

MEMORANDUM

To: Board of Regents
From: Board Office
Subject: Award of Federal Title IIA Professional Development Grants
Date: March 31, 2003

Recommended Action:

Approve the allocation of \$538,608 in federal Title IIA funds to six projects from independent colleges, community colleges, and Regent universities that provide professional development for K-12 teachers.

Executive Summary:

Administered by the Board Office	The Board Office functions as the state agency for higher education in Iowa that oversees administration of <i>No Child Left Behind - Title IIA</i> federal program that provides funds on a competitive basis to qualified colleges and universities that they may provide professional development opportunities to teachers in K-12 education in the state.
Collaboration with Iowa Department of Education	In consultation with the Iowa Department of Education, Board Office staff prepared a Request for Proposals that supports curricular initiatives within the state in line with <i>No Child Left Behind</i> legislation.
Advisory Panel of Educators	Eight proposals that requested \$717,933 were received by the Board Office and reviewed by a panel of educators representing Regent universities, independent colleges and universities, community colleges, K-12 education, and the Iowa Department of Education.

Strategic Plan:

The Title IIA program, like its predecessor programs, contributes to meeting portions of the Board's Strategic Plan, especially Key Result Areas (KRA) 2 and 4:

- ◆ KRA 2 — Provide access to educational, research, and service opportunities within the missions of the Regent institutions.
- ◆ KRA 4 — Meet the objectives of the Board and Institutional strategic plans, and provide effective stewardship of the institutions' state, federal, and private resources.

The Title IIA program is an interface for Regent universities, independent colleges and universities, community colleges, and K-12 education (Strategy 4.4.2.0).

Background:

Program History

Since the early 1980's, the federal government, through the Elementary and Secondary Education Act, has provided funds to state agencies for higher education for colleges and universities that they may offer professional development for teachers in elementary and secondary education.

The latest reauthorization is known as *No Child Left Behind* and took effect in January 2002. As its name implies, the primary emphasis of programs under the Act is on students and their achievement. This program is contained in Title II of the Act, and over the years has had varying emphases. The current program offers professional development in the basic disciplines.

In Iowa, the program's focus is on those curricular areas designated by the governor and legislature in House File 2272: mathematics, science, and reading. Because there have been funds available for reading, the program currently emphasizes mathematics and science.

Requests for Proposals

Board Office staff develop a Request for Proposals (RFP) annually, in consultation with curriculum specialists in the Iowa Department of Education and an advisory panel of educators assembled by Board Office staff. Guidelines, goals, and procedures for the program are outlined in the RFP and distributed to presidents, grant officers, and other interested individuals within Regent universities, independent colleges and universities, and community colleges.

Review by Advisory Panel

An advisory panel of educators representing the major segments of education within the state reviews proposals. Their evaluation of the proposals, adherence to federal and state guidelines, and a federal concern for equitable geographic distribution in the state are used to select the proposals for funding. The Advisory Committee makes its recommendations to the Board of Regents based on their assessment of the factors and what will be best for the State of Iowa.

Analysis:

Funds Available
Total \$546,085

The competition for FY 2002 Title IIA funds includes \$543,443 for project activities. Additionally, unencumbered FY 2001 Eisenhower Professional Development Program funds in the amount of \$2,642 are available to augment the funds available for the competition.

Advisory Committee Process

The Title IIA Advisory Committee reviewed the eight proposals in March and recommends six for funding. The total amount requested by the six projects is \$538,608, which falls within the funds available for the program.

The following projects are recommended for funding:

College/University Project	Project Director(s)	Recommended Title IIA Funding	Total Project Funds
Loras College Teaching and Learning Mathematics: A Problem Solving Approach	Dan Willis and Christina Nugent	\$ 89,650	\$182,622
Southwestern Community College Every Student Counts in Area 14	Chris Duree and O.J. Fargo	\$ 89,024	\$131,068
University of Iowa An Iowa Chautauqua on Kit Based Science	Robert Yager	\$ 89,997	\$168,150
University of Iowa Science and Math Inquiry Learning Enhancement	John Dunkhase	\$ 89,988	\$ 89,988
University of Iowa Science: Narrowing the Achievement Gap	Edward Pizzini	\$ 89,991	\$164,289
University of Northern Iowa University of Northern Iowa Learning and Teaching of Algebraic Thinking Institute	Karla Krueger	\$ 89,958	\$123,374
Total		\$538,608	\$859,451

Project
Descriptions

Project descriptions are attached to this memorandum, pages 4-10.



Richard P. Tieg

Approved: 
Gregory S. Nichols

Project Title — Teaching and Learning Mathematics: A Problem Solving Approach

Institution: Loras College

Project Directors: Dan Willis, Associate Professor of Mathematics and Computer Science
Christina Nugent, Adjunct Faculty in Education

Abstract

The long-term goal of this project is to increase student achievement. This will be accomplished by facilitating teachers' participation in school-based professional development. Teams of teachers will develop a Japanese-style lesson study process (a collaborative form of "action research") that make sense for their school. Project participants will develop a three-fold appreciation of problem solving: as an approach to doing mathematics, as an approach to student learning, and as a tool for professional development.

This will be the second year for the project, the fourth in a series of Loras College Institutes in Education. It will be open to kindergarten through sixth grade teachers from the Dubuque Community Schools, Dubuque Holy Family Catholic Schools, Ottumwa Community Schools, and Keokuk Community Schools. For maximum impact, we will recruit teams of teachers, with three teachers on a team, in a combination of second and first year participants. School administrators will also be engaged, but on a more limited basis.

The project will start with training for new participants in June with a four-day workshop on math content and standards, focused on the skills and knowledge needed by elementary teachers. Workshop participants will be asked to identify lessons and topics that proved especially troublesome during the previous year. The NCTM Standards and TIMSS research will be presented and discussed. Particular emphasis will be laid on problem solving as it relates to the development of both student understanding of content and teacher understanding of pedagogy. The primary textbook for the institute is *The Teaching Gap*, by Stigler and Hiebert. A miniature version of the lesson study process will be carried out during the June workshop.

During the 2003-2004 school year, first and second year participants will meet weekly with their lesson study teams for at least an hour. We will meet with the full group for four 2-3 hour sessions (twice in the fall and twice in the spring) to assist with their development of the lesson study process.

Late in the spring of 2004, the lessons that have been "polished" during the year will be shared at the second annual Lesson Study Fair on the campus of Loras College. Around the same time, participating teachers will meet with us to reflect on the project.

Qualitative and quantitative assessments will be used to monitor the progress of teachers and students throughout the program. Before and after problem-solving assessments will be used. Each teacher will fill out a behavior rating scale on 3-5 students in his or her classroom. A before and after attitude survey will be given to teachers and to students. Each team will develop an assessment plan aligned with the Comprehensive School Improvement Plan (CSIP) in their building.

The project will engage 30 new teachers and 15 teachers continuing from the first year. The lesson study process is more effective when more people in a building participate. Therefore the participants from Dubuque will be concentrated in a small number of buildings.

Priority will be given to schools with the greatest need (i.e., Title I schools and schools with a high percentage of students on Free or Reduced Lunch.)

Project results will be disseminated regionally and nationally over the Web and through NCTM meetings and publications by the workshop organizers and participants.

Project Title — Every Student Counts in Area 14

Institution: Southwest Community College

Project Directors: Chris Duree, Vice President of Instruction

O. J. Fargo, Director of Educational and Media Services, Green Valley AEA

Abstract

Southwestern Community College (SWCC), in cooperation with Green Valley Area Education Agency (AEA) with training support from the University of Northern Iowa (UNI) through the Department of Education (DE), intends to include 3 math staffs (grades 6-8) and principals of identified high-need school districts (LEAS) and 4 additional LEAs in providing and implementing Every Student Counts (ESC) strategies. The goal of the project is to increase teacher math proficiencies and 8th grade student achievement, specifically that of the low socioeconomic (SES) students within that population. Area 14 schools have never participated in the process.

The focus, grades and emphasis were determined by consultation and data analysis with all districts in the area as well as Iowa Test of Basic Skills and Education Development (ITBS and ITED) and Iowa Comprehensive Academic Measurement (ICAM) math scores. The math discipline was selected based on the schools within the region that are considered "at-risk" by the DE (failure of math goals for two consecutive years); relatively low levels of teacher math preparation and certification and student scores. Of the three required math-testing grades, the 8th grade area has consistently been the lowest in each of the schools as well as the entire region. 6th and 7th grades are included as the research shows that inclusion of a single grade has little impact. The emphasis on low socioeconomic students (SES) is based on a 27% difference in test scores between the SES population and other students in the cohort group as opposed to 19% for the area as a whole.

Based on the above data and needs, Every Students Counts was identified as the methodology to use because of its scientific research base, previous success data and methodology. Much of the preliminary discussion, data gathering, planning and identification were done with all schools in the area prior to knowing of the existence of the Title II-A grant. However, the infrastructure, training opportunity and funding were and are not available to do any implementation.

The LEAs for the grant population were chosen based on their grant-identified poverty status, previously identified CSIP and annual goals, math performance on the ITBS and DE classification as a school in need of assistance.

In addition to the activities of the grant proposal, it is also planned that the teachers involved, with their collective backgrounds in elementary and secondary settings, will eventually provide a solid nucleus of highly qualified teachers who will not only continue the successful strategies in their own classrooms but will also disseminate these strategies to other members of their staffs as well as those of non-participating schools.

SWCC and the partners will provide two highly qualified and experienced math instructors to function as consultants in the targeted grade levels and provide them specific Every Student Counts training arranged through the DE to deliver the strategies to the districts with additional support from two high implementing teachers. During the summer of 2003 and throughout the year the consultants will receive training from members of the UNI math faculty involved in math teacher preparation.

A Ph.D. math professor from the teacher preparation department of Graceland University who is chair of the Division of Math and Science will also take the training and implement it with his students in order to assist with the mentoring in at least one of the LEAS.

Nodaway Valley, a high implementing school, has agreed to allow the use of at least one of their instructors and her classroom to serve as a demonstration and lab site.

The two consultants, in cooperation with SWCC and high implementing teachers, will provide professional development to and mentor the high-need LEAs' math instructors in grades 6-8 to insure that the ESC strategies are properly applied, implemented and evaluated. The consultants will also collect and report teacher implementation data and evidence of academic improvement at the LEA and regional level.

The training provided to teachers will consist of 8 days of professional development (3 during the summer and 5 throughout the school year) interspersed with implementation, internal and external mentoring, teacher interaction, data-gathering and reporting at a building and regional level. Non-participating schools will provide a viable control group given the sociology of the area.

Regardless of continued funding from this source in ensuing years, the partners will continue the project through its three-year cycle and attempt to include other districts in subsequent years.

Project Title — An Iowa Chautauqua on Kit-Based Science

Institution: The University of Iowa

Project Director: Robert Yager, Professor of Science Education

Abstract

The intended outcome of this proposal is to provide teachers with additional tools to help meet their districts' annual and long-term goals of increasing student achievement in science. Most districts within the merged Area Education Agencies (2, 6, and 7) have goals based upon improving student scores on the ITBS/ITED and additional measures assessing applications, higher problem solving, and process skills. A great percentage of the questions on these measures indicate student understandings about scientific inquiry. Other questions measure conceptual understanding and other assessed domain. Studies by the National Science Foundation (NSF) show that using science kits increases student comprehension and retention. This Chautauqua workshop series will help prepare teachers of grades K-8 for the effective use of commercial science kits in their classrooms as they work to meet their long-term and annual goals.

The following components have been identified as necessary for the successful realization of the intended outcome of this application:

- ◆ Teachers will participate in an in-depth study of Inquiry and the content standards as they are presented in the National Science Education Standards.
- ◆ Commercial kits from FOSS, STC, and Insights will be available for teachers to examine and pilot.
- ◆ Teachers will develop criteria to be used to evaluate and/or modify science kits.
- ◆ Many elementary and some middle school teachers do not have science endorsements. With this in mind, post-secondary science educators will be available to help with content knowledge.
- ◆ Teachers will pilot selected kits in their classrooms.
- ◆ Results of the pilots will be shared in fall and spring meetings as well as on an Internet based web page.
- ◆ ITBS/ITED scores of students involved in kit-based programs will be analyzed and compared to scores of students not involved in kit-based programs.

This program will be based upon the Chautauqua model, which will have teacher teams involved in 10 days during the summer followed by three-day sessions in the fall and spring. Teachers will also interact with each other as well as university staff and scientists via an Internet based web page devoted to this project.

Project Title — Science and Math Inquiry Learning Enhancement

Institution: The University of Iowa

Project Director: John Dunkhase, Coordinator, Secondary Science Teacher Education Program

Abstract

The University of Iowa Science Education Department, in collaboration with UI science and mathematics faculty, Grant Wood Area Education Agency (GWAEA) and five eastern Iowa School Districts, is submitting this proposal to improve science and math teaching and student achievement.

The goal of the SMILE (Science, Math Inquiry Learning Enhancement) Project is to: "Increase the achievement in science and mathematics of all 5-8 students in participating LEA's and accelerate the math and science achievement growth of students who qualify for Free and Reduced Price Meals (FRPM), through a program consisting of an intensive summer workshop, academic year lesson-study groups and onsite implementation assistance from project staff'.

The Project objectives are to:

1. Improve the quality of instruction of participating 5th -8h grade math and science teachers, with an emphasis on improving content knowledge and pedagogical practice; and
2. Strengthen support for, and understanding of best practices in math and science education by participating LEA administrators, including principals, curriculum coordinators and superintendents

Key project activities include:

- ◆ An intensive summer workshop for 37 math and science teacher leaders and school administrators on:
 - Inquiry based teaching of math and science
 - NSES/NCTM standards
 - Learning Theory and Constructivism
 - Iowa Teaching Standards
 - Lesson-Study Group processes for improving teaching and Teaming
 - Facilitating/supporting teacher adoption of standards based curriculum and pedagogy
- ◆ Ongoing Lesson-Study Groups during the academic year led by the summer workshop teacher leaders and involving an additional 115 teachers
- ◆ On-site implementation assistance from GWAEA Science and Math Consultants, UI science education faculty and UI content area faculty
- ◆ Online discussion groups via a list serve developed to support teacher development of inquiry strategies

The project Evaluation Plan will enable us to document project processes and outcomes. Included among the outcomes are:

- ◆ Enhanced student performance/achievement, with particular focus on achievement gaps related to income and race/ethnicity
- ◆ Enhanced instructional practice and teacher content knowledge
- ◆ Enhanced student disposition toward math and science as a result of participation in inquired instruction.

A number of products will be produced and disseminated throughout the state. Among these are:

- ◆ A Project Report documenting the workshop and lesson-study processes employed and teaching/ learning outcomes achieved
- ◆ Sample lessons in math and science illustrating an inquiry methodology
- ◆ Presentations at state and regional professional conferences

Project Title — Science: Narrowing the Achievement Gap

Institution: The University of Iowa

Project Director: Edward L. Pizzini, Professor of Science Education

Abstract

Project SNAG: Science-Narrowing the Achievement Gap is a collaborative effort of AEAS, LEAS, and the University of Iowa. SNAG targets high poverty, low socio-economic, and special education students. The goal is to provide continued professional development to a select group of K-10 teachers, who have had vast professional development already in 'best' practices. The assumption is that professional development enhances instruction, resulting in increased student achievement. The project will include a Pre-Institute, Summer Leadership Institute, and Academic Year Follow-up. Specifically, emphasis will be placed on teaching/learning theory,

inquiry and problem solving, collaborative learning, integrated science, and inclusion strategies appropriate for ALL students. The 'trainer of trainers' model of professional development will be utilized with teacher-leaders playing a pivotal role. Utilizing matched pairs and comparison groups, the 'students of study' will be monitored to determine what, if any, changes occur in their science achievement scores. SNAG is innovative in that it embeds action research in professional development project through its evaluation plan.

Project Title — University of Northern Iowa Learning and Teaching of Algebraic Thinking Institute

Institution: The University of Northern Iowa

Project Director: Karla Krueger, Curriculum and Technical Project Specialist

Abstract

The University of Northern Iowa, Price Laboratory School Mathematics Faculty will provide a professional development institute focusing on algebraic thinking across the grade levels. In order to accommodate both elementary and secondary mathematics faculty, a combination of elementary and secondary Price Lab School faculty will lead the institute. Both have experience as teachers and as faculty of UNI teaching both future and in-service teachers, which will enhance their ability to lead this seminar. The summer institute will consist of one week (40 hours) of contact time in summer 2003, held at AEA 9. The follow-up sessions will be two days in the fall with participants at UNI Price Laboratory School (16 contact hours), 4 two-hour sessions via the ICN (8 hours) and a 2 day follow up session at AEA 9 in Summer 2004 (16 hours), totaling 80 contact hours.

The institute will use the algebraic framework and research-based instructional strategies explained in National Council of Teachers of Mathematics *Navigating through Algebra Series* (2001) as a primary resource. In addition to the *Navigating through Algebra Series*, the institute will provide training on using the calculator as a tool to visualize mathematics, implementing the Harvard Balanced Assessment tasks as a on-going source for instructional decision-making, analyzing video vignettes of teachers modeling the research-based instructional strategies in authentic classrooms and designing an action research plan to be aligned with the Iowa Teaching Standards, future School Professional Development plans, and current CSIP.

A two-day follow-up session will be conducted at Malcolm Price Laboratory School. This session will focus on research-based strategies for algebraic thinking in K-12 mathematics classrooms and sharing their progress toward completing their action research project.

Throughout the academic year, four ICN two-hour sessions will be conducted. The content of these sessions will include: further study of strategies to develop algebraic thinking, support in using technology as a tool to visualize mathematics, preparation for the participants' videotaped lesson, reflection of the videotaped lesson, discussion regarding the use of the Harvard Balanced Assessment materials for instructional decision-making and "seeing" student thinking, and support for their action research projects.

The participants will be videotaped in their own classrooms as they implement research-based teaching strategies that help students build conceptual understandings of algebra. This will occur during the spring 2003. The participants will analyze their own classroom videos. These videos will be a source for self-reflection and improvement. Up to three participants will be selected for the production of high-quality videos for use in subsequent professional

development opportunities. In addition to the video element, supporting text materials will be provided to participants for use in informing their instruction, use in action research and for further professional development

During the summer 2004 a two-day follow-up session will include further study of the elements described in the above paragraph. In addition participants will contribute to development of materials to be used in dissemination and in future professional development activities. Participants will contribute lesson plans that proved effective and contributed to raising student test scores. They will also contribute to the Math DVD content and participate in the final evaluation component.

Participants will be supported financially by granting tuition for four graduate credit hours through the University of Northern Iowa as well as room, board, and travel costs. In addition, participants will receive educational materials to use in their classrooms and in future professional development. The materials include but are not limited to: *NCTM K-12 Navigating through Algebra* series, curricular materials on integrating the calculator as a tool in learning algebra, the Mathematical Content and Process Scoring Software Program: A Multidimensional Approach to the Scoring of Balanced Assessment Tasks, Iowa Teaching Standards DVD, and a Math DVD which will be produced as a result of this grant.