NO CHILD LEFT BEHIND GRANT ABSTRACTS 2009-2010

Following is a list of sub-grants funded by the Arkansas Department of Higher Education through the federally funded No Child Left Behind grant program. The purpose of the grant funds is to improve the quality of teaching in Arkansas. The grant notifications were distributed in March 2010. For more information and to receive a registration form, contact the project director of the funded project using the email provided below.

Arkansas State University **$80,142**
Craighead County
Project Title: Nanotechnology and AR, Africa and Rice (Nano-Rice)
Contact Information: Dr. Cynthia Miller – camiller@astate.edu

The **"Nanotechnology" project** will provide a professional development program for 30 grade 6-10 science teachers given during two weeks in July 2010, with 45 contact hours and 15 follow-up hours in the 2010-2011 school year. The follow-up sessions will include two 6-hour Saturday workshops and two classroom mentoring visits to observe participants teaching their nanotechnology 6E lesson plans with students. This project will improve participants' Life, Physical and Earth science content knowledge as related to nanotechnology topics.
The **"AR, Africa and Rice" project** will provide a professional development program for 30 grade 7-10 science, mathematics and social studies teachers given during two weeks in the fall 2010 semester, with 45 contact hours and 15 follow-up hours in the 2010-2011 school year. The follow-up sessions will include two 6-hour Saturday workshops and two classroom mentoring visits to observe participants teaching their nanotechnology 6E lesson plans with students. This project will improve participants' science, mathematics, and social studies content knowledge and their ability to develop/implement multidisciplinary thematic units of study.
Participants in both projects will receive stipends of $800 for full attendance and classroom materials valued at $150.

Arkansas State University **$58,649**
Craighead County
Project Title: Proportional Reasoning
Contact Information: Ms. Jannie Trautwein – jhuffman@astate.edu

Proportional Reasoning will use the curriculum of Teaching Fractions and Ratios with Understanding , 2nd Edition by Susan Lamon as well as other standards-based materials. The class will feature innovative activities and teaching methods that promote sense-making and powerful reasoning with fractions and ratios. It crosses traditional boundaries to include many of the elements that are integrated in the teaching/learning enterprises: mathematics and science content, teacher understanding, student thinking, teaching methods, instructional activities and assessment. It is meant to push participants beyond the limits of their current understanding of rational numbers, to challenge them to refine and explain their thinking and to make sense – without falling back on rules and procedures they have relied on throughout their lives.

A intensive workshop will be held July 21-30, 2010. There will be two follow-up sessions during the 2010-2011 school year and attendance at the Arkansas Curriculum Conference is mandatory. One visit each semester will be made to each participant's classroom for the purpose of mentoring.

Arkansas Tech University **$74,397**
Pope County
Project Title: River Valley Integrated Curriculum Project
Contact Information: Mr Steve Zimmer – szimmer@atu.ecdu

The Math and Science Institute is offering two programs of integrated curriculum instruction for teachers of elementary and middle level students in the River Valley Integrated Curriculum Project.

Big Ideas in K-4 will focus on the use of thematic units and an inquiry based instructional pedagogy across the early childhood grades. The 7E Instructional model will form the basis of the instructional component so that all core content areas will be taught throughout the academic year. Through the use of university faculty whose primary focus is working with early childhood pre-service teachers, participants will receive instruction formulate with the latest research proven methods. In addition, the university faculty will gain invaluable associations with current educators in the field as these veteran educators begin incorporating the integrated curriculum components the university faculty present.

Data Analysis 101 for Grade 5-8 Teachers will take standards from the Arkansas Math and Science Frameworks and provide methods and strategies in how to instruct students in the proper handling of data collected to solve a problem. Problem solving is a primary focus of both the math and science curriculum. To problem solve, students must understand how to analyze information assimilated. Through this program, teachers will gain understanding of the methods of analysis that can be accomplished with and without the use of technology.

Harding University **$108,060**
White County
Project Title: Increasing Teacher Core Content Knowledge, Improving Pedagogy, Reflecting on Assessment of Student Achievement and Readying Teachers to Become Highly Qualified in Core Subject Areas through the National Board for Professional Teaching Standards (NBPTS) FY2010
Contact Information: Dr. Clara Carroll – ccarroll@harding.edu

The National Board candidate process is a high-stakes endeavor for educators. The goal of the certification process is greater core content knowledge and pedagogy resulting in improved student achievement. In partnership with the Cannon-Clary College of Education, College of Sciences, College of Arts and Humanities, the Wilbur D. Mills Education Service Cooperative and Bald Knob, Clarksville, and Rose Bud Public Schools, this project provides highly rigorous, quality graduate studies in the NCPTS

core content areas and is a respected voluntary licensure system which provides an opportunity for professional growth unlike any other for educators. The methodology includes: graduate coursework offered in 5 sessions during the summer/fall/spring session with online assignments, and twelve follow-up sessions during NBPTS candidacy period. In studies conducted with participants in the No Child Left Behind Grants of FY03-08, Dr. Clara Carroll found that Harding University is providing statistically significant research-based instruction for participants to be effective in providing the knowledge teachers need to become National Board Certified Teachers, improving teaching practices and impacting student achievement. These results were presented by Dr. Clara Carroll at the National 2005, 2007 and 2009 National Board for Professional Teaching Standards Conferences and at the 2006 and 2007 Mid-South Educational Research Association Conference.

University of Arkansas **$72,603**
Washington County
Project Title: Explorations of Math and Science
Contact Information: Ms. Lynne Hehr - lhehr@uark.edu

Explorations of Math and Science project consists of two major parts.
Part I: Three summer sessions will be held for teacher professional development:
• ***Algebra and Data Analysis for the 21st Century****:* Standards-based and content-driven, this week will provide middle level (5-9) Arkansas teachers with algebra/data analysis and technology integration. Content to be covered with include: patterns, relations & function; the language of algebra; algebraic modules; algebraic representations; analysis of change; data interpretation & probability; and benchmark testing.
• ***K-4 Physical Science Explorations****:* Content-driven and framework-based, this institute will provide primary/elementary level (K-4) Arkansas teachers with physical science content that includes: characteristics and processes of science, properties of matter, motion and force, and energy/transfer of energy. Hands-on activities with math measurement and data collection/analysis, literacy components such as graphic organizers, note-taking and storybook correlations, and technology integration will be incorporated into this institute.
• ***5-8 Explorations in Physical Science****:* Content-driven and framework-based, this institute will provide middle level (5-8) teachers with in-depth physical science content that will be integrated with the nature of science standards. This two-week institute will focus on inquiry based science lessons that will seamlessly blend math and science as part of everyday learning. High yield instructional learning strategies will also be incorporated throughout this institute.
Each of these institutes will have the possibility of being a three hour science or math graduate level course with 45 hours be conducted during the two week institutes followed by 12 hours of two one-day workshops per institute during the fall. The final three hours will occur as teachers implement the science, math, and technology strategies covered during the summer through on-campus professional development offerings, classroom visits, and dissemination of information and techniques learned to school, district, and state curriculum events.
PART II: As a continuum of PART I, two day-long workshops (per institute) and seven half-day workshops will be offered during fall '10 and spring '11 focusing on math & science content requested by participants involved with the summer institutes.

University of Arkansas at Fort Smith **$46,370**
Sebastian County
Project Title: Teach Engaging Science through language Arts (TESLA)
Contact Information: Ms. Darlynn Cast - dcast@uafortsmith.edu

Teach Engaging Science through Language Arts (TESLA) is an integrated program designed to spark student interest in science utilizing children's books. TESLA will provide teachers with the tools they need to incorporate research based language arts instructional strategies into their science curriculum. Currently, K-6 teachers are faced with the challenging task of preparing students for standards based assessment with limited instructional time to teach all content areas. This program incorporates a variety of instructional strategies that have been determined to be "best teaching practices" by educational researchers. By the end of the program, teachers will be able to incorporate inquiry based science lessons based on the 5E learning cycle into their curriculum. Additionally, they will be able to create formative and summative assessments designed to inform and drive instruction in the classroom. All lessons presented in the program will be aligned to the Arkansas State Frameworks for both science and literacy. Finally, the TESLA program will provide teachers with the resources and support needed to establish a community of life-long learners. The TESLA program will provide teachers with a two week summer immersion experience (44 hours), fall follow-up sessions (12 hours), and a spring follow-up session (6 hours).

University of Arkansas at Little Rock **$62,382**
Pulaski County
Project Title: Arkansas STRIVE 2010: Inquiry and Problem-Based Teaching Approaches
Contact Information: Dr. Jim Winter - jdwinter@ualr.edu

Arkansas STRIVE places science, math, and computer teachers from middle, junior high, and senior high schools (6-12th grades) into summer research positions or on projects in industry, government agencies, universities, research facilities, and nonprofit organizations. Teachers work with professionals in the field for eight weeks and learn how professionals solve problems facing their organizations. We support about 25 teachers per summer in our program with a variety of private and pubic funding sources. We request matching monies from the No Child Left Behind (NCLB) Program for seventeen teachers to work on research projects in the ADHE-supported Centers for Math and Science Education at Arkansas universities and at other nonprofit organizations. We also present workshops to the teachers on inquiry and problem-based teaching, and on using computers for data analysis. In addition, we help the teachers develop inquiry-based or problem-based lessons using the new skills and experiences that the teachers acquired during the summer.
The main expected outcomes are that teachers will experience real-world research and problem solving, learn methods of inquiry and problem-based teaching, and develop two inquiry-based and problem-based lessons that they will use in their own classrooms. We place the STRIVE teachers' lessons on computer CDs and give a CD to each teacher so that they have a library of good inquiry and problem-based lessons.

University of Arkansas at Little Rock **$49,656**
Pulaski County
Project Title: Authentic Materials and Backward Design: Teaching Real World Second Language Communication
Contact Information: Dr. Dave McAlpine - dcmcalpine@ualr.edu

The Department of International and Second Language Studies (DISLS) is committed to providing quality opportunities for foreign language teachers to improve both their language and pedagogical skills in order to enhance the quality of classroom instruction in Arkansas schools.
This project will focus on utilizing authentic materials as the core in backward design for K-12 courses. The intent of these sessions is to enable teachers to center their instructional strategies on what students need to know in order to be able to perform well on assessments based on real world language usage in real world contexts. Finding ways to use authentic materials appropriately requires significant attention to not only the context and the materials but also to the development of the real world tasks. Teaching in a standards-based environment requires strong pedagogical and content knowledge as well as strategies for adapting authentic materials to the proficiency level of the students. The sessions will enable teachers to apply their theoretical knowledge to the creation of level-appropriate activities and assessments.

University of Arkansas at Monticello **$58,621**
Drew County
Project Title: Fostering Algebraic Thinking
Contact Information: Dr. Donna Hunnicutt - hunnicutt@uamont.edu

The University of Arkansas at Monticello will offer a professional development project to enhance participants' ability to implement "fostering algebraic" strategies. Participants will receive instruction utilizing (1) hands-on investigation, discussion, and reflection aimed at a deeper understanding of algebraic thinking; (2) language for talking and thinking about algebraic thinking; (3) structured approaches to gathering and analyzing data about students' mathematical thinking; (4) structured approaches to discussion among teachers about mathematics, student thinking, and other issues related to teachers' practice; and (5) mathematics problems that elicit and develop algebraic thinking. Participants will analyze students' written work for evidence that students are utilizing algebraic thinking. Participants will interact with students to provide a change in the analysis to real time teaching as opposed to written work. Real time teaching will ensure that participants can facilitate the transition from understanding to fostering student thinking. Real time teaching allows the participant to deepen their understanding of students' mathematical ideas through listening to determine if the students are providing verbal evidence of algebraic thinking. Participants will move beyond the analysis of data to a systemic process for documenting the information gained through analysis. This process focuses on patterns that develop across a class of students.

University of Arkansas at Pine Bluff **$41,544**
Jefferson County
Project Title: Concepts in Math and Science for 5-8 Grade Teachers-Part 2
Contact Information: Dr. Shelton Fitzpatrick - fitzpatricks@uapb.edu

The project will facilitate activities which are aligned with Arkansas Curriculum Frameworks and national standards. The project will consist of a three-credit hour graduate course taught over fifteen (15) three-hour sessions, starting June 7, 2010 and ending June 25, 2010. There will also be in-school mentoring during the 2010-2011 school year, along with two follow-up sessions. Participants will be trained with regard to best practices and recognized teaching techniques for teaching effectiveness with low income, minority, and academically challenged 5th to 8th grade students. No Child Left Behind will be the unifying theme as teachers are taught how to better understand content areas tied to Arkansas standards and to incorporate NSTA and NCTM standards of science and mathematics pedagogy and technology use in their classrooms. Professional development activities will include, but not be limited to, a three-hour curriculum based course where the teachers may receive graduate credit, a summer program to reinforce or introduce new technology based teaching materials, and follow-ups during the school year to evaluate materials usage and teacher performance. Pine Bluff and Dollarway-Altheimer, are the targeted districts for recruiting teachers into the project.

University of Central Arkansas **$59,921**
Faulkner County
Project Title: Visualizing Natural Science Frameworks with Satellite Remote Sensing and GIS
Contact Information: Dr. Brooks Pearson – bpearson@uca.edu

This project will provide advanced training in secondary natural and earth sciences through an integrated combination of workshop and course interactions. Participants will not only learn several important aspects of earth and atmospheric sciences (physiography, radiation balance, the interaction of electromagnetic radiation and the atmosphere and land surface, atmospheric physics, atmospheric chemistry, blackbody radiation laws, etc), but they will also learn to use imagery from satellite remote sensing to visualize these frameworks-based scientific principles in their classrooms. Besides achieving mastery of the course's scientific content, participants will be able to acquire, interpret, and effectively utilize satellite imagery and digital map data to facilitate the delivery of frameworks-based content in their classrooms.
The advanced workshop will reinforce content-based learning from the beginning workshop as well as introduce new material about the two- and three-dimensional mathematics of geodesy, earth spatial referencing, and map projection. Advanced participants will also learn basic image processing which will allow them to develop lesson plans for a frameworks-based unit supported by remote sensing data analysis or visualization.

University of Central Arkansas **$67,225**
Faulkner County
Project Title: K-4 SMARTS (Science, Mathematics, and Reading Teaching Strategies)
Contact Information: Dr. Uma Garimella – ugarimel@uca.edu

The K-4 SMARTS project is a professional development program that consists of a two week summer workshop (48 hours) with a minimum of two days of follow-up during the academic year (12 hours). This is a content intensive professional development program for 30 teachers in grades 2-4. The focus is on integrating science, mathematics and literacy in elementary schools so as to increase the probability of academic success for all students. The following topics are selected based on the needs assessment data: Matter-properties and changes, force and motion; Living systems – characteristics and properties, life cycle, reproduction and heredity. In each session teacher will a) conduct science content specific integrated inquiry-based activities that are tied to the Arkansas Frameworks and involve developing 21st century skills; b) develop tailored integrated (math and literacy) science lessons using the 5-E model; and c) connect the content to STEM careers. The Crusades materials will be used as reference materials to develop this integrated science program. A sustainable professional development will be offered through two face-to-face meetings, one day UCA field trip and minimum two day follow-up sessions will provide continuous support by UCA instructors throughout the year to develop and implement lesson plans to teach STEM related lessons. Each participant will receive a kit worth $150 to implement the activities in their classroom.