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About the Cover:

Socorro Herrera leads a professional development session with teachers in the Shawnee Mission School District.



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Paul Burden, professor and assistant dean of teacher education

David L. Griffin Sr., associate professor, assistant dean and director of the Center for Student and Professional Services

David Thompson, professor and chair of the educational leadership department

Ken Hughey, professor and chair of the special education, counseling and student affairs department

F. Todd Goodson, associate professor and chair of the curriculum and instruction department

Left:

Calling all superheroes! Tell the world what's great about the teaching profession. Snap a photo of a colleague or future teacher and add it to the conversation. It's the quickest way to be a #Force4GoodKS!

Patrice Scott is editor of Connections Magazine, which is published annually. Share story ideas with her at **785-532-2521** or **patrices@k-state.edu**. Photography was contributed in part by Rusty Earl and Mary Hammel. This magazine was produced in cooperation with the Division of Communications and Marketing.







Hello!

I am filled with pride every time I think of the members of K-State's College of Education family: faculty, students,

staff, alumni and friends. There is so much to share with you that it's best to dive in!

Whether it's through research, innovative programming, inspiring future teachers or encouraging people to become teachers, K-State's College of Education is the largest teacher preparation program in Kansas for good reason. This edition of Connections contains an in-depth look at some of our faculty researchers whose intellect and expertise are reshaping teaching and learning of young minds in classrooms across the globe. Whether it's through technology, professional development or new ways to present information, College of Education faculty are touching students' lives long before they arrive on a college campus.

You'll read about five researchers who are making a tremendous difference in schools.

But there is one colleague and friend who retired this year and we will forever be grateful for her time at K-State.

Linda P. Thurston, associate dean for research and Lydia E. Skeen professor, retired this summer. It is difficult to put into words the amazing mix of traits — curious, driven, ever-capable and empathetic — that make up who Linda is. She brought a critical lens to each discussion, careful to always inquire if resources and programs were available to all students. She leaves a legacy — but for those who knew her well, I believe it's more accurate to say Linda's leaving behind an enormous intellectual footprint and a heartbeat that will echo in Bluemont Hall well into the future. I'd like to publicly thank Linda for all she's done for the college, and also for the students everywhere who may never know her name but benefit from her compassion and tireless pursuit of equity.

One of the most rewarding aspects of being dean is being able to innovate, collaborate and support education leaders. It's just so pleasing when they are K-Staters! The college recently collaborated with the Kansas State Department of Education and Commissioner Randy Watson '81, '84, '90, to develop the "Be a Force for Good" teacher recruitment campaign. We also worked with **Deputy Commissioner Brad Neuenswander** - who is working on his doctorate - on a research project with statewide impact. K-Staters John Heim '87, chief executive officer of the Kansas Association of School Boards, and G.A. Buie '96, chief executive officer of the Kansas Superintendents Association, are Kansas Educational Leadership Institute, or KELI, partners. Rick Doll '80, '89, a K-Stater and former Kansas Superintendent of the Year, serves as the KELI executive director. There's a lot of purple decision-making going on.

Thank you, one and all, for your commitment to education. Kansas needs you and your K-State College of Education appreciates you!

With purple pride,

Debbie Mercer

College welcomes new recruitment coordinator



Danae Daellenbach joined the College of Education as a recruitment coordinator this summer.

Daellenbach earned a bachelor's degree in athletic training from the University of Wisconsin, Stevens Point in 2015. She came to K-State to work as a graduate assistant athletic trainer in student health at Lafene

Health Center while she earned her master's degree in public administration in 2017. Daellenbach believes her background and experiences complement her new position. "My passion for lifelong learning brought me to the College of Education," she said. "Our most valuable resource is you, alumni and friends of the college, and I invite you to contact me with ideas to recruit future teachers and to help us identify students you believe would be great teachers."

Daellenbach encourages you to contact her at danaed@k-state.edu and to follow the college's recruitment endeavors at #KStateFutureTeachers.

Dr. Shelbie Witte '06, '08

College of Education

Changing lives by the book

Books and characters are at the heart of literacy projects. And this year's alumni fellow, Shelbie Witte, repeatedly reveals her heart and character through inventive educational projects, like one that bridged a 7,000-mile separation between military-connected children and their deployed parents.

ALUMNI

Witte, associate professor and the Kim and Chuck Watson endowed chair, secondary literacy education at Oklahoma State University's College of Education, was named the College of Education's 2017 alumni fellow. "It's humbling, for sure," she said. "It's such a meaningful award for several reasons. I love K-State, I love Manhattan, and I love having worked at Fort Riley Middle School."

After graduating from the University of Oklahoma in 1995 and teaching for seven years, Witte moved to Kansas, but it wasn't the sunflowers that attracted her. "I met a boy, an Army boy and relocated here to be closer to him."

The move changed the trajectory of Witte's career when she accepted a teaching position on post in 2003. "At Fort Riley Middle School, there was more diversity

and more challenges than I'd seen in my career," she said. "To witness firsthand what it meant to children when a parent was gone

for nine months because they were deployed and some of the kids' basic needs and emotional needs weren't being met, and what it meant to teach kids who had already been in five different schools that year, was an awakening. I needed to learn more about teaching diverse learners and to learn more

about the changes happening in literacy."

That deep desire to reach students led her back to school, K-State, where she earned two graduate degrees.

"I felt like I was a good teacher when I started the graduate program, but I became a better learner because I questioned the things I was doing as a teacher and better reflected on the ways I approached my class and students," she said.

In 2005, Witte developed the Talkback Program, a literacy project where her middle school students and K-State future

> teachers could interact online. The concept germinated from a parentteacher conference when Witte was shocked to learn a student who was not engaging in the classroom was writing poetry and essays for hours on the computer at home. After she attended a conference in

Indiana where collaborative writing projects were discussed, Witte had an "aha moment" and the Talkback Program was born.

"I felt like I was a good teacher when I started the graduate program but I became a better learner because I questioned the things I was doing as a teacher and better reflected on the ways I approached my class and students."

> The biggest surprise came when a parent who was about to be deployed to Iraq asked if he could get a list of the books they'd be reading in the Talkback Project so he could discuss them with his child. "I said I can do you one better. I'll send you the books and you can also get online and talk with us and you can interact with all of these students. It wasn't long before he shared my email with other parents, who were soldiers in the same unit, so we had great participation. The parents felt a tie back to home through the pages of those books."

Passionate about literacy since she was a voracious reader growing up in Chickasha, Oklahoma, Witte has been actively involved with the National Writing Project for two decades and developed a website, shelbiewittie.com, for educators that contains links, articles, apps, tools, videos and blogs.

According to Witte, book characters loosely fall into two categories: mirrors and windows. "Mirrors" are characters who are a reflection of the reader, and "windows" are characters who open new worlds and experiences to the reader. Witte said her actions are windows to her soul and she hopes her future teachers will mirror her example with heart.



BIOGRAPHIES: CENTRAL TO IDENTITY, TEACHING AND RESEARCH

by Socorro Herrera



As a first-generation Mexican-American born in the United States, I am keenly aware of both the opportunities and the challenges that students like me experience in our K-16 educational systems. I am also aware that our K-12 classrooms are increasingly diverse, at multiple levels, and that this trend will continue for the foreseeable future. So, if America is to retain its place as a scientific, technological and innovation powerhouse, it is and will continue to be essential that increasing numbers of our culturally and linguistically diverse, or CLD, students receive the best preparation possible in our K-12 schools. It is well-documented that a well-educated and innovative workforce is essential to national productivity.

Regrettably, successes among CLD students are not currently the norm. In fact, in four of the five states with the highest population of CLD students, only 25 percent or fewer score at or above the basic level in reading (Samson & Collins, 2012). As we know, that skill is fundamental to learning. Yet, recent research and analyses continue to indicate that little attention has been afforded to the critical knowledge, skills and alignment to standards of best practice that teachers must demonstrate in order to be effective with these students (Murry, et al., 2015; Telez, 2010).

Therefore, my research agenda surrounds the improvement of teachers' readiness for and classroom instruction with CLD learners. In particular, I explore evidence of standards-based instruction utilizing models and strategies that are effective in building students' language skills and conceptual understanding. I use resulting insights to determine how best to prepare teachers to implement such models and strategies in various educational contexts. I also research how particular pedagogical and instructional actions support the progress and achievement of CLD students.

Over the past few years and through the support of Dean Mercer, several colleagues and I have collaborated with the Shawnee Mission School District and other Kansas school districts to conduct research in association with the professional development of K-12 teachers for diversity. Like other classrooms across the country, these classrooms tend to be highly diverse and complex for teachers and school leaders. The biography-driven instruction, or BDI, method



Socorro Herrera and Shabina Kavimandan, CIMA project manager and instructor, plan professional development sessions.

(Herrera, 2016) and its associated strategies are the

focus of this professional development. Teachers build

a holistic understanding of students' assets, needs and funds of knowledge. With this information, they are

able to support meaningful connections to the content

anecdotal, there is emergent and compelling evidence

student engagement, motivation, comprehension and

patterns of BDI strategy effectiveness for increasing the capacities of both elementary and secondary teachers

that teachers who maximize BDI strategies increase

retention. This new research builds on documented

to demonstrate culturally responsive instruction

Miller & Fanning, 2012).

(Herrera, Holmes & Kavimandan, 2012; MacDonald,

Miller, Murry, Herrera & Spears, 2013; Perez, Holmes,

Based on this research foundation, my colleagues and I in the Center for Multicultural Advocacy, or CIMA, have

begun to develop new and multifaceted proposals

for external funding to extend upon this line of BDI

and research to inform teacher preparation for pre-

service and in-service teachers. This is important work

because the field has, for years, emphasized the growing

necessity of culturally responsive teaching for educators

in diverse and complex schools. Yet, few well-elaborated

and academic language of the lesson. Although the preliminary quantitative findings have been fewer instructional strategies, have been intricately and explicitly developed from this notion of appropriate praxis for today's classrooms.

It is my hope that external funding for this work and this research will continue to emerge from the successes that we are witnessing with teachers and CLD students. Research holds the promise of informing: 1) better ways to prepare teachers for diversity and CRT; 2) targeted and purposive strategies that K-12 teachers can implement immediately to enhance the potency and reach of their teaching in diverse classrooms; and 3) robust ways to measure associations between teachers'

diversification of their practices and impacts on the achievement and other successes of CLD students.

My professional career has been devoted to advancing the personal, academic and professional success of CLD students, and I take great pride that our work in CIMA has touched students around the world. Our research has generated more than \$46 million in grants for K-State's College of Education. We have received 24 awards directly from the U.S. Department of Education for \$35.5 million, another \$2.8 million has come from subcontracts with other institutions of higher education and school districts, and \$9 million from international sources. Since our work at CIMA first began in 1999, these resources have supported our research and the professional development of teachers working with CLD students.

I am proud that the passion that drives me, and the entire CIMA staff, has expanded the knowledge base for educators everywhere. The CIMA research agenda has produced nine textbooks, 14 book chapters, 26 refereed publications, and nine non-refereed publications. In addition, we regularly present the outcomes of our work at local, regional, national and international conferences. Our influence, therefore, has been both in print and imprinted on the future through our service and volunteerism directly impacting educators, school leaders and students across the globe.

As a CLD student myself, I have no doubt that open-minded, seeing, proactive and caring teachers are the reason why I am in a position to conduct this research today. Because of these academic advocates, I can make a difference in the lives of others who will determine the nature of our tomorrows. I strive each day to pay that forward and to touch the school experiences of exponential numbers of CLD students who will also excel, precisely because of their teachers.





by Sherri Martinie

I love math. As a classroom teacher, there was no feeling in the world like working with students when they experienced that "light bulb moment." All students have the ability to learn math and experience success — that's what has driven my research agenda since joining the faculty at K-State.

My research agenda is oriented around the interaction of teacher practices and student practices in math classrooms and their impact on student achievement and mathematical thinking. I spent 19 years in the classroom before coming to K-State. Leaving the classroom was a difficult decision because I felt like I was making an impact but the opportunity to have a larger impact working with in-service and pre-service teachers prompted me to make a change. My research agenda is defined by my classroom experience and my desire to connect research and practice.



My research agenda was launched into action with the funding of my first grant at K-State. The vision of Project Quest was to form a core group of teacher leaders and mentees and equip them with the knowledge and skills to be leaders in the improvement of mathematics teaching and learning. Project Quest formed a professional learning community consisting of project leadership and teacher participants who worked together to achieve four goals: 1) Increase teacher mathematical content knowledge; 2) Increase the conceptual depth of math learning in classrooms by focusing on the Standards for Mathematical Practice; 3) Improve the implementation of standards-based mathematics instruction and curriculum in K-8; and 4) Disseminate teacher-created lesson plans and formative assessment probes. I wanted to know in what ways we can support teachers in engaging in effective teaching practices and what impact this has on students' engagement in math practices and on their achievement. This grant established solid partnerships with local school districts. The successes and challenges of this grant informed the work of current grant projects.

Continuing to study the interplay of teacher practices and student practices, the vision of Project Achieve is to create a leadership cadre of mathematics teachers at each participating school that can support the district as a whole as well as districts outside the partnership. Each teacher works directly with a building or district leader to guide the design and implementation of an action plan to carry the work of the grant into classrooms throughout the school year. The goals of Project Achieve are similar to Project Quest, but we recognized the need to focus on the teacher practice of building procedural fluency from conceptual understanding. This involves defining fluency in a broader way, understanding the conceptual foundation for a given procedure, engaging students in the building process and assessing fluency. We seek to answer the questions of how teachers effectively build procedural fluency from conceptual understanding and how we support teachers in this process.

After the first year implementing Project Achieve, we created a professional development session to be used statewide. This was essential because while knowing math is important, it is not enough. Teachers must also know how to engage students in the learning of



mathematics in a deep and meaningful way. Too often the teacher in the math classroom is the one doing math, solving problems and explaining it to others. Students need to be able to think mathematically, which requires learning math in a deeper way than what most math teachers experienced as a student. Math can no longer be viewed as a collection of facts and skills to be memorized; rather, it must be seen as a network of important, connected ideas. Teachers often teach the way they were taught, which served us well. But teaching and learning in the 21st century required us to challenge teachers to experience learning math in a new way.

As a supervisor of secondary math practicum students and student teachers, I partner with classroom teachers in the training of preservice teachers. My pre-service teachers learn a great deal from their mentor teachers, and an amazing benefit of our model is that mentor teachers learn from the student teachers as well! In the methods class, students engage in authentic problems and make connections among concepts. They also study the same teacher practices that we promote in our grant work. This allows everyone to use the same language and enhances the opportunity to learn from one another.

I have partnered with schools, educators and administrators through grant projects. Partner districts include Manhattan, Geary County, Morris County, Wamego, Clay Center, Rock Creek and Garden City. The work of this project has been shared with districts beyond the project partners as well. Our projects are designed to create a core group of teacher leaders. As a result, I am involved with the leadership teams for the partner school districts in the grant and I attend team meetings. I provide resources and help them design professional development. This enables me to gain a deeper understanding of the needs of the partner districts. Our current grant project, Project Achieve, draws on the relationships formed with administrators in a much more meaningful way. Goals for the project were written with input from partner districts. Teachers participating in the grant have support from building administrators as they apply for the grant at a special summer institute and throughout the school year as they implement practices they studied at the summer institute.

Our research project cycle begins each year with a two-week summer institute. We partner with mathematicians from K-State's College of Arts and Sciences to plan and implement the summer institute. K-State mathematicians present math content in the mornings with math graduate students. A mathematician presents an interactive math content session for approximately one hour followed by two breakout sessions where teachers have a choice of one of two topics. Teachers participate in a book study in the morning during one of the other two breakout sessions. The breakouts are activity-based, enabling participants to engage in solving problems. Book studies are facilitated by College of Education faculty and a graduate student along with the project math coach. Afternoon activities are reserved for a pedagogical focus. The presentations focus on eight researchbased, high-leverage teaching practices, with special emphasis on building procedural fluency from conceptual understanding. Teachers read case studies, watch videos of classroom vignettes and engage in classroom tasks. They reflect on these activities and evaluate the ways in which they are already engaged in these practices and what they can do to improve these practices in their classrooms and schools. These activities were chosen because they align to the goals of the project and they enable teachers to actively engage in professional development and connect it to their classroom experience. Teachers then create an action plan to focus on implementing practices more effectively in their classrooms. We provide follow-up professional development and observations in classrooms.

Through my research, I hope to improve the teaching and learning of mathematics, which will significantly improve student achievement. Ultimately, I hope to improve the way people think and feel about mathematics so it can be a solid foundation and help them achieve their dreams.

Burenheide returns to classroom to advance research agenda

by Brad Burenheide

After receiving a promotion to associate professor in the College of Education, I was at a crossroads. I'd covered a lot of ground studying how to teach social studies and sharing that with our future teachers while gaining a reputation amongst my peers across the country as a pragmatic researcher of history education in particular. However, at this time, I confess to having doubts about the direction of my teaching. Was what I was teaching my students meaningful and appropriate? Was I staying on the cutting edge of social studies education, especially with the rise of technology and one-to-one initiatives in local schools?

With that in mind, I began the process of reviewing my goals and research agenda and pulled out a file that dated back to the beginning of my career as an academic. One of my visual organizers detailed a part of my agenda that I'd overlooked. I had said at the beginning of my career in higher education that I wanted to make sure that I stayed connected with the schools. I had always seen myself as a teacher. To do that well, I wanted to make sure that I was still connected as a teacher. Over the next few years, this desire stayed at the forefront of my mind. During a student teacher postobservation conference with a cooperating teacher at Rock Creek High School, the teacher lamented the fact that the school did not offer any electives in social studies. This sparked the germ of an idea that led to this project.

I ran the idea by Mr. Schmitz at Rock Creek and he immediately encouraged me to run with it. I had kept my teaching certificate current, so I simply went in and asked the principal if he was amenable to the idea. That idea was having me teach a class at Rock Creek and research if my personal and practical theories of education were still effective, even after nine years removed from having a secondary classroom. I that the strategies and pedagogy I teach my methods students are effective. This also gave me a multitude of stories to share with my K-State students. I could talk about actual behavior, management or

was elated that Rock Creek Principal Eric Koppes needed only about five seconds to consider it. It was a very gratifying moment to be trusted with the kids and to have the opportunity to refine my craft in an actual secondary classroom.

I was assigned a current issues elective and taught a 90-minute class every other day on the Rock Creek block schedule. This allowed me to cover a breadth of material at a great school. Rock Creek is where my kids go to school. It has fabulous teachers who do some amazing things with some wonderful kids. Koppes allowed me the freedom to explore various aspects of social studies and took it a step further with a new theory he was exposed to in letting the kids set the curriculum.

On the first day of class, the kids' jaws dropped when I asked them what they

wanted to learn and explore over the course of the semester. This is something I explored going to a technology and pedagogy conference. By having kids explore topics they chose in an academic manner, we were able to get in-depth and have them motivated and engaged about subjects such as the 2016 presidential election, economics and constitutional rights.

This idea of having students drive the curriculum was just one of the components of my project. I was able to explore my personal and practical theories of education in a classroom setting and make sure

Burenheide, left, with the Johnson County First Amendment Foundation's Sara Christensen and College of Education professor Tom Vontz present a check to the winners of the 2017 "We the People" competition for high school students.



pedagogy issues with a current episode from my teaching.

Additionally, I pulled college students into the classroom. When my students complete a practicum in secondary classrooms, I often invite them to participate in teaching in my class. If I had students who needed additional work or wanted practice on an aspect of teaching, I had a ready venue where I could get these students access to more experience. Or if a student came to me with a problem, I was able to put that situation in my class and see how I would handle it in a pragmatic manner.

My relationship with Rock Creek has led to some other

partnership activities as well. The family and consumer science teacher across the hall was teaching a unit on interviewing for jobs and was lamenting that she was having difficulty putting mock interviews into a realistic setting. So, I brought my entire class to the school to serve as interviewers for the high school students. This arrangement worked so well that the two teachers are planning to make it a regular part of the curriculum of their programs.

After two years of working at Rock Creek, I will step away from teaching the class for the next year so that I can concentrate on

writing, specifically about my experiences teaching the Current Issues course. But I am planning on returning for another two-year cycle after this one-year hiatus. However, I will not be a stranger at "The Rock." Until then, my talents will be utilized by the school in several other capacities as a public address announcer for Rock Creek varsity football, basketball and wrestling events and as a scholar's bowl moderator for the home tournament.

It has been a great experience teaching at Rock Creek. The school has a talented faculty and outstanding kids who perform at exceptional levels in all that they do. Being in that environment has been a great motivator and catalyst for me to refocus on what I need to do in the future and steer my research in a meaningful manner. Additionally, it has just been pure fun. Because teaching is my vocation, I genuinely looked forward to driving out to the school to teach, and the benefits I gleaned as an academic have been invaluable both to myself and to my college students.

Burenheide leads a class discussion at Rock Creek High School.



Staples SHIFTS to next generation science standards

by Kimberly Staples

Research is important to me because I believe all students are unique and need their scientific ideas revealed by teachers who purposely collect and analyze cognitive pathways to inform instructional design, engage learners and implement effective instruction. As a former high school biology teacher, NASA/NOVA fellow and elementary science methods instructor, I've learned effective science instruction is rooted in determining the reasoning behind a chosen cognitive pathway for making meaning of science phenomena. It's both fascinating and illuminating when I analyze diagrams to determine if reasoning pathways present naïve ideas, alternative conceptions or accurate explanations of science phenomena. Being able to explain to the student how his or her ideas have evolved to a current model supports the trajectory of a learning progression of accurate scientific explanations. Because of this, my research is integrated into the science methods course to model effective formative and summative methods of assessment.

As I mentor undergraduate research assistants, they experience strategies I designed to analyze diagrams. This provides an opportunity for them to participate in research and assess their mental framework(s) for understanding science phenomena. I want future science teachers to internalize the relationship between teaching and research as analogous to obligate mutualism — an essential interdependent mechanism for science teaching and learning.

I have partnered with schools and educators through funded projects such as Project Connect, and Project SHIFTS: Advancing 6-12 Science Achievement: SHIFTS in Next Generation Science Teacher Professional Development." Both grants were designed to emphasize methods of eliciting students' mental models of science phenomena while enhancing teachers' science conceptual understanding. Secondary and middle-level science teachers, principals and paraeducators from USD 475 Geary County Schools and USD 500 Kansas City, Kansas Public Schools, and secondary science pre-service teachers engaged in professional development. This initiative involved using iPad technology and biotechnology to implement varied forms of diagrammatic representations to engage learners in their science understanding. Through Project SHIFTS, each district received a complete classroom set of polymerase chain reaction biotechnology equipment to promote student research.

During the academic year, I conduct a field trip with secondary science future teachers to a middle school to teach a lesson emphasizing a science concept or science and engineering practice based on the requests of the classroom teacher. The research into students' cognitive pathways for reasoning led to the collaboration with USD 475 and USD 500, including the development of a biotechnology club at KCK's Northwest Middle DA. Renderly : Science Educeri



School and supporting the biotechnology club at Junction City Middle School. The goal is to deepen students' understanding of membranes, the cell and DNA through experimentation utilizing biotechnology in the same manner as a research laboratory. Preparation for the lesson involves sessions with pre-service teachers to discuss their mental frameworks of the role of DNA in regulating cellular function and their ideas of students' reasoning patterns. The research component involves eliciting sixth-graders' views of DNA and the extraction process through diagrammatic representation and questioning probing techniques. In this era of the Next Generation Science Standards, it is important to use current technologies to strengthen students' conceptual understanding of biological concepts, especially prior to secondary school — and this is accomplished through biotechnology. The framework of the research is applicable across content areas and serves as a model for future and current science teachers to inspire the next generation of scientists, demonstrating ideas matter and all students should experience science as a human endeavor.

K-State's future science teachers acknowledge the responsibility to share with our stakeholders in preparing students for college and career readiness in the present for the future. My students enthusiastically accept the opportunity to serve the community in this capacity. Each semester I am pleased to have outstanding, service-oriented students who are eager to support our science teachers and students. We embrace the university's Principles of Community in understanding we are part of many communities and have an obligation to be engaged in a positive manner. These field experiences provide professional development for science teachers across Kansas as well as mentoring opportunities for new teachers. My research has led to the development of mentoring projects in the classroom and the field for undergraduate and graduate students, and new science teachers.

During the semester, future teachers conduct site visits to schools with K-State alumni. One of the visits included USD 456's Marais des Cygnes Valley High School. Brock Baxter, a civil engineer who holds a master's degree in curriculum and instruction and teaches physics, chemistry and math, invited the pre-service teachers to observe and discuss his unique journey into education and the science classroom environment. Michelle Schulze, principal, and Baxter shared the structure of STEM experiences in their school. Pre-service teachers were able to interact with students and tour the school and community. We engaged in a critical discussion of the wonderful science teaching opportunities in rural districts.



Kimberly Staples, right, visits with Ryan Swift, secondary physics education major, at the Undergraduate Research Fair.

During the science practicum, pre-service teachers experience another area of my research designed to examine students' framework for understanding science phenomena through a K-12 science learning progression model. The candidates begin their experience by teaching engineering design — emphasizing a disciplinary core idea — in elementary school, followed by a practicum experience in the middle or high school, and they finally transition to student teaching. During each core experience, the candidates examine the progression and level of sophistication in understanding a specific disciplinary core idea and a specific science and engineering practice in their major content field. This longitudinal study continued during their first year as teachers, creating a system of continued mentoring.

At this point, my research grants have totaled more than \$750,000 in support of science professional development for undergraduates, alumni, science teachers and school personnel. This research has impacted science teaching and learning across the state of Kansas and beyond. The secondary science education program provides a research-driven journey to prepare science teachers as leaders. This is so important to me personally and professionally that I have established a scholarship fund — the Kimberly A. Staples, Ph.D. Secondary Biology Teaching Award - for future biology teachers during their student teaching semester.

The College of Education is a partner in 100Kin10 and has committed to increasing the number of highly qualified STEM teachers in the U.S. In the future, I plan to expand biotechnology integration into middle school programs across rural and urban districts to strengthen student STEM achievement and readiness for college and science-related fields.



Martinez **Martinez** about technology, focus training

by Tonnie Martinez

My research agenda focuses on impacting student learning through innovation and collaboration, as well as a current study stemming from the growing body of research on concentrative mindfulness training. These techniques are being used in a number of fields, including the military, to increase focus and resiliency while reducing stress. The experience of this pilot project ultimately resulted in a grant application for a full-scale research study involving 900 middle school participants.

Students today have exceptionally stressful lives, which caused me to wonder if mindfulness could impact student success. Schools are a reflection of society and what happens in society that isn't resolved outside of the school day is brought into classrooms every day. News stories along with conversations with frustrated teachers and school administrators reinforced the need for a solution. Was there a nonmedical, noninvasive way to reduce student stress? Could a research project quantify those results in a statistically significant way?

For the pilot project, I used the MUSE, a wearable device in the form of a headband that senses the electrical rhythms of the brain, or EEG. The headband is coupled with an app that monitors the user's brain electrical activity and gives immediate feedback in the form of nature sounds so that a calm or meditative pattern can be achieved. Data is revealed at the end of the session. Use of the MUSE over time is thought to help reduce distractibility, improve stress control and improve mood.

After determining the MUSE's applicability for students in middle school, I contacted a partnership middle school with about 500 students and explained the idea for a research pilot. After gaining buy-in from administrators and counselors, purchasing a few of the MUSE headbands, and securing parental and student approval, 20 students who were frequently sent to the office for behavioral redirection were officially enrolled in the focus-training study. Half the control group continued with the school's approved protocol for behavioral redirection; the other half — the treatment group — was given three minutes of focus training twice a week for 20 weeks with the MUSE.

During their homeroom period, students in the treatment group left their classrooms, picked up a MUSE and iPAD and started the three-minute session. A gentle voice offered instruction as to how to breathe and what the different sounds meant. For example, if the student chose the beach, winds howled dramatically to indicate the need to focus on breathing. No wind equaled a calm mind. A chirping bird indicated an exceptionally calm and focused mind. Nature sounds quided the students.

The initial data revealed only one student in the treatment group had the same number of referrals; all of the others decreased, with one student's referrals plummeting from 19 in the previous semester to zero during the

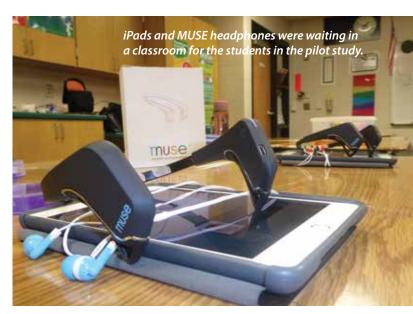
treatment period. Incidents for behavioral redirection for the 10 students in the control group remained at the same rate or increased during the research period. Every student in the treatment group increased the ability to focus according to brainwave measurements taken during the sessions.

In exit interviews, students in the treatment group used words like "soothing," "calming" and "relaxing," and even reported they could hear the sounds of the MUSE as they used the breathing techniques at home when they felt their stress levels rising. Because the students seem to appreciate the MUSE so much, I opted to leave them at the school in the counselor's office for the duration of the semester so students and faculty alike had access to the device.

This pilot project was a team effort in the truest sense. I am deeply indebted to the teachers, school counselors, social workers, staff and administrators who provided everything from support to great suggestions for this project. The school counselor and social workers were particularly helpful in providing suggestions for a scaled-up version of the study.

Our preliminary results are very exciting, but they are simply that — preliminary. We held to rigorous research standards and if the grant proposal we just submitted is funded, we plan to roll out a full-scale research project with 900 students at another middle school in the Midwest to determine if we can replicate the results. We expect notification in November or December. Once again, we will buy all of the MUSE headbands and are hoping to use students' smartphones to capture the data from their sessions.

I believe this research project may have profound effects as stress and anxiety are



as much a part of students' lives today as backpacks are. As society has changed, so have the social-emotional needs of students who are dealing with issues 24 hours a day because of the nature of social media. While schools are not mental health clinics, much of the responsibility for mental health issues has been laid at their doorsteps. Who knows how this research could positively impact teen suicide, depression, anxiety, ADHD and a host of other mental health and behavioral issues. I'd like to think recognizing the role of stress and teaching students coping strategies is a step in the right direction.

While awaiting news on scaling up this project, the Office of Innovation and Collaboration will be evaluating virtual reality. In partnership with Stanford's Virtual Human Interaction Lab, we'll be taking an in-depth look at a virtual reality scenario on homelessness and how using it with our preservice teachers might increase their levels of empathy toward homeless students and families. Virtual reality has many applications. Can you imagine how valuable it could be for teachers to experience an unusually tense classroom management scenario before having their own classroom? That adds an incredible layer to teacher preparation.

Innovations in education are constant and part of my job is to test their efficacy and applicability for improving teaching and learning. We rely heavily on our Professional Development School partners' willingness to collaborate on research-based and mutually beneficial projects. Cutting-edge technology is a hallmark of our college, and it's great to be part of this team.

For more information, please visit choosemuse.com or type in MUSE headband in YouTube for demonstrations.

Thurston's legacy is a gift to all

As Dean Debbie Mercer noted in her message, Linda P. Thurston's contributions to education will echo throughout Bluemont Hall and the profession well into the future. Learn how she impacted those closest to her over her storied career.

'One of the best hires in K-State history'

Warren J. White

A colleague, Dr. Norma Dyck, and I wrote a successful federal proposal in the mid-80s to develop a series of three classes on transition skills and pay the students' tuition. We had money in the grant to hire a coordinator, so we advertised in area newspapers, which was how it was done before the internet. Linda Thurston applied - she was managing the Emma Chase café in Cottonwood Falls — and we hired her immediately. Never in our wildest dreams did Norma and I think someone with her background and skills would apply for a part-time grant coordinator position in Manhattan, Kansas. Her proposal writing skills became evident quickly and her many talents have led her to the White House, the National Science Foundation and ultimately to the position as a highly respected associate dean. She has to be one the best hires in K-State history! I am proud to be her colleague.

'Impact is without equal'

James Teagarden

Linda Thurston's impact on my personal and professional journey is without equal. As a novice teacher in the early 1980s, I was a participant in the consulting grant she secured for special education teachers. This professional development experience literally changed my life. Other projects included an equity grant for girls in the then-emerging world of computers, where Linda filmed special education procedures and techniques in my classroom and shared them with other special educators. Over the years our roles have changed but I've always seen Linda as truly a point of inspiration. Linda was my major advisor during the work on my doctorate, and without her guidance and perseverance, I would have never completed that journey. Linda's focus has always been to provide opportunity for others to grow, and I am eternally grateful that I have had the pleasure to benefit from her leadership.



'Innovative sprit and exhaustive drive'

Jan Middendorf and Cindy Schuman

Linda Thurston has been a mentor, friend, colleague and inspiration to us throughout our time working, writing and creating together. Linda has an innovative spirit and exhaustive drive that makes things happen. She has an uncanny ability to invent creative ideas and then put the right people together for the right reasons to operationalize those ideas. This is evidenced through the success of her many endeavors, but most notably in our work together with the Office of Educational Innovation and Evaluation, or OEIE, and with the National Science Foundation. Linda does not see obstacles, she only sees opportunities and approaches her work with the same philosophy. Her legacy of having an immeasurable drive serves as an excellent model for others to follow. Her influence will be truly missed, but her legacy will live on in others who have been so fortunate to know and work with her.



'Champion for social justice education'

Susan Yelich Biniecki

Linda Thurston has been a champion for social justice education throughout her career in all facets of research, service and teaching. She has impacted our understanding and practice within the realms of gender equity, advocacy for children with disabilities, faculty mentoring and many other areas. She leaves a rich legacy of engagement with the faculty and students she has touched. I was fortunate to work on one specific project that demonstrates her vision and commitment: the interdisciplinary social justice education graduate certificate program for which she led development efforts. Students have the opportunity to gain a deeper understanding of the foundations of social justice education and apply this knowledge in real-world theory to practice projects to make a difference in their communities. The program has the hallmarks of Dr. Thurston's passion for social justice education and her collaborative approach to project development.





'Like the sail of a boat'

Peggy Detmer and Ann Knackendoffel

Linda Thurston came to K-State in the 1980s to assist with a three-year federal grant project in special education. Her tenure turned into decades of commitment to social justice that touched countless people, especially those on the fringes of society and schools. She championed causes but really, she championed people. Linda was a catalyst for seeking out and bringing together some of the most diverse groups and individuals ever assembled with the goal of making things better. She was like the sail of a boat that helped steer us in the direction of the goal. We had the privilege of co-authoring "Consultation, Collaboration and Teamwork" and proudly report that this relevant text is now in its eighth edition. (The first edition included Norma Dyck.) Linda's positivity, mentorship, leadership and innovation have left their mark on her students and colleagues, as well as the state and nation.

'Building teams and community'

Linda Thurston's contribution to the college for many of us is as a colleague, mentor and friend. Her contributions included guiding us through many grant proposals, mentoring new faculty to ensure their success, and being an honest sounding board for research ideas and personal challenges. Her greatest contribution to the college, though, was that of a community builder. I recall many parties at her house where she invited all types of people, and everyone left knowing someone new and interesting. I also recall many after-work cocktail hours where just a few would gather, mixing established and new faculty, not talking too much about work but about families and hobbies. The lasting lesson I learned from Linda is that the strongest scholars are those who reach out to others, continually build new networks, and always have time to assist others. Linda's example of building teams and community is her legacy to the college.

'Mentored students as developing researchers and academics'

Paul Maxfield

I was immediately interested in getting involved when I heard Linda Thurston's vision for a journal showcasing student research in the College of Education at Kansas State University. I joined Dr. Thurston's team as a managing editor for The Prairie Journal of Educational Research. or PJER, in 2014. I've been grateful for the experience and guidance that she has provided me over the last few years. I was impressed by the way she mentored students as developing researchers and academics. She made sure that students were involved in PJER at all levels: as authors, as reviewers and as advisors on our editorial board. Ultimately, Dr. Thurston's intention was to establish a culture of research amongst the students of the College of Education. This work culminated in the publication of the first issue of PJER in spring 2016. The success of the journal could not have happened without her.



Faculty evaluate college's technology initiatives

2017 marks the fifth anniversary of the College of Education's technology initiative. It was a comprehensive, collegewide approach that included faculty, students and instructional staff and was designed to positively impact teaching and learning not only in the college but in the K-12 classrooms of our future teachers as well. Research data reveals more confident faculty and future teachers who are inspired to use technology in their classrooms. The initiative also amounted to \$600,000 in savings for students.

Linda Thurston, Ann Knackendoffel and Deepak Subramony explain their research and findings related to the initiative.

Faculty data

by Linda P. Thurston, former associate dean for research and Lydia E. Skeen professor emeritus

Teacher educators recognize the need for preparing future K-12 educators to integrate technology into their teaching, and colleges of education have an increasingly important responsibility to prepare them. In spring 2012, the College of Education instituted an iPad initiative that included providing iPads and a series of professional development sessions to all faculty and instructional staff. In developing the initiative, college administrators considered technical feasibility, financial feasibility, educational requirements and implementation of educational practice. Noting research on adoption of new technology in higher education, the initiative included several important considerations: the financial feasibility of the initiative for the college; the technical feasibility of offering professional development and ongoing technical support; the educational requirements for new teachers; and the pedagogical needs of schools served by the teachers the college produced. The initiative included these elements: provision of iPads for all instructional faculty and staff; mandatory professional development of iPad technology done in carefully planned stages; and ongoing technical and administrative support. A study was conducted to learn the impact of the iPad initiative on faculty attitude, behaviors and competencies and the use of the mobile technology.

The 69 faculty and instructors who participated in the iPad initiative — all of whom received an iPad — were required to attend three iPad professional development sessions offered by the College of Education's Catalyst Technology and Media Services during the first three months of the 2012 fiscal year. Training sessions, each lasting 90 minutes, were interactive and were conducted in groups of up to four faculty.

The iPad initiative gave faculty not only access to iPad technology, but also the

necessary incentive and guidance through professional development. As a result, data shows since its implementation the initiative increased the faculty's ability and confidence in using the iPad, as well as the adoption of the technology for instructional purposes. In addition, faculty were motivated to try new iPad approaches in the future.

According to interviews, professional development sessions not only decreased technology anxiety among faculty, but also improved communication and social interaction that created a sense of community in the college.

Student surveys

by Ann Knackendoffel, assistant professor and chair of the technology committee

Before the iPad initiative, faculty who wanted to use hands-on technology in their classes had to wheel iPad or laptop carts into their classrooms. Faculty soon learned that the cart solution was problematic, and the only way to truly integrate technology into courses was for students to use the iPad for everything they do. Dean Mercer, with the help of a private donor, purchased iPads to loan to elementary- and secondarylevel pre-service teachers when they were accepted into their professional sequence of coursework. This was an essential step in the college's one-to-one iPad initiative. Students were surveyed at the end of each semester and reported that the iPad technology increased the ease of collaboration in classes as well as engagement with course materials. It also helped them learn how to implement technology in their classrooms. The surveys strove to elucidate how the iPad initiative helped students meet the college's technology proficiencies. Pre-service teachers reported that they were likely to utilize technology to:

- Promote student reflection using collaborative tools.
- Design, customize and adapt learning activities to address diverse learning.
- Communicate relevant information and ideas effectively.
- Use current and emerging digital tools to support research and learning.
- Apply ethical use of digital information and technology.
- Explore cultural understandings and global awareness.
- Utilize resources to support professional growth.

Finally, one student summed it up this way on a survey: "Not only did I enjoy having the iPad to use in my block classes, but I also learned so much about how to utilize technology in the classroom, seeing it both from a student's perspective and from a teacher's perspective. I didn't realize its potential until after I saw how it was used in my education classes."

Digital resources

by Deepak Subramony, associate professor

Another major component of the college's technology initiative was aimed at supporting college faculty in developing and implementing open alternative electronic textbooks within their respective courses. Since then, the college has invested roughly \$77,000 as part of this initiative and it has saved students approximately \$600,000. Dean Debbie Mercer commissioned an evaluative case study during the 2016-17 academic year with the aim of enabling a holistic understanding of its outcome.

Instructors interviewed as part of this study were grateful for and appreciative of the college's e-text initiative. They were unanimous in their belief that the initiative was important and was worth supporting. Specifically, they:

- Recognized and appreciated the enhanced affordances of the e-text medium — as compared to print textbooks — in terms of enabling easy and equitable access to course materials for students.
- Believed that the process of creating and implementing an e-text had an extremely positive influence on the nature and quality of the information and content they were providing their students in their respective courses.
- Reported that the e-text helped them organize course content more effectively, custom tailor it and ensure that the information presented to students was current.

- Found the process of creating and implementing an e-text tremendously gratifying on multiple levels. In particular, they:
 - Noticed it allowed them to gain unprecedented control and mastery over the content covered in their respective courses.
 - Gained tremendous professional and personal satisfaction from the endeavor.
 - Were grateful for and appreciative of the financial benefits provided by the initiative.
 - Perceived the process of creating and implementing an e-text to be immensely valuable in terms of the myriad learning opportunities it provided.

In conclusion, students interviewed as part of this study were unanimous in expressing appreciation that instructor-created e-texts saved them from the often-considerable expense of purchasing commercial textbooks. They valued the ease and flexibility of access provided by the e-text media format and appreciated not having to carry around a print textbook, being able to access the e-text across multiple locations, and enjoying continued access to it after the end of semester. Most importantly, they recognized and welcomed those e-texts that were effectively designed and developed. They could discern and acknowledge when an e-text was successfully focused on and customized to their specific learning needs, and when it presented well-designed hypermedia content and navigation that featured superior affordances as compared to traditional static and linear print textbooks.









Doris Wright Carroll, right, is pictured with Mahkala Lackey, the 2017 recipient of the Doris Wright Carroll Multicultural Technology Award and the Lawrence G. Wright Scholarship. Abel Frederic said Carroll, a generous benefactor to the college, has advanced the college's mission by creating scholarships that support her commitment to education.

Greetings from the development director

Hello,

Let me begin by expressing my gratitude to serve as the development director for the College of Education at Kansas State University. As I went through the selection process for this position, it became very clear to me how privileged I would be to work alongside each of you to help advance your alma mater. Your love for K-State, its students and its mission are infectious. During my first meeting with Dean Mercer, she expressed to me that "family" isn't just something we say; it's real, and our faculty, alumni and students live it. Thank you for welcoming me with open arms into the Wildcat family.

I'd like to take the opportunity to tell you a little bit about myself. I am a native of Fort Lauderdale, Florida, and came to Kansas in 2002 to accept an athletic scholarship to Bethany College in Lindsborg. I later graduated from Ottawa University with a bachelor's degree in political science and graduated in 2012 from the Charlotte School of Law in Charlotte, North Carolina.

Although I am not a native Kansan, my professional career has been devoted to the betterment of this state. Whether working toward educational initiatives, securing funding for a regional hospital or helping alumni invest in our students, I have a passion for this state and plan to live here for many years to come. Kansas is home and to repeat a phrase I have picked up since becoming a Wildcat, it's "a place that I love full well."

Many of you are aware of the university's successful Innovation & Inspiration fundraising campaign, which is cementing K-State's ability to fulfill its mission of teaching, research and service for the foreseeable future. The leadership's decision to extend the campaign to achieve a new \$1.4 billion goal by 2020 is designed to meet the needs of our university as well as provide an affordable education for students. The college's success is cause for celebration. To date, faithful alumni and friends have generated \$13 million in gifts toward our goal.

Philanthropists like you have ensured Dean Mercer's priorities pertaining to student success, retaining and attracting quality faculty, diversity of faculty and students, and innovation through technology will keep K-State's College of Education as the clear choice for future and current educators. Our students who enter their student teaching semester have access to scholarship funds that will help ease the financial burden of the clinical semester. We are addressing the changing demographics in the classroom and meeting needs through various programs such as Call me MISTER, English to Speakers of Other Languages and social justice education.

Thank you so much to all of you who have chosen to take up the very special vocation of being an educator. During my first few months with the college, a donor relayed to me how important this profession is because outside of a student's immediate family, teachers maintain the most contact with students. Educators have incredible influence on the students in their classrooms. Teachers touch more lives during their careers than most of us can dream of, and although you may not remember each name or face, they will always remember you. I look forward to advancing K-State alongside each of you.



Abel Frederic Jr.

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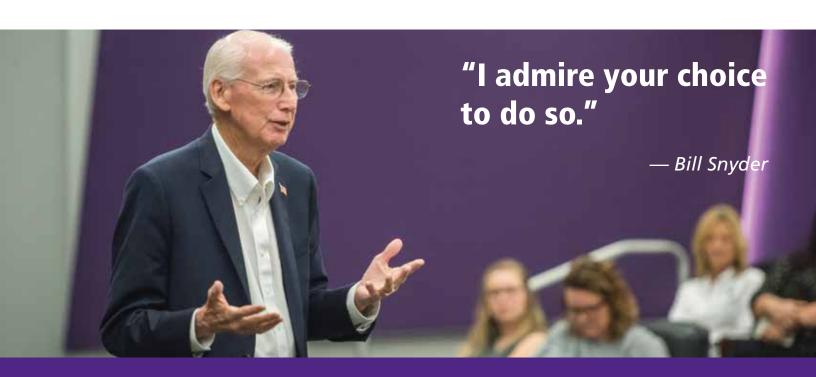
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* Deceased



College of Education

6 Bluemont Hall 1100 Mid-Campus Drive Manhattan, KS 66506-5301



Imagine a legend telling you that he admires you. That's exactly what happened to students in Lori Goodson's Core Teaching class when K-State legendary football coach Bill Snyder said he admired them for their career choice.

A reverent stillness filled the air as Snyder shared a story about a teacher who made a difference in his life and encouraged the future

teachers to become emotionally invested in their students, to set goals and establish a value system.

"Don't make it (success) rocket science," Snyder said. "Only 50 percent of people set goals and only 5 percent have a plan. The last part is hard work, and it's something you have total control over. Perseverance allows us to achieve."

