MEASURE

THE RESEARCH PUBLICATION OF ARKANSAS STATE UNIVERSITY

ARKANSAS STATE UNIVERSITY

FALL 2014

EXPONENTIAL IMPACT

DISCOVERIES TO CHANGE OUR WORLD

WHAT IS MEASURE?

How do we measure our commitment to research?
How do we judge successful scholarship?
How do we place value on creative expression?
How do we appraise the impact of service?

- Student engagement?
- Productivity?
- Awards and expenditures?
- Comparison with our peers?
- National and international recognition?
- Influence in the field?
- Solutions to real world issues?
- Economic impact?
- Community enrichment?

The answer is: all of these, and more.

At Arkansas State, we value each discipline and their measures of success.
MEASURE is a showcase of A-State success in a variety of disciplines.

Arkansas State University Mission Statement
Arkansas State University educates leaders, enhances intellectual growth and enriches lives.

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LETTERS:

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MEASURE
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ONLINE
AState.edu/Research

CHIEF RESEARCH OFFICER
Andrew Sustich
sustich@AState.edu

EXECUTIVE EDITOR
Rebekah Craig
rcraig@AState.edu

CONTRIBUTING EDITORS
Emily Devereux
edevereux@AState.edu
Cole Pace
cole.pace@smail.AState.edu

UNIVERSITY PHOTOGRAPHER
Andrew Ferguson
A-State Digital Creative Media

CONTRIBUTING PHOTOGRAPHERS
John Artim
john.artim@smail.AState.edu
Michael Johnson

GRAPHIC DESIGN
A-State Publications & Creative Services
Heath Kelly
Assistant Director & Graphic Designer
pcs@AState.edu

PRINTING
A-State Printing Services
dmaloch@AState.edu

Dr. Tim Hudson

Ladies and Gentlemen:

I am delighted to present the fourth edition of **MEASURE : THE RESEARCH PUBLICATION OF ARKANSAS STATE UNIVERSITY**. This annual magazine showcases some of the many scholarly activities at A-State. The publication stems from the growing importance of research on our campus, and the desire to highlight the impact of our activities to the A-State community as well as our friends around the globe.

In this issue, we focus on the diversity and excellence of student research activities. Arkansas State has a special responsibility to nurture a culture of creativity and innovation among our faculty and students. Our mission, to educate leaders, enhance intellectual growth and enrich lives, forms the focus of this **MEASURE** edition. The three feature articles highlight research and scholarship by outstanding students.

In **EDUCATE**, we feature the nationally recognized CSI: Classroom Science Investigations program, which excites regional junior and senior high students using forensic science as the context for inquiry-based science lessons. **ENHANCE** recognizes four outstanding student researchers at A-State, along with a group of summer student researchers who are part of a program to broaden the participation of underrepresented minorities in scientific research. Global scholarship in the College of Fine Arts is the focus of **ENRICH**, as their artistic achievements are enriching lives around the world.

We hope you enjoy this edition of **MEASURE** and welcome your comments and suggestions.

Warm regards,

Tim Hudson, Ph.D.
Chancellor

Rebekah Craig

e^3 = Exponential Impact

Arkansas State continues developing research infrastructure to facilitate a thriving campus culture of creativity and innovation. Rebekah Craig, director of Research Development, says, "To me, e^3 means exponential impact. A-State faculty and students have tremendous dreams of a future that is brighter because of their contributions. By making those dreams a reality, we exponentially increase the impact of A-State on our world and our future."

NEW FACES AND NIMBLE STRUCTURES

"I am extremely proud of the innovative approaches being taken on so many fronts to advance the university's culture of research and scholarship," said Dr. Lynita Cooksey (pictured with CoB dean, Dr. Shane Hunt.)

The Research and Technology Transfer (RTT) office aims to create nimble, adaptable administrative structures that will promote high-caliber research activities and broaden interdisciplinary collaborations, says Craig, who brings to her new position a decade of laboratory-based and health policy research experience. In response to faculty, student and staff requests, RTT expanded programs this year by developing new Institutes for Research Development for department level administrators, faculty with significant grants experience, and PhD students in the College of Sciences and Mathematics. Two research administration graduate internships were launched to enhance the professional development of students preparing for careers as faculty or higher education administrators.

RTT created a new research administration liaison role fulfilled by Emily Devereux, who is also the new associate director of Research Development. An A-State alumna and former program manager for the NSF-funded Arkansas Center for Plant Powered Production, Devereux brings a deep knowledge of post-award grant management and the challenges that faculty face in administering research programs. Devereux will liaise between faculty and administrative staff to bridge the gaps between our pre- and post-award grant administration processes.

Nikki Turner, director of Sponsored Programs Accounting, meets with team members Rebekah Craig, Jessica Blackburn, Jenny Estes and Emily Devereux.

Another newly created role is that of associate director of Foundation Relations in University Advancement. Jessica Blackburn, also an A-State alumna, will work collaboratively with RTT to assist faculty in pursuing philanthropic gifts to fund their research and scholarship. Research Compliance has a new face this year as well. Jenny Estes joins RTT this month as director of Research Compliance, transitioning from her work in fiscal compliance as an auditor and A-State Sponsored Programs accountant. Estes said, "I am deeply grateful for this opportunity to further my understanding of research issues and to serve our outstanding faculty in a new capacity."

Dr. Lynita Cooksey, vice chancellor and provost, noted, "Just as RTT continues to evolve its role in support of A-State's research mission, similar change is occurring within the various academic colleges.

THE WAY FORWARD

Research plays a critical role in the College of Agriculture and Technology, where faculty are engaged in a wide range of research projects that include sustainable crop production systems, bio-based fuels, geospatial technologies and plant biotechnology.

"The technological revolution occurring in modern American agriculture brings many exciting opportunities for research, and I am pleased our faculty are making a positive difference for Arkansas agriculture," said Dr. Tim Burcham, dean of the college. "I want our college to be at the forefront of research efforts that foster technology integration for increased productivity and sustainability in crop production systems."

College of Business (CoB) new dean, Dr. Shane Hunt, is focused on producing high-quality academic research that has a significant impact on both business theory and practice. Hunt said, "Our goal in the years ahead is to build truly world-class Centers of Excellence where our faculty and students collaborate to produce innovative research that advances academic disciplines and enhances the strategy of businesses throughout the world."

Other colleges are purposefully advancing research and grant-writing among their faculty. Dr. Susan Hanrahan, dean of the College of Nursing and Health Professions, appointed Associate Dean Dr. Angela Schmidt as a research officer for the college to facilitate research opportunities and assist faculty their research endeavors, with an emphasis on forming interdisciplinary research teams. The college collaborates with RTT to offer "brown bags" throughout the semester to support faculty research and grant opportunities. Hanrahan said, "Our college is now documenting all grant submission and research efforts, not only awards, as a consideration in faculty productivity."

Dr. Cooksey believes the increasing involvement of undergraduate students in creative and scholarly activity "speaks highly of our faculty's commitment to A-State's mission to educate leaders, enhance intellectual growth and enrich lives." This is central for the College of Sciences and Mathematics (CSM). "Our push has been that research is a fundamental way of teaching for our college," noted Dr. John Pratte, dean of the CSM. Research that involves students is the type of research promoted by the college. "They aren't separate entities. You are teaching students in research."

INVESTING FOR IMPACT IN 2014

2 = Ralph E. Powe Junior Faculty Enhancement Awards from Oak Ridge Associated Universities, a prestigious award only bestowed on 30 researchers nationally each year

2.5 = million dollars from the National Science Foundation in six awards to faculty from three colleges

19 = million dollars in A-State research expenditures in FY14

20 = number of undergraduate students who applied for and were awarded competitive funding for mentored research experiences

277 = thousand dollars awarded from the National Endowment for the Humanities

475 = thousand dollars awarded from the U.S. Department of Agriculture

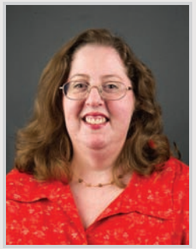
Jonathan Merten (L-chemistry) and Zahid Hossain (R-engineering) received prestigious Ralph E. Powe Junior Faculty Enhancement Awards in 2014 (pictured with their college deans, John Pratte and Paul Mixon.)

There are student-faculty research teams across the A-State disciplines. "What our faculty do, our students do, whether that is marine biology in the Caribbean, environmental research in Nepal, or laboratory collaborations in another state," said Dr. John Pratte.

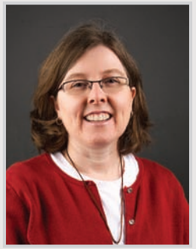
EDUCATE

INQUIRING MINDS WANT TO KNOW

Imagine rural Arkansas junior and senior high school science students so excited about their lessons that they wanted to skip their lunch break to continue working on experiments. That is one outcome of an innovative educational approach designed by A-State researchers.



Karen Yanowitz



Tanja McKay

Ann Ross

CULTURALLY RELEVANT SCIENCE

The CSI: Classroom Science Investigations program is a collaborative effort of the College of Education, College of Sciences and Mathematics, and the A-State Rural and Delta STEM Education Centers. It immerses participating junior and senior high school teachers in learning novel, inquiry-based teaching methods with forensic science as the context. A diverse group of teachers and students are recruited each year with the aims of improving the quality of science, technology, engineering and math (STEM) education, developing students' self-confidence that they can succeed in STEM fields, increasing the number of Arkansas students entering the STEM workforce, and building parental involvement in their child's science education.

Dr. Karen Yanowitz, professor of Psychology and principal investigator of the grant, said the idea came from the popularity of the "Crime Scene Investigation" television show. "It was really good at getting people talking about science. Before that show aired you didn't really see people in the community talking about DNA analysis and other forensic science concepts." Yanowitz and her co-investigators Drs. Tanja McKay, associate professor of Entomology, and Ann Ross, associate professor emeritus of Teacher Education, decided to utilize this pop culture phenomenon to create an exciting new approach to traditional science education.

THE MYSTERY OF "POCO" THE PIG

The CSI project uses environmental crime scenarios rather than violent to teach basic research skills such as developing hypotheses, planning investigations, making observations and drawing conclusions. Forensic science requires students to utilize each of these skills and allows teachers to create lessons with a "real-life" context. McKay described an entomology module, "We give them a scenario and 'crime scene' photos, for example a mysterious event with a pet pig named Poco that was found dead behind a hotel." Prior to the lesson, CSI staff bury a carcass and collect insects at different stages of decomposition. "Students then use their research skills to determine the age of decay for Poco, based on insect succession patterns that allow them to estimate time of death."

It's so easy to take concept you're teaching and put it into the context of solving a forensic crime.

One challenge in using this approach is that many teachers lack experience with scientific research or with using inquiry-based lessons. Teacher preparation traditionally focuses on direct instruction and "experiments" for which the outcome is already known. In CSI, teachers participate in a year-long program starting with an intensive summer workshop and continuing over the academic year. Each summer 25-30 teachers spend two weeks at A-State, becoming students during the first week to experience the modules first-hand and thus teach them more effectively. About 50 students join them in the second week when the teachers teach the modules with the mentoring and assistance of CSI staff. The teachers are then required to implement inquiry-based lessons throughout the academic year and host a family science night at their school.

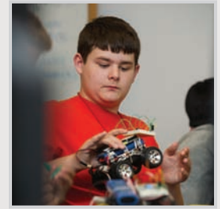
Wendy Jones, a junior high school science teacher at Ridgefield Christian School, reported using inquiry-based modules was somewhat new for her, but it felt liberating. "Students will be spoon-fed for as long as teachers will do it, but when you turn them loose they get excited and lessons come alive to them because they experience it." She observed her students were very excited and by the end of one CSI module, they were able to explain the laws of thermodynamics. "CSI gave me a spark in my classroom," said Jones.

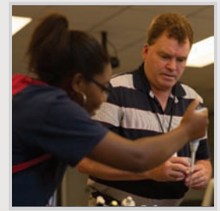
Lessons come alive to the students because they experience it.

FUTURE STEM WORKFORCE

When the CSI project began, only one-fourth of students in Arkansas were enrolled in at least one upper-level science course, compared to nearly half of students in top performing states. Drs. Yanowitz, Ross and McKay hope and expect the CSI model will help change that statistic for our state. They are tracking the progress of students who received this type of instruction as they matriculate into college to determine the impact of the CSI program on student career choices.

Their innovation was enthusiastically supported by two National Science Foundation (NSF) grants totaling nearly $2.5 million across seven years (NSF 05-621 Information Technology Experiences for Students and Teachers – ITEST). The program was cited by NSF Director, Dr. Subra Suresh, in his March 2012 testimony before a U.S. Senate Committee, as an example of NSF-funded research designed to achieve excellence in U.S. STEM education. Over the past seven years, the program has trained over 175 teachers and engaged more than 500 7th-12th grade students directly in the summer camps, with thousands more students impacted by teachers implementing the new approach in their classrooms. The reach of the CSI program has extended far beyond Arkansas with teachers and students attending from over 10 states, building student interest in STEM careers across the nation.





Students learn a variety of scientific disciplines as CSI program participants.

BEAR-BONED SCHOLARSHIP

One summer, said Ross, the A-State museum brought in coffins with skeletal bones for the students to examine. "Students from northwest Arkansas were studying a unit on black bears and their teacher found a hunter with a black bear carcass in his freezer. He donated the bones and CSI students were able to use their research skills to distinguish between the human and bear bones. Representatives from the State Crime Lab came in as guest speakers and informed the students that distinguishing human and animal bones is one of their biggest challenges."

Learn more about the CSI project. Scan this QR code to watch a video.

A program like this involves the expertise of many people.

A-State faculty members who substantially contribute to the program include Drs. David Gilmore, Ron Johnson, Marty Huss, Ed Hammerand, Diana Williams, Julie Grady, Cynthia Miller, Staria Vanderpool and Richard Warby. Invaluable support for the program comes from program manager, Renee Carroll and science specialists Debbie Rogers and Linda Kellim.

Whatever our souls are,
his and mine are the same.

ENHANCE

BRIDGE OVER DELTA WATERS

A-State students are bridging the gap between acquiring knowledge and using that knowledge to better the world. The diversity of research at A-State is expanding, both in terms of the scope of work performed on campus and in our recruiting a diverse population of student researchers. Providing authentic research experiences allows our students to enhance their career preparation and graduate with workforce-relevant experience. Four outstanding A-State students have achieved national and international acclaim for their research, spanning topics from plant bioengineering to the social and legal impact of 19th century English literature.

Austin Lewis
Student Researcher

Lewis received an award for his presentation at the 2014 Beltwide Cotton Conference and the College of Agriculture and Technology Graduate Honors Award for having a 4.0 GPA.

"It's critical to conserve our groundwater, since 80 pecent of our land in Eastern Arkansas is used for growing crops that often require irrigation."

SENSING FOR SUSTAINABILITY

Groundwater from the alluvial aquifer, the primary irrigation source for agriculture in the Lower Mississippi River Basin, is being pumped at an unsustainable rate. Austin Lewis, a graduate student in the College of Agriculture and Technology, is doing something about it. Using advanced technologies, Lewis determines the size of irrigation pipes, number and size of holes for each pipe, and time needed to uniformly irrigate each field. Lewis and his faculty mentor Dr. Michele Reba (USDA-ARS), are tracking furrow irrigation advance to verify the performance of the irrigation planning tool. "We place sensor units in the center and end of the furrows. This allows us to have sensors in several fields at one time and is an unstaffed way to measure the advance," Lewis explained.

Incorporating the use of irrigation planning tools will allow producers to decrease water usage and increase profits. For his master's thesis, Lewis is testing 14 sensor units in three cotton and three soybean fields. His work is funded by a Conservation Innovation Grant from the USDA Natural Resources Conservation Service (with Drs. Michele Reba and Tina Gray Teague), with matching funds from the Judd Hill Foundation, Delta Plastics, University of Arkansas and University of Arkansas Division of Agriculture and Technology. Lewis and Reba emphasize that collaboration is crucial to the success of their research. They have extensive collaboration with producers at the field sites and with other students, including Yin Lin "Jack" Chiu, an environmental sciences graduate student who designed the sensor units, and Cory Whitehurst, an undergraduate biology major who helps Lewis in the field.

Lewis's interest in science developed as a teenager when he was recruited by Dr. Tina Gray Teague for a summer job helping with her field research. His experience with Dr. Teague was the first time he had been in the field and said, "It awed me. Then I spent two years as an intern with Bayer Crop Sciences and those experiences solidified that I wanted to pursue a career in research." In the future he hopes to do research for corporations similar to Bayer. Of his career choice, Lewis comments, "Research is fun for me. It's challenging, but it's a good challenge and I like challenges."

"As an intern, my time in the field with Dr. Teague awed me ... those experiences solidified that I wanted to pursue a career in research."

Learn more about Austin. Scan this QR code to watch a video.

A BRIDGE TO THE FUTURE

Lean more about the Bridge program by scanning this QR Code.

Dr. Malathi Srivatsan, professor of Neurobiology and assistant director of the Arkansas Biosciences Institute, recently received $750,000 in grant funding from the National Sciences Foundation (NSF) for her program, Bridging the Divide. The program provides support and mentoring to strengthen STEM education at three institutions: A-State, Philander Smith College (PSC, collaborator Dr. Nastassia Jones) and University of Arkansas at Pine Bluff (collaborator Dr. Anissa Buckner). Their ultimate goal, Srivatsan said, is to "produce a well-trained workforce of scientists and engineers who can innovate and become job creators."

This summer, five students from PSC and two from A-State are participating in mentored summer research experiences, supported by the Bridge program, Arkansas' ASSET Initiative (both NSF-funded) and the A-State College of Sciences and Mathematics.

arkansas state university : the measure of success

CLOAKED IN LIGHT

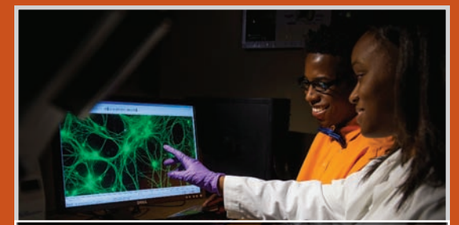
Electrodynamics explores the relationships and interactions of light and matter. Once these interactions are understood, researchers can model the conditions in experiments and in the design of emerging nanotechnologies. One such emerging technology is invisibility cloaking – the idea of bending light around a moving object to make it seem invisible, while the object continues in its original path, for example a stealthier bomber. Graduate student Cheyenne Sheppard is using theoretical physics to model and understand the forces responsible for the bending of light.

Sheppard, who excels in theoretical modeling, has a B.S. in Mathematics, and is currently completing both a B.S. in Physics and an M.S. in Mathematics. His faculty mentor, Dr. Brandon Kemp (College of Engineering), used an analogy for their research, "When you shoot a gun it recoils because it carries momentum. It's the same when you turn on a flashlight because light has momentum, but the force is so small you can't feel it. In the past few years the science of nanotechnology has matured and we now recognize that these small forces are very important." However, modeling these forces of light has been the subject of debate among scientists from the era of Einstein until today. "At that time the debate was theoretical, but now it is a practical engineering design problem."

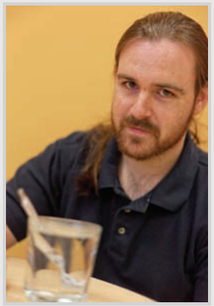
The implications of Sheppard's research are crucial and will direct the design of new nanotechnologies. Forces of light can now be used to trap and push nanoparticles, but Sheppard's research will answer whether they can also be used to pull on the particles, creating a sort of "nanotechnology tractor beam." His research was recently published in Physical Review, a leading physics journal. Kemp said, "Cheyenne was able in just a few months to solve a problem in relativistic electrodynamics. The reviewer comments on his manuscript were incredible and were the best reviewer comments I've ever received. So now I have him working on a much more complicated problem." Sheppard said if he had all the funding and support needed to tackle any scientific problem, he would continue working in this area. "It is an amazing field and very stimulating."

The implications of Sheppard's research are crucial and will direct the design of new nanotechnologies.

"To foster economic growth in Arkansas we must produce a well-trained workforce of scientists and engineers who can innovate and become job creators."
– Dr. Malathi Srivatsan



Bridge program students discover neuron structure using a BD Pathway confocal bioimaging system in an ABI laboratory.



Cheyenne Sheppard
Student Researcher

Using a glass of water and pencil, Shepherd explains how matter exerts a force on light that causes it to bend around the matter. This produces refraction, making the pencil appear bent when actually the light is bent.

"I always had an interest in taking things apart and seeing how they worked, and did this a lot at home. My dad had an active role in encouraging me and developing my passion by taking me to the library and science shows."

Learn more about Cheyenne. Scan this QR code to watch a video.

Aaron Tollet
Student Researcher

"The problem in nature is sustained and variable production. We are trying to produce the stilbenoids at a sustainable rate and prevent them from being degraded too quickly."

"We trick the hairy roots to produce these defense compounds (stilbenoids) without a fungal attack. A lot of the defense compounds for the plant also have important applications for human health."

UNEARTHING THE PROMISE OF THE PEANUT

Harnessing plant compounds to benefit human health is the topic of Aaron Tollett's research in the laboratory of Dr. Fabricio Medina-Bolivar. Tollett specifically works with "hairy roots" from plants such as peanut. In response to fungal attack in the field, peanut plants produce defense compounds called stilbenoids. These natural medicinal compounds that protect plants could be neuroprotective for humans as well. Plant-based foods can be bioengineered to contain larger quantities of stilbenoids. "Perhaps in the future, eating the peanuts we engineer would help protect a consumer from Parkinson's disease or to prevent some cancers," Medina-Bolivar suggested.

Tollett, a sophomore double-major in Biology and Chemistry, said there weren't many science activities in his small, rural high school in southwest Arkansas. However, "my high school class visited A-State and toured the Arkansas Biosciences Institute (ABI) labs and greenhouse. During the tour, one of Medina-Bolivar's lab members explained the hairy root system. The reason I came to A-State was because I was interested in the work I saw at ABI."

While most students do not embark on "authentic" research experiences until their junior or senior year, Tollett explored research possibilities at ABI during his first semester of college. He began working in the Medina-Bolivar lab in January 2013 and after only two months, presented a poster of his independent research at a scientific conference. Medina-Bolivar observed, "Aaron became independent right away. I don't like to micromanage my students and want to see them develop critical thinking skills. Aaron has done that in a short time." In March 2014, Aaron was selected as one of only six students from around the nation to present an invited talk to the American Chemical Society conference attended by over 10,000 researchers. He was the only student who did not come from a major research institution, and he received first place in the competition.

When asked about his future aspirations, Tollett said, "I'm thinking about education in the sciences because I like working with younger people. I am currently a mentor for the Upward Bound program to teach math and science to high school students." He reported one source of inspiration is his experience with Medina-Bolivar. "He's been a great mentor and has taken the time to explain everything in depth. He gives me a lot of information to explore further on my own. I really can't envision working with anyone else."

"The reason I came to A-State was because I was interested in the work I saw at ABI."

Learn more about Aaron. Scan this QR code to watch a video.

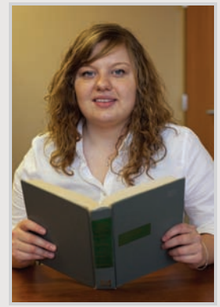
WORDS THAT SHAPE SOCIETY

Fictional literature isn't just for our reading pleasure. When it flows from the pen of a skilled writer it can be used to propel social movements and change. Emily Hill, a spring 2014 graduate in English, explored this power of literature in her undergraduate honors research thesis. Hill examined the notion of marital entrapment in three works by the Brontë sisters: *Tenant of Wildfell Hall*, *Jane Eyre* and *Wuthering Heights*. Of her subject matter, faculty mentor Dr. Kate Krueger noted, "Those novels show the pulse of the social moment and how women changed women's rights. Representing their traumas in fiction versus court reports was powerful and led people to reexamine their situations. It led to greater equality."

Hill hadn't read any of the Brontë works until she took two courses taught by Krueger. "I really didn't like Victorian literature until I came to college but then learned to like it. It is really unique that there's a whole family of women writers in that time period." With her interest sparked, Hill pursued and was awarded funding from the Arkansas Department of Education to complete a Student Undergraduate Research Fellowship – one of only four awarded in the state for English/Philosophy research. Of her analysis of the books, Hill said, "I think they are arguing that the courtship and marital practices of their time should be changed. Their practices are such that they have no real means to get to know their future mate. They are encouraged to marry for money and security, not for love. It had a negative effect on men too. The male characters were clearly unhappy with their circumstances. It was all-around bad for society."

"Emily is really unique in terms of her social consciousness," Krueger said. "She has a very powerful way of looking at the world and is very aware of the way we impact the world and interact as a society. It seemed natural to me that she would gravitate toward those texts because they are about using literature to impact society. I think that will make Emily a great teacher because she has a passion to make the world better by leading her classroom and students." Beginning in Fall 2015, Hill will teach high school English in the Osceola School District. She plans to replicate things she's learned from her high school and college teachers as she uses literature to spark dialogue and social change for the next generation.

When fictional literature flows from the pen of a skilled writer, it can be used to propel social movements and change.



Emily Hill
Student Researcher

Hill's 9th grade English teacher, Ms. Jennifer Woolard, in Corning High School was her favorite. "We wrote essays once a week, which she critiqued. I didn't realize how much writing that is until I came to college. She made me a better writer."

Hill will be presenting two papers at this year's National Conference for Undergraduate Research in Kentucky.

Learn more about Emily. Scan this QR code to watch a video.

BRIDGING COLLEGE & COMMUNITIES

Having just finished his freshman year at PSC, Ji'Vone Freeman from Chicago's south side, is now exploring genetics in an A-State laboratory. He said, "If I just read something in a book I'm more likely to forget it. But in this program, I'm learning advanced genetics hands on, without reading a book."

PSC student Zana Robinson from Garfield, Ga., says she isn't very good at chemistry, but in the Bridge program she is learning applied science, hands on, to complement her classroom studies at PSC. Her classmate, Toria Holland from Detroit, Mich., commented, "Before I came to the Bridge program my lab skills were not up to par, but I'm developing those skills here." PSC student Breiona Hamilton from Raytown, Mo., summed up her experience by saying, "I work with a 'family.' They are so encouraging. I really like seeing how each person has a different expertise and I can learn different techniques from them. It is amazing to see how it works."

"If we provide students with early, intensive mentoring and hands-on research experience, over time they will form a large, diverse pool of graduates that shine as stellar scientists in the STEM workforce."
– Dr. Malathi Srivatsan

Bridge program students discuss plant genetics in the ABI greenhouse.

ENRICH

ALL THE WORLD'S A STAGE

Ask Don Bowyer what constitutes scholarship in the fine arts and he'll tell you it is no different from any other academic discipline. Scholarship, whether in sciences, technology, humanities or the arts, involves creating something new by applying a unique interpretation to an established body of knowledge.

Across the disciplines represented at Arkansas State University, scholars apply techniques they have perfected through painstaking repetition to produce novel products, ranging from new medicinal compounds or technological improvements to original musical compositions, sculptures, paintings or screenplays.

"When others select a musical composition or a play to perform or art for exhibition, this is a type of peer review. They've deemed it worthy of performance."
Dr. Bowyer, dean of the College of Fine Arts

Chris Wilson

CFA students are engaged both locally and globally in music, theater and visual arts.

EDUCATE LOCALLY. PERFORM GLOBALLY.

College of Fine Arts (CFA) researchers and scholars are expanding their scope to include scholarship on a global scale. In every CFA department, faculty and students are rising in global scholarship and recognition. For example, Nikki Arnell, assistant professor of graphic design, presented to a design conference in Japan and Kimberly Vickery, associate professor of graphic design, conducted photography workshops in Spain. They, along with Dr. William Allen, professor of art history, received Middle East Studies grants to exhibit at the Istanbul Biennial, the world's most-comprehensive international art exhibition. Dr. Temma Balducci, associate professor of art history, and her students spent a summer studying art history and visual arts in Madrid. Tim Bohn, assistant professor of theatre, has published plays that have been performed in other regions of the U.S., while the Department of Theatre has helped to bring international performances to A-State's Fowler Center.

As the Department of Music's enrollment has grown, they have extended their reach far beyond Arkansas. Dean Bowyer and Dr. Marika Kyriakos, associate professor of music, presented research papers in Buenos Aires. Dr. Dan Ross, professor of music, performs in Poland and France and has helped a Polish chamber orchestra develop compositions and organize performance tours in the United States. The student choir performed a six-concert tour in cities across Spain, and four A-State student singers and musicians were among those selected from around North America to participate in Opera Maya, an international summer music program in Mexico.

Dr. Neal Bartee, professor of music (trombone), recently performed in France and Hong Kong; a trombone student ensemble performed at an international conference in Alabama. Dr. Chris Wilson, assistant professor of music (trumpet) has participated in the Orvieto Musica Festival in Italy for several years as invited faculty. Last year, 12 A-State students accompanied him as a part of the largest trumpet group in the festival's history; all of the pieces they performed were original compositions by A-State faculty and alumni.

Music has the power to not only stir emotion, but it can also create change in a person. It's not just something you listen to – it affects the deepest part of who you are.

PHENOMENAL FACULTY

When asked why the College of Fine Arts is growing so rapidly, students reported being inspired by the national and world-renown of A-State faculty members, such as Dr. Dan Ross, who frequently lectures at the Julliard School and is known worldwide for developing a machine used in producing reeds for oboe and bassoon. One student said, "A lot of people don't get to see just how phenomenal our faculty are. The number one reason I moved here was to work with these faculty." "Our faculty were so welcoming and enthusiastic," another said; "they want to interact with and enfold us, so I chose Arkansas State from a city five hours away."

Learn more about Chris Wilson's symposium in Italy. Scan this QR code to watch a video.

AN UPRISING OF ENTHUSIASM

These trumpet ensemble members found their performance in Italy to be a career- and life-changing experience. "I'm a future music educator and in order to be an excellent educator I must perfect my craft," said one student. "We had the opportunity to do that at the festival." It was a career-defining experience for another student who said, "I learned so much more and determined this is really what I want to do with my career," while another said, "To become well rounded, we should experience as much of the world and other cultures as we can. People tend to become narrow-minded and for us to take this opportunity in college while our time is flexible, I think it makes us better people and shows us the American way isn't the only way."

The trumpet ensemble members also participate in the A-State Marching Band. In 2013, the 220-plus member marching band was the largest in A-State's history. Other CFA performance groups have also grown. Internally, the CFA produces more than 300 performances annually and students view the performances as an important recruitment tool. One music student noted the Marching Band in particular "could be considered the largest support group for the campus. We represent the university well and high school students see us at events and want to join. A lot of high school bands come to play on the field with us." Another voiced the sentiment of CFA performers. "We say 'Red Wolves Rising,' and it's true," said the student. "The university is continually growing. It isn't just the music department – it's everywhere – and there is growing excitement around the state. High school students are catching on to that and eager to enroll at Arkansas State."

Under the leadership of Bowyer, global scholarship is expected to increase even further, for both students and faculty. He hopes to launch a study-abroad program in summer 2015 that would include all CFA departments in one international location. Bowyer's own international performance background, which has spanned the globe, informs and influences his plans and reasons for being excited about increasing international opportunities for students and faculty. "I learned a lot living overseas," he noted. "It is a huge educational opportunity to get out and see the world from a different perspective. It changes the way you look at the world."

The Sound of the Natural State
A-State's 220-plus member marching band helps generate statewide excitement for the university.

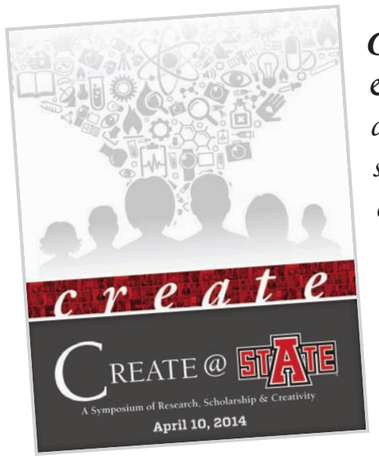
We say 'Red Wolves Rising,' and it's true … it isn't just the music department – it's everywhere – and there is growing excitement around the state.

Pictured are faculty and student trumpet ensemble members *(from left), front row: Joshua Mobley, Hunter Durham, Dr. Don Bowyer, Adonis Finch and Ali Guedea; back row: Cassidy Lucas, Christa Burgess, T.J. Irvin, Seth Jansen, Matt Penny, Dr. Christopher Wilson, Crist Blackwell and Joshua Poff (not pictured: Matthew Bounds).*

2014
4th Annual!

CREATE @ STATE

A Symposium of Research, Scholarship & Creativity



Program and abstract booklet for the third annual Create @ **STATE**: A Symposium of Research, Scholarship & Creativity

Create @ STATE : A Symposium of Research, Scholarship & Creativity *is an annual event dedicated to the celebration of research, scholarship and creativity by students at Arkansas State University. The symposium is an opportunity for both undergraduate and graduate students in all disciplines to showcase their accomplishments through poster, oral and creative/artistic presentations. Faculty members across the A-State campus serve on the Advisory Board, as student mentors, presentation judges, room hosts and enthusiastic audience members.*

The fourth annual **Create @ STATE** on April 10, 2014, featured a record number of participants. Over 300 undergraduate and graduate students presented their scholarly work, which was mentored by 85 faculty members. The day-long symposium also featured Three Minute Thesis (3MT©) and Gone in 60 Seconds (G60) Live Pitch competitions, and two new events: a Documentary Film Festival and an Art Gallery Exhibition and Artist's Talk.

Thirty-seven students received awards from Research and Technology Transfer totaling $4,700 in gift cards to the A-State IT Store. In addition, winners were chosen for the 3MT© and G60 competitions. Phi Kappa Phi awarded the "Phi Kappa Phi Love of Learning Award" to one undergraduate and one graduate poster presentation for scholarly works that exemplified the motto of Phi Kappa Phi. Other colleges created awards specific to their disciplines or interests as a way of demonstrating their support for student scholarship. The College of Sciences & Mathematics awarded cash prizes for best poster and best oral presentation in the disciplines represented in the college, and the College of Agriculture & Technology gave an award for the poster or oral presentation that offered the best use of technology to solve problems in natural resource management.

Create @ STATE continues to add new and innovative ways to engage students in the educational research experience. Deep commitments, enthusiasm and support from faculty and administrators continue to add to this event, providing an expressive outlet for student researchers and scholars that will enhance their professional development. The fifth annual **Create @ STATE** is scheduled for Thursday, April 7, 2014, in the A-State Carl R. Reng Student Union.

Winners from 2014 Create @ STATE

BEST OVERALL UNDERGRADUATE POSTER PRESENTATION

William Blair, Chemistry
High Throughput Phenotyping Approaches to Identify Salt Tolerance Lines within a Rice Diversity Panel
Faculty Mentor: Dr. Argelia Lorence, Chemistry & Physics

BEST OVERALL GRADUATE POSTER PRESENTATION

Keitha Keech, Family Nurse Practitioner
Effects of Diabetes Self-Management Education and Teaching on HbA1c Levels
Faculty Mentor: Dr. Lisa Waggoner, Nursing

BEST OVERALL CREATIVE/ARTISTIC PRESENTATION

Cassie Phillips, Biological Sciences
The Role That Gender Plays in Coming Out and the LGBT Community
Faculty Mentor: Dr. Kathleen Carrick, Social Work

BEST OVERALL UNDERGRADUATE ORAL PRESENTATION

Ryan Lee, Counseling & Michelle Cebada, Counseling
A Service-Learning Approach to Student-Focused Motivational Interviewing
Faculty Mentor: Dr. Gill Strait, Psychology & Counseling

BEST OVERALL GRADUATE ORAL PRESENTATION

Mary Kilmer, Environmental Sciences
Water Quality Impairments of the Cache River, Arkansas: Who's to Blame
Faculty Mentor: Dr. Jennifer Bouldin, Biological Sciences

A-State students from all disciplines participate in the day's events.

2014 Create @ STATE Documentary Film Festival

The Documentary Film Festival included two student produced short-films examining the impact of the 2013 tornado in Moore, Okla., and the events surrounding the 1998 Westside School shooting. Zane Wright, son of Shannon Wright, who died in the shooting while shielding a child, was one of the ***Westside Shooting*** student producers. Dr. Michael Bowman's film, ***The Battle for Freedom***, included four A-State student production assistants and aired on the Arkansas Educational Television Network.

2014 Create @ STATE Art Gallery Exhibition & Artist Talk

Artwork by **Jessica Corder** was featured in the Art Gallery exhibition. Corder presented an Art Gallery Talk to attendees about her work in a series entitled 'Strangers.'

Andy Sustich

Friends:

I hope this edition of MEASURE helped you gain a deeper understanding of the many ways A-State's scholarly activities impact our students and our future. We are proud of the innovation and drive of our faculty, staff and students, who are educating, enhancing and enriching lives. In research administration, we appreciate our unique perspective gained through supporting the variety and magnitude of intellect, discovery and creativity taking shape across campus. We crafted this edition of MEASURE to share that perspective with you.

Research & Technology Transfer is committed to supporting discovery and innovation through research initiatives at Arkansas State. Our office provides support through activities such as our annual student research symposium **Create @ STATE**, Institutes for Research Development benefiting staff, faculty and graduate students, and the MEASURE research publication, to name a few.

On behalf of Research & Technology Transfer, along with A-State's artists, scholars and researchers, we extend our deepest appreciation to you. Thank you for taking the time to read this issue and we look forward to sharing the next edition with you.

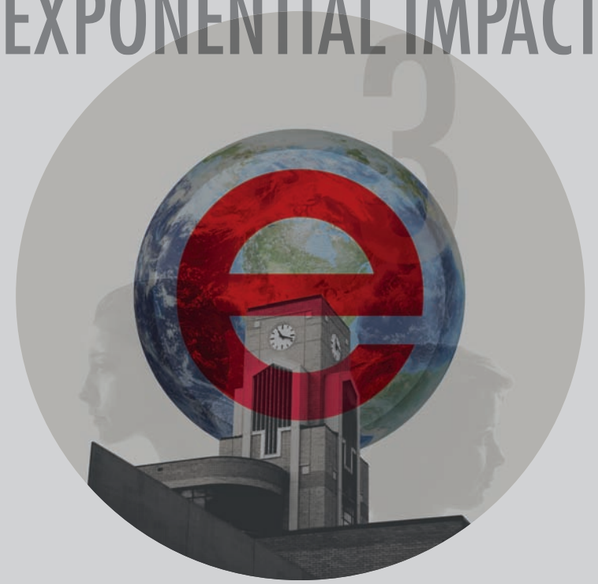
Best regards,

Andrew T. Sustich, Ph.D.
Vice Provost for Research and Graduate Studies

MEASURE

THE RESEARCH PUBLICATION OF ARKANSAS STATE UNIVERSITY

EXPONENTIAL IMPACT



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Thank you for your consideration and support.

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