language, literacy and content knowledge for ELs (Nocon, Davis, Keenan, et al. 2011).

Mathematics Focused Modules: The mathematics modules will build on Carpenter et al.'s (1999) text on Cognitively Guided Instruction and its companion CD-ROM of video vignettes to help teachers learn how ELs are exposed to various problem types (e.g. comparison and part-part-whole problems). Moreover, teachers will learn how to pose problems that expose students to various types of content and scaffold the development of the language and literacy skills necessary for successful mathematics engagement. In addition modules will focus on the use of multicultural texts which provides the context to engage students in critical literacy as they discuss and challenge the validity of the context, the portrayal of the characters, and the authenticity of the story (Quintero, 2004) while providing a third space where knowledge,

different ways of knowing, and self-determination come together in a culturally specific context to learn mathematics (Leonard, Davis & Sidler, 2005).

Several differentiated modules will be developed that will focus on using a problem-solving approach coupled with multicultural literature and scenarios to help teachers produce lesson plans on three big ideas in mathematics: number, algebra, and statistics. For instance, a module on number will be developed for teachers in grades K-2. Multicultural literature books that can be connected to number sense and numeration will be used for context and to support language and literacy development. Teachers will learn to pose problems that can be used to help young children learn the four basic operations (Carpenter, et al., 1999) and through that work support language acquisition. Another module will be developed and used with elementary teachers (grades 3-5) to improve ELs acquisition of language, literacy and algebraic thinking. Multicultural texts that focus on location and place can be used and problems can be developed that use coordinate grids, distance, and rate to develop proportional reasoning. A module on statistics will be developed for use with middle school teachers (6-8). Various sources of locally relevant data will be used to explore statistics, which can easily be tied to social justice issues and language and literacy development. Lessons that have been previously explored included tracking homes prices in different neighbourhoods, SAT scores by race and gender, and income by profession (Gutstein, 2003). Overall, at least five mathematics related modules will be created in support of the overall goals of the project.

Science Focused Modules: The themes of *Red Rocks* and *Climate Change* will be used to develop several modules for teachers that leverage the landscape in Colorado and global concerns, respectively. The modules will focus on the unique needs of teaching geology using inquiry-based learning that supports language, literacy, and science content knowledge

development. The curriculum for the modules will build upon inquiry-based education modules from Leonard's (Co-PI) previous NSF-funded Earth Links in the geosciences. The modules will embed links to information about natural resources found in the surrounding Rocky Mountains and Front Range. Numerous rocks of various colors, textures, and elements can be found in the area. Lessons can be connected to learning about rock formation, landforms and catastrophic events like earthquakes, avalanches, and forest fires. The online modules will be designed to carefully integrate teaching the content of geoscience using innovative teaching and inquiry-based techniques, along with opportunities to critically analyze the pedagogy that supports both language and content development. In this way, participants will gain content knowledge and experience using these modules and learn how and why these methods are used. Some modules will also include field activities and use of other technology. The field component will include utilizing tools such as GIS (e.g. MyWorld GIS from GEODE) and taking field trips to local parks and streams. Field-based experiences are relatively easy to integrate because of the close proximity of national parks and mountain ranges to the Denver metro area.

Additional science modules will build on the ideas and design features from the WISE and TELS platforms developed by the University of California at Berkeley (http://wise.berkeley.edu). These programs provide online activities that teachers can use for students to work collaboratively in pairs to critique materials, debate controversies, or design their own solutions to science problems. WISE combines Web resources with teacher guidance, which may include whole-group discussion, experiments, and classroom debates around a particular science topic. Evidence pages contain curriculum content, hints provide scaffolding and probe students to answer questions, and notes ask students to provide written responses to justify conclusions and present evidence. Moreover, WISE and TELS provide a range of

technology tools for learning, including tools for drawing and graphing, data evaluation, visualization, simulation, concept mapping, and online discussions. All student work is saved in a database, permitting students to work easily from any computer. Teachers have the ability to access student files and make comments about student work. We will use the design features of WISE and TELS to develop our modules using the themes of rocks and climate change as well as ensure that the proper supports for language and literacy development are embedded.

Outcome #2 – Increased Capacity of In-Service Teachers

The UCTE program engages with over 300 clinical teachers every year who spend over 1000 hours mentoring and co-teaching with teacher candidates, thus having a substantial impact on the learning of candidates. Increasing clinical teachers' capacity to provide effective models of instruction for ELs, especially in the areas of math and science, for our candidates to observe, engage in and learn from is essential. The online modules developed by the design team will first be piloted by members of the pre-service PLCs (which include site coordinators and other district personnel who are K-12 educators) such that data collected through threaded discussions and various module learning activities housed on EdWeb will be used to refine the modules before fully rolling them out to clinical teachers and other interested PDS educators (e.g., principals, instructional coaches, learning specialists, etc.) Once they are rolled out, clinical teachers, our licensure graduates, and other educators will be able to flexibly engage in the modules through an online learning community approach where they may choose to identify their own small learning community from their PDS or engage with other educators from other PDSs across the network to form an online learning community for a particular module.

In order to support the differentiated nature of the modules to meet the needs of teachers based on content and grade level, the module design team along with the co-PIs will develop a

needs assessment aligned with the content of the modules such that a teacher can use the needs assessment to self-identify which modules best align with the desired professional learning content the teacher is seeking. In addition, the needs assessment can also be utilized by principals and instructional coaches to suggest modules that best align to professional learning content they see a teacher may need.

The modules will be developed in such a way that successful completion of five specific modules in a particular area (linguistically responsive education; math; science) can be combined to receive three graduate credits for a maximum total of nine graduate credits if the specific modules are completed in all areas. Because many of our partner districts have or are currently developing strategic compensation models we will also work with those district partners to identify how completion of ECALLMS modules can be leveraged in their compensation models (e.g., professional development units in Denver Public School ProComp).

Work Plan by Year

The following chart illustrates the focus of pre-service PLCs across the time of the project.

	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Purpose	Co-PIs Design supports, outcomes, expectations, quality controls, etc. and recruit	PLCs engage in capacity building	PLCs design innovation and plan for their own altered practice	PLCs implement altered practice/ Evaluate and gather data regarding	PLCs refine altered practice / Plan for sustainable improvements

	PLCs			changes	

Each year of the ECALLMS project will provide opportunity for the PLCs to expand their own knowledge and practice regarding preparing teachers to effectively instruct ELs. Further, from Years 2-Years 5, PLC participants will test the online modules designed for in-service teachers.

The following chart shows the expectations for module design for in-service teachers across the tenure of the ECALLMS project.

	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Totals**
Design	*3*	*6*	*6*	*6*	*6*	27
Test		*3*	*6*	*6*	*6*	21
Rolled-Out			*3*	*6*	*6*	15

In Year 1, the design team will create 3 modules, one in each area. In Year 2 those 3 modules will be tested and in Year 3 they will be rolled-out and available to our UCTE community. The pattern will continue across the years of ECALLMS and will result in the design of 27 modules, 21 of which will have been thoroughly tested and 15 will be available to the UCTE community. Our commitment to developing a high quality online learning environment for the UCTE community extends past the length of the ECALLMS project. Therefore, we plan to utilize all of the available funds across the grant to push this project as far forward as possible during the time of the project and plan to continue testing and rolling-out the designed modules beyond Year 5.

Management Plan

(1) Management plan to achieve the objectives of the proposed project, including clearly defined responsibilities, timelines, and milestones for project tasks. The UCTE program has

extensive partners through the PDS Network described above. This project will build upon those established structures, as well as our work with NCTAF, to deepen our pre-service curricular coherence and develop an online community environment for an expansion to equally coherent in-service professional development for our district and university teachers and graduates.

UCD's federal awards during Fiscal Year 2010 totaled 904 and were valued at $275 million across both the Downtown Denver Campus and the Anschutz Medical Campus. The SEHD is currently managing 24 federal and federal-flow through grants with budgets totaling more than $17 million. The university and school are experienced in managing federal grants programs and the financial obligations involved. Both the university and school have managed projects that met the stated objectives and were within the budgetary guidelines proposed.

Project Management Mitchell, Leonard, Nocon, and Gutierrez will share overall responsibility for project management and participate in all decision-making. The four project directors will be involved in all aspects of the grant in the interest of pre-service and in-service coherence and community. Each project director will assume primary responsibility for specific duties, as indicated below.

i. Professional Learning Communities (Mitchell, with support from Gutierrez)
ii. Module Development (Leonard, with support from Nocon)
iii. On-line Community Environment Technical Development (Gutierrez)
iv. Fiscal Administration and Design Team Coordination (Nocon)

Mitchell (proposed funding at 30%, including summer pay) will assume primary responsibility for the project, particularly in summer. Leonard, Nocon, and Gutierrez (proposed funding at 10% during the academic year) will provide active leadership and support. The proposed project

will expand upon our on-going work and structures, particularly in terms of in-service professional development. Project management milestones are outlined in the following table:

Month/Year	Activities/Milestones	Responsibility(Percentage of Grant-funded Time)
Aug. 2011	Convene Design Team, organize weekly meeting schedule & space, tech consultants. Organize grant administration, hire doctoral students	Nocon (In-kind)
Academic year 11-12.	Design Team generates PLC design, capture video of effective practice; curricular design frame and content for 3 modules, and technical integration with on-line community environment, Advisory Board review and community PD event in April	Mitchell (66%), Leonard (100%), Gutierrez (100%), Nocon (100%), RAs (100%), GA (100%) Advisory Board (100%)
Summer 12	Expectations, guidelines, structures, outcomes, quality rubrics, and necessary supports for successful PLCs. Preliminary designs of on-line environment and three modules ready for testing. Year 1 Evaluation.	Mitchell (33%)
Academic year 12-13.	Design Team generates 6 modules, PLCs test 3 modules from 11-12 and build capacity around effective practice for ELs. Advisory Board review and community event in April; Needs assessment survey designed in connection with first modules	Mitchell (66%), Leonard (100%), Gutierrez (100%), Nocon (100%), RAs (100%), GA (100%) Advisory Board (100%)
Summer 13	3 tested modules rolled out online, 6 additional	Mitchell (33%)

	modules ready for testing, PLC products, including draft Learning Progression, Year 2 Evaluation.	
Academic year 13-14.	Design Team generates 6 modules, PLCs test 6 modules from 12-13, PLCs design and test plans to alter practice and work on curricular alignment of UCTE, Advisory Board review and community event in April; Needs assessment survey updated with connections to additional modules	Mitchell (66%), Leonard (100%), Gutierrez (100%), Nocon (100%), RAs (100%), GA (100%) Advisory Board (100%)
Summer 14	6 new tested modules rolled out online, 6 additional modules ready for testing, PLC products, including revised Learning Progression, Year 3 Evaluation.	Mitchell (33%)
Academic year 14-15.	Design Team generates 6 modules, PLCs test 6 modules from 13-14, PLCs implement and evaluate altered practice and work on curricular alignment of UCTE, Advisory Board review and community event in April; Needs assessment survey updated with connections to additional modules	Mitchell (66%), Leonard (100%), Gutierrez (100%), Nocon (100%), RAs (100%), GA (100%) Advisory Board (100%)
Summer 15	6 new tested modules rolled out online, 6 additional modules ready for testing, PLC products, including revised Learning Progression, Year 4 Evaluation.	Mitchell (33%)

Academic year 15-16.	Design Team generates 6 modules, PLCs test 6 modules from 14-15, PLCs refine altered practice, plan for sustainable improvements, and work on curricular alignment of UCTE, Advisory Board review and community event in April; Needs assessment survey updated with connections to additional modules	Mitchell (66%), Leonard (100%), Gutierrez (100%), Nocon (100%), RAs (100%), GA (100%) Advisory Board (100%)
Summer 16	6 new tested modules rolled out online, 6 additional modules ready for testing, PLC products, including revised Learning Progression, Year 5 Evaluation; Needs assessment survey updated with connections to additional modules	Mitchell (33%)

Financial Management UCD will serve as the fiscal agent for the project. The Associate Vice Chancellor for Finance at the university will ensure that federal fiscal regulations in the Education Department General Administrative Regulations (EDGAR) are satisfied. UCD's Grants and Contracts office will provide Nocon, Associate Dean for Teaching and Learning, with a monthly report of project expenditures and encumbrances. The office is experienced in administering federal, state and local grant funds. The system documents amounts allocated by line items, expenditures, total expenditures to date and budget balance. An annual audit of fiscal operations and restricted accounts will be completed by an independent accountant.

Project directors (Mitchell, Leonard, Nocon, and Gutierrez) will review the budget monthly, reconcile it quarterly to monitor spending and make necessary adjustments/corrections, and initiate and document all requests for expenditures through UCD's purchasing and expense

systems, which document payee, amount and description of expenditure, budget line item. Attached receipts and signature of project directors authorizing payment of funds will be included. The project assistant will maintain budget records. As an item is requisitioned, the expenditure will be posted and an accurate up-to-date record made available for effective budget management. Any discrepancies in the financial system will be rectified immediately. Project records will comply with all institutional, state and federal audits performed during the project period.

(2) Time commitments of the project director and other key project personnel are adequate to meet the objectives of the project. The time commitments outlined are adequate to meet program goals. Drs. Leonard, Nocon, and Gutierrez have administered numerous federal and foundation grants and are supported by strong university leaders. Dr. Mitchell worked closely with Dr. Maria Brisk and Dr. Anne Homza on the Project ALL and TALCA NPD grants at Boston College. Additionally, as a result of the existing structures of the PDS Network and UCTE Affiliation meetings which link core foundations and pedagogy faculty with cross-disciplinary content methods faculty, the project directors have developed strong working relationships and familiarity with each other's content areas as well as the PDS schools and districts. Consequently, processes, procedures and clear communication lines are already in place to maximize efficiencies in implementing the proposed curricular redesign of our existing pre-service program and the expansion of our on-line community for in-service professional development. Further, based upon past history in implementing structures to support on-going collaboration in partnership with district and school personnel, SEHD staff and administration are satisfied that personnel time commitments and qualifications are appropriate and adequate to meet the goals and objectives of the project.

(3) Procedures for ensuring feedback and improvement in the operation of the project. Use of the UCTE Online Learning Community on EdWeb as a work space for the Design Team and PLCs as well as a learning space for pre-service and in-service teachers, university faculty, and other district partners offers a centralized platform for continuous feedback and project improvement. Ongoing analysis of the quality of the participant learning and products, documented in the on-line learning community's web environment will guide weekly decision-making. This is a regular function of Gutierrez' work, but will be the particular focus of the two doctoral students working as research assistants to the program. Additionally, the project directors will all be using the on-line community environment regularly as part of their university responsibilities and to support this work in this project. The rigorous Evaluation Plan will augment this online feedback loop with quantitative and qualitative data to inform project refinement. Throughout the grant period, frequent surveys, feedback and evaluation data will be collected electronically and physically at both the university and school and district sites and used to inform project personnel of the progress or needed improvements to the Design Team, PLCs and the on-line community environment so that modifications can be made accordingly to enhance the program's effectiveness.

External Evaluation Plan

This evaluation adopts a mixed-methods approach to assess the extent to which the project meets its goals, and the extent to which it results in changes in the knowledge and practice of participants. Three main types of data will be collected:

Progress monitoring data – to track the extent to which the project successfully meets benchmarks defined in the project plan and sustained engagement of the target audience across time.

Formative data – to assess the ways in which participants are engaging with the project, successes and challenges in pursuing project objectives, extent to which the project is providing high quality professional development appropriate to the needs of participants, and the ways in which the project could modify its practice to improve outcomes for participants.

Summative data – to assess the extent to which the project results in changes in practice among participants, lessons learned about creating high quality PD around instruction for ELs, and lessons learned about building an engaging and high quality online learning community.

These general categories provide a structure for the evaluation. Both quantitative and qualitative data will be utilized, with qualitative data collection focusing on data that will help the project improve its practice and better meet the needs of participants, and quantitative data focusing on the extent to which the project improves participant knowledge and changes their practice around teaching of ELs. The specific evaluation questions for each year focus on addressing the major objectives of the project and are shown in the table below.

Evaluation Questions	Indicators of Success	Data and Methods
All Years – Progress Monitoring		
What evidence exists that the project: conducted expected activities, reached intended audience, produced expected deliverables?	Meeting program task and timeline schedule	Review of project documentation and comparison to project plan.
Year 1 – Formative Data		
To what extent is the design of the	Creation of 3 courses	Survey of design team

courses high quality? To what extent has the project developed expectations and structures to guide/support the PLCs? What are the successes and challenges in the first year of the project?	Established criteria and structures for PLCs Recruitment of PLC participants Faculty satisfaction with course content and design process	Interviews with key stakeholders (e.g., design team, project team) Review of project documentation
Year 2 – Formative Data		
PLCs: How effective are PLCs at producing high quality products and addressing focus issues? What do PLCs feel is working well/challenges? What are lessons learned about structures and supports needed for PLCs to be effective?	PLCs feel supported PLCs familiar with online tools PLCs exhibit high quality meetings and products aligned with project expectations	Observations of PLC meetings Interviews with key stakeholders (e.g., design team, PLC members) Survey of online users Analysis of project artifacts (e.g., PLC action research coded for quality/rigor) Review of online data (e.g., usage statistics)
Online community: What does PLC engagement with online community	PLCs are actively and regularly engaging in	

look like? What lessons are being learned about engaging participants in online PD in an effective way?	the online community	
Year 2 – Outcome Data		
Building capacity: How does participation in online modules affect knowledge of effectively teaching ELs? How well does the online content meet PLC needs around teaching ELs? Are other pre-service courses influenced by project?	PLCs demonstrate increased knowledge of how to teach ELs. PLCs indicate online content meeting needs. Faculty begins to incorporate learnings about EL learning into pre-service courses.	Assessment of PLC member knowledge of teaching ELs (module-embedded assessment) Interviews with faculty
Year 3 – Formative Data		
PLCs: How effective are the PLCs at producing high quality products and addressing focus issues? What are the lessons learned about how to help PLCs be effective?	PLCs feel supported by project PLCs exhibit high quality meetings and products aligned with project expectations	Observations of PLC meetings Interviews with PLC members Survey of online users Review of online data

		(e.g., usage statistics)
Online community: How effective is PLC engagement in online community? How well does the online content meet the needs of PLCs around instruction of ELs? What lessons are being learned about how to engage participants in online PD effectively?	PLCs are actively and regularly engaging in the online community PLCs feel the course modules are meeting their needs. Online dialogue and products reflect knowledge of instruction of ELs	Observations of PLC meetings Interviews with PLC members Survey of online users Review of online data (e.g., usage statistics)
Year 3 – Outcome Data		
Building capacity: To what extent have faculty changed their teaching to reflect ways of accelerating the learning of ELs? To what extent do online modules build PLC and teacher knowledge and capacity to teach ELs?	Faculty changes their teaching to reflect ways of accelerating the learning of ELs. Faculty, PLCs, and clinical teachers demonstrate increased knowledge of how to teach ELs	Assessment of PLC member knowledge of teaching ELs (module-embedded assessment) Faculty survey and/or interviews Analysis of artifacts (e.g., faculty syllabi)

Year 4 – Formative Data		
PLCs: How effective are PLCs at producing high quality products and finding solutions to problems of practice?	PLCs products aligned with project expectations, improved since Yr 2	Analysis of artifacts (e.g., action research project)
Online community: What does the engagement of the PLCs with the online community look like? How effective is it? How well does the online content meet the needs of PLCs around instruction of ELs? How effectively does the project incorporate learnings from the PLCs into pre-service instruction?	PLCs are actively and regularly engaging in the online community PLCs feel the modules are meeting their needs. Feedback loops are established from PLCs and site teams to inform pre-service instruction	Surveys of PLCs Surveys of online users Faculty survey and/or interviews Review of online data (e.g., usage statistics)
Year 4 – Outcome Data		
Building capacity: To what extent does pre-service instruction reflect methods of accelerating the learning of ELs? To what extent do the online courses	Pre-service courses reflect attention to accelerating the learning of ELs. Users of the online	Interviews with teacher graduates Analysis of teacher practice (e.g., journaling, lesson plans)

build PLC capacity to teach ELs? To what extent do teacher graduates use instructional practices that reflect needs of ELs? To what extent is online community being utilized beyond project's direct participants?	modules reflect knowledge of how to teach ELs The instruction of teacher graduates is informed by the course content around instruction of ELs.	Review of online data (e.g., usage statistics) Analysis of artifacts (e.g., faculty syllabi, PLC products)
Year 5 – Outcome Data		
How effective was the project in creating online professional development that meets the needs of pre- and in-service teachers around teaching EL? How effective was the project in changing pre-service courses to reflect issues of teaching ELs? How effective was the project in increasing participant knowledge of teaching ELs? How effective was the project in changing practice?	Evidence that participants have gained knowledge of teaching ELs. Evidence of behavior change by participants (e.g., faculty, teachers, site teams) Use of modules by non-project persons.	Assessment of knowledge of teaching ELs (course-embedded assessment) Survey of online users Analysis of teacher practice (e.g., surveys, measures of practice, artifact analysis) Interviews with teacher graduates Analysis of site team

How effective was the project in creating a highly utilized online community of practice?		practice (e.g., surveys, artifact analysis, observations) Review of online data (e.g., usage statistics)

Reporting: Performance and GPRA Measures

The evaluation will report on the performance of the project as it relates to the project-level goals, as well as the relevant GPRA measures (1.2, 1.3, and 1.6). The table below shows which measures will be available, given when teacher candidates will complete their program:

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Measure 1.2: The percentage of pre-service program completers who are placed in instructional settings serving EL students within one year of program completion.			X	X	X
Measure 1.3: The percentage of pre-service program completers who are providing instructional services to EL students 3 years after program completion.					X
Measure 1.6: The percentage of in-service teacher completers who are providing instructional services to EL students.			X	X	X

Dissemination Schedule

It is expected that the evaluation would provide both interim deliverables and a final comprehensive report each project year. The evaluation team will work with the project team at the beginning of each year of the project to create a dissemination schedule for that year which is aligned with the decision-making timelines of the project. This will ensure that the project team has the appropriate information at the appropriate times to inform their decisions and practice. It is expected that at a minimum the evaluation would provide the project with a report at the end of the first semester of each year, and after the final semester.

Evaluation Team

External program evaluation will be provided for this grant by The Evaluation Center (TEC), School of Education and Human Development, University of Colorado Denver (UCD). This organization is an independent division of UCD whose mission is "to use rigorous, innovative evaluation processes to inform and promote evidence-based programs, practices and policies in schools, institutions of higher education, health care and in our communities."

The Evaluation Center team consists of staff with strong expertise in both quantitative and qualitative methodology, as well as a cadre of well-qualified masters, doctoral, and post-doctoral students. The team has experience conducting evaluations for the National Science Foundation, National Institutes of Health (Clinical and Translational Science Award program), and the Colorado Department of Education, among others. Their affiliation with the School of Education and Human Development provides access to faculty experts in curriculum, leadership, educational psychology, and measurement.

Quality of Personnel

Co-PIs: Dr. Kara Mitchell, Assistant Professor, UCTE. Her research agenda and expertise focus on the policy and practice of preparing mainstream teachers to work with ELs. She worked

extensively on two NPD grants (Project ALL and TALCA) at Boston College as a doctoral candidate. Dr. Jacqueline Leonard, Professor, Mathematics Education. She is a leading scholar in culturally responsive STEM education. She has extensive expertise in contextualizing mathematics by anchoring it to multicultural children's literacy, science, and technology. Dr. Honorine Nocon, Associate Professor of Linguistically Diverse Education and Associate Dean for Teaching and Learning. In addition to designing, implementing, and studying culturally and linguistically responsive curricula, Nocon is an ethnographer of formal and informal learning contexts, who worked with the European Commission's School of Tomorrow project and is an Affiliate Scholar with the Laboratory of Comparative Human Cognition at the University of California, San Diego. Dr. Cindy Gutierrez, Director of Urban Community Teacher Education. She is a leading scholar in Professional Development School models, having served on a National Professional Development School Collaborative that has an NSSE yearbook forthcoming summer 2011. She leads the extensive PDS Network for UCTE and has researched the design and creation of high quality online professional learning opportunities for clinical teachers in collaboration with the TLINC ® project for NCTAF.

Advisory Board: Dr. Tamara Lucas, Professor of Educational Foundations and Associate Dean in the College of Education and Human Services at Montclair State University. Dr. Lucas is the leading national scholar on the preparation of mainstream classroom teachers for teaching ELs. Dr. Maria Brisk, Professor of Education and chair of the Teacher Education, Special Education and Curriculum and Instruction Department at the Lynch School of Education, Boston College. Dr. Brisk's nationally recognized expertise is in bilingual language and literacy acquisition, methods of teaching literacy, and the preparation of mainstream teachers to work with bilingual learners. She was the PI on the very successful NPD grant, Project ALL at Boston College as

well as the Senior Advisor for Project TALCA. Dr. Anne Homza, Co-PI and Grant Director of Project TALCA, Boston College. She directed both Project ALL and TALCA at Boston College and has extensive expertise in striving for teacher education program improvement in order to prepare linguistically responsive content teachers. Dr. Richard S. Kitchen, Professor, Department of Educational Leadership and Organizational Learning and Department of Mathematics & Statistic, University of New Mexico. Dr. Kitchen is a leading scholar in the preparation of mathematics and science teachers for diverse classrooms. Dr. Kathleen Fulton, Director, Reinventing Schools for the 21st Century at the National Commission on Teaching and America's Future (NCTAF). Fulton is the creator and Project Director of NCTAF's Teachers Learning in Networked Communities (TLINC ®) project and has served as a lead author for numerous NCTAF reports including *STEM Teachers in Professional Learning Communities: A Knowledge Synthesis* (2010). Dr. Trey Martindale, Associate Professor and Program Coordinator for the Instructional Design and Technology (IDT) program at the University of Memphis. His research and expertise is in the design and analysis of online learning environments and he serves as the University of Memphis PI for TLINC ®.

Evaluation: Dr. Kelci M. Price, Senior Evaluator, UCD Evaluation Center. Dr. Price has 7 years of experience conducting program evaluation in education including serving as an internal program evaluator for the Chicago Public Schools, directing and conducting the evaluation of many projects relevant to math, science, and major K-12 district initiatives. Her background includes training in social psychology, advanced quantitative and qualitative methods, research design, and program evaluation.

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