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Grant Proposals—
Template with Samples

Purpose
While no two grant proposals look exactly the same, they do follow a general **structure** or **template**. We created these pages to assist those new to grant-writing, but also as a resource for those familiar with grants but seeking new ideas.

Remember, no perfect formula or (set of formulae) exists for every grant situation. It is important to understand the type of project the agency wants to fund. For my students, we call this "Learning to Love Your RFP" (Request for Proposal). Then use the examples we have provided that best fit your grant and your funding agency.

We hope our templates with samples help you in your endeavor.

Listed Below (with samples)

Project Abstracts/Summaries:
- Sample Research Abstract
- Sample Abstract/Summary for Service Grant

1. Introduction
2. Needs Assessment
3. Rationale/Theoretical Framework
4. Research Design
5. Work Plan/Action Plan/Scope of Work
6. Evaluation Plan
7. Management Plan
8. Other documents for grants
    a. Letters of Support samples

Abstract for a Research Grant

Sample #1

Using Media to Help Students Learn Mathematics

Project Summary

This Research and Development project addresses a Research-K12 Program Challenge 2: *How can all students learn significant STEM content?* The project focuses on developing educational media to aid students in understanding core mathematics concepts that researchers have found are misunderstood as students reach middle school. The project will also provide instructional tools to assist teachers in using these media, and thus secondarily addresses K12 Research Program Challenge 3: *How can teachers teach STEM content?*

In spite of general gains in mathematics learning in the United States (NAEP, 2007) and successful mathematics progress for students in many of the math reform efforts, (MSP Impact Report, 2008), researchers have noticed critical gaps in conceptual understanding of core mathematics concepts and processes in students. These misunderstandings cause problems for students as they move through school. By high school, achievement scores drop dramatically, and the gap in test scores between mainstream and culturally and linguistically diverse students can be as much as 30 points (NAEP, 2007). Our research question is: **In what ways can innovative media be used to help students learn significant mathematics content**? Designed by mathematics educators, mathematicians, learning specialists and game developers, the media in this proposed project are organized around math concepts that are often misunderstood. The *Math Project* modules are meant to be easy to access and use, focused on one concept at a time. They provide rich nourishment for the middle-grades curriculum. The project focuses on math concepts, that for some reason, students have found hard to master using a traditional text-based mathematics curriculum. Funny scenarios, comical characters, and memorable vocabulary are used to help students see mathematics as entertaining as well as understandable.

Intellectual Merit: Researchers, while conducting evaluations of student performance within successful mathematics projects in New Mexico (NM), found that there were consistent weaknesses in understanding in specific areas of mathematics across schools by grade levels. Further research demonstrated that these same areas of weaknesses could be found across states. If these small media modules can help schools and teachers provide quick and useful interactive lessons from which students can learn previously misunderstood math concepts, the product will be of significant value nationwide. Extensive research is planned in this project, beginning with an iterative design process including teachers and middle-school students and continuing with randomized controlled trials in school classrooms.

Broadened Participation; Research will specify how well these materials work for all students, as well as for which groups they seem to work best. Developing and researching the materials in New Mexico, a lab for the future of our increasingly diverse classrooms, will ensure the products will be useful as we move math education into the future. Throughout the project, team members will evaluate materials for potential use by English language learners, adult learners, and other learners not in the specific audience targeted in development.

Sample #2

Make-IT! is an inquiry-based, information technology (IT) program that involves under-represented girls in grades 7-12, their teachers and their parents in using e-portfolios and digital media to develop their abilities in STEM fields. The project models SCANS competencies for workplace know-how in the 21st Century and leverages the resources, programming, and community-based projects of a successful mathematics, science and IT collaborative in the southwest border region. Make-IT! will enhance life-long application of information technology to STEM learning in a year-round systemic enrichment program that includes an after-school component, monthly Saturday all-day symposiums, and a month-long summer field-based experience.

The ***intellectual merit*** of this research effort resides in using and practicing information technologies as a means for under-represented students to learn about STEM careers and gain IT abilities. Following weekend and after-school explorations, a university field-based summer lab experience supports students in an intensive experience culminating in the development of a personal STEM e-portfolio. The project also brings together university experts in science and information technology with public school and community leaders to deliver a systemic, focused, year-round enrichment model.

The ***broader impact*** of the project is the development of a model that uses information technology to support linguistically and culturally diverse girls in applying 21st century workforce know-how to their own development as future STEM leaders. The development of an extended-day community-based learning model that results in more under-represented students entering STEM fields is essential for the economic well-being of the border region.

Abstract for a Service Grant

Sample #1

NEW MEXICO TEACH MATH AND SCIENCE PROGRAM!
Submitted by New Mexico State University

As a minority-majority state with a high rate of poverty and low educational achievement, New Mexico is experiencing a critical need for highly qualified math and science teachers. This proposal brings together research universities, educational consortia, and 24 school districts with high needs to address this need through an innovative teacher preparation program and nested professional development experiences.

Program goals include utilizing and strengthening existing STEM partnerships to recruit, train, and retain 40 new math and science secondary (grades 6-12) teachers each year for a period of 5 years. At the end of the program, the components will be institutionalized and a total of 200 new teachers will have been placed in the 20 partner school districts. Program outcomes will include 200 new teachers who are prepared to serve the diverse and high needs population of New Mexico; understand best practices in math and science instructional methodology; are committed to the field of education; and bring a diversity of backgrounds and experience to their work. Moreover, this statewide program will attract continuing support beyond the grant period.

Program participants will hold a bachelor's degree in science, math, or engineering and will earn alternative licensure to teach math and science. They will participate in coursework over two summers, one fall semester, and one spring semester during their first year of teaching. Mentors will be work with individual participants throughout the program, and, for the second and third years, the participants will join the Scientifically and/or Mathematically Connected Communities (state STEM programs) to participate in monthly professional development opportunities as well as ongoing summer workshops. In subsequent years, science/math field specialists will continue the mentoring through team teaching, demonstration lessons, lesson design, and other activities requested by the participants or identified through program assessment.

INTRODUCTION

The introduction should hook the reader. It should motivate the reader to spend his/her time in reading forward. Why should this grant proposal interest the reader? What problems are addressed and why are they important? What are your goals and objectives? What is your capacity to implement change?

In sum, the Introduction:

- Is designed to hook the reader
- Includes an overview of:
    - The purpose of the grant in addressing a specific need
    - The grants broader goals (and often outlined objectives) of the grant
    - Your own program's capacity to study or implement a solution

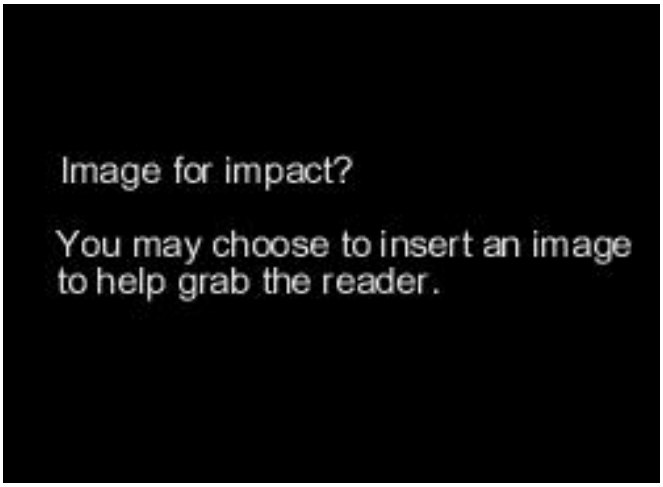
Sample #1

Why a Student BUILDING program is needed in Target, New Mexico

In 2006, there was a major flood in the small town of Target, New Mexico. The population of the town at the time was around 1200 and is now closer to 900. This flood, Federal Emergency Management Agency (FEMA) Disaster #1234 5 (Target, NM) was in many ways, New Mexico's *Katrina*. The flood damaged or destroyed 55 of the town's 80 businesses, and adversely impacted 402 of 480 residential dwellings. Now over two years later, approximately thirty families are still displaced from their homes and live in FEMA trailers 10 miles away in Neighboring Town, NM.

The flood left behind a severely damaged infrastructure. According to the Target Area Recovery Team, 95% of residents did not have flood insurance (REFERENCE NAME, 2009).

There is also a shortage of trained adobe and earthen structure workers in the area, particularly those experienced in basal (wall base) stabilization and in the application of traditional (mud and lime) plasters. Contrary to unofficial assessment by regional general contractors and some building inspectors, almost every building assessed by the Desert State University (DSU) and Cornerstone staffs, whether they are adobe, masonry, or of frame construction, can and should be repaired. In other words, rehabilitating existing structures is not only more cost-efficient, but preserves the historical equity of buildings and homes of the area.



The community of Target, other community organizations in Our County, as well as Desert State University's Colleges of Education and Engineering and Our County Community College (OCCC) have come together to prepare this grant proposal. They see in YOUTH RECONSTRUCTION program an innovative means to offering hope and resources to solve two problems: the unemployed, underemployed and under-educated youth in Target and the surrounding rural community, as well as the need to help families who remain without housing and have been waiting for help .for two years. This proposal is aimed at providing education and high wage jobs for youth while also alleviating a severe housing shortage and rebuilding a town.

The goal of this proposal is to address the needs of Target and the surrounding rural communities. These needs will be meet by the rebuilding of these damaged homes to pass code inspection, leading to increases in the historical and property values of these homes while also providing educational opportunities for youth leading to high-school degrees, certification in the building trades, and for those who desire it an AA degree in construction through Our County Community College (DACC). At least 75% of the participants who graduate from YOUTH RECONSTRUCTION program will be either successfully transitioned to postsecondary education or will possess a job that averages at least $10 an hour. By creating a partnership of community development agencies, work force offices and university and community college outreach efforts within the YOUTH RECONSTRUCTION framework, Target's hope in its future and the future of its youth can be restored. The YOUTH RECONSTRUCTION program also offers to youth, leadership development, academic remediation, career and post-secondary advisement, community involvement, and will lead to real educational and career opportunities.

Sample Introduction #2

COMMUNITY LITERACY PROGRAM (CLP) - TEACHER LEADER ALLIANCE (TLA)

VISION, GOALS, AND OUTCOMES

The Community Literacy Program (CLP) Teacher Leader Alliance proposal responds to the need of partner districts across New Mexico that have embarked on full scale implementation of innovative literacy programs, yet lack the leadership on school campuses or in their districts to support effective enactment of a quality curriculum.

The proposed CLP Teacher Leader Alliance (TLA) project designed in partnership among English and Language professors, education faculty, and school district leaders will develop a cadre of 60 literacy teacher leaders that have a deep conceptual knowledge of K-12 literacy, as well as the knowledge, skills and dispositions to facilitate growth in literacy teaching and learning environments in schools or districts. The Alliance will provide a two year cycle of professional development (PD) through intensive summer study as well as a follow-up academic year program that includes application of their learning in their school or district setting. The first cycle will begin in summer 2010 and include a cohort of 30 Teaches Leader candidates. A second Alliance will begin in summer 2012 with thirty new Teachers Leader candidates.

Our Vision: Teachers who complete the Teacher Leader Alliance program will become intellectual leaders able to facilitate the creation of rich mathematics learning environments for teachers and students in schools and districts.

We begin with the end in mind, by envisioning the characteristics of our teacher leader candidates at the completion of the proposed CLP- Teacher Leader Alliance.

I. Deep Understanding of Literacy Concepts via Vertical Progression and Connections:
Teacher leaders will gain a new lens for learning literacy by studying how concepts connect within and across grade levels (vertical articulation). Teachers will gain a deeper understanding of literacy concepts by understanding these connections. They will understand how the content progresses throughout the K-12 continuum and how the concepts in various grade levels relate to one another. By gaining a range of models and strategies to represent literacy ideas, Teacher Leaders will be able to help reading and literacy teachers throughout K-12 levels to differentiate their instruction and meet the needs of diverse learners.

II. Pedagogical Practices that Represent the Art and Science of Masterful Teaching
Teacher leaders will know how to listen to language, build literacy learning experiences and conversations around children's ideas and understand how to support their learning. Specifically, they will know how to use effective teaching strategies grounded in our state's process standards of problem solving, communicating, reasoning, representing, and connecting literacy and reading ideas. They will be able to assess student literacy thinking to understand each student's knowledge framework and choose instructional moves that build upon student's existing knowledge.

III. Intellectual Leadership
Teachers will have a depth of knowledge of literacy and pedagogy and how to apply them in school settings that will allow them to become intellectual leaders in their district and schools. They will have gained dispositions, knowledge of strategies, and tools for working with adult learners and they will have the intellectual capital to be seen as leaders in their schools or districts. Teacher Leaders will know how to facilitate cultures of learning among colleagues and administrators within a school system. They will understand and implement practices from adult learning theory to support teacher's professional learning and engage in productive professional discourse. This intellectual leadership will lead to successful district or school-wide collaborative efforts based on flexibility in thinking and the ability to understand multiple perspectives on learning and the challenges of teaching. Teacher Leaders will have confidence by the end of the two-year Alliance experience to know that they can positively impact a school system at various levels.

IV. Supportive School Environment
Principals will understand the research that supports improved student learning of literacy and how to foster a culture of professional learning on their campuses. Principals and Teacher Leaders will collaboratively develop a vision for the Teacher Leader's role on the school campus or in the district. They will create formal agreements that define the scope of work of the teacher leader and the principal's support towards this partnership. They will clearly communicate expectations for professional learning among school staff and routinely engage in reflection and evaluation of the progress the school is making towards teacher and student learning goals.

Sample Introduction #3

Capacity Statement:

Desert State University (DSU) brings a wealth of expertise to support this effort. It is a Carnegie I Research institution, and a land grant, sea grant and space grant institution located in BigTown, Desert State. It is the flagship of the Desert State University System, which consists of nine universities, eight state agencies, and a health science center that serves 90,000 students and reaches more than 4 million people each year. DSU has an enrollment of approximately 44,000 students, and ranks among the top 10 universities nationally in value of research, including support for many cutting-edge science and technology initiatives.

DSU is a national leader in developing telecommunications and is a member of the "High-Tech" Consortium. The High-Tech Consortium is led by 170 universities in partnership with industry and government to develop and deploy advanced network applications and technologies. High-Tech is creating a network capability for the national research community to ensure the rapid transfer of new services and applications to the broader Internet community.

The DSU College of Education (3,820 students) is a leading developer of teachers in Desert State. The college has 112 tenure/tenure track faculty members plus 60 additional teaching faculty members. The College of Education is accredited by the National Council for Accreditation of Teacher Education, the Southern Association of Colleges and Schools, the American Psychological Association, and the Desert State Education Agency. The College of Education has several centers and outreach programs, including [Project Outreach] which can support the proposed activities. Project Outreach assists organizations with strategic planning for technology, maintaining, troubleshooting and upgrading technology, and using distance learning technologies effectively. There are state of the art technology training facilities in the College of Education and in Project Outreach, as well as technology support personnel.

Other resources that can support the proposed activities include [ANOTHER Project]. A primary task of Our Project is to link the Desert State Essential Knowledge and Skills (TEKS) objectives that are the basis for instruction for all schools in Desert State with national objectives prepared by the National Council of Teachers of Mathematics (NCTM) *Principles and Standards for School Mathematics* (2000) and the AAAS Project 2061 *Benchmarks for Science Literacy* (1993). Together, these standards for mathematical thinking in the nation's public schools have shaped most states' mathematics objectives, including Desert State. Our Project then extends the national-state linkage to Desert State adopted textbooks in mathematics for grades 6-8 and evaluates their contributions to effective instruction for the state objectives on TEKS.

The Gulf Coast [ANOTHER Project] is a federally funded project designed to provide five years of comprehensive support services for a cohort of middle school students in three rural and low-income districts in order help prepare them for college. One of the Another Project priorities is to encourage more students to take and succeed in algebra, especially in the eighth grade. Through the Gulf Coast Another Project, DSU participates in a statewide and national network of [associated] projects, and is in a position to disseminate information about the Explorations in Algebra Workshops of the Some Program through these networks.

NEEDS ASSESSMENT

Analyze the situation using the best data you have available and cite where possible. Show both the strengths and weaknesses of the current situation.

The Needs Assessment provides:

- A situational analysis of problem and how you intend to address it
- Strengths and weaknesses of the current situation

Sample #1

Needs Assessment

This flood happened in one of the neediest of New Mexico communities. The population is comprised of the following ethnic groups: Hispanic (79.2%); White Non-Hispanic (18.8%); two or more ethnicities (2.4%), and American Indian (1.6%). The estimated median household income in 2005 was $21,100. Unemployment ranges are just under 16% and rising in the current economy. Levels of poverty in these areas are some of the state's worst. An estimated 23% live below the poverty line earning a median annual income of $13.999. In spite of these challenges, the people of Target have come together and formed a group aimed at restoring their town, the Target Area Recovery Team (TART).

A needs assessment conducted by the Target Area Recovery Team (TART) tasked with long-term recovery identified a minimum $204,000 worth of unmet basic materials needs. This figure does not include supervisory or labor costs associated with rebuilding damaged homes. Education challenges are many. Out of the nine-hundred and thirty total people living in Target only, ninety-one residents hold a bachelor's degree or higher (US Census, 2000). For students in grades 9-12 the dropout rate is 9.7%, nearly twice that of the state's average of 4.9% (New Mexico Department of Education, 2007). The school district's student achievement scores are also some of the lowest in the state. On last year's state report card only 16% of the 8th grade students in Target showed proficiency in mathematics (New Mexico Department of Education Web Site, 2009). The nearly 500 commercial and residential buildings were adversely impacted by an *arroyo* (natural drainage) breach that sent waist-high water roiling throughout the downtown where many of the *adobe* homes sit. Much of the water collected in an historic residential area west of Franklin Street. This neighborhood features charming and unique 1930s and 1940s-era homes constructed using sun-dried clay, sand and straw (*adobe*) bricks.

Sample #2

The Math Achievement Plan (MAP) evaluative research will study the replication and adaptation of the model based on the original Your Town Math Initiative (YTMI) model but modified over the next three years using a process of design-based research. The original mixed effects linear model would also continue to be used to study the empirical answers to specific research questions based on the model. The proposed work will be done in a larger district with more diverse demographics through a partnership with district leaders and teachers and STEM (Science, Technology, Engineering, and Mathematics) educators and researchers.

This district, Your Town Public Schools, represents the changing national trends in student population. While states like New York and Texas struggle to meet the needs of diverse learners the changing demographics bears out the growing challenges for schools in all states including Wisconsin and Ohio (NCES, 2006).There is a need for effective capacity building models for mathematics achievement that can inform others in the broader mathematics community and contribute to expanding the quality, quantity and diversity of students who will have the mathematics background to enter the STEM (Science, Technology, Engineering, and Mathematics) fields. The theoretical framework for this systems model is included in the rationale section below.

The following proposal describes how a systems model for building capacity that was shown to be successful during the YTMI initiative could be adapted for use nationally in other districts. A significant component of this proposal is to continue to expand the evaluative research begun during the student outcomes study and to use a continuous improvement process involving *design-based research* to further strengthen a *capacity building model*. This will be made possible by a strong, existing collaboration between educational researchers, mathematicians, mathematics educators and school district leaders with extensive experience over the last 10 years in building the capacity of districts for success in mathematics teaching and learning.

While the YTMI was successful in closing the achievement gap for Hispanic students in a 94% Hispanic district, we want to know if the same research-based systems model for building capacity can work in a district of mixed ethnicity where Hispanic students are currently scoring as much as 20% below Anglo students in the district by eighth grade.

This research effort will provide the opportunity to produce and disseminate new knowledge in the form of research findings, research tools, and a tested building capacity model that could positively impact student's mathematics learning across the country. In addition, we would like to find out if a focused professional development plan based on the building capacity model can be applied and tested in supporting full implementation of the K-8 NSF math curriculum in the Fall of 2007 and if this can be done through an intensive three year effort. Full implementation will include developing and coordinating all parts of the system, including curriculum alignment with teaching and assessment, the development of additional formative assessments, intense PD in mathematics content and teaching mathematics, support for administrators in the implementation process, and the integration of significant school-based support for teacher collaborative efforts (see REFERENCE). This proposal would provide the funding for researching these efforts while the district and other

grants are providing funds for the implementation of the same standards-based curriculum used in the YTMI.

A sustainable model that results in closing the persistent achievement gap for under-represented minority and low-income students in mathematics has potentially significant national value to Science, Technology, Engineering, and Mathematics (STEM) education. As the national demographics of our student population becomes increasingly diverse, it is imperative that educators address the achievement gap and make it possible to increase the quantity, quality and diversity of students capable of studying in STEM fields and eventually entering the national STEM workforce. A number of publications and reports ("*Waiting for Sputnik"*- Center for Strategic and International Studies, "*Rising Above The Gathering Storm: Energizing and Employing America for a Brighter Economic Future"* - National Governors' Association, as well as the developing *American Competitiveness Initiative* call for urgent action to improve the preparation of our nation's youth to work in STEM fields.

Ethnically and linguistically diverse students are the largest growing proportion of new public school students with Hispanics being the largest growing "minority" population in the United States (US Census Bureau, 2000). Students from these populations are not achieving at the same rate of success in math as other populations (NCES, 2002). National Assessment of Educational Progress (NAEP, 2004) data indicates that at the national level the achievement gap for ELLs, various ethnic groups, and low-income students is not closing (Haycock, 2001). Hispanic students fall behind their Anglo counterparts in math at all grade levels (NCES, 2002), have lower participation rates in advanced math courses in high school and college, and are underrepresented in STEM related fields which require a strong background in math.

While mathematics is only one component of STEM education, knowledge of mathematics impacts deeply the study of science, technology, and engineering. In fact, in an interview with engineers for an NSF project (Bridges Project, 2002) when asked about what students needed to know to enter engineering in university, consistently, the engineers suggested that an understanding of mathematics and especially mathematical reasoning was an essential component to the study of every STEM discipline. It is a lack of mathematical knowledge that keeps children from studying further in the STEM fields (Moses & Cobb, 2002).

An important value of the proposed study would provide information about how a systems model for building capacity for mathematics learning can work in a larger district with mixed ethnicities and what level of effort and time are necessary to make such a model sustainable. One of the major findings of the YTMI is that the problem does not lie with the children, their ethnicity or their income level, but with their lack of access to a system that provides all students with the opportunities to learn a rich and challenging mathematics curriculum. The YTMI demonstrated what was first discovered in the *effective schools research* (McInerney, Dowson, & Van Etten, 2006), that schools can have a significantly positive effect on student learning, despite the fact that students are economically disadvantaged, have learning needs in terms of language and need to become part of an academic culture.

THEORETICAL FRAMEWORK AND/OR RATIONALE

The Theoretical Framework describes your approach to the problems based on both the literature reviewed and your own professional experiences.

The Rationale is similar to a theoretical framework but usually not as comprehensive. It also specifies how your approach best addresses the needs outlined in the Needs Assessment.

Grant proposals require *either* a Theoretical Framework or Rationale.

Theoretical Framework and/or Rationale provide:

- A framework for your approach based on key concepts
- Why your approach best addresses the statements of your Needs Assessment and the project goal(s)

Sample #1 (Theoretical Framework)

Theoretical Framework for the Capacity Building Model for Mathematics Achievement

The roots of the XYZ Systems Approach to mathematics reform are grounded in both the literature in the STEM education field and in the extensive experiences of the mathematics educators and mathematicians who will be involved in implementing and researching the proposed systems research. Based on our own experiences and supported by Cohen and Hill's *Learning Policy* (2001), we believe that many educational reforms fail because teachers and the systems in which they work are not placed at the center of the reform.

As described earlier we found that variables affecting the success of lesson study included whether or not teachers had access to a quality standards-based curriculum, the school and district in which they worked had aligned teaching with the curriculum and the state standardized assessment, and the school and/or district had a system for supporting teacher collaboration. All of these factors were considered in designing the systems model used in the XYZ Systems Approach. Critical elements included: (1) A commitment to using one standards-based curriculum for all schools and students that was district-wide and both top-down and bottom-up (2) The selection of an NSF-developed curriculum, namely *Investigations in Number, Data and Space and Connected Mathematics* (3) Alignment of the curriculum with teaching and assessment, including the use of

formative assessments (4) Extensive professional development, including 130 hours for teachers in mathematics content and teaching (5) Professional development for all administrators in how to support the new curriculum (6) Extensive academic year follow-up support in schools for teachers (7) Mathematics specialists at each school who give teachers immediate help and model lessons (8) Support and time for teacher collaboration.

Sample #2 (Rationale)

Rationale

The model was developed and over the last ten years and was implemented and researched through the XYZ, a National Science Foundation grant (2000-2006) which was a partnership between the "Your Town School District" (YTSD) and Desert State University (DSU). *This initiative was grounded in previous work by the researchers, mathematicians, math educators and school leaders who make up the authors of this systems capacity building research proposal*. In the 1990s our work, like many math reform programs during this period, focused on teachers and provided PD that was of high quality, but largely disconnected from district, school and classroom cultures and practices. During a Star Schools grant (U.S. Department of Education, 1999) we collaborated on a three-state project (California, Colorado and New Mexico) to assist teachers to use technology and expanded pedagogy to improve student achievement in mathematics. The NM staff led the professional development efforts. After highly rated summer institutes with teachers, the grant leaders were disappointed when in follow-up visits they found almost no change in classrooms.

In 2002, the decision was made to change our professional development (PD) approach and co-construct mathematics PD with teachers around the learning needs of their students. Around this time, Lesson Study was being introduced to the U.S. and with the help of Dr. "Red" and Dr. "Blue" we introduced a modified form of lesson study in NM (Green & Brown, 2007). We noticed that those teachers who working in districts with a common agreed-upon standards-based curriculum and had administrative support for collaboration had the most success in increasing student achievement. We also found through this collaborative work that teachers wanted to know more about the mathematics content and thus we invited mathematicians to collaborate with us in our work.

Based on this prior work, Pink, Green, and Yellow in collaboration with the YTSD developed a Local Systemic Change Initiative, the *Your Town Mathematics Initiative* (YTMI), (Award #xxxxx, 2001-2006). The YTMI was a partnership with the university to improve teachers' knowledge and skills in teaching mathematics using standards based resources, specifically Investigations in Number, Data and Space and Connected Mathematics (CMP). This mathematics partnership

between DSU and the YTMI was remarkably successful and further contributed to the development of a research-based model for a systems-based approach to capacity building for math achievement. This restructuring effort for students in grades K-8 in a low-income (100% free and reduced lunch) district with 60% English Language Learners (ELLs) resulted in closing the achievement gap, and in some cases surpassing state averages. Figure 1 shows where student achievement scores were when we started the project.

Figure 1
2000- Achievement Scores for YTSD Students as Compared to the State

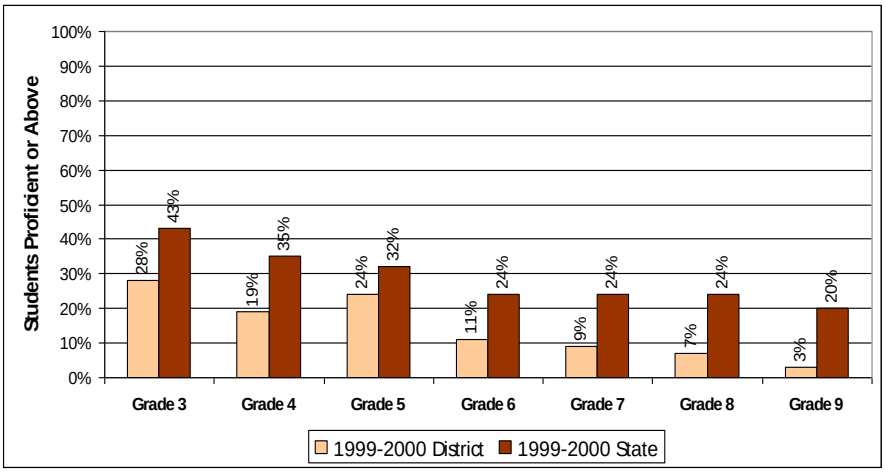


Figure 2 shows the proficiency levels for students in the district at the end of the five year program. Of special interest is the effect of the program on subgroups, especially ELLs who are now scoring far above all ELLs in the state. The students are above the state scores in grades 3 and 8. Students in those grades had spent the most time learning math in the XYZ. There is a drop in 11th grade. The initiative was aimed at K-8 students and the effects seem to be maintained in grade 9 but drop off as students move further into high school. The XYZ is fully sustainable by the district which is using operational funds to improve student achievement by continuing to have a math specialist at each school to support the mathematics PD.

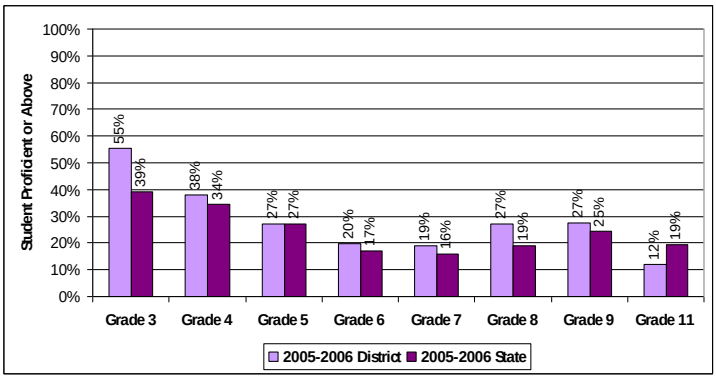


Figure 2 – 2006- Achievement Scores for YTSD Students as Compared to the State

A summary of scores by sub-groups is provided in Table I below. A Student Outcomes Study was begun in 2003 to look for the effect of the XYZ on student achievement. The final study showed that PD, level of implementation of the PD in the classroom, and teacher's collaborative work using modified lesson study all had a significant positive effect on student achievement. A mixed effect statistical model was used to show that variance decreased in student test scores during the initiative which lead to

higher achievement for all students. The study also found changes in classroom instructional behaviors which included increased use of teacher questioning, more problem-modeling, increased student engagement and increased classroom discourse (Green, Orange, Grey, White & Black, 2007).

Table I: Percent of Students Proficient or Above (2005-2006) New Mexico Standards Based Assessments

	Grade 3		Grade 8	
	YTSD	STATE	YTSD	STATE
All Students	56%	44%	28%	26%
Hispanic Students	55%	39%	27%	19%
English Language Learners	57%	33%	21%	8%
Economically Disadvantaged	56%	36%	28%	14%
Students With Disabilities	27%	20%	4%	3%

Research on this initiative as well as related research in the field provides the basis for a systems-based capacity building model to support district-based mathematics achievement. The components in the capacity building model will provide the groundwork for the XYZ research study which will study the use of this model in a larger and more heterogeneous district.

Sample #3 (Rationale)

WHY TEACHER LEADER FOR SCIENCE?

Rising expectations of classroom teachers to increase student learning coupled with the lack of capacity that school districts have to support teacher growth have created fault lines in education in which teachers and students are falling through the cracks. Principals are held accountable for increasing student achievement, yet they often lack the content knowledge and instructional expertise to support effective teaching practices. We see Teacher Leaders as the bridge to create a support system for teachers and serve as a partner to school

Teacher Leaders help teachers improve classroom practice and build an infrastructure for continued professional learning.

administrators in order to improve instruction for all students learning at the classroom level. A nation which is searching for ways to improve students' Science learning is looking to classroom teaching for the answers (Cohen & Ball, 2001; Hiebert, Gallimore, & Stigler, 2002; Lampert, 1985; Stigler & Hiebert, 1999, 2004; National Council of Teachers of Science [NCTS], 1989, 1991, 2000; National Research Council [NRC], 2000). Teachers are asked to embrace ideas about teaching and learning that may be distinctly different from the ways in which they were taught (Cohen & Ball, 2001; Ma, 1999; NCTS, 1991). Standards and curricula materials reflect different views about the nature of science, the role of the teachers in the science classroom, the way in which students learn mathematics, and the sources of scientific authority (Hiebert et al., 1997). Studies have shown that the teacher is the most important factor in realizing these changes (Darling-Hammond & Sykes; Sanders & Horn, 1998; Wenglinsky, 2000). Teachers' content knowledge is often a limiting factor in teaching science. Ball's work (1997, 2003, 2004) demonstrated that curriculum is mediated by the teacher's knowledge of the subject.

Professional learning opportunities in science content and pedagogy are essential to the support of support teachers as they encounter these rising expectations (Darling-Hammond & Sykes, 1999; NCTL, 2000; Rand Corporation, 2003). In addition, there is a need for new leadership models including science coaches and Teacher Leaders to support teachers in gaining the required new skills for teaching mathematics deeply and effectively. The literature on science teacher leadership highlights the need for the Teacher Leaders' knowledge of science, science pedagogy, and students' scientific thinking (Langbort, 2001, Friel & Bright, 2001). In her list of *Who are Teacher Leaders?* Langbort (2001) lists eighteen attributes of a science Teacher Leader, including being a spokesperson for science education, an active member of the science education community, and a mentor to other science teachers. According to Friel and Bright (2001), Teacher Leaders play two vital roles in their schools: 1) they can model quality instruction in their own classrooms and 2) facilitate reflection with colleagues.

WHY NEW MEXICO?

A unique dichotomy exists in the Land of Enchantment known as New Mexico. While extensive collaborations around the state show that New Mexico has great potential to improve science learning, it is still a high-needs state in which almost all of its districts are designated as high-needs LEAs. On the one hand, two national labs and a significant presence of science- and technology-based industry mean that we have some of the world's finest scientists. On the other hand, our remoteness and low population density limit us to a very small tax base, which has significant repercussions in the public schools. New Mexico personifies a cultural diversity that is also reflected in our schools, with a majority of our students (K-12) being Hispanic, second language learners. Therefore, as the first **minority-as-majority-state** (42%Caucasian, 47% Hispanic, 9% Native American, 1% African-American), New Mexico has the unprecedented potential and consequent responsibility to educate traditionally underrepresented groups in the STEM (Science,

Technology, Engineering, and Mathematics) fields to be the next generation of scientists, mathematicians, and engineers.

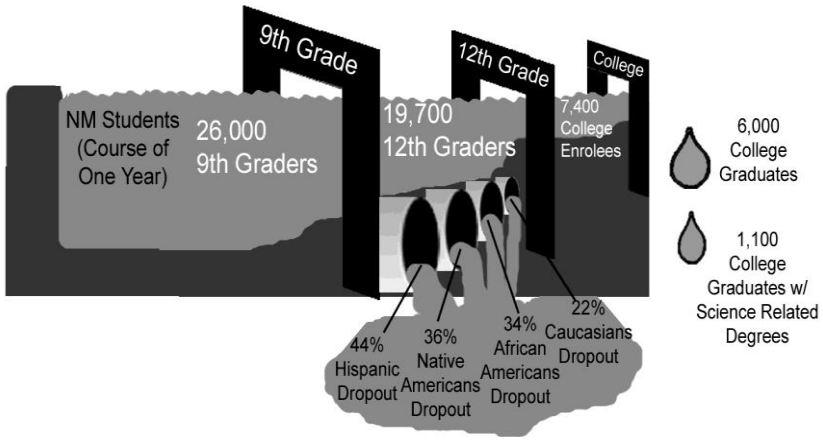
New Mexico is also well positioned to increase the quality, quantity, and diversity of Teacher Leaders. Over 50% of the students in DSU's teacher education program are Hispanic students, and we have a growing number of Native American students studying to be teachers or participating in graduate programs in education**.** DSU has a solid record of increasing the successful participation and graduation of Hispanic students and students with disabilities in the STEM fields as demonstrated in NSF and Department of Education-supported programs throughout the university. We anticipate that at least half of our teachers for the institute will represent ethnically and linguistically diverse students.

Moreover, New Mexico is a reflection of the complex educational, cultural, and demographic changes occurring throughout the nation, but it is facing them sooner than the rest of the country. Consequently, we have a unique laboratory setting that is rich in ethnic, cultural, linguistic, socioeconomic, and geographic diversity. Since students in classrooms across our nation are becoming more culturally and linguistically diverse, the successful strategies that promote student success that are implemented and documented in New Mexico can be replicated in the future in districts across our nation.

Students living in New Mexico desperately need improved science education. Our students rank very low on standardized tests in both science and math; 87% of 8th graders are below proficient levels in science, while 82% of 8th graders are below proficient levels in science. Being from the fourth poorest area of the United States, the majority of our students are on free or reduced lunches and come from homes where the median income for a family of four is $20,000. Twice as many children in New Mexico (24%) live in poverty as those throughout the U.S. (11.8%) (U.S. Census Bureau, 2005). New Mexico is one of the poorest states in the nation, and the repeating cycles of intergenerational poverty continue (Santos & Tiano, 2002; SW Hispanic Research Institutes, 2003).

In the 2003 Report Card on American Education, New Mexico ranked 48th in student achievement; in the 2003, 2005, and 2007 National Assessment in Educational Progress (NAEP) reports, New Mexico ranked 49th in terms of math and science achievement.

Other factors that have hindered the educational achievement of New Mexico students include: a high student drop-out rate; high teacher turnover; and a low high school graduation rate. We liken the flow of our students through the education system to an "acequia" (traditional Hispanic community irrigation system) analogy. New Mexico is ranked 50th in terms of the national matriculation rates (Kids Count, 2008). We start with a large



flow of 9th graders, which is drained by a high school drop-out rate of almost 44%, with the drop-out rate increasing over the past five years. Of high school seniors, 62% are diverted from entering New Mexico colleges owing to many factors including the cost of higher education and the lack of prerequisite skills.

Looking at the U.S. Census Bureau for the **poverty** percent for all ages, we find that **only** Louisiana is poorer than New Mexico. In the poverty percent for all population members under 18, **only three other** states have a higher poverty rate than New Mexico. Looking directly at some of our larger partner school districts, we see that in Las Cruces Public Schools over 25% of children age 5-17 are living in poverty, while in "Some-Town School District" almost 50% of children age 5-17 are living in poverty.

RESEARCH DESIGN

Not all grant proposals contain a Research Design section. Rather, they are reserved for Research Grants.

The Research Design portion should specify the problem being address and then designate the methodologies used. For instance, are your methods qualitative, quantitative, or mixed-design? You should also address your specific research questions.

Research Design:

- Specifies your methods of research
- Is used primarily for research grants

Sample #1

RESEARCH DESIGN

The research design addresses the pressing problem of providing leadership in K-12 schools in mathematics education. Professional learning opportunities in mathematics content and pedagogy are essential to support teachers as they encounter increased expectations for mathematics gains in

their student achievement across increasingly diverse student bodies. The designers of this project also include the need for teacher leaders to apply their learning at their school and district site and engage in a continuous process of praxis, using theory to inform practice and practice to inform their knowledge as intellectual leaders. In order to investigate the development and enactment of the institute, as well as the effects of teacher learning on their schools and students, a mixed-methodology (Cresswell, 2003, Tashakkori & Teddlie, 2003) will be used for this study. This design supports the collection and analysis of quantitative and qualitative data related to teacher leader learning of mathematics, pedagogy, and leadership during their participation in the Institute. Data will also be collected in relationship to the effects of teacher leader participation on their students' achievement and the development of standards-based learning environments in their classrooms. A mixed effects statistical model will be used to relate elements of teacher professional learning (math content and enhanced pedagogy) to student achievement, and to classroom learning environments.

The study addresses two overarching questions:

1. What are Teacher Leaders learning from participation in the Institute and how are they learning it?
2. What effects does this learning have on student achievement, classroom environments, and professional work with colleagues and administrators?

Qualitative approaches will be particularly valuable in exploring the developing role of teacher leaders in action, while quantitative methods can determine whether the Institute is a value-added approach for addressing the ultimate national priority of stronger mathematics students. The members of the research team add greatly to the proposed methodology since they have engaged from different perspectives in studying teachers' and students' learning of mathematics for many years and include mathematicians, qualitative researchers, a school researcher, and quantitative researchers who have developed a mixed effects linear hierarchical model for relating elements of professional development to student achievement. The following table lists the sub-questions to be answered under each overarching question for the research study. Fuller descriptions of when data will be collected, by whom, as well as information on instruments are included in the supplemental documents.

Research Questions and Data Collection & Analysis Summary

What are teachers learning in the Institute and how are they learning it?	
Sub-questions	***Data Collection and Analysis***
Does the presentation of mathematics using a vertical alignment model help participants gain conceptual knowledge of K-12 mathematics?	Pre and Post testing annually on Mathematics Knowledge for Teaching (*MKT*, University of Michigan). *M-TASK*- Mathematics Teacher Assessment of Skills and Knowledge- Quantitative analysis of MKT gains. Quantitative and Qualitative analysis over two years of Institute participation
How does learning K-12 mathematics via vertical alignment help Teacher Leader candidates to	Classroom observations using validated instruments including the *Levels of Use* (LOU)- level of classroom implementation of PD, , *Observation tool* for math learning of ELL students, and the

differentiate instruction in the classroom?	*Classroom Snapshot* which looks at types and structure of teaching and types of student learning (engagement, etc.) – Quantitative analysis using mixed effects model.
What features of the professional development structures (institute, school-based mentoring, PLC) help TL move towards Standards Based Learning Environment (SBLE)?	Reflective questions are answered twice a semester for each PD structure; teachers also analyze their classroom in relation to the SBLE rubric and reflect on connections between the type of PD structure and how they see their classroom changing. Structures are classes, collaborative groups, individual work
How do TL apply what they have learned in the Institute in their work with teachers and principals in their schools and districts?	TLs will keep weekly field logs related to their study and its application to field using carefully guided questions as well field notes. They will also reflect on their learning at the beginning, middle, and end of each session and provide feedback on what courses and parts of courses were most valuable. Qualitative analysis using constant-comparative method/themes.
What do TLs say were the most valuable aspects of the academy in helping their work in the schools?	Teacher interviews and focus groups Qualitative analysis using constant-comparative method for the development of themes.
What aspects of the project activities facilitate TL in applying adult learning and facilitating meaningful math discourse with PLC?	Use of video and audio case studies. Rubric on Secondary Learning Communities Participant checking; qualitative analysis for themes
What is the effect of Teacher Leader learning on student achievement, classroom practice and the development of a district plan for improving math teaching and learning:	
Does participation in the Institute positively affect student achievement? Which elements of institute learning (mathematics, pedagogy, and/or leadership) have the strongest effect on student achievement?	Use of a mixed effects linear model that looks at the effect of 1) mathematics learning (MKT and M-TASK), pedagogy (Institute assessments of pedagogy abilities and SBLE-Standards-Based Classroom Rubric) and 3) quality of time spent as part of the PLC Rubric (in development) on student achievement (state standardized test- NMSBA). Quantitative using linear hierarchical mixed-effects model.
Does participation in the Institute positively affect classroom practice? Which elements of institute learning (mathematics, pedagogy, and/or leadership) have the strongest effect on student achievement?	Use of a mixed effects linear model that looks at the influence of 1) mathematics learning (MKT and M-TASK), pedagogy (Institute assessments of pedagogy abilities and SBLE) and 3) quality of time spent as part of the PLC Rubric on measurements of standards-base mathematics environments (LOUs, Classroom Snapshots). Quantitative using linear hierarchical mixed-effects model. Additional qualitative evaluation of how TLs worked.
How does participation in the Institute impact the school or district plans for improvement of mathematics instruction?	District administrators and principals will be asked to assist their school's readiness for change using the Quality Mathematics Education Model (QMEM). The QMEM will be given annually. An Improvement plan developed by the teacher leader and principal will be evaluated using a School Improvement Rubric.

Dissemination: "OurProject" researchers will disseminate their findings to the educational community through strategies that begin at the local level, and then broaden to the state, national and international level. At the national level the research findings will be submitted for publication

in the *Journal for Research in Mathematics Education*, *American Education Research Journal*, or other professional journals. Practice-based articles with be submitted to journals like NCTM's *Teaching Children Mathematics* and *Mathematics Teaching in the Middle School.* The project and its findings will be proposed for presentation at the National Council of Teachers of Mathematics (NCTM) Research Pre-session, Joint Meetings of the American Mathematics Society (AMS) and Mathematics Association of America (MAA), National Association of Bilingual Educators (NABE), American Educational Research Association (AERA), National Council of Supervisors of Mathematics (NCSM) and other national conferences. This team has presented at numerous conferences and additionally will publish a monograph to share this research project.

Sample #2

Research Design

The proposed evaluative research utilizes a mixed methodology (Tashakkori & Teddlie, 2003) that includes an empirical evaluation design utilizing a hierarchical mixed effects model within a design-based research approach. This research approach will guide the team in evaluating and modifying the implementation of the Capacity Building Model in a new district. The mixed methodologies involved are described below in terms of procedures and timelines.

The overarching research question for this systems research is:

1. Can the implementation of a capacity-building systems model that closed the achievement gap in a rural New Mexico district also work in a larger district with mixed ethnicities?

The next two questions will guide the research. The first question refers to the use of design-based research to modify and refine the model as it is being implemented in a new setting. The second question describes the procedures for answer the empirical questions related to the effect of the model on student achievement. The procedures to be used for the collection of data are included after each question.

2. How does the model need to be modified by participating stakeholders in order to strengthen its potential replicability?

The modification will be addressed through the use of design-based research (Design-based Research Collective, 2003) to support continuous improvement in the implementation of the model. Design-based research provides a useful methodology for researchers, practitioners and content area specialists to work together to produce meaningful change in context of practice Kelly (2003). This is systems-based research within a school setting the lens of design-based research is promising and needed. S*ustainable innovation requires understanding and how and why an innovation works within a setting over time (Kelly, 2003)*. The research design involves multiple cycles of design, enactment and study. This approach will be used to constantly improve the strength of the model as

it is being introduced in this new district setting. Using design-based research (Sandoval & Bell (2005), involves including the perspectives of all stakeholders in a research project which then become a part of a continuous formative evaluative process that can be used to shape and refine the systems model as it is implemented throughout the district. Frequent formative assessments can be extremely powerful for keeping a project on track and ensuring that all components of a model are working in tandem with one another. Design-based research views a successful intervention as a joint product of the designed intervention (the Capacity-Building Model) and the context in which it occurs. Models can be generalized through this work and model building is the goal of THIS RESEARCH PROGRAM.

Design-based research can compose a coherent methodology for studying educational practice. Because design-based research is grounded in local needs, constraints, and interactions of local practice, a lens for understanding the implementation of a model and how it can transform educational practice. The goal is usable knowledge that can be used to modify educational change in practice (Design-Based Research Collective, 2003). Models of successful innovation can be generated from this approach. This project will be assisted in implementing this methodology through an internal and external evaluation team. The research team has a scheduled work plan to collaborate and based upon the data and measurement benchmarks will determine and document next steps.

3. Which elements of the model have the most positive effect on student achievement in the new district?
A mixed effects model will be used to analyze each year the data gathered in answer to the following questions as related to the effects of each component of the Capacity Building Model on student achievement. The three components of the Model are correlated to the appropriate research question below:

Component 1: Quality Aligned Curriculum
- 1a: What relationships exist between types of professional development and student achievement?
- 1b: Does the level of classroom implementation affect student achievement?

Component 2: Teacher Quality and Collaboration
- 2a: Do teachers gain pedagogical content knowledge as a result of the project and how does that interact with student achievement?
- 2b: How does the level of teacher collaboration affect student achievement?

Component 3: Administrative and STEM Community Support
- 3a: How does the level of administrative support affect student achievement?

The section below describes the procedures for gathering and analyzing data to answer the research questions. Table IV outlines the data collection and analysis and answers the following:
1) What evaluation instruments will be used?
2) Who is responsible for the collection of data?
3) Who is responsible for the analysis of the data?
4) What is the timeline for each evaluation?

Table IV: Data Collection and Analysis for "This Research Program"

Evaluation	*Evaluation Instruments*	*Responsible for Collection*	*Responsible for Analysis*	*Timeline*
Measure what teachers implement in their classrooms from their professional development through classroom observations	**a) Levels of Use Observational Rubric** (used to observe at least 10% of the classrooms in the district to determine if what is presented in PD is being used in the classroom)	District Math Specialists and R. Name2, Project Coordinator S. Name3, and S. Name4 District Reps. K. Name5, Internal Evaluator	Research Team K. Name1 K. Name5 M. Name6 D. Name7	Random classrooms will be observed twice a year with both observation instruments for each year of the grant.
	b) Classroom Lesson Observation Instrument (used to observe at least 10% of the classrooms in the district to determine if what is presented in PD is being used in the classroom)			
Measure growth in teacher pedagogical content knowledge through pre and post assessments	**Survey of Content Knowledge for Teaching Mathematics (University of Michigan)**	District Math Specialists Project Coordinator Internal Evaluator	Research Team	Year 1, teachers will be assessed during summer training and again at the end of the school year. In Years 2 and 3, teachers will be assessed only at the end of the school year.
Analyze student achievement on the state criterion-referenced test by teacher classroom (Summative Evaluation)	**New Mexico Standards-Based Assessment Results (NMSBA)**	District Math Specialists District Reps. Internal Evaluator	Research Team	NMSBA is administered in March of each year. Results become available in September.

Analyze student achievement on district selected short cycle assessments (Formative Evaluation)	**The short-cycle assessments will be determined by the district.**	District Math Specialists District Reps. Internal Evaluator	Research Team	Short cycle assessments will be administered at least four times per year for each year of the grant.
Measure the level of administrative support	**a) Teacher Surveys** (to determine the level of administrative support)	District Math Specialists District Reps. Internal evaluator	Research Team	A random selection of teachers will be surveyed once per semester for Year 1 and once per year for Years 2 and 3.
	b) Teacher Focus Groups (to determine the level of administrative support)	District Math Specialists Internal Evaluator	Research Team	At least one teacher focus group per campus will be convened each year of the grant.
Track hours and type of PD received by teachers, principals, and district administrators	**a) Professional Development Teacher Sign-In Sheets** (to demonstrate the quantity and type of professional development teachers have attended)	District Math Specialists District Reps. Internal Evaluator	Research Team	Data must be collected and compiled after each PD session. Data will be analyzed yearly.
	b) Professional Development Principal/Administrator Sign-In Sheets (to demonstrate the quantity and type of PD principals /administrators have attended)	District Math Specialists District Reps. Internal Evaluator	Research Team	Data must be collected and compiled after each PD session. Data will be analyzed yearly.
Measure participants' satisfaction with the PD attended	**Professional Development Teacher and Administrator Evaluations** (to determine the quality of the PD and to help adjust PD to the needs of the people attending PD)	District Math District Reps. Internal Evaluator	Research Team	Data collected and compiled after each PD session. Data will be analyzed at least twice each semester to determine the quality of on-going PD and to make adjustments to training.
Measure how much time teachers are	**School Schedules** (to determine if time is built into	District Math District Reps.	Project Coordinator	School schedules will be collected at

given at each grade level at each campus for collaboration	each school's schedule for collaborative activities)	Internal Evaluator		the beginning of each school year.
	Teacher Focus Groups	District Math District Reps. Internal Evaluator	Project Coordinator	The amount / quality of collaboration time will be discussed during yearly teacher focus groups.
Measure the district's ability to sustain positive change in mathematics instruction after the grant is over	**a) District Budget—**(level of fiscal responsibility taken by the district to hire District Math Specialists and other personnel to sustain the mathematics initiative)	P.I. & Co-P.I. District Reps.	P.I. & Co-P.I. Project Coordinator	A study of the district budget will be completed at the beginning of each fiscal year.
	b) District Budget—(level of fiscal responsibility taken by the district to replenish mathematics materials as needed)			

Table V. answers questions concerning the reporting of the research findings.

1) Who is responsible for producing the reports?
2) To whom will the reports be presented?
3) Who will make the presentations?
4) When will the results be presented?
5) Who will make decisions based on the research results?

The reported results will be used by the design-based research teams to assist in modification of the model to increase its effectiveness.

Table V: Analyzing and Reporting of Research Results

Evaluation	***Who will be responsible for producing the reports?***	***To whom will the reports be presented?***	***Who will do presentations?***	***When will results be presented?***	***Who will make decisions based on results?***
Initial meeting of Evaluators/ Researchers and LCPS Reps to set Benchmarks/Measure	Program Coordinator	Research Team and Internal and External Evaluator	Internal Evaluator	Meet before the project begins and Monthly thereafter	Research Team and Internal and External Evaluators

ments for 3 year project to align model/data for decision making					
Measure what teachers implement in their classrooms from their professional development through classroom observations	Research Team, P.I. Project Coordinator	Principals District Math Specialists Other district personnel	P.I. & Co-P.I.	Twice yearly—February and September	Co-P.I. District Reps. Principals
Measure growth in teacher pedagogical content knowledge through pre and post assessments	Research Team, P.I. Project Coordinator	Principals, District Math Specialists Teachers Other district personnel	P.I. & Co-P.I. Project Coordinator	August of each year	P.I. & Co-P.I.
Analyze student achievement on the state criterion-referenced test by teacher classroom (Summative Evaluation)	Research Team, P.I. & Co-P.I. District Reps	Superintendent Principals, Other district personnel (Parents and community members will receive similar data without teacher info.)	P.I. Research Team	October of each year (results don't arrive in districts until September)	Superintendent Principals Other district personnel
Analyze student achievement on district selected short cycle assessments (Formative Evaluation)	Research Team, P.I. & Co-P.I. District Reps.	Principals Teachers Other district personnel	Co-P.I. District Reps. District Math Specialists	As short cycle assessments are given (four times per year)	Principals Teachers
Measure the level of administrative support	Research Team, P.I. & C0-P.I. District Reps.	Superintendent Principals Teachers	P.I. Research Team	Year 1: Jan. and August Years 2 & 3: August	Superintendent Principals Other district personnel
Track hours and type of PD received by teachers, principals, and district administrators	Research Team, District Math Specialists	Superintendent Principals Teachers Community members	P.I. & Co-P.I. District Reps.	August	Superintendent Principals Other district personnel

Measure participants' satisfaction with the PD attended	Research Team	P.I. & Co-P.I. Project Director District Reps.	Research Team	At least twice per semester	P.I. & Co-P.I. Project Director District Reps.
Measure how much time teachers are given at each grade level at each campus for collaboration	Project Director	P.I. & Co-P.I. District Reps.	Project Coordinator	August and May	Co-P.I. District Reps.
Measure the district's ability to sustain positive change in mathematics instruction after the grant is over	P.I. & Co-P.I. District Reps.	Superintendent Principals	P.I. & Co-P.I. District Reps.	During the preparation of the district budget and at the beginning of each fiscal year	Superintendent District Budget Committee

Sample #3

Research Questions and Design

The overarching research question in this study is: **In what ways can innovative media be used to fill conceptual gaps in middle grades mathematics**? The project team is interested in designing media to address specific gaps in conceptual understanding for middle grades students. The formative research was described earlier. Once full versions are completed, testing research will begin with randomized control trials.

Randomized Control Trials for Years 3, 4, and 5

The research team will use a study design strongly suggested by NSF (NORC, 2005), a Randomized Control Trial design for projects such as this one that is testing the effectiveness of a product for learning. The hypotheses to be tested, the protocols and instruments used for evaluative purposes and the planned statistical analyses are described below.

Hypotheses, Evaluation Protocol, and Statistical Analysis	
Hypothesis 1	
Students in experimental classrooms will increase their **conceptual understanding of given mathematical concepts** at a significantly higher level than students in control classrooms as measured on the New Mexico Standards Based Assessment (NMSBA).*	
Evaluation Protocol	**Statistical Analysis**

A. (NMSBA) mathematics results for students in Grades 6, 7, and 8 will be disaggregated and analyzed to determine similarities and differences in the performance of students in experimental classrooms as compared to those in control classrooms. • by overall mathematics proficiency, • by each area originally identified as an area of weakness • by ethnicity, gender, level of English language learning, socio-economic status and enrollment in special education B. Results from post-test for each module will be analyzed to determine level of proficiency demonstrated by each student.	Pre-treatment equivalence will be compared with post-treatment scores by student within treatment and control classrooms. An analysis of variance will be used to compare the performance of students. in experimental and comparison classrooms. A mixed effects linear model will be used to examine differences in treatment means as well as differences in variability.

** NMSBA is administered in spring of each school year: results available September 1 of following school year.*

Hypothesis 2	
Students will **retain their understanding of math concepts longer** in experimental than in control classrooms based on year-end scores over time on the NMSBA.	
Evaluation Protocol	**Statistical Analysis**
New Mexico Standards Based Assessment (NMSBA) mathematics results for students in Grades 6 and 7 will be disaggregated and analyzed by the categories listed above for the students. Student scores will be aggregated by type of classroom, experimental or control. Repeated measures of student understanding will also be given 3 times during the one year experimental trial. NM schools give standardized formative assessments during the year. We will use these scores as well as repeat the post-test developed with the modules.	Comparisons of year to year student test scores using an analysis of variance over students 6th and 7th grade years: 3 years of comparisons for 6th graders, 2 years of comparison for 7th graders.

Hypothesis 3	
Students in experimental classrooms will **increase their effective use of math process skills** as measured on open-ended portion of the NMSBA at a significantly higher level than students in control classrooms.	
Evaluation Protocol	**Statistical Analysis**
Changes in the percentage of possible score points students earn on the open-ended portions of the NMSBA will be analyzed using a pre- and post-treatment. Changes in scores for experimental and control classrooms will be compared.	Pre-treatment equivalence will be with post-treatment scores by student within treatment and control classrooms. An analysis of variance will be used to compare the performance of students in experimental and control classrooms on the open-ended items on the test. A mixed effects linear model will be used to examine differences in treatment means as well as differences in variability.

Hypothesis 4	
Teachers who use the multimedia tools with their students in experimental classrooms **will increase their mathematics pedagogical knowledge** at a higher level than teachers in control classrooms**.**	
Evaluation Protocol	**Statistical Analysis**
Participating teachers will be administered the *Numbers and Operations* and the *Geometry* components of the *Mathematical Knowledge for Teachers* test (MKT), annually to determine changes in their mathematics pedagogical knowledge.	We will do a matched-pair item response analysis on the MKT to determine change in mathematical pedagogical knowledge

From the schools currently partnering with the Institutes Math and Science Partnership program, the research team will choose 60 teachers who have agreed to try these materials with their students for a year. Thirty of these teachers will be randomly selected to serve as the experimental group in year one, while thirty of the teachers will serve as a control group. Both groups will do the same pre and post testing, teach similar content, and assist researchers with gathering data. Experimental teachers will use the *Math Program* multimedia modules. Student learning will be assessed in several ways including post-tests that are provided with the modules, and standardized short-term and annual assessments given at the school for all students.

In year 4, the 30 comparison teachers will become the experimental teachers and 30 additional teachers will be randomly selected within the same schools to serve as control teachers. One of the advantages of this design is that all of the schools in the population selected will currently be members of one of the state MSP projects and will be receiving monthly professional development opportunities not specifically related to *Math Program* materials, whether they are in experimental or control classrooms. During the last year, the research team anticipates testing *Math Program* in schools outside of the given partner districts, either in another state or in New Mexico, in order to answer the research question about usefulness in any school.

WORK PLAN/ACTION PLAN/SCOPE OF WORK

Here you must specify objectives you will meet over a given period of time and how you intend to meet them. This portion of your proposal should contain a graphic timeline as well as a table of objectives, activities, and responsibilities.

The entirety of the Action Plan may consist of a detailed table or timeline.

Your Work Plan/Action Plan/Scope of Work describes:

- What you will do
- How you will do it
- Who will perform each task
- Spells out multiple objectives
- Includes a timeline

Sample #1

Work Plan

The success of the research project requires a district-wide adoption and implementation of a reform-based social science curriculum. Your Town Public Schools (YTPS), the district partner for the proposed project, is planning to adopt *Investigation in Number, Data, and Space* for all

elementary schools and *Connected Social Sciences 2* for all middle schools, beginning in the Fall of 2007. The project work plan includes designing summer social science academies for all district teachers; providing follow-up professional development during the academic year; and establishing school-based learning communities for continual review and refinement of teaching practices based on student learning outcomes. In addition, principals and school-based social science leaders will participate in on-going professional development to learn how to support teachers through the change process.

The district-wide social science reform effort will allow the project staff to focus on evaluative research on the effects of the model on the district, schools, administrators, teachers, students and the community, as well as to integrate design-based research methodologies for modification of the model as it is being implemented.

The work will begin with an assessment of each school and teachers' readiness to implement a standards-based curriculum. Through OUR PROJECT and other projects, we have developed a means for evaluating a school's capacity for change toward reform-based social science and a sequenced level of professional development options based on the needs of each school. District administrators and principals will be asked to assist their school's readiness for change using the Concerns-Based Assessment Model (CBAM) and its evaluation of readiness for different types of professional development as suggested by the following professional development options, including Lesson Modeling, Lesson Study, Curriculum Planning, and Topic Specific Sessions. These options have already been developed and align with the CBAM levels for each school in a district. Table II outlines the Stages of Concern, possible indicators, and relevant support.

Stages of Awareness	***Expressions of Concern***	***Professional Development Options***
INFORMATIONAL CONCERNS PERSONAL CONCERNS	"What is this all about?" "How will these standards directly affect me?"	Topic Specific Professional Development
MANAGEMENT CONCERNS	"I am spending all my time managing materials and planning lessons."	Team Curriculum Planning
CONSEQUENCE CONCERNS	"How is my use affecting learners? How can I refine it to have more impact?"	Lesson Modeling
COLLABORATION CONCERNS REFOCUSING CONCERNS	"How can I coordinate what I am doing with others in my grade level?" "I think there are some changes we could make to improve things.."	Team Curriculum Planning and/or Lesson Study

The time is perfect for testing a district-based social science reform system, since all districts in New Mexico are in the process of deciding on a new social science adoption. This means that all of the needed curriculum materials will be available with no additional costs. The proposed partners,

the Sometown District and the Desert State University OUR PROJECT Program, will provide support in terms of costs and personnel for implementing the project. Specifically, OUR PROJECT will provide implementation support for all middle school principals, teachers and students. The district will provide additional funds for professional development and plans to hire social science specialists for the schools. This will allow the staff to focus on evaluative research on the effects of the model on the district, schools, administrators, teachers, students and the community, as well as use design-based research methodologies for modification of the model as it is being implemented.

Sample #2

ACTION PLAN FOR STUDENT ACHIEVEMENT THROUGH INCENTIVES AND LEADERSHIP

Goal 1 – Restructure Instructional Time, Roles for Principals &Assistant Principals, and Pay System to include Incentives				
Objectives	**Actions**	**Timeline**	**Responsibility**	**Outcomes**
Create a 4-day school week with extended hours and a one-day/week community-based learning day.	The school board in YTSD (Your Town School District) has already passed a resolution to extend student instructional time, is considering this model and surveying parents.	Year One of the grant will require this restructured school week to be in place.	Superintendent, Associate Superintendent, & School Board approve. Deputy superintendent in charge of community-learning facilitation	The newly restructured school week will have 4 extended days and an additional day of community learning. involvement in schools.
Reassign principals to instructional leadership duties and provide training	The Center for Educational Leadership (CEL) in partnership with the YTSD instructional leadership team will introduce and implement the systemic professional development (PD) model. Coordinators, coaches, and PD experts will be hired to assist in year one.	The timeline for professional development is based on moving through the 5 stage model toward leadership. Intense professional development in years one and two will lead to graduate programs and advanced professional development in	Associate Superintendent for Education, and SAIL Principle Investigator and Director, P. Garcia will work with the DSU team from the Center for Educational Leadership (CEL) to implement PD.	Principals will become increasingly comfortable with facilitating instructional learning in classrooms. They will adapt a new type of leadership that involves collaborative work with teacher leaders.

		years three to five.		
Reassign assistant principals to become student performance and assessment specialists and provide training.	The Department of Educational Management (EMD) and the Center for Educational Leadership (CEL) will provide classes and professional development in collaboration with YTSD evaluation team.	Intensive training in accountability literacy will be provided beginning in year EMD and CEL will teach analyzing, understanding and profiling student performance within school sites.	Dr. H. Chavez with CEL and Dr. Bill Smith, Dept. .Head for EMD will work with J. Doe, YTSD to provide support for Assistant Principals. this program	Principals, Assistant Principals, and Developing Leaders will be able to use data to make decisions with faculty related to improving student achievement.

Goal 2 and Goal 4– Create a systemic model for increased professional leadership leading to increased student achievement				
Objectives	**Actions**	**Timeline**	**Responsibility**	**Outcomes**
Implement a new model for leadership provided by CEL and EMD. Collaborative develop with the YTSD district, administrative training program, courses, and professional development opportunities	Implement five levels of the Systemic Leadership Model for developing leaders at all levels in knowledge, skills and dispositions leading to increased student achievement. Leadership development will begin with provisional teachers and proceed through highly qualified principals.	As soon as Project SAIL is approved, participants will be selected and the specifics of the professional development activities will be finalized. All five levels will be addressed simultaneously, but leaders will move from one level to the next. to another.	D. Martinez, Bill Smith, H. Chavez and C. Johnson who will assist with in-depth instructional content workshops and coaching.	Participants will develop at the level(s) appropriate for them. Principals, assistant principals, and developing leaders (Ps, APs, & DLs) will become highly qualified as systemic, contextual, accountability literacy, and instructional leaders.
Goal 2 and Goal 4– Create a systemic model for increased professional leadership (continued)				
Objectives	**Actions**	**Timeline**	**Responsibility**	**Outcomes**
Provide instructional support in target	Special workshops will be provided by faculty	As soon as Project SAIL is approved, participants will	Dr. Martinez will work with university	Principals, Assist. Principals and Developing

areas: math, science/inquiry and special education	researchers working in collaboration with YTSD instructional specialists to help grow pedagogical content knowledge in target content areas.	be selected and the specifics of the professional development activities will be finalized	researchers, Dr. Gray, C. Johnson, Elliot Blue, K. Smith, and YTSD instruction group.	Leaders will routinely share examples of specific teaching and curriculum strategies are associated with improved student achievement.
Increase data-driven decision-making and accountability	Step 4 of professional development for leadership, the assistant principal (AP) level will emphasize data-driven decision-making and accountability for all YTSD participants.	AP.'s will receive intensive support in year one and two, including help in analyzing & understanding student & school data &using data-based research strategies for decision making. In years 3-5 APs will mentor new APs in accountability literacy.	Elliot Blue, H. Chavez from the DSU and Mark Randall from YTSD will design Professional development	Principals, Assistant Principals, and Developing Leaders can. document examples of decisions in teaching, assignment, curriculum, assessment and intervention that have been made on the basis of data analysis.
Provide opportunities for teachers to become assistant principals and principals. Provide masters and education specialist degrees.	Educational Management and Development will offer and Educational Specialist degree in it for participants who are interested.	Courses leading to the degree will be offered when the training begins. The degree will take two years to complete.	Elliot Blue, EMD department	At least 20 teachers from YTSD will enter programs to help them get their administrative licensure. At least 10 principals will become involved in advanced leadership work.
Goal 4- Increase recruitment and retention of teachers and administrators				
Objectives	**Actions**	**Timeline**	**Responsibility**	**Outcomes**
Form partnership with DSU pre-service administrator and	YTSD and DSU will collaborate through a series of retreats to plan how	Three retreats will occur during the first year of the Project SAIL.	D. Martinez, Bill Smith, H. Chavez and C. Johnson	The contribution of each entity will seem to participants to

teacher programs to increase enrollment of local majority Hispanic teachers and administrators.	degrees and preparation programs will inculcate salient aspects of the models for teaching and leadership.	One will occur at the beginning of each of the subsequent four years.		blend seamlessly.
Continue reform orientation of Your Town schools as models for student success.	Provide funding to pursue advanced degrees, attend professional conferences and participate in professional leadership opportunities,	The activities outlined will be offered to YTSD teachers throughout the grant.	D. Martinez, Bill Smith, H. Chavez and C. Johnson	Retention of teachers &administrators will continue. Hispanic teachers from the community will move into leadership roles.
Goal 5- Increase Informal and Out-of-School Learning for students through university and community partnerships				
Objectives	**Actions**	**Timeline**	**Responsibility**	**Outcomes**
Invite agencies to provide programs both academic and in recreational and health on one day/week in the YTSD area.	$300,000 has been allocated as matching funds for community agencies to offer programs on Fridays. Ongoing programs in some schools like the science clubs and family festivals will be expanded to more schools.	An RFP for Friday community programs will be issued in year one of the grant. Additional grants will be sought to increase community and parent participation.	B.Curry, deputy superintendent in YTSD and Associate Superintendent for Student Services will facilitate the growth of community and parent learning involvement	The community-based learning program will grow each year and increase by at least one new program. It is anticipated that additional community learning will also be added on some evenings and Saturdays
Require SES providers to provide tutorial programs on Fridays and connect these programs to in-class activities	YTSD's instructional team, principals and teacher leaders will meet with SES providers to work on a plan to connect tutoring with classroom	After the grant is awarded a meeting will be set up with SES providers requiring them to coordinate activities with regular school offerings and to	B. Curry and H. Chavez and DSU's Alliance program.	SES programs will be better coordinated with regular school programs and increased student achievement will occur.

	learning	offer activities and workshops on Fridays.		
Goal 6- Develop and disseminate a sustainable model that builds capacity for achievement through leadership and incentives				
Objectives	**Actions**	**Timeline**	**Responsibility**	**Outcomes**
Continue to present successful models of increasing student achievement in high need districts at state, national, and international conferences. Continue partnership with the DSU sponsored Alliance for the Advancement of Teaching and Learning which includes 25 districts, regional educational centers, and others.	YTSD personnel and collaborating faculty are already involved in presenting a district-wide approach to raising achievement in math and literacy. Presentations have been done to the state legislature and invited from as far away as Oxford, England	Current presentations on YTSD's district-wide successful reform will continue. As the new model of improving student achievement through incentive pay and leadership development.	D. Martinez, Bill Smith, H. Chavez and C. Johnson will continue to write about the reform and present at national and international conferences.	One district in New Mexico, Espanola that is very low in achievement has already visited YTSD and is implementing a similar model. Additional districts will be invited to partner with YTSD in increasing achievement especially for high need areas.

Sample #3

Project Plan

A) Strategic Plan - Goals and Global Outcomes

The overarching goal of the OUR PROGRAM CENTER is to improve student academic performance through out-of-school academic enrichment for students and increased opportunities for parents to help their children succeed in school and become involved in community-based learning themselves.

Goal I. As a result of academic mentoring by undergraduate university students through each of four regional centers, students will improve their performance in reading and math as measured on short-cycle assessments (Measures of Academic Progress, MAP and Developmental Reading Assessment, DRA)—and the state-mandated summative assessment, the New Mexico Standards-Based Assessment (NMSBA).

Goal II. As a result of authentic project and inquiry-based learning in the STEM (science, technology, engineering, and mathematics) fields, students will improve their writing, math, science, technology and problem-solving skills as demonstrated by improved performance on district assessments and quality of products.

Goal III. As a result of opportunities to participate in dance, music and art activities and community performances, students will further develop their reading and mathematics skills, demonstrate increased performance on district assessments, and show better attendance and retention in school.

Goal IV. Families will take a larger role in supporting their students in reading and mathematics learning as a result of opportunities to participate in family literacy and numeracy activities. OUR PROGRAM will involve families in the learning activities experienced by their children during the after-school and summer enrichment programs from dancing to doing science experiments.

Management Goal: The project will be carefully managed at the district level by a professional project coordinator with previous experience in managing out-of-school learning. This person will be assisted by a certified teacher at each of the four centers, additional YTSD SEMAA teachers, and university facilitators. All learning activities in the OUR PROGRAM CENTER will align with each school's educational plan for student success (EPSS) and with specific student learning needs based on achievement data from the home schools. Programs offered by DSU already have proven success in increasing student interest and achievement in school and are supervised by university professors and staff. The district's 21st Century Learning Communities Center (21stCLCC) Project Coordinator will, with the support of the district, create a OUR PROGRAM Centers Advisory Council representing the project stakeholders. This group will provide advice and feedback to the Project Coordinator and facilitate communication about the centers. The Project Coordinator will also be supported by the district's Parent Coordinator and the Parent Outreach Ambassadors (POA) located at the 21 schools in the district. On-going partnerships like the YTSD-ENLACE partnership will also help connect the home school communities with the four centers and their activities.

Sample #4

Timeline					
	2009	**2010**	**2011**	**2012**	**2013**
Development					
Wave 1: 5-8 Products	Development and revision		Delivery	Revision as needed	
Wave 2: 5-8 Products		Development and Revision		Delivery	Revision as needed
Wave 3: 4-5 Products			Development and Revision		Delivery
Website	Working prototypes available for download				Final versions available
Formative Testing					
Learning Games Lab	Test characters, interface and ideas, with ~ 60 youth throughout year.				
Teachers and Classrooms	Test working prototypes with teachers and students in ~20 classrooms annually.				
Quality Assurance Committee	Review materials twice annually.				
Randomized, Controlled Trials			Wave 1	Wave 2	Wave 3
External Evaluation					
Evaluate progress on goals and objectives	Mid- and end-of-year staff surveys				

EVALUATION PLAN

You need to create a means and a schedule to verify whether your goals are met. Both a summative (for instance, an annual survey or test) or **formative** (in terms of progress toward goals) evaluation should be included in your plan.

An evaluation plan verifies:

- How goals will be measured/evaluated
  - Often uses benchmarks
  - Spells out when evaluation occurs

- May be formative and/or summative
- Usually in the form of a table, but may contain introductory text

Sample #1

The following section describes the evaluation plan for Math-PROJECT. The plan will be carried out by internal and external evaluators, who will be in charge of gathering data to ensure that we meet the project goals and benchmarks The evaluators with assistance from district site researchers will gather, analyze, and report formative and summative data back to the partnering districts and the research team on a continuous basis as part of the design-based research design (See Appendix C for the design-based research model). In Math-PROJECT the evaluation plan interacts with the design-based research that drives this project. As data is gathered and feedback is given to and provided back by the partner district leadership teams, there will be unanticipated changes as we refine how to build capacity for achievement in each district. Because we are using design-based research, which allows for modification of a project as it is implemented, it is difficult to include additional unanticipated research. The following basic benchmarks & timelines for year 1 and 2-5 are below. Additional measurements and benchmarks will emerge as the result of design-based research.

Outcome Goals, Benchmarks and Evaluation for Math-PROJECT	
Goal I: Implement a sustainable system-based leadership model in each partner district that can be researched, modified, and by the end of the grant replicated and disseminated to other high-need districts.	
Benchmarks:	**Evaluation:**
Partner districts will have established a mathematics district leadership tem (DLT) representing key stakeholders by the End of Year 1.	• Administer the New Mexico Quality Mathematics Education Matrix (QMEM) Rubric to all members of the DLTs at their first meeting. After the results are compiled and analyzed, they will be presented to each DLT. The QMEM will be administered to DLTs annually as one indicator of positive change of math instruction and learning in the district. Each participating district will— • submit a list of DLT members/participants along with a description of the stakeholder group each member represents. • submit meeting times, dates, and location for all DLT meetings. • submit minutes from each DLT meeting which will include a) the names of the members in attendance, b)

	the goals of the meeting, c) the issues discussed, d) the decisions made, e) the tasks accomplished, and f) the next steps.
The mathematics DLT will complete a plan of action for mathematics teaching and learning by the end of Year 1.	Each participating district will— • submit a completed Plan of Action by the End-of Year 1.
The DLT will use data to modify their actions in Years 2-5 to increase the effectiveness of the model in their district.	Each participating district will— • submit a modified Plan of Action at the End-of Year 2, 3, 4, and 5 which includes data which documents/justifies the necessity for change in the original Plan of Action.

Mathematics Partnerships for Achievement through Leadership (Math-PROJECT)
Evaluation Plan (page 2)

Goal II a: Improve teacher knowledge for teaching mathematics through challenging courses and curricula.	
Benchmarks:	**Evaluation:**
A new Masters of Arts in Teaching Mathematics (MAT) will be developed and taught collaboratively by mathematicians and educators.	• Track number of students admitted and retained in the MAT program. • Collect and analyze the student course evaluations for each course in the MAT program. • Conduct and analyze an exit interview with any student leaving the MAT program prior to receiving their degree. • Conduct focus groups each year with randomly selected participants in the MAT program to gain the students' perspectives as to the successes and failures of the MAT program
An advisory group consisting of district teachers will be formed to advise the development and implementation of the MAT.	The advisory group will— • submit a list of its members along with a description of the grade level and/or course each member teaches. • submit meeting times, dates, and location for all advisory group meetings. • submit minutes from each advisory group meeting which will include a) the names of the members in attendance, b) the goals of the meeting, c) the issues discussed, d) the decisions made, e) the tasks accomplished, and f) the next steps.
A major goal of the MAT program is to enable teachers to become mathematics leaders. They will a) gain knowledge of mathematical	• Administer the Mathematical Knowledge of Teaching (MKT) Measure (University of Michigan) in the fall of each year of the grant as a pre-post assessment. Each MAT program participant will—

strategies for meeting the learning needs of diverse communities; b) gain skills in facilitating teacher professional learning communities (PLCs), c) provide structures and resources for curriculum alignment, standards-based instruction, problem-based learning, mathematics discourse and formative assessments.	• complete and submit a professional development log documenting any and all training they have provided during the school year. • document (in a short narrative) any and all of the opportunities offered by the MAT courses for them to demonstrate their skills through modeling lessons or through facilitating/leading staff development.

Goal II b: Increase the quality, quantity and diversity of mathematics teachers. MAT graduates will become math leaders to support mathematics teaching and learning in their districts.	
Benchmarks:	**Evaluation:**
Students in the MAT program who are classroom teachers will serve as mentors for pre-service teachers and offer classroom experiences and opportunities to gain further mathematical knowledge needed for teaching.	• Track hours for pre-service teachers being mentored by MAT students. • Conduct focus groups with pre-service teachers at the end of every semester.
Districts will hire additional qualified math specialists from their own communities to support mathematics teachers at the district level.	• Compare the district mathematics specialists/teacher ratio prior to the implementation of the grant with the ratio after the completion of the grant.

Scope of work for Lead External Evaluator – Jorge Smith	**Focus of Time**
1. Construct a logic model—graphic model of the program over time including resources, inputs, expected outcomes. This document provides a conversation piece between evaluators and other stakeholders to examine and critique the progress of the program. Communication with program staff about model implications.	Two to three days
2. Background reading – external evaluator needs to get up to speed on the components of this program, similar programs, and research indicators	Three to five days
3. Visit NMSU and districts in the field to help with data collection, sample the climate of the program, and communicate with team members. This would take place both in the fall and spring and involve travel and time spent in New Mexico as well as reflection time to report on and communicate back with New Mexico team.	Ten days
4. Visit NMSU and districts in the field to help with data collection, sample the climate of the program, and communicate with team members. This would take place both in the fall and spring and involve travel and time spent in New Mexico as well as reflection time back in Texas to report on and communicate back with New Mexico team.	10 years
5. Conferencing with New Mexico team by phone as well as preparation and reflection on the meetings.	Two days per year

6. Visit New Mexico when there is "down time" for program staff to provide feedback and participate in reflection, perhaps in the summer and/or winter.	Five days
7. Read and report on data generated by New Mexico staff annually	Two to five days/ year

Sample #2

Table X: Evaluation Plan for XYZ Reading Research

Evaluation	*Evaluation Instruments*	*Person(s) Responsible for Collection of Data*	*Person(s) Responsible for Analysis of Data*	*Timeline*
Measure what teachers implement in their classrooms from their professional development through classroom observations	**a) Levels of Use Observational Rubric** (used to observe at least 10% of the classrooms in the district to determine if what is presented in PD is being used in the classroom) **b) Classroom Lesson Observation Instrument** (used to observe at least 10% of the classrooms in the district to determine if what is presented in PD is being used in the classroom)	District Reading Specialists (to be named) R. Round, Project Director S. Triangle, District Rep. K. Gray, Internal Evaluator	University Research Team K. Gray K. Blue M. Red	Random classrooms will be observed twice a year with both observation instruments for each year of the grant.
Measure growth in teacher pedagogical content knowledge through pre and post assessments	**Survey of Content Knowledge for Teaching Reading (University of Michigan)**	District Reading Specialists R. Round, Project Director K Blue, Internal Evaluator	University Research Team K. Gray K. Blue M. Red	For Year 1, teachers will be assessed during summer training and again at the end of the school year. For Years 2 and 3, teachers will be assessed only at the end of the school year.
Analyze student achievement on the state criterion-referenced test by teacher classroom (Summative Evaluation)	**New Mexico Standards-Based Assessment Results (NMSBA)**	District Reading Specialists K. Blue, Internal Evaluator	University Research Team K Gray K Blue M Red	NMSBA is administered in March of each year. Results become available in September.
Analyze student achievement on district selected short cycle assessments (Formative Evaluation)	**The short-cycle assessments will be determined by the district.**	District Reading Specialists S. Triangle, District Rep. K. Blue, Internal Evaluator	University Research Team K. Gray K. Blue M. Red	Short cycle assessments will be administered at least four times per year for each year of the grant.
Measure the level of administrative support	**a) Teacher Surveys** (to determine the level of administrative support)	District Reading Specialists K. Blue, Internal Evaluator	University Research Team K. Gray K. Blue M. Red	A random selection of teachers will be surveyed once per semester for Year 1 and once per year for Years 2 and 3.

	b) Teacher Focus Groups (to determine the level of administrative support)	District Reading Specialists K. Blue, Internal Evaluator	University Research Team K. Gray K. Blue M. Red	At least one teacher focus group per campus will be convened each year of the grant.
Track hours and type of PD received by teachers, principals, and district administrators	**a) Professional Development Teacher Sign-In Sheets** (to demonstrate the quantity and type of professional development teachers have attended)	District Reading Specialists S. Triangle, District Rep. K. Blue, Internal Evaluator	University Research Team K. Gray K. Blue M. Red	Data must be collected and compiled after each PD session. Data will be analyzed yearly.
	b) Professional Development Principal/Administrator Sign-In Sheets (to demonstrate the quantity and type of professional development principals/administrators have attended)	District Reading Specialists S. Triangle, District Rep. K. Blue, Internal Evaluator	University Research Team K. Gray K. Blue M. Red	Data must be collected and compiled after each PD session. Data will be analyzed yearly.
Measure participants' satisfaction with the PD attended	**Professional Development Teacher and Administrator Evaluations** (to determine the quality of the PD and to help adjust PD to the needs of the people attending PD)	District Reading Specialists S. Triangle, District Rep. K. Blue, Internal Evaluator	University Research Team K. Gray K. Blue M. Red	Data must be collected and compiled after each PD session. Compiled data will be analyzed at least twice each semester to determine the quality of on-going PD and to make necessary adjustments to training.
Measure how much time teachers are given at each grade level at each campus for collaboration	**School Schedules** (to determine if time is built into each school's schedule for collaborative activities)	District Reading Specialists S. Triangle, District Rep. K. Blue, Internal Evaluator	R. Round, Project Director	School schedules will be collected at the beginning of each school year.
	Teacher Focus Groups	District Reading Specialists S. Triangle, District Rep. K. Blue, Internal Evaluator	R. Round, Project Director	The amount and quality of collaboration time will be discussed during yearly teacher focus groups.
Measure the district's ability to sustain positive change in reading instruction after the grant is over	**a) District Budget**—(level of fiscal responsibility taken by the district to hire District Reading Specialists and other personnel to sustain the reading initiative)	C. Circle, P.I. L. Sphere, Co-P.I. S. Triangle, District Rep.	C. Circle, P.I. L. Sphere, Co-P.I. R. Round, Project Director	A study of the district budget will be completed at the beginning of each fiscal year.
	b) District Budget—(level of fiscal responsibility taken by the district to replenish reading materials as needed)			

MANAGEMENT PLAN

Your team should be organized with a clear division of labor based upon expertise and experience. You can also graphically depict the management of your grant.

Your management plan depicts:

- Who is in charge of which aspects of the project
- Who provides overall supervision
- How support is structured and the rationale for this structure
- Strengths and weaknesses of team members in relationship to their duties

Sample #1

Quality of Project Personnel

Expertise and Responsibilities

Lead P.I. and Director of Research: Dr. K. Gray

- Provide budgetary oversight
- Hold regular project management meetings
- Attend PI meetings as requested
- Oversee internal researchers
- Serve as lead author on all reports and articles published

Dr. Gray is currently the Associate Dean for Research in the College of Education. She is also a Professor of Learning Technologies and Curriculum. She continues to do research on the design and implementation of learning environments for education. She has been involved in education as a teacher, administrator and college professor for almost 40 years and is currently P.I. for the Mathematically-Connected Communities project. She has written four books and published numerous academic articles.

Co-P.I. and Director of Development: Dr. B. Brown

- Oversee production of Math Project modules.
- Lead regular project design meeting.
- Serve as lead author on all design documents created

Dr. Brown currently directs development in Desert State University's Learning Games Lab, overseeing formative and predictive research on game characters, use and educational potential. Her PhD is in instructional technology, and her research emphases are in game development and interactive media. She has been developing educational games for 14 years including games on science and math concepts. Additionally, Dr. Brown served as the lead developer on the pilot Math Project materials, covering development of games and animations for handheld computers or other mobile devices.

Co-P.I. and Director of Formative Testing: Dr. J. Blue

- Oversee all formative evaluation, securing formative test groups, collecting data.
- Oversee video development and publishing of all final resources.
- Compile formative data for analysis by development team.

Dr. Blue serves as Director of Media Productions and the lead instructional designer on game and instruction activities, ensuring they meet national standards and measurable learning objectives. She has more than 30 years experiences working on multimedia educational tools and development, particularly for science and math instruction. Under Dr. Blue's leadership, the Desert State University (DSU) team has produced more than 20 science and math education, food safety, nutrition and obesity games, touch screen public kiosks, Web sites, animations, videos and print publications in several different languages, including, Spanish, Navajo, Mandarin, Cantonese, Fijian and English. She has served as senior personnel on more than 50 funded grants to date.

Math Content Specialist: Dr. T. Red

- Serve on design team guiding math content and pedagogical approach.
- Conduct formative evaluation in classrooms

Dr. Red is an associate professor for mathematics in the Department of Mathematical Sciences at Desert State University where his specialization is the study of topology. For the past five years, as part of the Mathematically-Connected Communities grant. He has worked extensively with colleagues in the College of Education, middle school math teachers, and middle school students. He was the math specialist for the Pilot Math Project Animations.

Research Team: K. Square, Dr. A. Circle, N. Triangle

- Design research and find best instruments
- Collect and analyze data
- Run statistical analysis including mixed effects models
- Compile and analyze all findings, make reports

K. Square served 33 years as the Director of Assessment, Strategic Management and Accountability first for the Neighbor State School District and later in the YourTown School District. He has since retired from public school work and has been teaching assessment and research at Desert State University while also serving on the research and evaluation team for several math projects in the Institute for Mathematics and Science Education. Dr. A. Circle, Assistant Professor in Special Education is an experienced statistician and researcher in the area of learning with technology. N. Triangle, has been an instructor in the department of Educational Statistics for the last 16 Years. She serves as a statistician for various grants across the college and assists doctoral students and faculty with research design.

External Evaluation and QA Committee Coordination: The Important Institute

- Conduct annual evaluation of project to analyze progress towards goals.
- Appoint members, establish protocol and compile data from Quality Assurance committee.

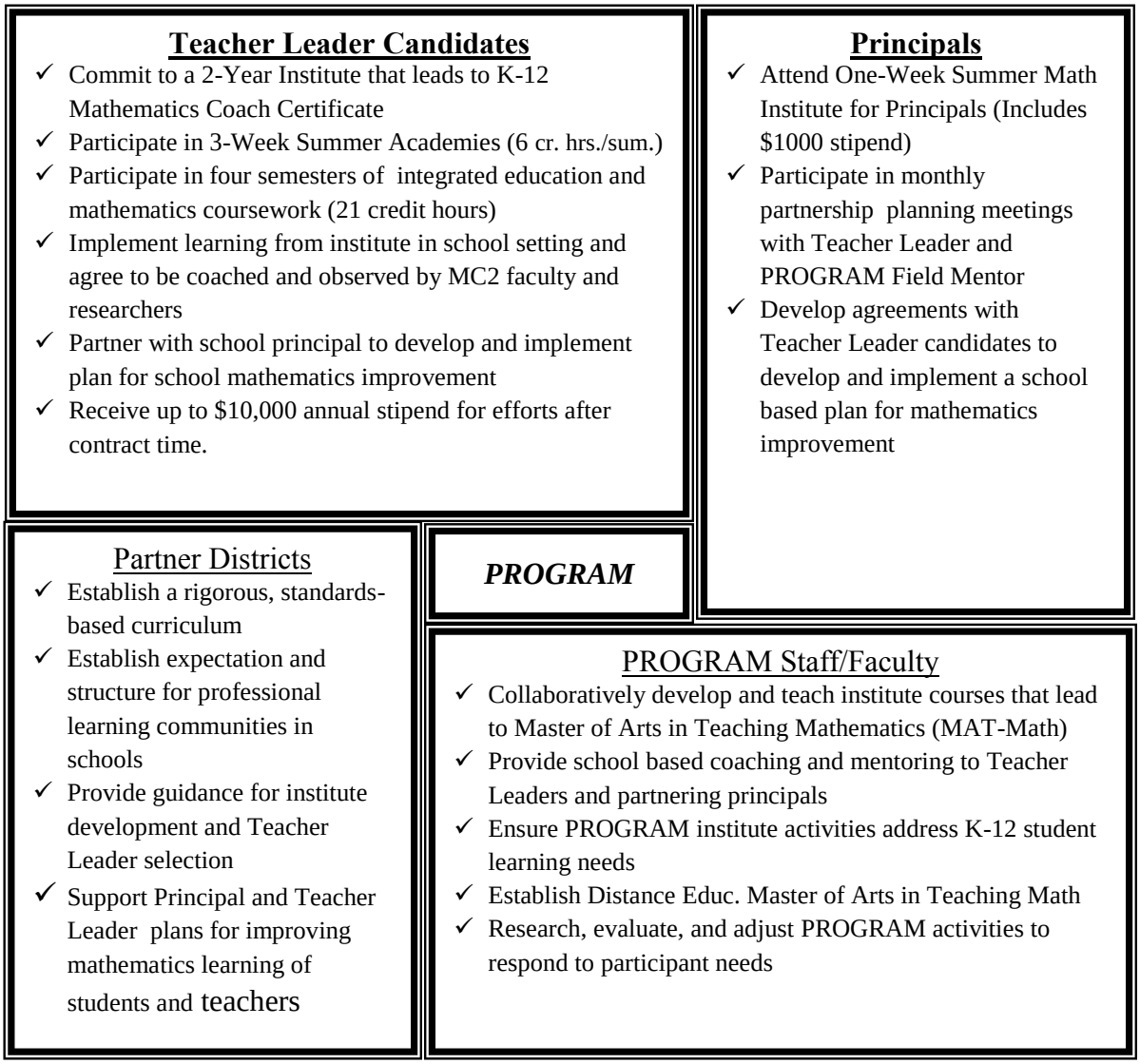
The Important Institute is a non-profit educational agency focusing on research and development, evaluation, quality assurance and strategic planning, and related professional development and technical assistance. Important Institute staff have conducted scientifically-based research, design-based research and have evaluated STEM and other programs for thirty years, including similar recent projects. The Important Institute has expertise in carrying out these services for universities, school districts and regional agencies with diverse populations. S. Astute, the executive director of Important Institute, has a background and expertise in research & evaluation, quality assurance, mathematics education, e-learning, professional development, and effective educational programs for English Learners.

Results from Prior NSF Support

K. Gray is currently a Co-P.I. on the *Scaling Up Mathematics for Achievement* XYZ grant, which is in its second year. This project is researching how a model for building capacity for mathematics achievement based on previous work on

the Gadsden Mathematics Initiative works in a larger and more diverse district. Dr. Gray previously worked as a researcher in the Gadsden Mathematics Initiative (GMI) and conducted a Student Outcomes Study that investigated how professional development in that project affected student achievement. The GMI recently ended but was a very successful NSF project, nominated as a Golden Nugget. Math scores of low-income, English-Language Learners in this district continue to outperform similar students in the state and in some grades (3rd and 8th) are higher than average scores for all students.

Sample #2 (Graphic Management Plan)



LETTERS OF SUPPORT

While resumes have a list references and artistic submissions include a portfolio, grant proposal should contain letters of support to place your work and abilities in a professional context.

Sample#1

The National Science Foundation

Re: OUR PROJECT
CI-TEAM RFP #070X-XXX

To Whom It May Concern:

I am pleased to write this letter in support of the grant application submitted by New Mexico Tech and partners throughout the state of New Mexico to implement OUR PROJECT – a Cyber-infrastructure Training, Education, Advancement and Mentoring model. This project helps to address the critical need in New Mexico to advance students in STEM careers and engage teachers in rural and minority districts with professional development and technology tools.

The partners of this project have all worked many years in the fields of education with a focus on technology and STEM. Under this grant, these dynamic partnerships would be leveraged using existing educational programs to demonstrate the power of infrastructure, collaboration and mentoring to improve on opportunities that exist for rural and minority students.

As _(head or rural education, etc)_____I strongly support OUR PROJECT and the combined efforts of the partners to secure funding to advance education through eLearning and the use of cyber-infrastructure tools for New Mexico's population of minority and rural students. There is a critical need in New Mexico for these teachers to become confident and well engaged in the STEM programs available in today's environment. OUR PROJECT would benefit (program, my interests, etc) by _____. I would be able to work with this project

_____-and the demonstration project findings would _____. The importance of this project is….

Sincerely,

Name
Title, contact info

Sample#2

February XX, 20XX

The Selection Committee
Some Program Fund Grant Application
U.S. Dept. of Education, XXXXXX
1212 Main Street
Room 12123
Name of City, State, Zip

To BIG COMMITTEE:

As the Executive Director of the New Mexico Association of "School-Related Activities," I am writing this letter of support for the SOME PROGRAM. SOME PROGRAM is being submitted by the Your Town School District (YTSD) in partnership with (VARIOUS PRESTIGIOUS INSTITUTIONS).

The goals of the SOME PROGRAM provide for a systemic approach to raising academic achievement of students in the Gadsden Independent School District. The recent history of YTSD demonstrates the commitment of district personnel to developing high quality programs based on educational research and providing the support necessary to successfully implement these programs district wide. The result has been continuous improvement in the academic achievement of students in the district.

Research has consistently proven the importance of high-quality teachers. Many New Mexico school districts are very rural and deal with the unique challenges of border schools. These districts consistently combat the problem of retaining high-quality teachers. The results of the SAIL program and the documentation recorded describing the implementation will be beneficial in providing a guide for other school districts that are facing similar challenges.

As the Executive Director of the New Mexico Association of "School Related Activities," I highly support SOME PROGRAM and believe the implementation of this program will provide data that can be used for increasing academic achievement in school districts throughout our country.

Respectfully,

Supporter M. Name

Supporter M. Name, Ed.D.
Executive Director
New Mexico Association of "School Related Activities"

Sample#3

July 31, 20XX

Dr. M. Gray
New Mexico State University
Las Cruces, NM 88001

Dear Dr. Gray,

On behalf of the Your Town School District, I would like to extend to you our support of the **OUR PROGRAM** grant proposal. As a district, we are excited about the opportunity to look at different approaches to educate our children and provide professional development for our staff. The potential that this grant provides in looking at different methods to address common issues is immense. YTSD has never shied away from a challenge, or from change and this proposal will give us an opportunity to address both.

Should there be need for any additional information, please do not hesitate contacting me.

Sincerely,

<signature on file>

M. Brown, Superintendent
Your Town School District
P.O. Box XX
Sometown, NM 88XXX
Phone: (505)XXX-XXXX
Fax: (505)XXX-XXXX