To: Joel Tohline, Interim Director
LSU Center for Applied Information Technology and Learning

From: Barbara Fuhrmann, Dean, College of Education
Frank Neubrander, Professor, Department of Mathematics
Frank Cartledge, Associate Dean, College of Basic Sciences.
Director, Center for Scientific and Mathematical Literacy

Re: CAPITAL Faculty

LSU CAPITAL will catalyze and support interdisciplinary research and teaching at LSU in IT-intensive areas like Biological Computing, Materials Science, Wireless Technologies, Virtual Commerce, and Geoinformatics. In addition, LSU CAPITAL will make strategic investments that support Louisiana's Vision 2020, whose first and most important goal is

> ``*to re-create our state as a Learning Enterprise, a rich, diverse, complex organism in which all businesses, institutions, and citizens are actively engaged in the pursuit of knowledge. Louisiana will be a place where knowledge is valued as primary currency, where that knowledge is deployed to improve the profitability and competitiveness of business, the efficiency and accountability of government, and the quality of life of its citizens."*

One of the obvious stumbling blocks in the pursuit of these goals is the present lack of high quality K-12 mathematics and science instruction in many of Louisiana's schools (which is part of the poor state of Louisiana's public education system in general). Without a public education system that imparts to its students the skills and training necessary for them to qualify for or retain advanced, technology-based jobs in a globally competitive job market, the Governor's Vision 2020 as well as the Legislature's IT-Initiative are destined to fall short of their goals. Without drastic improvements within the public school system it will be impossible to attract many new IT-intensive companies to Louisiana and to retain those few who are presently doing business in the state. For us to better prepare students to enter the modern IT-intensive workplace, LSU cannot begin worrying about the students only after they have enrolled at LSU. As long as only 6% of the state's eighth-graders score at the proficient or advanced levels on the mathematics part of the LEAP test (compared to over 30% on comparable tests in many other states), it will be a losing struggle to attract a sufficient number of qualified undergraduate students to IT-intensive fields of study at LSU. To be effective, any IT initiative that is aimed at driving economic development in Louisiana has to address this problem and find ways and

Mathematics, LEAP 2001 Grade 8				
% of Students at Each Achievement Level				
Advanced	**Proficient**	**Basic**	**AB**	**U**
2	4	39	23	32

strategies to transform Louisiana into one of the national leaders in K-16 science and mathematics instruction.

We would like to suggest that LSU CAPITAL create a faculty position for a research scientist/mathematician from an IT-related field who is willing and able to direct, coordinate, and implement K-12 related IT-initiatives. We envision an individual who would probably have a joint appointment in Education and Mathematics or Science, and who would be associated with the Center for Scientific and Mathematical Literacy (CSML). CSML is a joint venture of the Colleges of Arts & Sciences, Basic Sciences, Education, and Engineering charged with promoting activities across campus that lead to professional development for both pre-service and in-service teachers.

We envision activities associated with this new faculty position to include:

- Organization of IT-related professional development academies for LSU faculty and K-12 educators who wish to transform visions of high quality teaching and learning into daily practice (see attachment about existing PT-NET initiative)
- Recruitment and support of LSU students interested in careers in math and science teaching (see the attached page for one such initiative)
- Grant writing to obtain resources for K-12 outreach activities with an IT emphasis
- Support for educational components of Center-type grant proposals that have an IT focus
- Research related to effective uses of information technologies in K-12 education

The National Science Foundation has already endorsed the need for special attention to information technology in the math and science educational enterprise through creation of the Information Technology in Science Center for Learning and Teaching at Texas A&M University. We believe the activities noted above would provide a solid foundation for the specific IT-related goals of LSU CAPITAL, would strengthen LSU's PK-16 initiatives, and would certainly be in line with Vision 2020's main goal ``*to re-create our state as a Learning Enterprise.''*

We appreciate your consideration.

Sincerely,

Barbara Fuhrmann
Frank Cartledge
Frank Neubrander

Manpower to Educate Louisianans for the Information Age

A crucial step in preparing young Louisianans to participate in high technology areas is to overcome the dramatic shortage of well-trained teachers of mathematics and science. Since only a few students in the traditional teacher preparation pipelines study secondary science or mathematics education, the state has created teacher practitioner and other alternate certification programs to attract mid-career individuals into the teaching profession. However, despite all efforts, the numbers of qualified mathematics and science teachers still fall far short of needs.

A potential pool that is far larger consists of the undergraduate mathematics and science majors at our colleges and universities. The LSU Department of Mathematics and the departments in the College of Basic Sciences, along with the Department of Curriculum and Instruction in the College of education, propose to tap this pool by devising curricula that give students the coursework associated with a traditional mathematics or science major, while at the same time providing high quality teacher preparation, including early and continuing experiences in public schools, that will lead to secondary certification. These departments are already very active in providing specialized coursework aimed at both pre-service and in-service teachers and are following a national trend of increasing involvement by university science and math departments in K-12 education.

With the support of a faculty position funded through LSU CAPITAL, the new certification program could be managed jointly with the Center for Scientific and Mathematical Literacy (CSML). In collaboration with the College of Education, individual departments would be responsible for curriculum development, but CSML would be active in student recruiting, fund raising for scholarships, grant writing for resources for course development, etc. CSML has an advisory board internal to LSU, but for management of this program would expand its board to include representatives from the Department of Education, the BESE Board, the Board of Regents, and local school boards.

We are convinced that large numbers of mathematics and science students would take advantage of the opportunity to have teaching certification that represents a career path that many have not considered prior to their enrollment in the university. For instance, 283 B.S. degrees were granted at LSU in the 2000-2001 academic year in a biological science, with many of these students not aware of the meaningful contributions they might make through a teaching career. The University of Texas at Austin, through its UTeach Program, has been very successful in similar recruiting among math and science majors. We believe a similar approach would be effective at LSU and perhaps throughout Louisiana.

PT.NET—Preservice Teachers Networking Environments through Technology

In the fall of 1999, Louisiana State University, in partnership with Southern University and the East Baton Rouge Parish School System, was awarded $1,369,588 over three years from the United States Department of Education, to implement the development of full scale improved programs in both universities to facilitate the development of technology-proficient teachers for grades 1-8. Through PT.NET, university faculty in the arts and sciences and in professional education have developed IT-intensive skill in integrating technology into instruction; faculty have engaged in cross-disciplinary collaboration to ensure that preservice teachers see technology appropriately used in both their content and their pedagogy courses; pre-service teachers have worked in conjunction with university faculty and elementary teachers to create technologically enhanced instruction; and both university faculty and preservice teachers have participated in hands-on learning experiences with modern technology in elementary schools. During 2000-2001, a national evaluation of over 230 funded projects identified LSU's program as one of the four exemplary programs under the Department of Education's initiative. PT.NET is featured in a video that has received national exposure and acclaim.

Unfortunately, in 2001, the United States Congress chose to consolidate many individual federal programs into block grants awarded to state departments of education, thus ending future funding for similar projects. PT.NET continues to be highly successful at LSU, but only elementary teaching has been directly impacted. Support for continued development of this initiative, focusing on mathematics and science at the secondary level, could be developed through CSML, under the direction of a research scientist/mathematician from an IT-related field.