APPENDIX K

Sample Abstracts Previous Projects

Application Abstracts from sample projects funded by MHEC ITQ Grants

Note: some former grant program were 36 months in length, while others were 18 months long

Salisbury University,
Eastern Shore Partnership for Real-World Information Technology in Science Using Science Visualization
Project Director: Edward Robeck

The Eastern Shore Partnership for Real-World Information Technology in Science is a collaborative project between Salisbury University, the three Lower Eastern Shore Local Education Agencies – Somerset, Wicomico and Worcester Counties – and local businesses and agencies. In the proposed project the partnership will focus on a specific form of information technology; namely science visualization (SVs). SVs have become an indispensable tool in STEM research and professions in that they allow STEM workers to visualize complex phenomena. SVs include still images, animations and simulations developed with techniques ranging from digital photographs to complex data-driven supercomputing products. Just as SVs help clarify phenomena in STEM work, they can help students comprehend complex science concepts. In this project, the partners (including 22 teachers) will explore the potential of SVs to enhance inquiry-based science instruction and their use in problem solving (e.g., understanding the inner workings of the human body, modeling large storms, and making automobiles safer.) In the ESPRIT Science SV Project, the partnership will also expand to include the Peninsula Regional Medical Center, the Eastern Shore Regional GIS Cooperative, and K & L Microwave. The work of these partners includes the use of SVs and will help provide real-world applications of SVs related to content in the Maryland Voluntary State Curriculum. This project will provide high-quality professional development regarding how an important information technology tool – science visualizations – can be used in innovative inquiry-based science instruction and in ways that support student achievement while highlighting important aspects of STEM research and careers.

Community College of Baltimore County
Elementary Summer Math & Technology Institute (ESMTI)
Project Director: Linda Grongberg-Quinn

Three cohorts of twenty Baltimore County Public Schools (BCPS) teachers recruited from low-performing schools will participate in turn in a two-week institute over three summers involving innovative "hands-on" math techniques and technology to increase student success as demonstrated on the Maryland State assessment. This will be followed by progressive enrichment activities, with earlier cohort members mentoring later members.

Faculty members from the Community College of Baltimore County (CCBC) and the College of Notre Dame in Maryland will conduct workshops designed to strengthen math teachers' content mastery (in algebra, geometry, statistics, probability, number relationships, and computation), pedagogy, and classroom management skills toward the ultimate goal of improving student achievement.

CCBC faculty will use Kidspiration, Inspiration, Kid Pix, and other software with the BCPS teachers to provide resources to improve visual learning, build graphic organizers, improve comprehension, problem solving, and critical thinking skills of their students.

Workshops led by Notre Dame faculty members will feature a variety of technology techniques, including the ePortfolio, to assist with classroom management strategies. BCPS teachers will work individually or collaboratively to begin to gather artifacts for the ePortfolio, which will be used in follow-up sessions and a culminating mini-conference. This conference will include round tables and poster presentations in which ESMTI participants can share model lessons and math units that will include information from the summer institute. The final products will also be placed on education websites and public television featuring education resources.

University of Maryland, College Park
ITQ: Preparing Literacy Coaches for Low Achieving Middle and High Schools
Project Directors: Wayne H. Slater & Linda Coleman

In meetings with Baltimore City Public Schools (City Schools) and University of Maryland (UM) professionals, we agreed that a Phase 4 literacy coach initiative would be appropriate for City Schools to address persistent literacy deficiencies across subject matter areas in their lowest performing middle and high schools. Beginning in 2006, Phase 1-3 literacy coach initiatives have been successfully implemented in Montgomery County and Prince George's County Public Schools. We intend to construct the proposed City Schools initiative using the design and expertise found in these established programs. The University System of Maryland/Maryland Higher Education Commission (MHEC) approved Post-Baccalaureate Certificate in Literacy Coaching is an eighteen-graduate-credit program designed to provide advanced preparation in literacy instruction (reading and writing) grounded in theory-driven, research-based best practice. The City Schools first cohort of twenty highly qualified middle and high school teachers will be recruited to serve as literacy coaches in their lowest performing secondary schools. Released from their regular assignments, these coaches will provide leadership and work collaboratively across subject matter areas with individual and small groups of teachers, subject matter departments, school faculties, and administrators to ensure the delivery of research-based best practice in reading and writing to assist low performing schools meet struggling pupils' literacy needs, their success on Maryland State Assessments, and schools' adequate yearly progress goals. We will use formative and summative assessments to evaluate the efficacy of this proposed initiative and pupil assessment data compared to baseline to determine literacy coach impact on pupil achievement.

Frostburg University
ITQ/Training Opportunities in Physics & Physical Science
Project Director: Francis Tam

The ITQ/TOPPS Project at Frostburg State University (FSU) is designed to provide high quality professional development opportunities for high school and middle school science teachers across the state to gain Physics content area knowledge, develop their teaching strategies, integrate instructional technology and attain the "Highly Qualified" status. The ultimate goals are to enhance classroom teaching and learning effectiveness, and improve student achievement in Physics and Physical Science.

This inquiry-based and active-oriented Physical Science professional development project is research-based, hands-on, and mind-on. It is modeled after the nationally-proven successful program of the Physics Resource Teaching Agents (PTRA) developed by the American Association of Physics Teachers (AAPT) PTRA Project. A unique feature of TOPPS is mentoring and tutoring by FSU Physics and educational professionals, as well as PTRAs trained by AAPT. The TOPPS project will support a cohort of 20-24 Teacher Scholars for a sustained professional development of three years, using the curriculum developed by AAPT. Instruction will be given in a six-day residential intensive workshop at Frostburg State University, including evening educational and mentoring activities. There will also be two weekend "follow-up" meetings per year so participants can share experiences in the implementation of workshop activities, content and concepts in the participants' classrooms.

The Teacher Scholars will be able to earn up to nine graduate credits in this three-year grant program. The grant will cover either tuition and fees or a stipend, in addition to room, board and travel. With its content-rich subject of Physics, the TOPPS Project will help the teacher Scholars to gain content knowledge and science process skills to meet the NCLB "Highly Qualified" status by passing the required PRAXIS Tests or completing the graduate course work.

Johns Hopkins University
Mathematics & Science Teacher-Leaders Institute
Project Directors: Francine Johnson and Anila Asghar

This project proposes to establish a program of professional development for K-8 teachers in mathematics and science content, to improve student learning and achievement in the classroom. The content delivery will be linked to challenging national and state standards for students. This collaborative effort will draw on the expertise of the faculty of the Johns Hopkins University (JHU) Graduate Division of Education, the JHU Krieger School of Arts and Sciences, the JHU Whiting School of Engineering, and Baltimore City Public Schools.

The three-year project will target teams of three to four teachers from K-8 schools in Baltimore City (a cohort of 18 teachers for mathematics and 18 teachers for science). Through the delivery of high-quality instruction in mathematics and science, team taught by Arts and Science or Engineering and Graduate Education faculty, these teachers will be able to serve as Mathematics Teacher-Leaders or Science Teacher Leaders in their respective schools. The project takes a content-applications approach to providing a school team with enhanced understanding of mathematics and science content that will enable them to be mathematics of science teacher leaders. They will initiate, implement, and strongly support the mathematics and science professional development of colleagues, and help to institutionalize effective mathematics and science learning and teaching for all within their school and their district. In order to prepare the participants as teacher-leaders, we will also address the requisite knowledge, tools and methodologies related to supporting the professional development of adults.

Morgan State University
Pathway to Highly Qualified (PHQ) Mathematics Teachers: A Collaborative Partnership Between Baltimore County Public Schools (BCPS) and Morgan State University
Project Directors: Anasuya Swamy and Kevin A. Peters

In an effort to increase the teacher quality of secondary mathematics teachers in the Baltimore County Public Schools (BCPS), Morgan State University's Center for Excellence in Mathematics and Science Education (CEMSE) and Morgan's Professional Development School (PDS) Program, and BCPS propose a collaborative partnership that will assist secondary teachers to achieve "highly qualified status" as outlined in "No Child Left Behind" (NCLB). The purpose of the partnership is to develop a professional development track that will lead to the full certification of 30 secondary mathematics teachers. The pool of 30 teachers will work at 13 targeted schools within BCPS.

The goals of the project include:

- Providing collaborative (BCPS, CEMSE, and PDS) professional development activities for 30 secondary mathematics teachers;
- Developing a pathway for secondary mathematics teachers that will led to full certification and highly qualified status; and
- Increasing the number of highly qualified secondary mathematics teachers at 13 targeted low- achieving schools in the BCPS.

The activities to accomplish these goals will include the following:

- Summer Mathematics Institute for teachers during the summer of 2007;
- Collaborative professional development for teachers during 2007 and 2008;
- Graduate and undergraduate level pedagogy courses taught through Morgan State University;
- PRAXIS I and II technical assistance for teachers; and
- Collaborative professional development activities through BCPS, CEMSE and PDS.

An Advisory Committee comprised of key members of Morgan State University and Baltimore County Public Schools' staff worked together to develop this project. Each partner has made a commitment to the success of this program and will play a key role in achieving its goals.

University of Maryland, Baltimore County
2008 & 2009 Teacher Quality in Biology (TQB) Programs at UMBC
Project Director: Lasse Lindahl

The 2008 and 2009 Teacher Quality in Biology (TQB) Programs at UMBC will prepare Maryland high school science teachers to give top quality instruction in modern biology. These inquiry-based instructional programs, which are sponsored by the UMBC College of Natural and Mathematical Sciences with the Department of Biological Sciences and Education, will support two learning communities of up to 20 TQB Teacher Scholars for a total of up to 40 participants for two consecutive sustained professional development programs in molecular and cell biology, genetics, biochemistry, evolutionary theory and laboratory skill development. Each program will include three phases: 1) After-school preparatory sessions with related on-line instruction and discussion; 2) Activity-based, nine-day "Hands-On" Current Biology Summer Lab Course at UMBC, and 3) Concluding Seminar and Poster sessions when participants present and share their final project

lesson plans to pre-service teachers and invited guests. The annual TQB Programs feature approximately 100 contact hours or comprehensive instruction, attendance-based stipends, textbooks, custom manuals, and the opportunity to earn three graduate credits in biology. Campus housing will be available to eligible participants during the summer. In addition to expanding and fortifying the knowledge base of up to 40 participants in the core learning goals for biology, the programs will benefit their current and future students, as well as their colleagues. Action research conducted by participants in their classrooms will help to maximize the effectiveness of the instruction and aid program evaluation. Classroom observations by education coordinators will provide ongoing support and additional follow-up evaluation.

Johns Hopkins University
Developing Curriculum Leaders through Blended Course Delivery
Project Director: Edward Pajak, Professor and Chair

This project represents the second phase of a collaborative effort between Johns Hopkins University and the Baltimore County Schools. The project is intended To improve middle and high school student achievement in the areas of mathematics, science, and reading/literacy, as measured by the Maryland State High School Assessments. In an earlier funding cycle (ITQ Phase 4), four graduate-level courses were successfully developed and offered to middle and high school administrators in Baltimore County that equipped them with the content knowledge and pedagogical skills they need to become effective leaders of curriculum in their schools.

In this new phase, for which funding is requested, course content and learning activities will be posted on-line and delivered by faculty in a combined face-to-face and virtual format. This change to blended delivery is based on feedback from participants, who (1) reported that their schedules sometimes made attending class in real time challenging, but (2) recognized that working and sharing information and ideas with colleagues in the classroom added value to the learning experience by expanding their professional networks and improving group problem-solving skills. This second phase of the project will also be enhanced by providing participants with an opportunity to develop electronic portfolios that document the plans they develop for mobilizing their schools around the purpose of improving student success in terms of the Core Learning Goals.

McDaniel College
Mentoring Young Writers Project
Project Director: Sharon Craig

The Mentoring Young Writers Project is a collaborative professional development program that partners McDaniel College's Education and English Departments with Deer Park and Franklin Elementary Schools in Baltimore County and Sandymount Elementary School in Carroll County. Using a three-phase model, McDaniel College instructors provide intensive, sustained professional development in writing to a cadre of 40 teachers and principals in partner schools. In the initial phase, participants enroll in a research-based graduate course and conduct school-based study groups to support application of course content. During the second phase, course instructors and writing mentors embed onsite support in the classrooms, creating opportunities for demonstration

lessons, team planning, observations, coaching, and consultation. The program culminates with a joint summer institute designed to facilitate dialogue about student data, school writing programs, and continuous professional development.

The Mentoring Young Writers Project goals build on the school system's current writing initiatives with 6+1-Trait Writing and align with national, state, and local standards for English Language Arts. The professional development structure accommodates school-based professional learning communities and promotes active inquiry into writing knowledge, performances, and dispositions from the teachers' and students' perspectives.

Project evaluation components include formal and informal writing measures administered over multiple data collection points. Ongoing analysis of quantitative and qualitative assessments will provide data to (a) monitor program effectiveness, (b) measure student achievement, and (c) improve classroom writing instruction. An integrated study component will allow the project director to study fourth-grade writers' achievement over the implementation period.

University of Maryland, College Park
Enhancing Language Competency for Spanish and French Teachers
Project Director: Perla Blejer

This project is a collaboration between the School of Education, Second Language Education and Culture Program (SLEC) and the College of Arts and Humanities, School of Languages, Literatures, and Cultures (SLLC) at the University of Maryland College Park and Prince George's and Montgomery County Public Schools. The nine-credit graduate-level program lasts 18 months and will improve the language, cultural, and educational competencies of a total of 25 Spanish and French teachers. Such a sustained program will have a significant impact on the participant's classroom practices (Garet et al., 2001: Richards & Farrell, 2005.)

There are three content components: 1) one course in Spanish or French language and culture taught in the target language with content of high interest such as contemporary culture, literature of film; 2) a class in Spanish or French grammar/writing focusing on specific areas intended to enhance grammatical and writing abilities; and 3) an education course emphasizing issues relevant to foreign language (FL) teaching, such as cultural competence, oral language skills, and content-based instruction. A one-day follow-up conference provides participants with a venue to share their final products.

The five goal areas of the American Council on the Teaching of Foreign Languages (ACTFL) Standards will be addressed: Communication, Culture, Connections, Comparisons, and Communities. Technology is integrated into the courses themselves and at lease one culture course has a structure blending electronic and face-to-face formats. Several Maryland Teacher Technology Standards are targeted, including Standard I; Standard II; Standard IV; Standard V; and Standard VII.