ITQ Table of Contents

Project Title: Using Lesson Study to Improve Teacher Quality in Northern Arizona

ITQ PROJECT SUMMARY

Applicant/University or College:

Northern Arizona University

Project Title:

Using Lesson Study to Improve Teacher Quality in Northern Arizona

Summary: (not to exceed 200 words)

Our goal is to build capacity to create a sustainable, region-wide professional development initiative where curriculum, instruction and assessment (CIA) alignment works in concert with teacher professional development (TPD) within the existing leadership and professional development structures in Coconino County to improve student learning in mathematics. Effective CIA, TPD and leadership are key elements identified by research in improved student and teacher attitudes and performance. The project uses lesson study as a professional development model to implement research-based practice. ITQ funds will supplement funds from the Department of Mathematics and Statistics at Northern Arizona University, Coconino County Arizona Regional Support Center (AZRSC), seven Coconino County public school districts, and the Arizona Teacher Enhancement Collaborative (FUSD) to initially support 30 teachers from seven school districts to build capacity of mathematics education. Thirty additional teachers will be added in each subsequent year. Project activities will include needs assessment at the school level to focus collaborative practice for each team, graduate course work in mathematics education, and site-based professional development centered around improving student achievement through curriculum, instruction and assessment alignment. Together, project partners will design, implement, and manage a regional 3-year initiative, which will build and sustain capacity for increasingly effective K-16 mathematics education in Northern Arizona.

Project Description

Needs and Intended Outcomes

Arizona's Coconino County is unique in its geographic and cultural diversity. It includes the Grand Canyon, Lake Powell, the San Francisco Peaks, and the western region of the Navajo Reservation. As the second largest county in the United States, much of it is sparsely populated and isolated. Many students begin their school days after lengthy bus rides, some as long as one an hour. The economies of these communities are based on tourism, with growth occurring in minimum wage employment. 58.74% of the students in the county receive free or reduced lunch with eight of the school sites over 80%. County-wide, school districts serve a student population that is 42% Native American and 12% Hispanic. Twenty –five percent of the households speak a language other than English.

Together, the diverse cultures form more than 50% of the county's population, and by all accounts, these children are being left behind. Student achievement patterns in the county show significant gaps along ethnic and socioeconomic lines. More than 46% of Native American students, 40% of Hispanic students, and 29% of the African American students fell far below the average on the Math portion of the AIMS test for all grades. In addition, only 23% of Native Americans and a 28% of Hispanics met or exceeded the math standards for Arizona. A county wide initiative is needed to make sure these children are not left behind. The partners in this proposal share the goal of improving student achievement and teacher effectiveness in mathematics education.

Effective school reform initiatives must include focused collaboration to achieve a common goal (Cohen & Hill, 2001). Administrators and educators have indicated their commitment to improving the quality of teaching in Coconino County through both their formal letters of support (see appendices) and through informal collaboration in developing this proposal. They want to work together with the other grant partners in implementing an innovative professional development approach, Lesson Study, outlined below, in their districts and schools.

Research and practice document the impact of high quality teacher professional development on increased student achievement. Studies such as the U.S. Secretary's Annual Report on Teacher Quality (U.S. Department of Education, 2002, p. 7), and the ABOR ITQ RFP are two that define these qualities: deep content knowledge, effective planning and implementation of instruction, ability to assess learning and create a positive learning environment, effective communication/collaboration, continuous professional development, and professional ethics and commitment to education and student learning (ITQ RFP, p. 6-7). Fulfilling the "Highly Qualified" provisions of NCLB with teachers who are also highly effective instructional managers is an especially urgent need for Arizona rural schools with low student achievement. For the past several years, the number of Arizona teachers with substandard licenses, who are teaching out of their field or who are long-term substitutes has been about 10% of the statewide workforce. This number varies greatly across the state with high numbers in rural and poor districts. This proposal addresses both needs with a single system to build instructional effectiveness through focused and guided teacher-learner classroom investigation that builds mathematics content knowledge through professional conversation, observation and analysis.

A county-wide needs assessment, the *Teacher Needs and Perceptions Survey*, has been developed and administered through the Coconino County Arizona Regional Math and Science Support Center (http://www4.nau.edu/ifwfd/projects/techshare/survey/survey.asp). The survey focuses on the following topics: 1) identification of Highly Qualified Teachers and their areas of strengths and weakness, 2) teaching and assessment of Arizona Academic Standards, 3) instructional delivery, 4) classroom management, 5) K-3 reading instruction, 6) communication and collaboration,

7) school climate, and 8) the integration of technology into the classroom and curriculum. Items in this survey reflect current research on teaching practices that have a positive effect on student achievement (Achey Cutts, 2000; AASPA 1995; Bender, 1999; Burke, 1999; ETS, 1999; IETTI, 1996; Jones, 1995; Marzano, 2003; Neff, 2003; Redalen, 1998; Stigler and Heibert, 1999). In addition to needs indicated by student achievement data, this survey will be used to determine staff development needs of K-12 educators in schools and districts throughout Coconino County. The survey will assist in the development of a comprehensive Professional Development Plan and guide these organizations in providing meaningful professional growth experiences for all county educators.

The AZRSC activities will complement other comprehensive professional development projects underway through the Educational Services Department of the Coconino County Superintendent of Schools office. These staff developers are members of the Professional Development Leadership Academy (PDLA), and are committed to supporting projects that provide comprehensive, teacher-centered, intensive professional development throughout the county. All county initiatives arise from a commitment to the National Staff Development Council's Standards for Professional Development, which reiterate the Arizona Professional Standards for Teachers. Additionally, these principals are the foundation of the plans that all districts are completing for compliance with the Professional Development provisions NCLB. Both the survey and training provided to representatives from all districts are supported by the PDLA. This comprehensive approach supports the sustainability of this proposal and integrates these activities within the school community.

Aligning curricular standards and objectives to instruction and assessment ensures more effective, results-driven professional development (NRC, 2001). Districts and schools that have adopted NSF-supported standards-based curricula are most successful in their reform efforts (http://www.project2061.org/tools/textbook/matheval/default.htm). Numerous studies underscore the power of using exemplary NSF developed curricula for helping students learn mathematics, particularly for those students who have a history of poor achievement in mathematics (Ben-Chaim, D., Fey, J., Fitzgerald, W., Benedetto, C., & Miller, J., 1998; Lapan, Reys, Barnes, & Reys, 1998). However, alignment alone does not guarantee the success of a professional development effort in mathematics. The Third International Mathematics and Science Study **(**TIMMS), the largest, most exhaustive, cross-cultural study ever carried out on mathematics and science education (Stigler & Heibert, 1999) concludes that curriculum materials alone do not ensure student success. Another essential component of the alignment process will be to help teachers become familiar with and adept in using these standards-based curricula.

Several Coconino County districts have undertaken extensive curriculum mapping projects, but in some cases, these are not integrated into the actual daily practice of teachers. In order to impact student achievement, teachers need to develop models of effective implementation through intensive study and reflective practice. The Lesson Study model is predicated on this process by empowering teachers to become the instructional leaders of their classes, not the passive presenters of "canned" curriculum. The model's emphasis on student behavior and outcomes provides the context for meaningful assessment of individual student progress and the motivation for teachers to adjust their instructional strategies to meet these needs. The Lesson Study model requires that teachers use the results of formative and summative assessments to select lesson topics, and the course content will reference state and national standards in reviewing curricular outcomes. These elements are the basis of lasting leadership from the content area teachers. This leadership is essential in Arizona's rural schools, where administrators all too often stay only a year or two at a single school or district.

Seven schools in Coconino County are either in the Arizona Learns "Underperforming" category or have not made "Adequate Yearly Progress" as required by NCLB. Most of these schools show significant weaknesses in mathematics achievement at one or more grade levels. They are anxious to review and revise their School Improvement Plans, demonstrating to the Arizona Department of Education Solutions Teams who will be conducting site visits this winter that they have plans to address their weaknesses. This initiative supports that required improvement with training that is systemic, standards-based, and supportive of teacher empowerment.

Our project goal is to create a sustainable, county wide professional development initiative where curriculum, instruction and assessment alignment works in concert with quality teacher professional development within the existing leadership and professional development structures within the county's school districts. This capacity building model for mathematics achievement is diagrammed below in Figure 1.

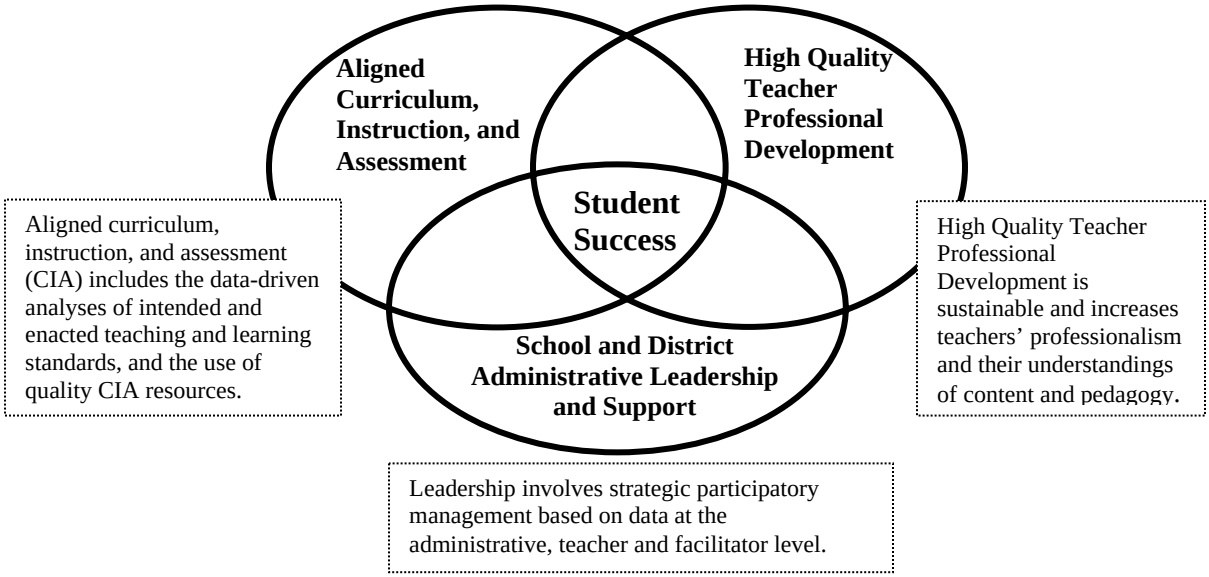

Figure 1: Capacity Building Model for Math Achievement

The capacity building process outlined in Figure 1, above, illustrates the elements that are essential for successful professional development implementation. Lesson Study, and this capacity-building process, meets the Arizona Board of Regents' goals for Improving Teacher Quality by providing the most current and effective content and instructional strategies as identified by research, improvements in student learning, and best practices, expanding leadership skills and opportunities for teachers and principals in order to encourage and support systemic reform, addressing national and state standards, and incorporating solutions identified by research and best practice that effectively meet those needs.

Lesson Study has received national attention as a result of the TIMMS study and the subsequent publication *The Teaching Gap,* lauding the teacher reflection process as having "the potential to solve what has been identified as a major problem in U.S. education . . . the gap that exists between educational policymakers and classroom practice" (Stigler & Hiebert, 1999, p. 155). The recent National Research Council (2001a) publication *Adding It Up: Helping Children Learn Mathematics* endorses Lesson Study, saying "through lesson study groups, teachers' engage in a very

detailed analysis of mathematics, of students' mathematical thinking and skill, of teaching and learning (p. 395)" and that "working directly on improving teaching is their means of becoming better teachers (p. 397)".

In Lesson Study, teachers learn and practice all of the components of the mathematics achievement capacity building model in an essential and authentic way. As members of a team they actively participate in these elements:

- studying achievement data and classroom indicators to identify achievement gaps that they want to address,
- researching curriculum, instruction and assessment resources that target these needs,
- participating in targeted professional development that focuses on content and effective instructional strategies,
- reflecting on the improved teaching and learning of the targeted areas,
- sharing their findings with other educators.

This process empowers teachers by supporting their active participation in all the elements and allowing them to focus on local needs. The process illustrates the essential features of effective and sustainable professional development (NRC, 2001b). These activities:

1. Use the teacher-student learning connection as a criterion for the selection and design of TPD.
2. Embed TPD in the specific content of the student curriculum.
3. Integrate examination of student learning, using multiple sources of evidence into TPD.
4. Include attention to student learning in TPD associated with the implementation of curricular and instructional innovations.
5. Reference both formative and summative evaluation of TPD to student learning.

New Mexico's MathStar project, where this projects' principal investigator worked for two years (Hovermill et al., 2003; MathStar, 2003), serves as an important example of the success of Lesson Study in communities and geographical areas similar to Northern Arizona. These teacher educators and researchers have indications of higher than expected student achievement in a 100% free lunch district with large numbers of ELL students. The following data (see Table 1) documents the impact of full-school implementation of lesson study in two middle schools in Gadsden Independent School District. Other schools in the district had teams implementing this reflective process as well. Although these schools showed growth as well, building a school-based culture of reflective practice seems to have additional benefits (Wiburg et al., 2003).

Table 1: Mathematics achievement gains in Gadsden School District Middle Schools

	2000 – Math Grade Median Percentages	2001 – Math Grade Median Percentages	Gains in Percentile Points
State-New Mexico	48.7	51.4	2.7
District-GISD	33.0	39.4	6.4
Gadsden Middle School	34.9	42.7	7.8
Santa Teresa Mid School	31.8	41.1	9.3

Procedures and Timeline

The Department of Mathematics at Northern Arizona University has partnered with the Arizona Regional Math and Science Support Center, Coconino County Educational Services, Coconino County Superintendent of Schools, Fredonia USD, Flagstaff USD, Maine Consolidated

USD, Williams USD, Tuba City USD, and Page USD in an effort to implement and manage a Mathematics Lesson Study across Coconino County. MAT 601: Seminar in Mathematics Education - Reflecting On/In Mathematics Education is a 3 credit hour, graduate-level university course focusing on mathematics teacher education. This professional development model presents a powerful framework for collaboratively researching and revitalizing the mathematics teaching and learning that occurs in classrooms, schools, and districts.

The AZRSC consists of a Director, Linda Neff (Co-PI), who works for the Coconino County Superintendent of Schools, and a representative from each district in the County. The AZRSC meets on a monthly basis to plan, coordinate, and deliver professional development support services to LEAs in the following areas: 1) recruiting and retaining highly qualified teachers, 2) plan, coordinate, and deliver support services to LEAs in implementing State Board-approved Arizona Academic Standards by Grade level, and 3) to assist schools in acquiring nationally researched, scientifically based subject matter and effective instructional practices in all K-12 critical content areas with a focus on mathematics and a subsequent emphasis on Science.

Working with the AZRSC team and the district PDLA teams, we have recruited teacher teams from each district to take the MAT 601 course during Spring 2004. Jeff Hovermill and Carol Howald will team teach the MAT 601 course. The AZRSC is funding the initial stages of the program by paying the tuition costs for one team of three from each district, in order to initially train teacher leaders in each district on the curriculum, instruction, and assessment alignment, and Lesson Study components of our capacity building model. At the same time, administrators and community members from each district are being updated on the importance of holistic vision, collaboration, and support in mathematics achievement for deep impact and sustainability to result. When funding is received from ITQ in the Spring of 2004, the work plan timeline outlined in Table 2, below, the will be put into effect to build capacity and sustainability in all the partnered districts in the Coconino County.

Table 2: Work plan for Coconino County mathematics education capacity building

Project Phase	Description	Schedule	Personnel	Estimated Task Hours
I. Pilot Study	Arizona Regional Math and Science Support Center (AZRSC) funds 1 team of 3 people from each district to take MAT 601 (3 credit hours) during the Spring of 2004 to learn about Lesson Study and the mathematics education capacity building model. FUSD funds 4 teams from Flagstaff Unified School District. 30 teachers and 7 district leaders take the course.	January 2004 – May 2004	Jeff Hovermill	
			Carol Howald	
			Linda Neff	AZRSC part time salary
II. Summer Mathematics Education Courses	All of the participants from each district, who took MAT 601 in Spring 2004 will take MAT 599: Leadership in Mathematics Education (3 credit hour course) to deepen their ability to help implement and guide all components of the capacity building model. Tuition is waived as an in-kind contribution by NAU. Stipends paid by ITQ and AZRSC. Course materials and travel expenses paid by AZRSC. Formative evaluation occurs.	July 2004	Jeff Hovermill	7 days
			Carol Howald	7 days
			Linda Neff	4 days plus part time salary
			37 participants	$300 stipend per teacher
III. Lesson Study	ITQ and AZRSC pay one team from each district and four teams (10 teams total) in	Fall 2004 Spring 2005	Jeff Hovermill	12 days

	Flagstaff USD a stipend for their work. ITQ pays for one district representative (7 districts). ITQ pays PIs for facilitation and guidance in the form of a stipend for two PIs and a course buy-out for one PI each semester. AZRSC pays part time salary for Linda Neff to work on project management. NAU preservice teachers participate with inservice teacher teams and learn reflective practice skills.		Carol Howald	12 days
			Linda Neff	24 days plus AZRSC part time salary
			37 participants	$300 stipend per teacher per semester.
IV. Summer Mathematics Education Courses	30 new teachers, coming from each district in Coconino County will take MAT 601 (3 credit hour course) to learn about Lesson Study and the mathematics education capacity building model. Tuition is waived as an in-kind contribution by NAU. Stipends paid by ITQ and AZRSC. Course materials and travel paid by AZRSC. Yearly Evaluation occurs.	July 2005	Jeff Hovermill	7 days
			Carol Howald	7 days
			Linda Neff	4 days
			30 participants	$300 stipend per teacher.
V. Lesson Study	Year 2: ITQ and AZRSC funds pay 10 new teams in Coconino County a stipend for their work. AZRSC pays for travel to support teacher professional development. ITQ pays for one district representative (7 districts). School districts incorporate Lesson Study into their professional development plans so that their previous teacher teams can continue this form of professional development. ITQ pays PIs for facilitation and guidance in the form of a stipend for two PIs and a course buy-out one PI each semester. AZRSC pays part time salary for Linda Neff to work on project management. NAU education students continue involvement.	Fall 2005 Spring 2006	Jeff Hovermill	12 days
			Carol Howald	12 days
			Linda Neff	24 days plus AZRSC part time salary
			67 participants	$300 stipend per person for new teachers per semester
VI. Summer Mathematics Education Courses	30 new teachers, coming from each district in Coconino County will take MAT 601 (3 credit hour course) to learn about Lesson Study and the mathematics education capacity building model. All of the participants from each district who participated in Lesson Study during the 2005-2006 school year will take MAT 599: Leadership in Mathematics Education (3 credit hour course) to deepen their ability to help implement and guide all components of the capacity building model. Tuition for each course is waived as an in-kind contribution by NAU. AZRSC pays for teachers' course materials and travel. Stipends paid to District Leaders and Project Investigators by ITQ. Yearly Evaluation occurs.	July 2006	Jeff Hovermill	7 days
			Carol Howald	7 days
			Linda Neff	4 days
			60 participants	$150 stipend per teacher
VII. Lesson Study	Year 3: ITQ and AZRSC funds pay 10 new teams in Coconino County a stipend for their work. AZRSC pays for travel to support teacher professional development. ITQ pays stipends for one district representative (7 districts). School districts incorporate Lesson Study into their professional development plans so that their previous teacher teams can continue this	Fall 2006 Spring 2007	Jeff Hovermill	12 days
			Carol Howald	12 days
			Linda Neff	24 days plus AZRSC part time salary

	form of professional development. ITQ pays PIs for facilitation and guidance in the form of a stipend for two PIs and a course buy-out one PI each semester. AZRSC pays part time salary for Linda Neff to work on project management. NAU education students continue involvement.		90 participants	$300 stipend per person for new teachers
VIII. Summative Evaluation	Principal Investigators finalize qualitative and quantitative evaluation of the project	Summer 2007	Jeff Hovermill	6 days
			Carol Howald	6 days
			Linda Neff	6 days

Composition and Role of Project Personnel

Principal Investigator Jeff Shamantha and Co-Principal Investigator Carol Howald are assistant professors of mathematics education at Northern Arizona University. They bring their experience with mathematics curriculum, instruction, and assessment and teacher professional development to this project. They will design and teach mathematics education courses, provide site-based support in reflective practice, and be responsible for project evaluation.

Co-Principal Investigator Linda Neff will serve as the Manager for the project. She will manage scheduling, team building, and coordinating the overall lesson study process across the county. She will be responsible for the budget, time management, and coordination with Co-PIs. She will train lesson study facilitators, work with district representatives to develop procedures and protocol for implementing the lesson study process within the existing professional development structure of each district. She will also design and manage the project website.

Evaluation

To evaluate the effectiveness of this project, we consider our capacity building model. To effect long-term benefits a school needs to work to toward a vision and understanding of an aligned curriculum, a faculty composed of qualified quality teacher (as described by the guidelines adopted by the ITQ Advisory Committee), and administrative and community support. The evaluation of the project will include: formative evaluation, the ongoing assessment of activities by participants, which will inform the developing nature of the lesson studies; and an overall summative evaluation of the outcomes and impacts of the project for teachers and their students each year, to inform the long-term goals of the project. To organize our evaluation efforts we will be using Guskey's Levels of Professional Development (Guskey, 2000). For details, see appendix.

Evaluation data will consist of 1) surveys by the AZRSC (see appendix), which informs us of teachers' experience, beliefs and perceptions related to a variety of issues including curriculum alignment, levels of knowledge, and administrative and community support; 2) video and artifacts of classroom lessons and associated planning and debriefing sessions, which inform us of teacher changes in their understanding of aligned curriculum and their content and pedagogical knowledge bases; 3) student pre test and post test of content knowledge in area of lesson study foci and AIMS scores over time of project, which will inform us of impact of lesson studies on student learning in different ways; 4) surveys and interviews of administrators, leadership teams and teachers concerning the culture of professional development within the schools and impacts of the project, which will inform us of perceived changes in teacher quality and administrative and community support; and 5) field notes of the project staff reflecting all three areas.

Dissemination and Sustainability

The nature of lesson study implies a de facto dissemination of learning among the faculty within a school or district. Effective involvement of pre-service mathematics teachers indirectly disseminates this work to other schools as well. In addition to this, teachers and project staff will be supported to share the effects of their work at local conferences such as the Arizona Association of Teachers of Mathematics. Research lessons and lessons learned will be available via the web for professional development workshops at school sites. Survey data will by used by the AZRSC for planning county wide professional development needs and possible opportunities. Mathematics education faculty will make use of the evaluation of the program and the assessed needs of the teachers to fine-tune teacher preparation activities. Results will by presented at colloquia at Northern Arizona University and at meetings of the Arizona Council of Teachers of Mathematics.

The collaboration built within the structure of lesson study is a mainstay of the sustainability of this project. Within a three-year timeline and the current level of support indicated by local schools, lesson study will be embedded in school and district professional development plans and within teacher practice. By placing this work within the existing professional development structure of each district, and working with district representatives to develop procedures and protocol for implementing the lesson study process within career ladder and leadership team structures, the project staff and collaborating partners has built a framework to sustain the project after the life of the grant.

References

Achey Cutts, P. (2000). *Connecting Technology with Brain Research*. Cedar Falls, IA: Area Education Agency 7, Educational Services.

Allen, R. (2003). Embracing Math: Attitudes and Teaching Practices are Changing – Slowly. *Curriculum Update*, Fall 2003, ASCD: Washington, DC.

American Association of School Personnel Administrators (AASPA). (1995). *Most Critical Knowledge and Skills of Future Educator*. AASPA: Washington, DC.

Ben-Chaim, D., Fey, J., Fitzgerald, W., Benedetto, C., & Miller, J. (1998). Proportional Reasoning Among 7th Grade Students with Different Curricula Experiences. *Educational Studies in Mathematics*, 36: 247-273. Kluwer Academic Publishers: The Netherlands.

Bender, C., & Phye. G. *(1999). Star Schools Engaged Learning/Technology Assessment Tools.* Ames, Iowa: Iowa State University.

Burke, K. (1999). *How to Assess Authentic Learning*, Third Edition, Skylight Professional Development, Arlington Heights, Illinois.

Cohen, D. & Hill, H. (2001). *Learning Policy: When state educational reform works.* Yale University Press: New Haven, CT.

Educational Testing Services (ETS). (1999). *Components of Professional Practice*. ETS.

Guskey, T. R. (2000). Evaluating professional development. Thousand Oaks, CA: Corwin Press.

Hovermill, J., Wiburg, K., & Jorgenson, K. (2003). *Using Lesson Study and Technology to Improve Teaching and Learning*. Paper presented at Society for Information Technology and Teacher Education Annual Meeting: Albuquerque, NM.

Iowa Educational Technology Training Institute (IETTI). (1996). *Educational Technology Skills Inventory.* Cedar Falls, Iowa; University of Northern Iowa, IETTI.

Jones, B. (1995). *Plugging In: Choosing and Using Educational Technology*. North Central Regional Educational Laboratory, http://www.ncrtec.org/capacity/plug/plug.htm

Lapan, R., Reys, B., Barnes, D., & Reys, R. (1998). Standards-based Middle Grades Mathematics Curricula: Impact on Student Achievement. *Journal of Research in Mathematics Education.*

Marzano, R. (2003). *What Works in Schools: Translating Research into Action*. ASCD: Washington DC.

MathStar (2003). See the MathStar web site for Lesson Study tools (http://mathstar.nmsu.edu).

National Research Council (2001a). *Adding It Up: Helping Children Learn Mathematics.* Kilpatrick, J., Swafford, J., Findell, B. (Eds.). Mathematics Learning Study Committee, Center for Education, Division of Behavioral and Social Sciences and Education. National Academy Press: Washington DC.

National Research Council (2001b). *Educating Teachers of Science, Mathematics, and Technology: New Practices for the New Millennium.* http://www.nap.edu

Neff, L. (2003). *Strategies for Teaching in a One – Five Computer Classroom*, Professional Development Workshop Materials, Northern Arizona University, Flagstaff, AZ.

Redalen, E. (1998). *Elements of Instruction that are Correlated to Teaching Effectiveness and Student Learning*. Cedar Falls, IA: Area Education Agency 7, Educational Services.

Shulman, L. & Moon, J. (1995). *Finding the Connections: Linking Assessment, Instruction, and Curriculum in ElementaryMathematics.* Heinemann: Portsmouth, NH.

Stigler, J. & Hiebert, J. (1999). *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom*, The Free Press: New York, New York.

Turner, D., Molina, C., and Torres, M. (2002). *Curriculum Alignment database tool.* Southwest Educational Development Lab: Austin, TX.

U.S. Department of Education. (2000). *U.S. Secretary's Annual Report on Teacher Quality.* http://www.ed.gov/offices/OPE/News/teacherprep/index.html

Wiburg, K., Hovermill, J., Guzman, W., Hills, S., Jorgenson, K. (2002). *MathStar New Mexico Annual Report: Year 4*. Annual Report to Department of Education: Washington, DC.

Youngerman, N. (2002). When vision, not test scores, sets school priorities. *Language Arts,* 79(3), 226-228.

ITQ BUDGET REQUEST

Applicant: Northern Arizona University - Department of Mathematics and Statistics

Project Title: Using Lesson Study to Improve Teacher Quality in Northern Arizona

Principal Investigators: Jeff Hovermill, Assistant Professor, Jeff.Hovermill@nau.edu, 928-523-6897
Carol Howald, Assistant Professor, Carol.Howald@nau.edu, 928-523-6872
Linda Neff, Director of Coconino County School District's AZRSC, 226-5632

FUNCTION	AMOUNT REQUESTED (per year)	INSTITUTIONAL CONTRIBUTION	EXTERNAL SUPPORT (Note Source)
1. Personnel:			
Hovermill (7 days summer, 1 Spring semester course buy-out at 10% FTE, 12 days Fall, FTE, $45,000, ERE 38.95% academic year, 16% summer)	8984.00		
Howald (7 days summer, 1 Fall semester course buy-out at 10% FTE, 12 days Fall, FTE $44,450, ERE at 39.23% academic year, 16% summer)	8929.00		
Neff (28 days, FTE $44, 432, ERE 39.24%	4785.00		16000.00 (AZRSC)
Fringe Benefits (ERE) (described above)	8116.00		
TOTAL PERSONNEL COSTS	30814.00		
2. Participant Support:			
Tuition		Tuition Waiver	18000.00 (AZRSC & FUSD)
Materials			2520.00 (AZRSC)
Travel			
Room & Board			1440.00 (AZRSC)
Stipend (30 participants @ $300 a semester for 3 semesters, 7 district leaders/liaisons @ $1000/year)	25000.00		7200.00 (AZRSC & FUSD)
3. Professional and Outside Services			
4. Staff Travel (2 trips to Phoenix for ITQ evaluation with ABOR, 1 trip to state conference)	700.00	2160.00	2160.00 (AZRSC)
5. Materials & Supplies ($225 duplication materials and expenses, $200 digital video tapes, $200 poster paper, markers, computer disks)	625.00		
6. Other Operating Expenditures			
7. Total Direct Costs	57142.00	20160.00 (w/ waiver)	47320.00
8. Indirect Costs	2857.10		
9. TOTAL	**59999.10**		

Budget Justification

Personnel:
Lesson Study teams require at least 30 hours of professional development support each semester, 300 total hours for the 10 teams. All of the PI's will contribute at least 28 days of work to this project above and beyond their normal professional duties. All of the PIs will work 12 days during the Fall and Spring. Drs. Hovermill and Howald will work 7 days over the summer, since they are teaching summer courses, and Ms. Neff will work 4 days over the summer on project administration. Drs. Hovermill and Howald are listed for 19 days of ITQ funds, because this corresponds to one academic semester and one summer of work. They are requesting their other semester support in the form of a course buy-out (Hovermill in the Spring, Howald in the fall) for the semester where their teaching load is too high to provide them with the time necessary to support teacher's professional development. The course buyouts for Hovermill and Howald, described above, cost 10% of their academic year salary, plus ERE. Ms. Neff is only paid to work 10 hours per week by the Arizona Regional Support Center; she will work the additional days listed on project responsibilities. The FTE salary for Hovermill, Howald, and Neff, respectively, are $45,000, $44,450, and $44, 432. Amounts requested for these personnel are calculated based on their daily rate multiplied by the number of days they will work on this project, plus the cost of a course buy-out for Hovermill and Howald. ERE's are calculated at 39.24% for Ms. Neff, 38.94% during the academic year for Hovermill, 39.23% for Howald during the academic year and 16% for both of them during the summer.

Participant Support:
AZRSC and FUSD are working with administration from 7 Coconino County school districts to pay tuition, stipends, and materials for an initial 30 teachers to take a Spring 2004 MAT 601 course at NAU to learn Lesson Study and CIA alignment. These 30 teachers will form the core of this project and will be supported in developing the leadership abilities necessary to work with their school administrations and expand the mathematics education capacity building process to first 30 more and eventually 90 math teachers in the county. 30 teachers will receive $300 stipends each semester (Fall, Spring, Summer) of their first year in the project. $100 of this stipend will be provided for each teacher by AZRSC and $200 is requested from ITQ for a total of $18000 of stipends per year for this expense. Seven district leaders will each receive a $1000 stipend per year for their work organizing Lesson Study in their district, aligning it with their district professional development plans, and gathering and submitting project evaluation data to project principal investigators for a total of $7000 per year for this expense. All participating teachers will receive tuition waivers for summer mathematics education courses at NAU. AZRSC will pay for teachers' room and board during summer conferences.

Staff Travel:

Funds to support staff travel, totaling $700 a year are requested from ABOR for this ITQ project. This amount will pay expenses associated with project evaluation trips to ABOR and dissemination of project findings at state conferences and/or meetings. NAU Distance Education and AZRSC will pay for travel associated with visiting and supporting Coconino County Lesson Study teams.

Materials and Supplies:

Mathematics education course materials, estimated at $2100 a year, will be paid for by AZRSC. Funding for project materials and supplies, including duplication materials and expenses, digital video tapes, poster paper, and computer disks, totaling $625 a year are requested from ABOR for this ITQ project; $225 duplication materials and expenses, $200 digital video tapes, $200 poster paper, markers, computer disks.

Indirect Costs:

ITQ indirect costs for higher education institutions are designated to be 5% of the total of the requested funds. Requested funds for the categories described above totaled $57142.00. 5% of this amount brings indirect costs to $2857.10

Total Costs:

Total requested funds from ABOR for this ITQ project, including indirect costs, is $59999.10 per year.