

## College of Education - FY 2007 Research Abstracts

### SCHOOL OF APPLIED HEALTH AND EDUCATIONAL PSYCHOLOGY (SAHEP)

#### GIS Research and Implementation

This project will integrate the use of a statewide Geographic Information System (GIS) in the sponsor's programs by developing a centralized GIS laboratory to effectively serve as a library for geo-referenced infrastructure, facility, visitor, natural resources, financial, inventory, tourism, and other data. It will facilitate management of extensive digital data sets, transfer of data, and cooperation with outside agencies and the public. It will also identify and procure remote sensing data and integrate the GIS with remote sensing and better manage data internally as well as provide data to the public in a visual format.

**Sponsor:** Oklahoma Tourism and Recreation Department

**PIs:** Lowell Caneday

#### Resources Management Plan

The purpose and scope of the resource management plan (RMP) is to provide background information, identify the policies and goals governing the management of Lake Thunderbird and its incorporated resources, summarize the plan's components, and provide descriptive and historical information of the project. The RMP provides the basis for management of the continuing public demand to utilize Bureau of Reclamation's land and water areas. The ultimate purpose of the RMP is to establish a management framework for the conservation, protection, enhancement, development, and use of the physical and biological resources at Lake Thunderbird.

**Sponsor:** Oklahoma Tourism and Recreation Department

**PIs:** Lowell Caneday, Deb Jordan

#### Preparing Future Faculty in Psychology

Programs offered will address the career interests of OSU doctoral students interested in preparing for academic careers. Participants include students from OSU's five doctoral psychology programs housed in SAHEP in the College of Education and in the Psychology department in the College of Arts and Sciences, as well as faculty mentors and students from partner institutions (Langston University, the University of Central Oklahoma, Southwestern Oklahoma State University, Northwestern Oklahoma State University, Tulsa Community College, OSU College of Osteopathic Medicine, OU Health Sciences Psychologists).

**Sponsor:** American Psychological Association

**PI:** Sue C. Jacobs

#### Oklahoma Network for the Teaching of Psychology (ONTOP)

The grant supports the creation of the Oklahoma Network for the Teaching of Psychology (ONTOP), which will have an annual conference. ONTOP will bring together individuals involved in the teaching of psychology in Oklahoma at all educational levels (high schools, 2-year colleges, 4-year colleges, and universities). In Oklahoma, there are 47 institutions offering a degree in psychology or behavioral sciences and numerous high schools where psychology courses are offered. These institutions are spread across the 181,000 square miles of the state. The first annual conference will be held on Friday Sept 21st at the Renaissance Hotel in downtown Oklahoma City.

**Sponsors:** Association for Psychological Science, American Psychological Association, Society for Teaching of Psychology

**PIs:** Sue Jacobs (secondary)

**PIs (primary):** Shelia Kennison, Arts & Sciences

#### Fire Prevention and Safety Grants

The first study will survey individual volunteer firefighters and volunteer fire departments to create a comprehensive assessment of internet connectivity and access for individual self instruction, blended e-learning, communications for the purpose of national, state or local alerts concerning emergency responder health and safety, and reporting. A second study using the established methodology and the vetted instrument with departments that are organized with paid and volunteer firefighters commonly

referred to as combination departments is proposed. This second study will expand the current data base and provide the opportunity to make comparisons.

**Sponsor:** National Volunteer Fire Council

**PI:** Steve Edwards

### **Project CREATES**

Project CREATES conducts research on transforming teaching and learning as teachers and artists develop and deliver high-quality academic instruction infused with high-quality arts instruction for students attending high-risk schools in the Tulsa community.

**Sponsor:** Barthelmes Foundation, ArtsBridge/University of California, Irvine, Anonymous gift

**PI:** Diane Montgomery

### **Exercise as a Recreational Therapy Intervention for Older Individuals Diagnosed with Depression**

This project will evaluate the influence exercise may or may not have when delivered as a Recreational Therapy intervention to individuals admitted to a Geriatric Psychiatric Treatment Facility diagnosed with clinical depression. This project will add to the body of knowledge addressing commonly utilized interventions with specific data concerning exercise as a Recreational Therapy intervention. These findings may also provide examples of best practice exercise programs such as specific types and durations of exercise schedules for utilization with older individuals diagnosed with depressive disorders.

**Sponsor:** American Therapeutic Recreation Foundation

**PIs:** Tim Passmore, Donna Lindenmeier

### **Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR-UP)**

A comprehensive five-year program, GEAR-UP utilizes diverse public and private two-year and four-year institutions, a state agency; non-profit community based organizations, and Tulsa Public Schools. As a main objective, the program works with approximately 1,200 middle school students and encourages them to stay in school, study, and prepare for college or vocational training.

**Sponsor:** US Department of Education

**PI:** Al Carlozzi

### **The Influence of Off-the-shelf Orthotics in Knee Motion of Males and Females during Functional Activities**

Thus the purpose of this study is to investigate the effects of an off-the-shelf orthotic on knee motion in the frontal, sagittal, and transverse planes during a stop-jump and drop-jump task in male and female subjects. The objective of this research is to perform experiments to determine if orthotics are efficacious in both male and female subjects in preventing abnormal mechanics at the knee that may contribute to knee injury. We plan to accomplish the objective of this research by pursuing two specific aims: 1) establish the extent to which orthotics are efficacious in reducing abnormal knee mechanics in hyperpronated individuals during a stop-jump and drop-jump task; and 2) determine concomitantly the extent to which gender affects the efficacy of orthotics in functional activity.

**Sponsor:** Mid-America Athletic Trainers' Association (MAATA)

**PI:** Aric Warren

### **Practicum Programs**

Programs provide students with preprofessional clinical experience.

**Sponsor:** Michael E. DeBakey Veterans Affairs Medical Center

**PI:** Donald Boswell

**Sponsor:** Associated Centers for Therapy, Inc.

**PI:** Al Carlozzi

**Sponsor:** Payne County Youth Services

**PI:** Barbara Carlozzi

**Sponsor:** Perry Public Schools, Stillwater Public Schools  
**PI:** Gary Duhon and Eric Mesmer

**Sponsor:** Stillwater Medical Center (Stillwater High School), Guthrie High School  
**PI:** Tona Hetzler

**Sponsor:** Shadow Mountain Behavioral Health System, LLC  
**PI:** Jerry Jordan

**Sponsor:** Stillwater Schools & YMCA  
**PI:** Patricia Hughes

**Sponsors:** Advanced Chiropractic, Donald Cawley, MD, Ponca City High School  
**PI:** Matthew O'Brien

**Sponsors:** Douglasville, GA-Inner Harbor Hospital, Methodist Specialty and Transplant Hospital, Colorado Mental Health Institute at Fort Collins, Tulsa Center for Behavioral Health, The Children's Center, The Rehabilitation Institute of Chicago (RIC)  
**PI:** Tim Passmore

**Sponsors:** Planned Parenthood of Arkansas and Eastern Oklahoma  
**PI:** Kindell Peters

**Sponsor:** University of Nebraska Medical Center  
**PI:** Terry Stinnett

**Sponsors:** Payne County Youth Services, Stillwater Domestic Violence Services  
**PI:** Carrie Winterowd

## **SCHOOL OF EDUCATIONAL STUDIES (SES)**

### **Assessment of Comparison of Perceived Sleep Quality and Comfort Based on Selected Durations of Bedding System Use**

This study will attempt to (1) assess sleep and comfort among selected durations of bedding systems use, (2) compare stress and sleep quality among selected durations of bedding system use, and (3) ascertain the break-in period for new bedding systems. Results of this study may enable bedding system manufacturers to more accurately predict system longevity and will enable consumers to choose bedding systems with more confidence and accuracy.

**Sponsor:** International Sleep Products Association  
**PI:** Bert Jacobson

### **Oklahoma Center for Community Education**

The Center endeavors to increase accountability of community education programs in Oklahoma through assessment, communication, and training. The Center worked in partnership with a consortium advisory council made up of group members to implement the effort. The training included institutes, workshops and teleconferences, baseline assessment information, an electronic newsletter, and a webpage. Updating the *Community Education Practitioners' Handbook* and developing a final report on the status of Community Education in Oklahoma will complete the project.

**Sponsor:** Oklahoma State Department of Education  
**PI:** Bert Jacobson  
SES: Deke Johnson, Director

### **Assessment of the Effectiveness of Non-Transdermal Lifewave Patches on Muscle Strength,**

### **Muscle Endurance, and Power**

According to the manufacturers, recently developed energy patches use bioelectric stimulation produced by specific electrical frequencies in the body's magnetic field; they claim that over 99% of users experienced significant improvements (10% or higher) in strength after only a few minutes of wearing the patches. This study compares the efficacy of energy and placebo patches in the performance of bench press repetitions, standing vertical jump, and muscle endurance in college varsity athletes. The study finds no significant within or between group differences between active and placebo patches for maximum bench press repetitions, vertical jump distance, or grip strength. Based on these results, the energy patches used in this study did not significantly alter performance in the selected testing areas. Future research should focus on the efficacy of energy patches on endurance activities.

**Sponsor:** Lifewave™

**PI:** Bert Jacobson

### **NASA Aerospace Education Services Program**

Through this program, Oklahoma State University administers the activities of the Aerospace Education Services Program (AESP) of the National Aeronautics and Space Administration (NASA), which provides teachers, students, NASA Explorer Schools (NES), and the general public nationwide with information about NASA's latest programs and research. OSU disseminates information through teacher workshops, demonstrations, and lecture programs provided by thirty-five education specialists, twelve NES Coordinators and eight Digital Learning Network (DLN) Coordinators based at ten NASA space flight and research centers across the nation. Specifically, the program provides for aerospace education community involvement programs; assistance to NASA Explorer Schools; courses and workshops for elementary and secondary school teachers and pre-service teachers; assistance with curriculum enhancement and development activities at the national, state, and local levels; presentations for delivery on education television and radio; presentations for civic clubs and professional organizations; special services at science and technology centers; and professional development programs for aerospace specialists. This national program offers a number of these activities in selected inner city areas.

**Sponsor:** National Aeronautics and Space Administration (NASA)

**PI:** Steven K. Marks

### **NASA Teaching From Space Cooperative Agreement**

Under a contract with NASA, Oklahoma State University is responsible for the general administration of the Teaching from Space Program (TFS). This program provides logistical support for curriculum development, support to Network of Educator Astronaut Teachers (NEAT), education product development, education payloads and operations for the Space Shuttle and the international Space Station, and education conferences associated with the program.

**Sponsor:** National Aeronautics and Space Administration (NASA)

**PI:** Steven K. Marks

### **Aerospace Education High School Summer Academy**

The OSU Aerospace Education High School Summer Academy makes it possible for 30 students who are between their sophomore and junior years or junior and senior years in high school to engage in active study of aerospace education concepts. This experience provides on-campus classroom activities, as well as regional field trips to study the impact of aviation and space exploration on society.

**Sponsor:** Oklahoma State Regents for Higher Education

**PI:** Steven K. Marks

### **Factors of Variations by Gender in Terminal Degrees in the Physical Sciences across Western Nations: A Policy Comparative Study**

This study will identify the factors in K-20 educational systems of the selected countries that influence the percentages of women who complete terminal degrees in physics. The study will also identify the socio-cultural conditions in the selected countries that influence the percentages of women who complete terminal degrees in physics, and to investigate governmental programs, policies and other initiatives in the selected countries that might influence the percentages of women who complete terminal degrees in physics.

**Sponsor:** National Science Foundation

**PI:** Pilar Mendoza

**The Techno-Race and the Public Good of Higher Education: Are Canada and the U.K. Ahead?**

The purpose of this project is to investigate comparatively the implications of these initiatives in the public mission of materials science departments in these countries. This project builds on my previous work on American materials science departments and is based on an embedded multi-case study design where materials science departments in Canada and the U.K. that actively participate in these governmental Networks are the unit of analysis. This project will significantly contribute to our existing knowledge on industry-academia collaborations by integrating international contexts and will provide useful insights to promote healthy industry-academia collaborations.

**Sponsor:** National Academy of Education/Spencer Foundation

**PI:** Pilar Mendoza

**Falling Off the Science and Engineering Ladder: Factors of Variation of Female Participation in Science and Engineering in Italy and Germany**

The overall objective of this proposal is to test a hypothesis explaining the variation in women's representation in physics in Italy, Germany and the U.S. In particular, our central hypothesis is that the main contributors to gender variation in these countries are 1) gender stereotyping, and 2) K-20 educational policy and structures. The expected outcomes are 1) provide new and timely understandings to fill the knowledge gap about contributors to gender variation in S&E across countries; 2) validate and enhance existing theories by exploring cross cultural contexts; and 3) develop new and specific strategies to achieve equitable representation in S&E.

**Sponsor:** National Science Foundation

**PIs:** Pilar Mendoza and Patrick Forsyth

**SCHOOL OF TEACHING AND CURRICULUM LEADERSHIP (STCL)**

**Junior Science and Humanities Symposium**

Students from Kansas, Oklahoma, and Nebraska visit the OSU campus to present projects in a regional competition in science, mathematics, and engineering. The winners of the regional competition will then compete for additional scholarships at the national conference.

**Sponsor:** Academy of Applied Science

**PI:** Caroline Beller

**Collaborative Research: Engineering Students for the 21<sup>st</sup> Century**

This multi-year department-level reform program will replace the traditional focus on acquisition of knowledge with an emphasis on student cognitive development, where knowledge acquisition becomes a means to an end. Selected courses across the engineering curriculum are being reformed to fit this developmental model by modifying both the content of the courses and the methods of teaching.

**Sponsor:** National Science Foundation (NSF)

**PIs:** Richard Bryant

Electrical and Computer Engineering: R. Alan Cheville, Charles F. Bunting, Keith A. Teague

Digital Library Services: Elizabeth A. Reiten

Physics: Timothy M. Wilson

**Partnership for Integrating Literacy in Science and Mathematics (PRISM)**

Three workshops are offered to improve teacher skills and content knowledge in mathematics, science, content literacy and leadership skills. Another benefit of the workshops is to increase student outcomes by developing teacher content and pedagogical knowledge as well as improving teacher attitudes and beliefs in high-need LEAs. Participants work on a variety of mathematics or science tasks while learning to incorporate content literacy into their teaching. Participants will develop mathematics or science activities, lesson plans and assessments based on PASS objectives. Scientifically based research techniques will measure the programs' impact on teacher change and student achievement.

**Sponsor:** Oklahoma State Regents for Higher Education

**PIs:** Juliana Utley with Jean Dockers, Jenn Sanders and Gayla Hudson

### **Developing Algebraic Thinking: Using Geometric Contexts and Technology**

This proposal seeks to increase student achievement through providing opportunities for teachers' to increase their content and pedagogical knowledge. A 50 + hour professional development workshop supports the learning of Algebra through Geometric and numeric patterns. Teachers will use manipulatives and technology to gain a deeper understanding of Algebraic concepts while developing appropriate tasks, tied to PASS, for their students.

**Sponsor:** Oklahoma State Regents for Higher Education

**PIs:** Juliana Utley

University of Central Oklahoma: Darlinda Cassel

### **Geometry: Visualization and Manipulation for Understanding**

Researchers conduct week-long professional development workshops on visualization and manipulation for understanding of geometry in order to improve the content knowledge of mathematics teachers from high-need LEAs at three different locations in the state. All three workshops provide teachers the opportunity to work with the latest technology and geometry software and to incorporate those technologies and other geometric models with appropriate lesson plans and assessments based on the PASS objectives. Scientifically based research techniques measure the workshops' impact on student achievement.

**Sponsor:** Oklahoma State Regents for Higher Education

**PIs:** Darlinda Cassel, Stacy Reeder, Juliana Utley

Langston University: Betsy Showalter

University of Central Oklahoma: Adele Hanlon

### **Comparing Student Achievement Using Problem-Centered Learning Integrated Studies with Traditional Learning**

We are applying under goal one for two years. The purpose is to obtain preliminary data on the association between the use of integrated curriculum in a problem-centered learning environment and student learning compared to a traditional classroom setting. The data collected will be based on student achievement in mathematics and science as well as student attendance, attitudes, and behaviors attitudes towards those subjects and school.

**Sponsor:** U.S. Department of Education/Institute of Education Science

**PIs:** Darlinda Cassel

### **Professional Development Institute for Mentor Teachers**

Oklahoma State University's College of Education, in collaboration with Stillwater Public Schools, provides Coaching Skills for Effective Teaching, a funded program to prepare mentor teachers in the state's Residency (induction) Program to effectively support first-year teachers. The program works with approximately 100 educators throughout the state.

**Sponsor:** Oklahoma Commission for Teacher Preparation

**PIs:** Leah Engelhardt

Stillwater Public Schools: Diana Leggett

### **Teach for Achievement: Data-driven Decision-making in Literacy Education**

Teach for Achievement (TFA) intends to address endemic problems associated with poor literacy instruction and subsequent student outcomes. At its core, this project will provide intensive literacy, assessment, and data-based decision-making training to teachers and other school personnel. Follow up support provided through teacher coaches will be employed to ensure the implementation of empirically based literacy practices in the target school. Through the provision of these empirically based literacy practices and use of assessment data to inform instruction and monitor student progress, it is expected that student literacy outcomes will be impacted.

**Sponsor:** Oklahoma State Regents for Higher Education

**PIs:** Heidi Anne Mesmer

School of Applied Health and Educational Studies: Eric Mesmer

Communication Sciences and Disorders: Penny Cremeens

### **Career and Technology New Teacher Induction Process**

This service and research grant uses collaborators among the Oklahoma Department of Career and Technology Education (ODCTE), 22 technology centers, and Occupational Education Studies at the University of Central Oklahoma and OSU. Working as a team with local administrators, a local instructional mentor, and a higher education representative, first-year teachers identify strengths, challenges, goals, and strategies in order to move from surviving to thriving in development of the skills for effective teaching.

**Sponsors:** Oklahoma Department of Career and Technology Education and Local Technology Centers

**PI:** Mary Jo Crawford Self

### **Leveraging Emerging Technologies, Simulations, and Gaming Objects to Promote Learning in America's Youth (LET'S GO PLAY)**

The proposed project is designed to focus the development of leading-edge instructional strategies on a target population too often ignored in educational innovations. A key strategy of the project is to work with Title I educators in pilot schools as co-developers of project training and materials.

**Sponsor:** U.S. Department of Education

**PIs:** Susan Stansberry

**PD:** Gayla Hudson

### **GAMES: Gaming & Algebra Making EOI Successful**

The "GAMES: Gaming & Algebra Making EOI Successful" project will deliver a two-week professional development experience over Algebra content, educational technology and pedagogical strategies to middle and high school algebra teachers and collaborating school library media specialists and/or technology facilitators from partnering school districts in the northeastern quadrant of Oklahoma. The second week will center on a "Summer GAMES Academy" for middle and high school students. During this second week, participating teachers will teach students attending the GAMES Academy and will be expected to implement the best practices introduced, discussed, and analyzed during the first week of this program. The GAMES project's professional development plan, thus, incorporates actual practice of best practices and collaborative instruction under the tutelage and mentoring of the Project Team.

**Sponsor:** OSRHE

**PIs:** Susan Stansberry

Education Research Support Services: Gayla Hudson

Mathematics: James Choike

### **Mathematics and Science Partnerships Program**

This project delivers professional development to middle and high school algebra teachers through a two-week Summer Professional Development Institute (PDI) and a concurrent one-week Summer Algebra Academy for middle and high school students. It provides teachers with (1) training on content, pedagogy, and assessment related to OK PASS standards; (2) increased content knowledge to support formative assessment and diagnose student algebra learning; (3) expanded knowledge and skills for effective use of technology; (4) real classroom opportunities to work with students to implement strategies learned; and (5) peer coaching and reflection strategies related to their practice and instructional planning.

**Sponsor:** Keys High School, Oklahoma State Department of Education

**PIs:** Susan Stansberry

Education Research Support Services: Gayla Hudson

Mathematics: James Choike

### **Multicultural Fair: An International Exploration for Kids**

The Multicultural Fair: An International Exploration for Kids will support the training of OSU pre-service teachers in order to increase their effectiveness in working with diverse racial and ethnic populations. Will support teachers in their efforts to provide diverse cultural experiences for their students so that "students . . . learn about cultures and environments—their own and those of others with whom they share the earth." The project will support teachers in their professional development as culturally responsive

teachers, thus enhancing the image of the teaching profession. Pre-service teachers participating in the Multicultural Fair will be more likely to remain in the teaching profession.

**Sponsor:** Oklahoma State Regents for Higher Education

**PI:** Nadine Olson

Education Outreach: RuthAnn Sirbaugh

### **Rural Alliance for Improving Science Education (RAISE)**

RAISE seeks to enrich the learning environment of 6 – 12 grade students while providing OSU graduate students with first-hand opportunities to experience the teaching profession. Graduate students (RAISE Fellows) pair with 6 – 12 grade science teachers. The interdisciplinary area of Geographic Information Science (GISci) serves as the focus for fellows and teachers to develop innovative science curricula. Summer workshops were offered in July 2004. Dissemination of lesson plans and other materials developed by fellow/teacher teams will occur regionally through summer institutes and nationally through a project website.

**Sponsor:** National Science Foundation (NSF)

**PIs:** John Steinbrink

Geography: Thomas Wikle, Joel Helmer

### **Children's Motivation for Reading Across Grade One to Seven; A Cross-Cultural Perspective**

This study proposes to undertake a comprehensive investigation of various constructs of reading motivation that are hypothesized to be important in reading development across grades one to seven in two countries, the United States and China. Possible developmental patterns in reading motivation in elementary and middle school years that may operate universally across cultural contexts or vary depending upon the culture will be explored. Differences in instructional practices that may contribute to developmental trends in children's reading motivation will be examined. Special attention will be given to how motivational variation between the two cultural groups may induce different relationships among motivation for reading, amount of reading, and reading achievement. The findings will provide insights on how to improve instructional practices in reading in order to enhance all children's reading motivation and engagement, and have implications for offering guidance to parents and for the development of family literacy intervention programs.

**Sponsor:** Spencer Foundation

**PI:** Qiuying Wang

## **EDUCATION RESEARCH SUPPORT SERVICES**

### **A Professional Development Institute on Algebra and Its End-of-Course Assessment**

This project delivers professional development to middle and high school algebra teachers. It provides training on (1) strategies in content, pedagogy, equity, and assessment related to algebra teaching; (2) using formative assessment and student achievement information in instructional planning; (3) content knowledge tied specifically to supporting formative assessment and diagnosing student algebra learning; (4) teacher leadership, peer coaching, and self-reflection; and (5) increasing student literacy in speaking and writing about mathematics. Project goals will be accomplished with a five-day Summer Institute, follow-up meetings, and academic year support by means of the US Department of Education funded "Algebra for All" Web site.

**Sponsor:** Oklahoma State Regents for Higher Education

**PIs:** Gayla Hudson, Education Research Support Services

STCL: Susan Stansberry

Mathematics: James R. Choike

### **Oklahoma Center for Innovation in Teaching Excellence, Year 2 (OCITE)**

OCITE has created an active coalition of key stakeholders and developed relationships with and among a higher education collaborative and the Tulsa Public School District (TPS). Langston University, Oklahoma State University, Northeastern State University, and TPS held preliminary Partnership meetings to develop a cohesive plan to enhance discipline-specific content knowledge and instructional strategies in

the critical areas of mathematics, science, and reading. OCITE will strengthen these content areas by building leadership capacity within and for educators and educational leaders in an urban school district.

**Sponsor:** Oklahoma State Regents for Higher Education

**PIs:** Gayla Hudson, Education Research Support Services

Mathematics: James R. Choike

Langston University: Darnell Williams

Tulsa Public Schools: David E. Sawyer

Northeastern Oklahoma State University: Kay Grant

### **OEC - Mentoring - Year 1 of 3**

The Mentoring Professional Development Institute (PDI) has the potential to reduce the attrition rate of new teachers during their first three years of service, thereby providing a stable supply of teachers for school districts and alleviating the replacement costs of new teachers. The one objective of the PDI is to retain teachers and improve their overall quality through comprehensive induction. Also, the PDI will create high-functioning learning communities within the partner schools and to develop teachers and principals into high-quality professionals who improve student learning. In addition the PDI will deliver and support professional development that will become systematically embedded in the culture of the school and professional development that supports and sustains all members of the residency committee for a minimum of two years.

**Sponsor:** Oklahoma Commission for Teacher Preparation

**PIs:** Gayla Hudson, Education Research Support Services