BRIDGING THE GAP
Between Practice and Research

How Harris College’s Center for Evidence Based Practice and Research is driving a culture change in health care.

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- CORE STRENGTH
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- CHAMPIONING COMMUNITY JOURNALISM
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CORE STRENGTH  Graduate student Britt Campbell, left, and geology professor Helge Alsleben, right, examine rock samples at the off-campus Core Lab.

Endeavors
RESEARCH, SCHOLARSHIP AND CREATIVE ACTIVITY

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Making a Meaningful Difference Through Research

Editor's Note: Susan Mace Weeks, Dean of Harris College of Nursing & Health Sciences and founder of TCU's Center for Evidence Based Practice and Research, wrote the introduction for this issue at the magazine's invitation.

Children often engage in imaginative play full of symbolism and meaning. They role-play their hopes and dreams for the future, and analysis of their play can provide hours of intrigue and inquiry. What we may not always recognize is that play may be a childhood form of research.

Watch toddlers eating a Popsicle for the first time. You will see them exploring the unknown. Imagine preschoolers handling modeling clay for the first time. They are experimenting with materials in unplanned ways. You likely have seen a school-aged child examine the wings of a butterfly that has recently emerged from a cocoon. They are expanding their understanding of the world around them.

As adults we are often able to appreciate the wonder of a new texture, substance, or sight when seen through the lens of children. We often forget, however, the wonder of a new discovery in the context of research. Research allows us to cast off the memorization of rote facts in favor of unrestrained imagining of what might be if only... Through the lens of research we are able to explore the unknown and expand or refute our understanding of that which we previously believed to be true.

Research can be meaningful to researchers through the internal wonder they create as they explore the unexplored or achieve the unachieved. But when does research have meaning for others? It is not until the outcomes of the research create new opportunities for those around us that we move from knowledge generation for the sake of knowledge, to knowledge generation for the purpose of making a meaningful difference.

In this edition of Endevours, you will read accounts from a range of disciplines. You will learn about a variety of projects, from pipelines for water delivery to best practices to teach in a milieu of cultural diversity. The thread that weaves these stories together is their shared ability to make a meaningful difference in the lives of others. In this way, we improve upon the reflection of Peter Morville. We not only change who we become, we change who others become.

Susan Mace Weeks
Dean of Harris College of Nursing & Health Sciences
January 2016

“What we find changes who we become.”
Peter Morville
THE GEOGRAPHY OF HEART DISEASE

Mapping high-prevalence neighborhoods

Using geography and big data, Kyle Walker and Sean Crotty are showing how cardiovascular disease, which is the leading cause of death in Texas, spreads across the state.

Drawing from the Texas Department of State Health Services’ collection of hospital discharge records, Walker and Crotty — both assistant professors of geography — are mapping high-prevalence neighborhoods for cardiovascular disease. Their research also analyzes how these neighborhoods vary demographically and geographically.
The American Heart Association projects that by 2030, cardiovascular disease will account for almost $1 trillion in direct health care costs each year.

“Traditionally [with heart disease], the emphasis has been on treatment, but a growing emphasis within the health sciences is on prevention,” said Walker, who is also director of TCU’s Center for Urban Studies. “How do we look at factors within one’s residential environment, or certain behaviors, that might influence high rates of cardiovascular disease?

“Treating someone is expensive,” said Walker. “If you can prevent someone from getting sick to begin with, that has the potential to have significant financial implications on health care costs and also just general public health implications.”

Walker and Crotty published their findings in Applied Geography. The researchers’ results found considerable economic variance in high-hospitalization areas, which included lower-income communities in core cities, rural areas and middle-income areas on the outskirts of large cities.

“The findings themselves speak to how complicated neighborhood effects can be,” said Crotty, noting that higher income often correlates with better health outcomes. “There are some neighborhoods in Texas, that by any measure would be considered high-income neighborhoods with high education, that also fall into this very high incidence of cardiovascular disease. That’s something that we haven’t seen anywhere else in the literature.”

Down the road, Crotty said the researchers want to go into communities — “particularly the ones that don’t fit what existing literature says should cause higher cardiovascular health problems” — and do more qualitative work to see what is going on.

But the biggest challenge has been wrestling with the enormous amount of data. “We’re working with extremely large data sets. A year’s worth of data has upwards of three million records,” said Walker. “We’ve had to figure out computational approaches — ways to get our computers to work with massive data sets and try to comb through the data to produce insights.”

Walker and Crotty started their research in 2013 with a TCU junior faculty fellowship and a small university grant. The two researchers now are seeking larger grants to extend the project.

“The ultimate goal,” said Crotty, “is to help create policy recommendations for the American Heart Association or Texas Department of Health.” — Rachel Stowe Master

Fort Worth-Dallas Heart Health at a Glance: Applying geographic techniques and analysis to public health research, Walker and Crotty are examining the relationships between neighborhood characteristics and social outcomes as they relate to cardiovascular disease. By zooming in on the DFW area, this map gives a more neighborhood-specific view of age-adjusted hospitalization rates for heart disease, based on 2006 hospital records [courtesy of researchers].
What role does community play in determining how these groups participate? These are some questions political scientist Emily Farris explores in her research.

“I’m particularly interested in how we approach the political inclusion of traditionally marginalized groups, whether it be black women, Latinos or immigrants to the United States,” said Farris, assistant professor of political science. “For me, the theme is the importance of community among marginalized groups. How does that affect political inclusion and the policies we see?”

Farris and research collaborator, Mirya Holman, assistant professor of political science at Tulane University, tackled why black women participate in politics at a much higher-than-expected level, a phenomenon not sufficiently explained by prior scholarship. Their findings were published in Politics, Groups, and Identities in 2014.

“We became interested in black women because it’s a category that’s not typically studied,” said Farris. “There’s really little scholarship that looks at the intersection of race and gender when it comes to looking at their simultaneous effects related to political participation.”

Black women voted at a higher rate in the 2008 and 2012 presidential elections than any other racial or gender group. Using traditional factors to explain political participation, such as education, income and social trust, researchers would expect to find much lower levels of participation. Farris and Holman argued that “social capital,” or “the positive social consequences of group membership,” is a key predictor of elevated participation among black women.

“We wanted to look particularly at social capital as an alternate explanation for what might be going on. One of the somewhat surprising results that we found is social capital can include different types of capital,” said the professor. “There can be the social capital you get from joining a bowling league, for example, and learning about group membership and trust in others by just going bowling weekly. Other faces of social capital are faith based.”

Farris’ research interests also involve elected politicians. She collaborated with Holman on another project focusing on county sheriffs and the role elected officials play in creating policies in the communities they serve.

Holman and Farris conducted a large survey of county sheriffs to see if the elected officers’ attitudes on topics such as immigration and domestic violence affected the policies they put in place. “No one really researches county sheriffs from the political side, but they are an important local political actor,” said Farris. “They’re law enforcement, but they’re also elected and hold a lot of power in local government.”

The researchers’ results about sheriffs’ attitudes and domestic violence policies were published December 2015 in Social Science Quarterly. “We found that sheriffs who agree with what are known as ‘rape myths’ have less friendly domestic violence policies. Their deputies, for instance, might be less likely to inform a victim of domestic violence that they have a shelter resource or options for transportation to the hospital,” said Farris. “Who you elect and the policies they put in place shape the tone and attitude of the department. It’s really important that we pay attention to who we elect.”

— Jessica Llanes
When feminists lobbied for constitutional protection of women’s rights in the late 1970s, they found a supporter in the White House. But the quiet impetus behind former President Jimmy Carter’s backing the Equal Rights Amendment was his wife, Rosalynn Carter.

"Rosalynn Carter was deeply invested in the struggle and fight for ERA," said Elizabeth Flowers, associate professor of religion. "She views one of the biggest regrets of the Carter presidency, and her role in that, as the failure to pass the ERA."

In 1972, before Carter’s presidency, Congress passed the Equal Rights Amendment, giving the states until 1979 to ratify it. Congress extended the deadline to 1982, but the amendment still fell three states short of adoption.

Flowers’ interest in Rosalynn Carter is personal and professional. A child of the 1970s, she grew up a Southern Baptist in Memphis, making the presidential election of Jimmy Carter — an evangelical symbol of the new South — a “big deal” to her family.

“My research has focused quite a bit on the 1970s and changing gender roles for women, particularly in the South," said Flowers, who also is a faculty affiliate in TCU’s Women and Gender Studies program. “My last monograph looked at the Southern Baptist Convention as a case study for those changing roles, and the tensions and debates that came out of that, and the way they splintered the South, evangelicals and Southern Baptists. Jimmy Carter was a really significant part of the story, so I was always intrigued about Rosalynn’s role."

As Flowers’ research for Into the Pulpit: Southern Baptist Women and Power since World War II (University of North Carolina Press, 2012) progressed, Rosalynn Carter’s name kept resurfacing — primarily as a target for the religious right. The professor said focusing on the former first lady after the book’s publication seemed natural.

A TCU grant allowed Flowers to conduct two research visits at the Jimmy Carter Presidential Library & Museum in Atlanta. Rosalynn Carter “wanted to present ERA in a way that would appeal to mothers, housewives and Southerners,” the professor said. “She felt like if they could win over this segment, then the ERA had a chance of passing.

“[Rosalynn Carter] wanted to temper down some of the more radical elements of feminism, as she saw it, and challenge what she felt were caricatures of the movement,” Flowers said. “She wanted to be sure that the struggle for ERA really appealed to mainstream America.”

The professor’s research on Rosalynn Carter is part of a larger book project she is working on with a group of scholars that will retell the history of the evangelical South from the perspective of women and issues of gender. They hope to have the manuscript finished in spring 2016.

Flowers said some people assume that evangelical Southern Baptist women, such as Rosalynn Carter, were not natural allies of women’s rights. Through research, the professor hopes to show that evangelicalism and feminism are multilayered and diverse and that many evangelicals were on board with feminism in the 1970s.

“"A lot of issues around the Equal Rights Amendment are still here with us today. So you can hear echoes of the 1970s, as so much of the rhetoric and discourse around these issues come from this earlier period," Flowers said. “The tensions simply have not gone away, and in looking at Rosalynn, I find how much the past influences the way we talk about women, gender, feminism and issues of power in the present.”

— Rachel Stowe Master
A Management Professor’s Time and Work

Time is not a common research interest for business scholars. While some study time as it applies to other inquiries, such as job satisfaction over time, few make it their concentration.

“‘I’m one of the few people who views time as my central research interest,’” said Abbie Shipp, associate professor of management and co-director of the Neeley Critical Thinking Initiative, who added that studying the concept of time is essential to understanding organizational behavior.

Due to the absence of a pre-existing framework to guide temporal studies, Shipp started her scholarly journey with fundamental questions about time: “What does it mean? How does it impact what we study in management? If we don’t take account of it, what happens to our research?”

A lack of established theory or methodology made designing time studies a complicated venture. To simplify efforts for future researchers, Shipp synthesized available time-focused management research in *Time and Work, Volume 1* and *Time and Work, Volume 2* (Psychology Press, 2014). She co-edited both books with Yitzhak Fried, professor of management at Texas Tech University.

The professor fields numerous requests to co-author papers layering time parameters into established streams of management research but doesn’t have enough space in her calendar to accept every invitation. “I keep a list of all the things that I want to continue to study, and

The Emotions of After-Hours Work Emails

When William Becker saw his wife fume about a 5 a.m. email from her boss demanding immediate extra work, he imagined a new scholarly study.

“In general, my research is moving towards specific emotions that we feel, and how they influence us in the workplace,” said Becker, assistant professor of management, entrepreneurship and leadership.

In the private display of anger at that early-morning email, Becker found a prime illustration of how communication in non-work hours can cause a maelstrom of feelings. His spouse’s boss “was just sending emails at all hours of the night and morning, which was interesting for me,” he said. “Because I actually got to see her when she would get one of these emails.”

While there are several business studies about the proliferation of communication outside of normal work hours, few of them also analyze the feelings those messages evoke, said Becker. “If you aren’t including emotions, you’re kind of missing what’s going on.”

Becker designed the study with two research partners, Marcus Butts, associate professor of management at the University of Texas at Arlington and Wendy Boswell, professor of management at Texas A&M University. Initially the three researchers surveyed friends and professional acquaintances for their study.

Those study participants answered questions about workplace relationships and job expectations and agreed to report back when they received an after-hours work email for the next five days. The idea was
it’s long,” she said. “I’ll never get it finished.”

Time, after all, influences everything.

Shipp focused on centralizing existing information and providing a plan for ongoing queries in *Time and Work*. The two volumes are divided by individual and organizational foci. She and Fried invited business scholars to write chapters for the project.

Each scholar selected has an interest in time as it applies to another management research area, such as leadership or job stress. Shipp gave the writers freedom to explore the possibilities, asking: “If you took a temporal lens, what kinds of questions would you be asking that we weren’t already?” The resulting ideas, Shipp said, establish an “agenda for future research.”

Shipp also investigates how workers adapt to constant changes in and out of the workplace. Her current qualitative study examines how people perceive career trajectories in one-year increments. The professor is helping to develop new methods for measuring time. “Everything is in flux,” she said. “A lot of our measures are very precise at capturing snapshots, but they’re not capturing these trajectories over time.”

Shipp developed an appraisal tool called “temporal focus” to evaluate how a person’s thought patterns orient toward the past, present or future. Understanding variances in conceptualization of time might give insight into why people react differently to work-related issues.

“It’s not just studying time to study time, it’s studying time to make all these other research questions stronger,” said Shipp. “The greatest compliment I find is when I see doctoral [students] at the Academy of Management, and they say I’m going to be a time researcher, just like you are.”

— Caroline Collier

Given the exponential increase of technological communication and continual redefinition of work-life balance, interpersonal skills are more important than ever.
ADVANCES IN SUBSTANCE ABUSE TREATMENT

Using boron clusters to develop new anti-addiction medication

Nearly 24 million Americans, or about 9 percent of the population, have a substance abuse problem, according to the National Institute on Drug Abuse. Of those, about 1.9 million are cocaine users, making it one of the most abused drugs without specific medication available to treat it.

Yulia Sevryugina, assistant professor of chemistry at TCU, is researching the possibility of using boron clusters to develop new anti-addiction medications for cocaine and methamphetamine abuse.

“Addiction is quite a widespread problem,” says Sevryugina. “In America, we spend about $193 billion every year for problems related to addiction, including healthcare, drug prevention and work interruption.”

Prior to exploring addiction, Sevryugina researched boron clusters in the possible treatment of cancer and for local anesthetics. However, certain aspects of boron showed promise in treating other diseases, particularly those related to the brain.

“In the last 15 years or so, it became apparent that addiction is really a disease of the brain,” says the professor. “My personal interest in this problem appeared after I read a science paper by Dr. Raymond Stevens from The Scripps Research Institute.

“[Stevens] published the first structure of dopamine receptor D3, specifically responsible for addiction,” says Sevryugina. “Because I was already working in the field of developing new boron-based medicines, I saw immediately the opportunity to apply my knowledge to this new problem.”
Sevryugina focuses on cocaine and methamphetamine. Current anti-addiction medications are ineffective and cause side effects. In addition, many of the compounds have poor water solubility, high ability to dissolve in fats, and a fast metabolism, all of which means the compounds are destroyed when they enter the bloodstream. Boron, on the other hand, is both stable and versatile.

“Boron clusters are very robust. They are biologically stable because they are foreign to our bodies, so our bodies don’t have any metabolic pathway to convert them to toxic by-products,” says Sevryugina. “They are small, resistant to metabolism, and at the same time, we can very easily adjust fat and water solubility for these clusters. It allows us to fine tune the properties of the drug.”

Sevryugina received three grants from TCU to support her preliminary research. She and research partner, Robert Luedtke, professor of pharmacology and neuroscience at the University of North Texas Health Science Center, are applying for federal grants through the National Institute on Drug Abuse to support the design and development of new anti-addiction medications.

Although the initial research focus is cocaine and methamphetamine treatment, Sevryugina hopes research findings also will address other diseases affected by the dopamine system.

“Dopamine receptors are responsible for movement control, memory, learning and mood alterations,” says Sevryugina. “When we design a drug that targets dopamine receptors, it may be extended to a range of other diseases, including Parkinson’s disease, schizophrenia, dyskinesia, depression, autism, bipolar disorder, obsessive compulsive disorder—and even food cravings.” –Jessica Llanes

“In America, we spend about $193 billion every year for problems related to addiction, including healthcare, drug prevention and work interruption.”

Yulia Sevryugina

For Fulbright recipient Mauricio R. Papini, time in Spain was an opportunity to engage with an international audience about his research in the neuroscience of emotion and memory.
While many beginning teachers have concerns about teaching in urban schools, many available jobs are often in large metropolitan cities.

If the fears of young educators aren’t addressed, the consequences can be career altering, said Michelle Bauml, assistant professor of early childhood and social studies education. “Without excellent preparation and ongoing support as they begin their teaching careers, new teachers are seriously at risk of leaving the profession altogether.”

From the earliest days of her academic career, Bauml has been interested in studying young educators’ decisions to teach (or not teach) in culturally and linguistically diverse schools, which are becoming more typical in urban settings, as well as the implications for those who educate future teachers.

“Through my research and teaching, I strive to help prepare TCU’s future teachers for the important work of teaching in any context, but especially in urban schools,” said Bauml. “All children deserve excellent teachers, no matter where they attend school.”

Bauml’s interest in urban schools comes from personal experience. She taught third through fifth grades in Richwood, a small Texas town along the Gulf Coast, for nine years before accepting a position supervising first-year teachers in the Houston Independent School District — the largest school district in Texas.

“Moving from such a small community to a big city where there was much more cultural, linguistic and socioeconomic diversity than I had ever experienced as a teacher, I went through a brief period of culture shock,” said the professor. “I also witnessed distressing inequities among Houston’s schools in terms of facilities, teaching materials and new teacher support.”

The experiences inspired Bauml to pursue a doctorate so she could learn more about unraveling the complexities of teaching in urban schools. Her research efforts included co-authoring several peer-reviewed papers dealing with teacher candidates’ decisions to teach in urban and culturally diverse schools.

One research paper, “Learning from Preservice Teachers’ Thoughts about Teaching in Urban Schools: Implications for Teacher Educators,” was published in Education and Urban Society. For the study, Bauml and her co-authors interviewed preservice teachers — education students participating in school-based field experiences.

The researchers found three primary trends among the study participants: 1) Those who attended culturally diverse high schools were more open to teaching in urban schools; 2) minority preservice educators preferred teaching in culturally diverse urban settings; and 3) those in elementary education were less hesitant to teach in an urban school than those who wanted to work in secondary education.

“We learned so much about what prospective teachers were afraid of when it comes to teaching in urban schools,” Bauml said. “They are concerned about spending their first critical year as a teacher in such a challenging context as well as racial and cultural barriers and student misbehavior.”

TCU education students study these kinds of issues in the Early Childhood through Grade Six program, where Bauml, who won the College of Education’s Dean’s Research and Creativity Award for 2015, is coordinator. “[The program] is intentional about providing students with experiences observing, teaching and learning in a variety of diverse contexts.”

The American Association of Colleges for Teacher Education recently honored TCU’s program with the 2015 Best Practice Award in Support of Multicultural Education and Diversity. “We were so proud to receive the award,” said Bauml, “because it’s such a public statement to the education community that TCU is doing exemplary work.” — Rachel Stowe Master

“All children deserve excellent teachers, no matter where they attend school.”

Michelle Bauml
For multi-instrumentalist Joey Carter, music mentorship requires sharing the passion and frustration only a veteran performer understands. Carter plays gigs five to seven nights a week at restaurants, concert halls and smoky clubs with everything from solo jazz piano to Middle Eastern percussion.

In a lifetime of playing music, the instructor of percussion and music theory has made a myriad of music any way he could. Carter hit the world’s jazz festival circuit and designed a soundtrack for the Spy Kids movie franchise.

The lure of melodies and rhythms beckons daily, Carter said. “I’m kind of obsessed.”

Carter debuted on the public stage at age 9, playing drums and percussion with his father’s high society variety band. “In many ways, it totally defined who I was,” Carter said. “I was much more comfortable onstage oftentimes than I was off.”

Carter’s father, Rusty, opened a vintage instrument and repair shop, and his son turned to rock and blues bands before studying music at the University of Texas at Arlington. There, the younger Carter learned piano because a jazz ensemble needed nimble and willing hands.

Knowing that most performing musicians needed alternate income streams, Carter developed a career in music education at high schools and community colleges. A flexible teaching schedule opened his nights for gigs.

As a young musician, Carter discovered an affinity for the permutations of jazz, loving its improvisational nature. “It’s very liberating. You have to be in the moment. You can’t think too far ahead or think about what just happened,” he said. “You get into the flow, and you’re always listening more than you’re thinking.”

Almost 20 years after his professional debut, Carter realized he needed to devote more attention to instrumental fundamentals and nuances if he wanted to continue improving as a musician. “The right notes are the first part of the picture, but then you have to shape them into ideas.”

An encounter with Curt Wilson, a former jazz band director, led Carter to earn a Master of Music degree in percussion performance at TCU in 2000. He remained at the university to teach music theory, ear training, jazz history, jazz ensemble, jazz improvisation and private lessons in percussion and piano.

While Fort Worth’s jazz scene simmered since the glory days of legends Ornette Coleman and Ronald Shannon Jackson, its popularity swelled around the turn of the Millennium. At the time, a downtown bar started hosting a weekly jazz jam. Carter showed up with a vibraphone—a metallic keyboard with spinning wheels inside long tubes. Along with bassist Aden Bubeck and drummer Rich Stitzel, he was the backbone of the freeform sessions. (Nowadays Bubeck plays with country music star Miranda Lambert and Stitzel lives in Chicago.)

The three musicians clicked and formed Bertha Coolidge, a separate progressive jazz-fusion group along with guitarist Paul Metzger. Although Carter had experience penning a few solo tunes and did original compositional arrangement, the Bertha alchemy launched him into the status of professional composer.

Having performed thousands of pieces of music, writing constituted a new level of artistry. “A lot of it is being able to realize what you hear in your mind,” Carter said. “It’s like playing, only slowed down a little bit.”

Bertha Coolidge’s first album, Live at the Caravan of Dreams, with six of Carter’s compositions, won the Fort Worth Weekly’s album of the year award in 2002. Working with band members who understood his intention as a writer helped the process—another experience he could leverage with students. “I’m always thinking about what happened last night at the gig and how that matters to what we’re doing in class.”

Carter advises students to cultivate a devotion to practice, an obdurate attention to detail and a willingness to refine everything. “The more you begin to master [music], the more you realize you’re not there yet.”

As for his students following his footsteps as professional musician, Carter said he is encouraging but realistic. “It’s not easy because you never finish,” he said. “The goal is always to get better, and that’s a very ambiguous goal that constantly moves away from you.” — Caroline Collier
Imagine a relative is having afternoon surgery, perhaps to repair a broken bone. A bundle of nerves, the patient also is hungry and very thirsty. Chances are, the pre-operative instructions forbade food and fluids after midnight.

Despite the surgeon’s good intentions, by complying, the family member is taking a dangerous risk. Two decades of research recommends abstaining from food for four to six hours before surgery, and from water, only one or two hours. Dehydration in the middle of an operating procedure is a real, and unpleasant, possibility.

Pre-surgical guidelines are among hundreds of outdated yet routine health care standards. Hospital policies ranging from limiting visiting hours in intensive care units to choosing IV size often are based on habit -- not proven best practice.

“And old habits die hard,” said Susan Mace Weeks, dean of TCU’s Harris College of Nursing & Health Sciences and founder of its Center for Evidence Based Practice and Research. “When you or I or any of our family members go to seek health care, 50 percent of the time, there’s a better option out there than what they are offered.”

The lag time between research-based health care findings and their full implementation averages about 17 years. The delay is expensive, frustrating and potentially fatal. “Anywhere from 100,000 to over 400,000 lives are lost in the U.S. alone on a yearly basis from lack of best care,” said Weeks. “That’s scary.”

By CAROLINE COLLIER
Nurses at the forefront of health care

Nurses are well positioned to influence the delivery of health care, considering there are more than 3 million of them in the United States. “Nurses are the largest group of health care providers in the country,” said Kathy Weeks and her colleagues understood the potential alchemy between nursing schools and practice professionals, “but there wasn’t always a natural point of connection.” In 2006, TCU awarded Weeks and two Harris College colleagues a grant to establish the center. Initially, the professors planned to launch a faculty consultation program to help advance nursing research in hospitals in Dallas-Fort Worth.

“We have all this expertise in answering questions,” said Dru Riddle, assistant professor of professional practice at the Harris School of Nurse Anesthesia. Working professionals “have all this expertise in providing care. And the divide is bridged with our center.”

In 2016, Weeks estimates that more than 600 Fort Worth-area professionals participate in the center’s collaborative, which she helped form. The group is a culture-shifting, multi-pronged movement to bring diverse health care practitioners together under the banner of research, evidence and measurement. The common goal is a dramatic improvement of patient outcomes.

The center also trains people in the research synthesis process of systematic review. In 2009, it joined with the Joanna Briggs Institute, a champion of evidence-based practice. By disseminating the Australian institute’s model, TCU’s center has become the largest systematic research review trainer in the world. Scholars and health care professionals from far afield come to Fort Worth to learn how to harness the potential knowledge waiting inside of millions of volumes of published research.

“Evidence-based practice is where you have a question, and it’s already answered... you just have to go find the answer.”
Colyn Barry, a Dallas-based nurse

Barry was among dozens of nurses who described the results of their information quests at the fellowship’s September graduation ceremony. In examining everything from a designated quiet time in neonatal intensive care units to bedside chemotherapy education for cancer patients, the nursing fellows discussed the case of influencing hospital policies by locating appropriate research.

After explaining her recommendations for shortening the length of emergency room stays, Barry said that before the fellowship, she wasn’t comfortable with the idea of mixing research and a busy work shift. Evidence-based practice isn’t so daunting, she said. “It’s like being a translator of research.”

Erica Watkins, a 2012 fellowship graduate, conducted an informal survey at a hospital’s emergency department for her project. Watkins asked her colleagues: “What bothers you? What is there that we do that just can’t stand or don’t understand why we do it that way?” The most-repeated answer, said Watkins, pointed to making people suspected of having appendicitis drink contrast dye and wait, even if the extended emergency room visit and mouthfuls of thick gook exacerbated a painful health situation.

Using the fellowship’s instructions on finding and appraising appropriate research literature, Watkins searched for the scientific consensus. She found ample evidence to support her theory that the dye requirement was unnecessary, and that a quick path to the CT scanner resulted in an equally effective diagnosis – while skimming two hours from the emergency room stay of each suspected sufferer of appendicitis.

Watkins compiled the evidence along with her data and submitted a formal proposal in a three-ring binder and presented her dye-free plan to the hospital’s radiologists. She said the doctors immediately agreed to implement her suggestion.

Before and after the hospital eliminated its dye requirement, Watkins collected data on length of stay for patients with appendicitis. Her research-based recommendation saved time and money, and other hospitals took notice.

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Watkins’ plan is now standard in all of her employer’s North Texas emergency rooms. “It was very empowering to see, wow, all I had to do was ask and show the evidence,” she said, “and we changed our practice.”

**Worldwide Leaders in Systematic Review**

Nurse anesthetist Dru Riddle earned a doctorate in nursing practice at TCU and conducted a systematic review for his final project. He studied if monitoring brain activity during surgery to provide the minimum amount of necessary anesthesia would reduce a patient’s time in postoperative care.

By assembling and then aggregating suitable studies, Riddle found that the tailored anesthesia procedure would cut each patient’s time in the recovery room by four-and-a-half minutes — a small amount until he multiplied the minutes by every surgery in the hospital. By implementing his recommendation, one hospital could save more than $1 million each year.

Riddle now leads the TCU center’s systematic review training efforts. He explains the step-by-step method of finding all relevant research then paring down to the studies with sufficient details to justify their methodology. The next step involves combining results from the suitable research reports and averaging across variables to find fresh conclusions.

For studies with quantitative data, this process is called meta-analysis. But “a lot of questions can’t be answered with a traditional trial,” said Riddle. For example, concerning inquiries into patient satisfaction or quality of life issues, a meta-aggregation of qualitative reports is the norm.

Using the Joanna Briggs Institute’s straightforward model, “systematic review has [empowered] people that never thought they could conduct research because it was either too scary or too laborious or too entrenched in academe,” he said.

Brian Benham, an associate professor of nurse anesthesia for the U.S. Army’s graduate program, met Riddle through TCU’s doctoral program. Systematic review training was required for Benham’s degree and also a skill his employer needed. The director of the Army’s nurse anesthesia program wanted Benham to determine how to stem its attrition rate. The program’s students needed to complete their degrees and fulfill in-demand nurse anesthetist roles in the Army’s ranks.

With Riddle’s training, Benham learned to “cull through literally hundreds and hundreds and hundreds of articles and theses and dissertations to find the gems that truly will address your question.” Through aggregation, Benham discovered that undergraduate grade point average, more than standardized tests, heartfelt admission essays or even “some other esoteric benchmark,” predicted successful completion of a graduate health care program.

The Army’s nurse anesthesia program implemented Benham’s findings by prioritizing applicants who made good grades as undergraduates. Although the change is too recent to measure, Benham said because of the caliber and attitude of the current students, he expects the admission change to deliver the desired results.

Benham wants to launch more systematic review queries because the evidence is everywhere but in practice. “There is no more important thing that we could do as health care providers than to be sure that what we’re doing is the best for our patients.”
Riddle plans to create an interdisciplinary, inter-professional movement around systematic review. “I think there’s a lot of potential to collaborate with an almost endless number” of people and academic fields, he said. “It goes far beyond what you think of hard science.”

“We’re not just answering questions for the sake of doing research,” said Riddle. “We’re answering questions for the sake of improving lives, impacting health.”

Expanding the Impact

As health care enters the age of informatics, and insurance companies use big data to approve and reject treatments, providing optimal care is not just a good idea but also an imperative, said Diane Hawley, associate professor of professional practice at Harris.

“The culture is changing. There’s a huge movement afoot to be patient-centered,” said Hawley, who recently stepped down as coordinator of the center’s fellowship program to focus on measuring the fellowship’s overall impact.

To help nurses deliver up-to-date care as part of her role as a faculty consultant to Fort Worth-area hospitals, Hawley advocates for a “spirit of inquiry,” she said. “We’re getting the nurses to question why.”

Nurses appreciate the collaboration the center drives in a competitive health care market. “It’s terrific,” said Mary Robinson, chief nursing officer at a hospital in Fort Worth. “Having TCU own this and lead the initiative has created an opportunity for hospitals from all over the [Dallas-Fort Worth] metropolis to come together and benefit.”

For Watkins, the fellowship experience of creating change shaped her career. “My biggest takeaway from the program,” she said, “was to realize there’s so much more to my practice than just what I do at the bedside … to question why do we do this this way? Is there a better way?”

Watkins now serves as education coordinator for her hospital’s emergency department. She teaches colleagues about the power of mixing research with making rounds. She leads several evidence-based information quests, including searching for methods to reduce blood culture contamination.

For Juanita Hernandez’s fellowship project, she helped eliminate redundant methods of stimulating blood flow to prevent clots. But the benefits of incorporating research findings into her work were just beginning. “I know that I have the power to make a difference,” she said. “I know how to examine the evidence and look for those best practices.”

After the fellowship and subsequent graduate school, Hernandez is now manager of a medical surgical telemetry unit at a Fort Worth hospital. She compared her research-based mindset to being a detective. From promoting ulcer reduction to examining how best to use surgical drains, Hernandez turns to academic journals instead of engaging in guesswork.

Hernandez’s biggest impact, so far, may be in preventing falls. In teaching nurses to make rounds with purpose, so patients won’t have a reason to leave their beds, and creating policies for factors such as bed rail height, Hernandez reduced her floor’s fall rate by almost half in one year.

Unsatisfied with the few remaining falls, Hernandez returned to a spirit of inquiry and asked: “What else?” She noticed that the persistent falls occurred with people over age 65 whose families said they had been acting strange. Turning to the research literature, Hernandez discovered that administering anti-anxiety medications, such as Ativan, to that age group often induced delirium. “Sure enough,” she said, the medicine was a factor. She now is working to find better alternatives and will not stop until no patients fall on her unit.

If practice can be better, Hernandez wants to ensure it is. “We want to take care of these patients like we want our own family members taken care of,” she said. “And you know, when you provide that type of care, you actually enjoy your nursing more.”

As health care enters the age of informatics, and insurance companies use big data to approve and reject treatments, providing optimal care is not just a good idea but also an imperative.
INSTANT RELAY

Journalism team creates camera tool for near real-time photo streaming.

BY RACHEL STOWE MASTER

In the race to break news, television journalists employing live video feeds have always enjoyed an advantage over still photographers and their more cumbersome efforts to remotely upload images.

When Kent Chapline and Andrew Chavez read about a New York Times photographer who built a backpack that almost live-streamed photos back to the newsroom, they became intrigued. When the newspaper photographer didn’t want to share his device design, they decided to make their own. Their result: the Photostreamer.

“In about two weeks, we had a crude but working version,” said Chapline, instructor and director of student media at TCU’s School of Journalism. “We wrote our own custom software and built a hardware unit here in our newsroom.”

The John S. and James L. Knight Foundation awarded the project a $35,000 grant from its Prototype Fund, which supports nontraditional projects serving the journalism industry.

Chapline worked with Chavez, the former director of digital media for the journalism school and now a news application specialist at the Austin American-Statesman. They wrote opensource software and published the hardware instructions so any news organization could use the photo-streaming design.

How does their device work? The Photostreamer sends digital photos in near real-time to the cloud using any compatible camera and a Raspberry Pi microcomputer. About the size of a deck of cards, the battery-powered device plugs into a camera’s mini USB port and connects to the Internet via a cellular hotspot.

A camerawoman can focus on capturing compelling images, and the small device “automatically sends every picture she shoots to a website we designed,” said Chapline. “Back in the newsroom, the editors can look at the photos on the site, choose the ones they want and publish them immediately. The whole process takes less than 10 seconds.”

In the fall, Chapline gave test units to student photographers working for TCU360, which is the journalism school’s digital news outlet.

“We envision Photostreamer being most useful for breaking news or sports, but you can take great pictures anywhere.”

Kent Chapline

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Kent Chapline
CORE STRENGTH
Measuring the ground beneath our feet

By Caroline Collier

When drilling deep into the earth for fuel sources, oil and gas exploration companies first use hollow drill bits to unearth sections of subterranean rock called “core.” Geology professor Helge Alsleben and his students study the mineralogical composition and overall strength of these rock samples in the TCU Core Lab. Their results might help determine how the concentration of three main minerals influences the strength of these ancient rocks.
Ten years ago, Helge Alsleben was mapping the surface of Mexico’s Baja Peninsula. But gas-drilling activity in the Barnett Shale opened up new avenues of research for the geologist and his students.

**THE EVOLVING EARTH**

The earth we know is the result of hundreds of millions of years of elemental migration, upheavals in the form of continental smashing and eons of a seeming standstill. Despite the ancient age of the rocks, some of their original mysteries remain.

TCU sits several thousand feet above the Fort Worth basin, home of the 5,000-square mile Barnett Shale, a prehistoric geologic formation under 17 present-day North Texas counties. The basin extends from the Red River in the north, where it can be up to 12,000 feet deep, to the Llano uplift near Fredericksburg to the south, where the basin’s rocks emerge in places on the earth’s surface.

The trap door-like basin is a remnant of early tectonic movement, said Helge Alsleben, associate professor of geology. “[It] formed way back in the Paleozoic, when parts of South America collided with North America.”

**CORE SAMPLES**

The gas-seeking companies employ massive hollow drill bits, which emerge from the buried shale formations with cylindrical rock samples called “core.” Each sample is typically 200-300 feet divided into three-foot sections.
TCU CORE LAB >> Because core strength research can assist the hydraulic fracturing process, area oil and gas industry partners helped fund the construction of a 15,000-square-foot core sampling lab located near campus. Several companies store rock sections inside the climate-controlled building, which is next door to TCU’s repository for library books.

Inside the TCU core lab, most of Aisleben’s students analyze rock samples taken from various locations in the Barnett Shale. In 2015, one student sampled rocks unearthed from the Permian Basin in West Texas. Another acquired a core sample from the Marcellus Shale in the Appalachian region.

MINERALS AND STRENGTH >> After compiling spreadsheets full of numerical data, the geology researchers next need to exercise critical thinking and analysis skills. From a mineralogical standpoint, the geologists try to determine the relative concentrations of the three main minerals in the underground rock: calcite, quartz and clay.

Calcite is basically calcium carbonate — CaCO₃ — also in snail shells, pearls and eggshells. Quartz is silicon dioxide — SiO₂ — a common component in sand. Clay contains numerous elements, including lots of silicon and aluminum.

Shale consists of “fine-grained sedimentary rocks,” Aisleben explained. “They are basically broken down fragments of rocks that have been deposited and then made back into rock, just by pressure.” Depending on the reorganization of elements, the shale rocks will break at varying pressures.

Calcite = CaCO₃
Quartz = SiO₂

The oil and gas companies’ calculations of core porosity and permeability determine how and where gas flows through the dense material. After identifying optimal locations, drillers use hydraulic fracturing techniques to break the rocks and extract liquefied natural gas.

The TCU structural geologist and his students focus on a different research area: the core samples’ strength.

“The strength overall has important implications for how the rock would fracture, how it would break. And the word fracking is something a lot of people are familiar with, so how a rock breaks, and how the fractures are developed, is largely controlled by how strong the rock is,” Aisleben said.

The professor’s calculations help determine precise application of the pressure needed to fracture the rocks. Too much pressure, and small fragments of rock flow to the earth’s surface along with the liquid energy.
GEOLOGIC SAMPLING TOOLS >> An x-ray fluorescence, or XRF, machine shoots invisible beams at the rock samples for 60 to 90 seconds. The x-ray beam "interacts with the atoms that [are] near the surface of the sample, really just the very top few rows of atoms, maybe up to a millimeter or so," over a surface area roughly the size of a human's pinky fingernail.

The energy of the beam causes electrons to stir and eventually break free of their home atoms in the rock. Each freed electron serves as a "distinct signature," which identifies the element of its origin. The fluorescence machine's computer then "counts" the concentration of subatomic particles and estimates the elemental composition of the sample area.

The bambino, a nickname coined in the lab, is a small spring-loaded micro-rebound hammer. It propels a cylindrical "hammer" against a solid surface and measures the speed of the rebound to gauge the material's strength.

The dimpler is actually a "micro-indentor" and also gauges the strength of the test material. It pushes a diamond-tipped probe with a standardized amount of force, leaving a tiny indentation in the rock. Size measurements of the impression provide another indication of the rock's hardness.

Researchers use all three tools at three-inch intervals over the several hundred feet of each sample. So, for a 300-foot core cylinder, one would perform 1,200 unique analyses with each tool.

When finished, the sections of rock can go back into storage and wait for additional tests. "The core is still intact for the next person to come in and do what they need to do," Aisleben said.

NUMERICAL CALISTHENICS >>

To estimate concentration of the main minerals, a researcher plots the x-ray machine's elemental estimates on a triangular diagram. A pinpoint's placement relative to the corners indicates how much of each component goes into the composition.

"A rock that would be 100 percent clay would behave very differently from a rock that would be 100 percent quartz or 100 percent calcite," the professor said. "The question then is how do these mixtures behave?"

Geologists agree that the higher the concentration of clay, the weaker the rock, but "We're still struggling a little with the quartz and the calcite." Aisleben said both academia and industry long assumed quartz played the critical role in rock strength, but his data suggests calcite concentration might be the more important factor.
With students sampling core drawn from different rock formations at varying depths, Alsleben can compile all of the data until a trustworthy pattern emerges. “We just need to have a big enough database to really start to be able to potentially filter some of this out.”

**SHIFTING INTERESTS** When Alsleben began teaching at TCU, he said he expected to continue his doctoral research mapping the surface of Baja Peninsula. But a travel prohibition to Mexican border states and surging student interest in oil and gas careers led him into core strength assessment.

Though low oil prices have slowed hiring in the oil and gas industry, a new generation of researchers will need the skills for fuel exploration. “We have that big problem in the geosciences that there are a lot of people that are baby boomers in their 50s and their early 60s that are about to retire, and then there’s hardly anybody in that age range from like 50-35,” Alsleben said.

Independent research is required for a master’s degree in the department, and “a master’s degree is a working degree in geology,” Alsleben said. So he gives student researchers leeway to choose projects and tackle the problems with critical thinking skills. “I want them to own the research and own the project in the end and ultimately, hopefully know more than I do,” he said.

Core lab research is open to undergraduate geology students as well. One such researcher is compiling as much core strength-related data as he can. “He’s doing data mining and literature research and is coming back with a big Excel spreadsheet,” the professor said. “With bigger data sets, we can potentially see patterns emerge.”
CHAMPIONING COMMUNITY JOURNALISM

In an economic climate where large daily newspapers continue to struggle, community news is hitting its financial stride.

By Jessica Llanes

“Their goal isn’t to publish a newspaper. They have to become the go-to news source for their community. We get it.”

Tommy Thomason, director of the Texas Center for Community Journalism

Tommy Thomason, left, and Chip Stewart, right, are international experts on community journalism.
"Metro newspapers are in trouble," said Tommy Thomason, professor of journalism and director of the Texas Center for Community Journalism. "What a lot of people don't realize is that community newspapers are the healthiest segment of journalism right now."

Out of about 600 newspapers in Texas, about 580 are community papers, said Thomason, who started the center in 2009 as a training resource for journalists and scholars working in community journalism.

The center is best known for its free one- and two-day workshops that cover topics from advertising design and investigative reporting to social media techniques and smartphone reporting. It's the kind of training community news professionals need but often cannot afford to attend. The center not only provides the training at no cost but also meals and accommodations.

"When I talk about the pressures of today's newsroom and what they're expected to do, it's not something that I remember from 30 years ago or something I read someplace. It's because I just got off the phone 10 minutes ago with an editor in Gladewater [a small town in north-east Texas]," said Thomason. "People call us up and say, 'here's something we're having trouble with.' If it's a real issue, then we do a workshop on it."

In 1998, the Texas Press Association approached Thomason with a funding opportunity, and he suggested a series of small, hands-on workshops. The workshops actually predate the center by more than a decade. They were inspired by similar training workshops held at the Poynter Institute, a well-known independent journalism training nonprofit in St. Petersburg, Fla.

"Rather than have workshops for 200 or 300 people, I wanted to have workshops for 20 or 30 people," said Thomason. "I don't want someone just to come fill a notebook. I want to change lives. They feel like they have a friend forever when they leave us."

Thirty journalists attended the center's first workshop on photojournalism. The workshops became so popular that the center became the primary beneficiary of the Texas Newspaper Foundation, receiving more than $500,000 in the past decade.

"We've developed a reputation across the country. We now get more calls from community newspapers for our graduates than we can fill," said Thomason. "[The newspapers] realize that TCU is the university that cares about community journalism."

The center also offers phone consultations for publishers and journalists who need advice on everything from developing a social media presence to legal guidance. "We're sort of a clearinghouse where if you have a problem, you call us," said Thomason. "Their goal isn't to publish a newspaper. They have to become the go-to news source for their community. We get it. That's what we do."

Professional resources and advice are available on the center's website and Facebook page. One of the most popular offerings is the "Ask the Expert" page, where answers to legal questions are archived.

"I write about law issues, such as whether a record is open with the Texas Public Information Act, or if something can be used without running into copyright issues," said Daxton "Chip" Stewart, associate professor of journalism and the center's legal consultant. "The most popular post so far discussed whether to use photos found on Facebook."

Stewart, who is also associate dean at the Bob Schieffer College of Communication, serves as editor of the center's peer-reviewed journal, Community Journalism, which launched in 2012. The online journal publishes once or twice a year.

"We wanted to be different and publish online. We call it 'open access' because anybody can view it—it's free," said Stewart, who created the journal to encourage more scholarship in community journalism.

"It's hard getting credibility when you're an online-only journal because classically you've had these journals that have existed for 50 years," said Stewart. "They're published in print, and they're restricted access because only scholars get them."

The journal, which has an all-volunteer editorial board, is the official journal of the Association for Education in Journalism and Mass Communication's Community Journalism Interest Group, which has helped increase its visibility and attract more scholars.

"We get tens of thousands of hits on the site in a year, which is a lot for scholarship," Stewart said. "Fifty percent of our traffic is international."

"I do see [the journal] as a place where both the Center for Community Journalism and community journalism scholars can come together and do more outreach," said Stewart. "I'm actually talking to our editorial board about publishing smaller issues, or each article as it's ready, so we can get it out there and people can see it sooner."

In the spring, the journal's first international issue was published in partnership with International Society of Weekly Newspaper Editors and its quarterly journal, Grassroots Editor.

"We want to be accessible and meaningful, so we have an open call for broad ways of thinking about what community journalism is and how it exists today," said Stewart. "In our international issue, some of the articles are more like essays, and some are more traditional academic scholarship, but they all contribute to an understanding of how community exists and has developed around the world."
LIQUID
IMPACT

Becky Johnson’s Economic Analysis of the Pipeline Bringing Tomorrow’s Water to North Texas

BY CAROLINE COLLIER

Becky Johnson ripped out the grass in her backyard and replaced it with turf to conserve water. After working for more than two decades as an environmental consultant, she understands the severity of water scarcity.

“People don’t think about where water comes from,” said Johnson, professor of professional practice in environmental science. “They turn on their tap, and they expect it to be there.”

But the earth’s potable water is limited, and delivering it to urban areas is becoming more complicated. In North Texas, water demands are surging to levels the current supply cannot sustain. In the next 40 years, the population in the Dallas-Fort Worth Metroplex is expected to double to more than 13 million people. Without aggressive expansion of water sources, faucets will slow to a trickle.

To address the water problem, the Tarrant Regional Water District and Dallas Water Utilities teamed to tap additional water resources in East Texas and build the 150-mile Integrated Pipeline to serve North Texas homes and businesses until at least 2060.

During the 20-year installation period for the $2.3 billion pipeline, construction activity will flow through six counties, bringing a temporary water-fueled economic boom. How much extra income can each county expect to gain? The TRWD awarded Johnson a $173,490 grant to run a comprehensive economic impact analysis and find out.
In 1985, Johnson held a newly minted bachelor's degree in geology and looked for work in the oil industry. Low prices meant a lack of job opportunities. The environmental realm, however, was new and hiring. Johnson earned a master's degree in environmental science to help launch a career specializing in soil and groundwater contamination cleanup. In managing numerous projects, she learned the intricate budgetary details of complex environmental undertakings.

TCU recruited Johnson from the industry to bolster classroom environmental theory with professional reality. She teaches groundwater hydrology, environmental compliance and environmental impact statements. When she tackles outside research projects, such as the pipeline analysis, she includes students so the aspiring environmental scientists benefit from problem-solving practice and gain an insider look at the industry.

"In school, we get a little too hypothetical. We forget how [environmental theory] actually applies to real-world scenarios," said Emily Ritter, who managed the seven-student team tackling the pipeline analysis before completing a master's degree in environmental science in 2015.

Although running multifaceted economic models lies outside of Johnson's set of usual skills, she gained experience by working with Michael Slattery, director of the Institute of Environmental Studies and professor of environmental sciences. Johnson and Slattery have worked together since 2008 on the TCU-Oxford Next-Era Wind Energy Research Initiative, for which she conducted a socioeconomic impact analysis.

Johnson's familiarity with environmental economics led to the water district project. The nearly 100-year-old public agency provides raw water to 98 percent of the residents in Tarrant County, which includes Fort Worth. About 80 percent of its water supply originates from the nearby Richland-Chambers and Cedar Creek reservoirs.

"We are actively finding ways to get more water back to the people who depend on it here in Tarrant County," said Chad Lorance, a spokesperson for the water district.

Dallas Water Utilities has a contract to use the water in Lake Palestine in East Texas, which was created as a future water supply reservoir in 1965, although it has yet to be tapped for its intended purpose. TRWD needed to expand its ability to pump water from the two existing reservoirs. So to achieve both objectives, save money and reduce the environmental impact, Dallas partnered with the Tarrant water agency to build the 150 miles of pipe, 99 percent of which will be underground. Construction crews broke ground in 2014. At full capacity, the pipeline will deliver 350 million gallons of raw water, the equivalent of 530 Olympic-sized pools, daily to North Texas.

For the pipeline impact project, Johnson partnered with Bernard Weinstein, associate director of the Maguire Energy Institute at Southern Methodist University. His portion of the project plotted expected population growth against current water availability. Weinstein predicted water demand would grow almost as quickly as the area's anticipated population. Without expanding the existing water supply, Weinstein found the Dallas-Fort Worth area could suffer catastrophic economic consequences of an estimated $6 billion as soon as 2020.

Revenue generated from water sales and $440 million in low interest loans from the Texas Water Development Board will pay for the pipeline project. Much of the investment will spin off to areas east of Fort Worth and Dallas, stim-
Johnson and her students quantified those economic benefits on a county-by-county basis. “The whole intent was to go in and say, ‘Look, construction is going to be in your county for the next two years,’” Johnson said. “Here are the kinds of industries that are going to be impacted the most, and here’s how you can take advantage of it.”

On Slattery’s wind energy project, Johnson used software dubbed JEDI, for Jobs and Economic Development Impacts, to model the monetary influence on four counties in arid West Texas. The development impact software is the “little brother” of IMPLAN, or IMpact Analysis for PLANning, a master spreadsheet used for the larger pipeline project.

After a three-day software training session, Johnson and her students tested the pipeline economic impact model with random inputs and compared fictitious results during weekly meetings. “We had two different teams, and they would run the model and see if both teams got the same answers,” said project manager Ritter. “Little details can throw off the results significantly. So we were figuring out where the program was sensitive,” Ritter said. “After that, our results ended up being consistent throughout, using the actual data.”

It was a valuable “step-by-step problem-solving experience,” said Nick Haber, the lone undergraduate student to work on the pipeline project for its duration.

When Johnson’s project team tackled the complex projections for the water pipeline, they asked questions. For example, does Navarro County have sand and gravel pits available for making concrete? Where is the closest place to Ennis, Texas to rent 20 backhoes? Where will the construction workers live for the 83 months they spend in Henderson County?

Johnson said supplies purchased in one county would filter through other project segments differently. “In Tarrant County, there’s a big concrete water pipe manufacturer, so that money would propagate through the county very differently than it would propagate, say, through Ellis County, where Ellis County may have the sand and gravel pits, or the mines to supply the sand and gravel to that pipe manufacturer in Tarrant County.”

Tamie Morgan, professor of professional practice in environmental science, provided John-
son’s project team geographic information system expertise to map the planned construction route so costs could be apportioned based on tangible data.

After the two student teams ran the numbers backward and forward until they arrived at identical outcomes, Johnson had numbers to share with the TRWD last summer.

The economic analysis divided the pipeline project’s impacts into three categories. First, total direct impacts, or actual construction-related costs, should generate the most economic activity, including more than $100 million each year in wages.

Second, indirect impacts involve supply-chain purchases, such as backhoes and welding supplies, and secondary employment increases. Using these forecasts, businesses along the pipeline route can prepare for the big customer headed their way.

Last, induced impacts show how unrelated industries in each area will prosper. “You’ve got all these extra people working in your county, and they’re buying more gasoline at the local store,” Johnson said. Gas stations, restaurants, hospitals and housing services should get prepared for the anticipated economic influx too.

Armed with Johnson’s economic impact analysis, people in the seven counties involved in the pipeline project can strategize for the incoming economic activity. For example, Anderson County, which contains Palestine, can expect an additional 146 jobs each year for the 71-month duration of construction in the county in addition to more than $4 million in induced annual spending. Tarrant County businesses should plan for more than $4 million in annual supply-chain impacts and almost $7 million in induced spending. (Dallas County will not see actual pipeline construction but will receive income related to pipeline planning and management).

In aggregate, according to Johnson’s analysis, the pipeline project should generate a slight economic benefit, not including the expanded water supply. “The overall impact is a little bit more than the cost of the pipeline,” Johnson said. “But it’s having a pretty big ripple effect.”

North Texans can rely on Lake Palestine to help provide sufficient water until 2060. But Johnson said the Integrated Pipeline is a temporary fix. “This was all prairie,” she said. “This landscape was never meant to support the number of people that it’s supporting in terms of water.”

Agriculture uses about 70 percent of the water consumed, and farmers can innovate, but they can conserve only so much. Municipal use, however, swallows 20 percent of the total, and “about 40 percent of that is outdoor watering,” said Johnson, who gave up her backyard of St. Augustine grass.

Water shortages will be the defining issue of the future, Johnson said. “Historically as a nation we have not had to pay much of a price [for water],” she added. “I think given our population, that time is over, and the price to be paid is coming, and it’s coming quickly. I’m not sure people are ready for it.”

$173,490 GRANT to assess the economic impact of the new pipeline

150 MILES OF PIPELINE 99% of which will be underground

At full capacity, the pipeline will deliver 350 MILLION GALLONS of raw water to North Texas each day

$2.3 BILLION Cost of building the pipeline
LIFE STORIES
from
GUANAJUATO

BY CAROLINE COLLIER
A decade after writing about migration experiences in central Mexico, anthropologist David Sandell returned to collect stories about life in agricultural work. With a just-completed doctorate in 2004, Sandell moved to the Mexican state of Guanajuato, where he lived in a small village in the agricultural region near León. In 2014, the anthropologist returned to gather life stories of octo- and nonagenarians.

Villagers wanted their stories recorded so their children and grandchildren would have access to them, said Sandell, associate professor of anthropology. “They felt that the younger generations … were forgetting about where they came from, what is of value to them.”

The anthropologist wanted to understand how villagers cultivated a feeling of wholeness from a lifetime of agricultural labor and poverty. Sharing their experiences in stories “makes them feel complete,” said Sandell. His research could provide, “perhaps for the only time in their [lives], a venue in which their voices can be heard.”

Eighty-nine-year-old José shared his story. Like many residents in the region, José left school early to earn money and assist his family. He migrated to the U.S. during the days of the bracero program to work in agriculture. After returning to Guanajuato, José spent four decades harvesting fruits and vegetables for a rancher whose multiple farms produce strawberries, cauliflower and broccoli for export.

But, Sandell learned that José really wanted to talk about his son, Fernando, who followed in his father’s footsteps. In his 20s, Fernando had a privileged position. He managed inventory at the ranch where his father worked in the fields.

“Fernando’s extra income and indoor working conditions made his job desirable, but the younger man explained that he felt alienated from other villagers and a communal sense of purpose. Fernando quit the job, despite his father’s objections and an expectation of loyalty. José refused to speak to Fernando for three years.”

Sandell said the father-son rift is exceptional, but most of the 10 male and five female participants who shared their experiences fretted about the divergent life paths between younger and older villagers.

“Very few people have the privilege of being able to stay,” said Fernando. “A lot of people that have left have not returned.”

Many of the elderly villagers voiced dismay at the anti-migrant political rhetoric in the United States, said the anthropologist. Some wanted to talk about how inexpensive goods are a result of low-wage tasks performed by economically depressed people.

“People would not leave their homes if they had sufficient means to sustain themselves and a modicum of a quality of life,” said Sandell. “Migrants say that they want a contractual program, a way of ensuring safety, of preventing labor exploitation.”

Given the high price of a border escort for a trip across the U.S.-Mexico border coupled with rising drug-related violence, many of the older villagers have little hope for their children and grandchildren.

“Living in poverty was a source of abjection for all participants, who expressed frustration at the persistence of low wages. For example, villagers who work at a nearby U.S.-based auto assembly plant earn an average of $80 a week, a salary unchanged in more than a decade. “There’s no account of fair wage,” said Sandell. “It’s just an abundance of cheap labor brought on by global economic conditions.”

“The price of strawberries and other products sold locally translates into economic hardship elsewhere.”

“My hope is that TCU students will pursue knowledge about the relationship between the conditions of their own lives and problems of the world. And then take steps toward solving those problems.”

David Sandell, associate professor of anthropology
Apparel Quality: A Guide to Evaluating Sewn Products
BY JANACE BUBONIA
CHAIR OF THE DEPARTMENT OF INTERIOR DESIGN & MERCHANDISING AND PROFESOR OF FASHION MERCHANDISING
FAIRCHILD, 2014

Assessing a piece of clothing's quality is a task for consumers, but fashion industry professionals have a systematic method of separating fine work from junk. In this textbook, Bubonia discusses international standards of quality determination, a necessity considering the interconnected global marketplace for fashion.

The Hyper(in)visible Fat Woman
BY JEANNINE GAILEY
ASSOCIATE PROFESSOR OF SOCIOLOGY AND WOMEN’S STUDIES
PALGRAVE MACMILLAN, 2014

Women who are considered overweight must navigate a social paradox, writes Jeanine Gailey in this comprehensive analysis built on interviews with 74 women. On one hand, North American society singles out these women in harsh and critical manners. On the other, the women are left invisible. By giving overweight women a platform to own their experiences, Gailey focuses on the way society marginalizes and misunderstands the group.

Indian Slavery in Colonial America
BY ALAN GALLAY
LYNDON B. JOHNSON CHAIR IN HISTORY
UNIVERSITY OF NEBRASKA PRESS, 2015

Historians have been studying the far-reaching effects of African slavery on early America for decades, but they have overlooked the similar impact of the mass enslavement of Native Americans. Gallay examines how the continent’s original inhabitants became trapped in forced work situations, as well as how some became merchants of other native slaves to European settlers.

Inspiration and Innovation: Religion in the American West
BY TODD KERSTETTER
ASSOCIATE PROFESSOR OF HISTORY
WILEY-BLACKWELL, 2015

Part of a series on western history, Kerstetter’s textbook interweaves place and faith as key influencers on two centuries of the western United States. Through artwork and a discussion of religious factors ranging from Native American ceremonies to 20th Century cults, the professor shows how the history of the region is far more variegated than its standard presentation suggests.

Rastafari and the Arts: An Introduction
BY DARREN MIDDLETON
PROFESSOR OF RELIGION AND HONORS FACULTY FELLOW
ROUTLEDGE, 2015

Jamaican singer Bob Marley may be the poster boy for Rastafarianism, but Middleton writes that the movement far transcends reggae music. By exploring a range of arts associated with the Rastafari religion through interviews with a cross-section of spokespersons, the professor elicits the incomparable spirit of this Afro-Caribbean worldview and illustrates its broad impacts on popular culture around the world.

Distance
BY NATHANAEL O’REILLY
INSTRUCTOR OF ENGLISH
PICARO PRESS, 2014

Australia native O’Reilly has been globetrotting, teaching English and observing his surroundings for two decades. Through O’Reilly’s poetry, Distance captures the quirks of the places he visits, celebrating their uniqueness while honoring an undercurrent of homesickness for the country of his youth.

Open Your Heart: Religion and Cultural Poetics of Greater Mexico
BY DAVID SANDELL
ASSOCIATE PROFESSOR OF ANTHROPOLOGY
NOTRE DAME PRESS, 2015

Through the Catholic community of Mexican and Mexican-American people in Fresno, Calif., Sandell explores how ritualized storytelling helps people find meaning independent of their external conditions. Rituals from Mass to pilgrimage, he argues, allow for transcendence of poverty and racism and a heart-opening experience of the deeper dimensions of existence. By examining the construction of meaning in this community, Sandell sheds light on the poorly understood diaspora of the modern Mexican people.
KATHY BAKER, ASSOCIATE PROFESSOR OF NURSING AND DIVISION DIRECTOR OF GRADUATE NURSING STUDIES
EDITOR-IN-CHIEF, GASTROENTEROLOGY NURSING
The international journal publishes the latest developments in research, evidence-based practice, equipment, diagnostics and therapy related to gastroenterology endoscopy practice. The journal is the official journal of the Society of Gastroenterology Nurses and Associates and the Canadian Society of Gastroenterology Nurses and Associates.

KYLO-PATRICK HART, PROFESSOR AND CHAIR OF FILM, TELEVISION AND DIGITAL MEDIA
CO-EDITOR, QUEER STUDIES IN MEDIA & POPULAR CULTURE
A double-blind peer-reviewed academic journal devoted to the study of representations and expressions of queerness, it publishes scholarship at the intersection of media/popular culture and queerness in gender/sexuality. The journal’s inaugural print issue published in November 2015.

IN-MU HAW, PROFESSOR OF ACCOUNTING
CO-EDITOR, THE INTERNATIONAL JOURNAL OF ACCOUNTING
The oldest international journal on accounting publishes research studies that make contributions in different cultures and different economies. Research studies accepted for publication have methodologies, both archival and experimental, analytical modeling, or a combination. The journal, however, does not publish research based on interviews and survey questions.

JAN LACINA, PROFESSOR OF EDUCATION AND ASSOCIATE DEAN OF GRADUATE STUDIES
ROBIN GRIFFITH, ASSOCIATE PROFESSOR OF EDUCATION
EDITORS, THE READING TEACHER
The International Literacy Association’s peer-reviewed journal for education of literacy learners up to age 12 publishes articles covering topics such as applying research to classroom practice and using strategies to help all learners succeed. The journal’s latest volume focuses on children across the globe and the opportunities literacy provides them.

EFSTATHIOS MICHAELIDES, PROFESSOR AND CHAIR OF ENGINEERING
EDITOR, JOURNAL OF NON-EQUILIBRIUM THERMODYNAMICS
An international publication dedicated to new ideas, insights and results on non-equilibrium phenomena in science, engineering and related natural systems. The journal provides a bridge between science and engineering and promotes scientific exchange, especially in nano-technology.

MAURICIO RODRIGUEZ, PROFESSOR AND CHAIR OF FINANCE
CO-EDITOR, JOURNAL OF REAL ESTATE LITERATURE
This journal, which is published by the American Real Estate Society, offers a comprehensive source of information about real estate research. Besides academic research, the journal also publishes working papers, dissertations, book reviews and literature reviews on real estate data, methods, technology and international real estate.

DAXTON “CHIP” STEWART, ASSOCIATE DEAN AND ASSOCIATE PROFESSOR OF JOURNALISM
EDITOR, COMMUNITY JOURNALISM
The online-only journal publishes articles, mostly with social science methodologies, from a broadly inclusive view of communities. The journal seeks to inform both the practice of community journalism and the developing field of community journalism scholarship. In April 2015, the journal published a joint edition with the International Society of Weekly News Editors’ publication focusing on community journalism at the international level.

JOEL TIMMER, ASSOCIATE PROFESSOR OF FILM, TELEVISION AND DIGITAL MEDIA
EDITOR, TEXAS ENTERTAINMENT AND SPORTS LAW JOURNAL
The law journal provides current practical and scholarly literature to Texas lawyers practicing sports or entertainment law in an informative and interesting format. Article authors range from student writers to law school professors and attorney practitioners.
**EXTERNAL RESEARCH FUNDING**

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**INTERNAL RESEARCH FUNDING**

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