

PROJECT SUMMARY

Name of Institution (Include Branch/Campus and School or Division) The University of Louisiana at Monroe
Address (Include Department) Department of Mathematics, 700 University Avenue, Monroe, LA 71209
Principal Investigator(s) Maribeth Olberding Dr. Rhonda Adams Jones
Title of Project A Model Classroom for Teaching and Learning Mathematics at The University of Louisiana at Monroe

Abstract (DO NOT EXCEED 250 WORDS)*

The ULM Department of Mathematics proposes the establishment of a model classroom for teaching and learning mathematics. Working with the University's PK-16+ Coordinator and committee members, the Department plans to redesign existing courses and to construct new courses to comply with the state's new teacher certification structure and to best meet the needs of our future teachers. The goals of this proposal are (1) to enhance the instructional resources of the Department of Mathematics and (2) to better prepare preservice and inservice teachers to facilitate student learning through a standards-based mathematics curriculum.

Mathematics courses required of elementary education majors, including existing courses and courses that will result from certification requirements, will be taught in the model classroom. Instructors for the courses will be mathematics faculty who serve on the PK-16+ Mathematics Redesign Committee and who have experience in delivering reform-based instruction. Mathematics and education faculty members will collaborate in planning their respective courses

**A Model Classroom For
Teaching And Learning Mathematics
At The University Of Louisiana At Monroe**

Table Of Contents

Cover Page	1
Project Summary	2
Table of Contents	3
The Current Situation	4
Institutional Description	4
Rationale for Project	4
Impact on Existing Resources	6
The Enhancement Plan	6
Plan of Proposed Project	6
Evidence of Potential to Achieve Recognized Eminence	9

A MODEL CLASSROOM FOR TEACHING AND LEARNING MATHEMATICS AT THE UNIVERSITY OF LOUISIANA AT MONROE

THE CURRENT SITUATION

Institutional Description

The University of Louisiana at Monroe (ULM) is a state-assisted, multipurpose, institution of higher education that offers high quality academic and experiential opportunities to meet the academic, cultural, vocational, social, and personal needs of undergraduate, graduate and continuing education students. ULM claims more than 50,000 graduates and an annual enrollment of approximately 9,000 students, including 1,100 graduate students. The University is located in Monroe, Louisiana, and serves a geographic region consisting of 13 parishes, the largest such region served by any institution of higher learning in Louisiana. Included in this region are 173 public schools and 24 non-public schools. They serve a student population of 74,000 with 6,000 teachers. From this student population ULM draws approximately 67 % of its 9,000 students. Degree programs are offered through the Colleges of Allied Health and Rehabilitation Professions, Business Administration, Education and Human Development, Liberal Arts, Nursing, Pharmacy, and Pure and Applied Sciences.

The proposed project solicits resources for the Mathematics Department in the College of Pure and Applied Sciences. The Mathematics Department, with a faculty of 19, provides instruction for students enrolled in all of the University's colleges; however, the students who will most greatly benefit from the funding of this proposal will be the preservice elementary education majors from the College of Education and Human Development. Undergraduate enrollment in the College of Education and Human Development is 1,200; 460 of these students are majoring in elementary education.

Working with the University's PK-16+ Coordinator and the members of the PK-16+ Advisory Council and Redesign Committees, the Department of Mathematics plans to redesign existing courses and to construct new courses as needed to comply with the state's new teacher certification structure and to best meet the needs of our future teachers. Funds secured from this proposal will be used to establish a model classroom for mathematics instruction for elementary education majors.

Rationale for Project

Well over a decade ago, through the combined efforts of both mathematicians and mathematics educators, the national reform movement in mathematics was initiated. Pioneers in that movement recognized the enormity of the task and the broad-based commitment and support that would be needed to make advancements in the teaching and learning of mathematics. Thankfully, those efforts have endured and have even expanded. We have learned much about how people learn and about the benefits of high standards, effective teaching methods, and challenging assessments. Public attention is now focused on education reform, and it is repeatedly cited in polls as a primary area of concern for citizens and policy makers in America.

The evolution of the reform movement in Louisiana parallels the scenario noted in the preceding paragraph. Beginning in the late 80's and early 90's, programs targeted teachers, students, administrators, and public sector partners. Focus has been placed both on K-12 and on post-secondary education. Results of studies have supported the premise that the most direct

route to improved student achievement is through improved teaching. In 1999 the Louisiana Board of Regents and its Board of Elementary and Secondary Education formed the Blue Ribbon Commission for the purpose of improving teacher quality in Louisiana. The Commission was composed of thirty-one state, university, district, school, and community leaders. It was given the charge to recommend policies that would lead to a cohesive PK-16+ system to hold universities and school districts accountable for the aggressive recruitment, preparation, support, and retention of quality teachers who produced higher achieving K-12 students. The commission met from September 1999, to May 2001 and proposed recommendations that were adopted by the Board of Regents as their Guidelines for Teacher Preparation Programs.

Louisiana's PK-16+ initiative exists as a formal entity on each campus that offers teacher preparation programs. It functions under the leadership of a PK-16+ Coordinator with support from Advisory Council and Redesign Committee members representing the University faculty and students, local education agencies, parents, and the community at large. Dr. Dorothy Schween is the PK-16+ Coordinator for The University of Louisiana at Monroe. Under her direction, the members of the Redesign Committee for Mathematics, led by Mathematics Department Chair Dr. Stephen Richters, have met to consider options to improve mathematics-related course offerings for preservice teachers. These offerings include both mathematics and education courses; both colleges are represented on the committee.

Funds for the proposed project will be used to establish a model classroom that will be utilized to provide mathematics instruction for preservice students. The room is located in Hanna Hall, the building that houses most of the classrooms in which mathematics is taught. Included in the room will be trapezoidal tables that will facilitate the use of cooperative learning strategies and computer stations with Internet capability. Funds will also be requested for the purchase of instructional manipulatives and storage units. Computer software, such as Geosketchpad, suitable for providing instruction to preservice students will be purchased as will software suitable for instruction in grades K-8. The Mathematics Department does not own or have access to a projection unit; funds will be requested for this equipment as well.

In this model classroom, designed to facilitate the delivery of standards-based instruction, preservice students will experience mathematics instruction that is worthy of replication. That is, *they will be taught as they should teach*. At present, there are three members of the mathematics faculty who teach the courses that are designed for elementary education majors. The educational background, interest, and expertise of these individuals enabled them to design these courses, including the content and the delivery of instruction. They have been co-participants with faculty from the College of Education and Human Development in I.QUEST, a training program for the integration of technology into instruction and have worked with these Education faculty members to reinforce standards-based pedagogical practices. In addition, these faculty members from the Department of Mathematics have played multiple leadership roles in the design and delivery of professional development programs for inservice teachers. These individuals will be responsible for creating and teaching the additional courses that will result from the PK-16+ charge to redesign the ULM teacher preparation program. Outcomes of preliminary meetings to evaluate the Board of Regents' directives related to teacher certification alternatives indicate that at least two new courses will be needed. Further, it is the desire of these instructors to offer special sections of the introductory college algebra course required of all ULM students for preservice students. Should this grant be funded, it will provide the opportunity for preservice students to experience a coherent mathematics curriculum, both with regard to content and the delivery of that content.

facilitate student learning through a standards-based mathematics curriculum. In order to achieve these goals, the following objectives and related information are included:

To increase collaborative efforts between Mathematics and Education faculty
At The University of Louisiana at Monroe, College of Education and Human

Virginia Powell, and Jane Wampler. These individuals have selected the equipment to be ordered for the model classroom and will jointly plan for its instructional use.

It is anticipated that, upon notification of funding, equipment can be ordered in June 2002, and the model classroom can be set up prior to the fall semester of 2002. The PK-16+ time frame for redesigning teacher preparation programs has undergone several adjustments and is not currently finalized. It is likely, however, that implementation of the new programs will occur in January 2003. It is true that the greatest benefit by preservice students will be seen with

applications will not be restricted to teachers of preservice students or even teachers of mathematics. The University of Louisiana at Monroe promotes and recognizes outstanding teaching and acknowledges its responsibility in helping its faculty achieve excellence in that critical area.

The Teaching and Learning Resource Center will schedule training sessions in the classroom for the fall of 2002. Should planned projects be funded, the academic year sessions

Impact on Curriculum and Instruction

Impact on Faculty Development

Discussions have already begun regarding the possibility of team teaching mathematics methods and content courses for preservice teachers. Should this proposal be funded and the model classroom established, it would be a catalyst for the realization of the team teaching arrangement. Such an arrangement would be beneficial for faculty from both colleges, providing them the opportunity to learn from each other and to gain a greater appreciation for the knowledge and expertise of each group. The greatest beneficiaries, however, would be the

Display Units

A white board, along with two projection screens and two overhead projectors on carts, will be added to the set up of the classroom. The white board will serve both as a screen onto

Communication

Full Internet connectivity for all stations is paramount for maintaining a technologically current lab. The use of a wireless technology gives students exposure to the latest technology while also keeping the workstations streamline. The importance of being able to contact people and places throughout the world and exchange information cannot be overestimated. Total access for all stations would not only enable students to follow a teacher-led demonstration using the Internet, but it would also allow students to pursue individual avenues of research. A wireless Internet hub is requested to configure the classroom in this fashion.

(budget page 21)

\$3,200.00

Instructional Materials and Software

Participation in technology-related training programs and experience in providing instruction to preservice and inservice teachers contributed to the selection of the items requested below:

Software appropriate to the needs and wants of educators using the lab should be obtained in a timely and complete f

Furniture

The requested furniture will facilitate the establishment of a setting that will accommodate cooperative learning activities. Mathematics educators favorably recognize collaborative learning practices, but current campus resources are less than ideal for conducting such instructional practices. The 12 trapezoidal tables and 36 chairs will be placed to form hexagonal tables. At each hexagonal table there will be two computers for every six students. In addition, two utility tables will be needed to house the printers. Rectangular tables were considered but were deemed to be less conducive to the establishment of the intended cooperative learning setting.

(budget page 21)

\$4,788.00

Reform-based teaching practices require attention to planning and organization. Storage equipment for manipulatives can contribute to a better-organized classroom and more efficient delivery of instruction. Manipulative storage sets with carts and a locking storage cabinet are being requested in order to organize and to secure instructional resources.

(budget page 21)

\$1,300.00

Equipment on Hand for Project

Current equipment available in the Mathematics department was described in a previous section. Note was made that the equipment is limited and is being fully utilized. Equipment purchased in the summer and fall of 2001 will be available for use in the model classroom. One of these purchases is a color scanner capable of transforming text, graphics and transparencies into computer readable data; this will enable students to incorporate various media objects into presentations or projects. A laminating machine that preserves samples of preservice and inservice teachers' work is also readily available. The number of computers being requested, along with the number of computers already owned by the mathematics department, does not exceed the maximum allowed for certain site licenses owned by the department. These licensed programs will be made available on the workstations in the model classroom. Manipulatives acquired from previous LaSIP grants will also be incorporated into the classroom.

Equipment Housing and Maintenance

The equipment will be housed in an existing room in Hanna Hall on the campus of the University of Louisiana at Monroe. Initially the equipment will be covered by warranties. When these expire the Mathematics Department is required to enter into a maintenance agreement with the University's Graphic and Technical Services. This contract is paid from the department's budget at an approximate cost of \$4,000 per year.

FACULTY STAFF AND EXPERTISE

Co-directors of the proposed project are Maribeth Olberding and Rhonda Adams Jones. Mrs. Olberding, an instructor in the Mathematics Department who teaches preservice students, serves on the PK-16+ Mathematics Redesign Committee and has been instrumental in planning

the revision of existing courses and the development of new courses to comply with certification directives and to best meet the needs of ULM students. Mrs. Olberding has been a co-director and an instructor for several professional development programs delivered to regional inservice teachers. Her educational background is in mathematics education as are her interests for future endeavors. She recently organized for ULM students a chapter of Kappa Mu Epsilon Mathematics Honor Society and serves as the chapter's sponsor. Dr. Jones is an Associate Professor of Mathematics and Education and the director of the University's Teaching and Learning Resource Center. She was the director of the LaCEPT-funded Campus Renewal Project, through which special mathematics and science courses for preservice teachers were designed; she has been the director and/or instructor for many professional development projects for area inservice teachers; she serves on the ULM PK-16+ Advisory Council and Mathematics Redesign Committee; and she was the director of the December 2000 campus-based mini-conference that served to review and plan for the changes regarding teacher preparation programs.

Dr. Stephen Richters is the chairman of the ULM Department of Mathematics. Dr. Richters has been supportive of reform efforts and has granted faculty release time for work in this area, has offered special classes to assist inservice teachers in their certification efforts, has conducted technology workshops for inservice teachers, and has supported the development and approval of classes for preservice students. Dr. Richters is the chair of the PK-16+ Mathematics Redesign Committee, and he is a past member of the TLRC Advisory Committee. He will oversee the installation of the equipment for the model classroom and will schedule its use for courses, University faculty workshops, and inservice professional development projects.

Virginia Powell and Jane Wampler are members of the mathematics faculty who deliver instruction to preservice students. They have been instructors and/or directors of professional development projects for inservice teachers and have been instrumental in the redesign efforts for preservice mathematics courses. They contributed to the design and selection of resources for the model classroom, and they will work together with Mrs. Olberding to design lessons and activities for the courses that will be housed in the classroom. Powell, Wampler, and Olberding have themselves participated in a training for technology integration program and have all served as instructors for the National Faculty.

Dr. Dorothy Schween is the ULM PK-16+ Coordinator. Dr. Schween assumed this position in January 2001 and has worked to organize the various redesign committees and to oversee their work as it relates to the teacher preparation program. She has participated in the mathematics redesign meetings and is aware of the options for courses and course delivery that have been put forward. Under her leadership, a final decision will be made regarding requirements for certification as a preservice teacher.

ECONOMIC AND/OR CULTURAL DEVELOPMENT AND IMPACT

Relationships with Industrial/Institutional Sponsors

The proposed project will strengthen existing relationships with local education agencies in that the facilities will be used for classes and workshops for inservice teachers. A special effort will be made to utilize the facility for faculty of the University's two professional development schools and to establish a relationship with the participants in the Teacher Cadet program. This facility, given that it is being designed for the delivery of reform-based mathematics instruction, will enhance future grant proposals. Two such proposals are being

considered now. Requests from area teachers have revealed a need for two programs—one for K-8 teachers of mathematics and one for secondary teachers. The Louisiana Systemic Initiatives Program has a request for proposals scheduled for release in October that will accommodate these requests. Notification of funding regarding this model classroom proposal should be received prior to the deadline for the submission of the proposals mentioned above.

Promotion of Economic Development and/or Cultural Resources

The sad condition of education in Louisiana has been cited as reason for businesses, industries, and individuals to choose to not locate here. In particular, the delta region, which is served by The University of Louisiana at Monroe, has received notable attention as being the poorest in the nation. Any efforts that result in the enhancement of educational opportunities for

BIBLIOGRAPHY

Council for a Better Louisiana. *The Essential Profession: A Report on Teachers and Teaching in Louisiana*. Baton Rouge, LA: Council for a Better Louisiana, 2000.

Leitzel, James R. C., ed. *A Call for Change: Recommendations for the Mathematical Preparation of Teachers of Mathematics*. Washington, D.C.: Mathematical Association of America, 1991.

Louisiana Board of Regents. *Louisiana QUEST: Quality Education for Students and Teachers: A Proposal from the State of Louisiana to the United States Department of Education, Teacher Quality Enhancement Grants Program, Title II, Higher Education Act*. Baton Rouge: Louisiana Board of Regents, 2000.

National Commission on Mathematics and Science Teaching for the 21st Century. *Before It's Too Late*.

BOARD OF REGENTS SUPPORT FUND
ENHANCEMENT PROGRAM, FISCAL YEAR 2001-02
BUDGET
PROJECT YEAR (CIRCLE ONE):

1 2 COMPOSITE

Title of Proposal :

II. BUDGET JUSTIFICATION:

17	1	Multimedia Instructional Materials including content specific software, CD-Roms and Videos	\$3,000.00	\$3,000.00
18	12 sets each	Books for the integration of Literature into the Mathematics Classroom	\$2,000.00	\$2,000.00
19	12 sets each	Manipulatives	\$2,000.00	\$2,000.00
Furniture			Totals =	\$6,088.00
20	12	Trapezoidal Tables	\$135.00	\$1,620.00
21	1	Locking Storage Cabinet	\$300.00	\$300.00
22	2	Utility Tables	\$100.00	\$200.00
23	4	Manipulative Storage Sets including Cart	\$250.00	\$1,000.00
24	36	Maroon Chairs with no arm rests	\$79.00	\$2,844.00
25	1	Maroon Chair with arm rest	\$124.00	\$124.00
Maintenance-Departmental Match			Totals =	\$20,000.00
26	20	Computers and Printers	\$200.00	\$4,000.00
27	1	Installation		\$16,000.00
Shipping			Totals =	\$2,279.13
28	1	3% of \$75,971.00		\$2,279.13

III. FUTURE FUNDING PLAN:

We do not anticipate needed a future funding plan. As stated previously above, the Mathematics Department along with the University has plans already set for the maintenance of the equipment once warranties have expire.