CEE@ NEBRASKA

Department of Civil and Environmental Engineering
University of Nebraska–Lincoln

Spring/Summer 2021

Yajyoo Shrestha graduated in Spring 2021 with a degree in civil engineering.

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Dr. Wittich's research has the potential to influence standards for new construction and lead to solutions that safeguard existing structures.

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From Nepal to Nebraska: Shrestha earned his bachelor's degree in civil engineering this spring and will now begin pursuing a master's in structural engineering this fall. But his path to the Cornhusker State was far from a straight line.

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CIVIL & ENVIRONMENTAL ENGINEERING

Message from the Chair

The past academic year has been filled with challenges in navigating the COVID-19 pandemic, but it's been a privilege to lead the Department of Civil and Environmental Engineering (CEE) at Nebraska. I have been impressed by the resilience of our students and the ingenuity and adaptability of our faculty and staff as we continued our teaching and research activities this past year. In addition to challenges, the pandemic brought some opportunities, including the development of a three-week January term for which CEE faculty created three new courses to provide new learning opportunities for our students. Over 384 undergraduate students and 103 graduate students received their degrees in the past academic year. Our REU program focused on sustainable rural civil infrastructure ran virtually and expanded to include professional development training for both our REU participants as well as our own UNL students conducting summer research. Over 20 students participated from nine universities across the country. We were also able to bring a new faculty member, Dr. Matthew Williamson, to the department. Dr. Williamson brings a wealth of prior academic and professional experience in the area of geotechnical and materials engineering. The department also received over $9 million in new research awards this past year, providing resources for new discoveries. Some projects highlighted in this year's magazine include NSF-funded work to document damage from the Iowa derechos and to understand how engineering faculty responded to teaching in the pandemic. Other DOE-funded work is examining safe storage options for spent nuclear fuels as well as US EPA, DOE and Nebraska Department of Energy and the Environment funded work on pollution prevention for industrial manufacturers and wastewater treatment plants. I also want to thank our donors who provided gifts that allows us to give $98,000 in scholarship and fellowship funding to our students this year. We are incredibly grateful for the support of our department and our students.

Shannon Bartelt-Hunt, Ph.D.

UNL CEE Chair
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37 FACULTY MEMBERS

423 UNDERGRADUATE STUDENTS IN LINCOLN AND OMAHA

3 RESEARCH CENTERS

102 M.S. AND PH.D. STUDENTS

4 NSF CAREER AWARD WINNERS

5 ASCE FELLOWS

Environmental Engineering minor debuts in Fall 2020

A new environmental engineering minor was established in the Department of Civil and Environmental Engineering in Fall 2020.

Environmental engineering is focused on the application of engineering principles for protection of human health from adverse environmental factors, protection of the environment, and improvement of environmental quality.

A minor in Environmental Engineering will help students gain a comprehensive exposure to a broad range of topics and an understanding of the fundamental concepts of environmental engineering, including sustainability, water quality, drinking water and wastewater treatment, air quality and solid and hazardous waste management.

The minor requires 18 hours of courses, including nine hours of required courses and nine hours of elective courses. The minor is offered on both College of Engineering campuses in Lincoln and Omaha.

This minor is expected to help meet the growing need for environmental engineers, both nationally and in Nebraska. In addition to knowledge acquired through coursework, students in the minor are expected to benefit from professional development opportunities.

For example, local professional organizations, Nebraska Water Environment Association and the Nebraska Section American Water Works Association, operate a program that pairs students with professionals to provide mentoring related to environmental engineering.

Chi Epsilon new member initiations

On October 9, 2020 the UNL Chi Epsilon Student Chapter and UNL Omaha Campus Student Chapter hosted a joint event of Chi Epsilon New Member Initiation at Eugene T. Mahoney State Park.

Chi Epsilon (XE) is an American civil engineering honor society and currently has 141 chapters. This was the first time the two chapters hosted a major joint event. Officers from both chapters co-run the event.

A total of eight new members (six joined in person; two joined remotely) were initiated at the event. Department Chair Dr. Shannon Bartelt-Hunt, and Chi Epsilon faculty advisors Dr. Richard Wood and Dr. Jiong Hu, and family members of new initiates attended the event.

The two chapters also hosted a joint virtual initiation on December 9, 2020, with seven other members added.

Annual Graduate Picnic

Fall is a beautiful season in Nebraska. The Department of Civil and Environmental Engineering traditionally holds its annual Graduate Picnic in October, where graduate students and faculty from both Lincoln and Omaha get together to enjoy conversations and food in nice weather. Despite the pandemic, we continued this tradition in Fall 2020.

About 30 students and faculty met in Trago Park in Lincoln. We welcomed several new graduate students that just joined the department in the fall. Graduate students and faculty were excited to see each other in person again after several months of lockdown. The CEE Graduate Student Associate did a great job organizing the event. Kudos to the student officers that made the event possible.

EERI student chapter visits with NIST's Nikolaou

Written by Khalid Saifullah, Ph.D. student in CEE

The student chapter of the Earthquake Engineering Research Institute (EERI) was selected as one of a handful of universities around the world to host the Friedman Family Visiting Professionals Program. This is a competitive program for student chapters to host a nationally acclaimed earthquake engineering expert. While initially slated for an in-person visit in Spring 2020, the visit was postponed until Spring 2021 and converted to a virtual format.

On March 2, 2021, Sissy Nikolaou, Ph.D., P.E., D.GE, who is currently serving as the Earthquake Engineering Group Leader for the Materials and Structural Systems Division at the National Institute of Standards and Testing (NIST), paid a virtual visit to our student chapter of EERI through the aforementioned program. With over 25 years of global experience in the field of earthquake engineering and a person whose resume is ladened with national and international distinctions, Dr. Nikolaou's visit was a great privilege for our student chapter. The visit included a lecture from Dr. Nikolaou, tours of UNL's earthquake engineering facilities, and several meetings with student and faculty groups.

Dr. Nikolaou chose the emerging concept of "Functional Recovery – the new Frontier in Earthquake Design" as her topic for the lecture. This holistic basis for earthquake-resistant design is incorporated in the recently released NIST-FEMA report (FEMA P-2090/ NIST SP-1254) to Congress. Dr. Nikolaou touched on these recommendations related to functional recovery that, if acted upon, may significantly improve the resilience of communities across the nation.

After this distinguished lecture and lively Q&A session, UNL earthquake engineering faculty met with Dr. Nikolaou to discuss ongoing research at UNL and NIST. Dr. Nikolaou also met with members of the newly established chapter of GradSWE (Graduate Society of Women Engineers). Our student chapter also organized a virtual visit for her to showcase our earthquake engineering facilities. The operation and capabilities of small shake tables at both campuses in Lincoln and Omaha, along with a recently added state-of-the-art large shake table (3 tons payload capacity) in Assistant Professor Christine Wittich's research lab, highlight UNL's increasing capabilities for earthquake engineering research.

At the culmination of Dr. Nikolaou's visit, undergraduate and graduate students of our chapter (including the students who are participating in EERI's annual seismic design competition) met with her. Students got a rare chance to discuss more about their resumes, education, career goals, work-life balance and were lucky enough to get some valuable recommendations from one of the most experienced persons in their field.

Despite the shift to a virtual format, the visit turned out to be a great success, sparking lively discourse and inspiring students in the field.

Engineering students help businesses reduce water, energy use

Article by Bruce Dvorak

Dr. Bruce Dvorak of Civil and Environmental Engineering and Dr. Robert Williams of Mechanical and Materials Engineering have managed a grant-funded program where students perform technical assistance for manufacturers and municipal wastewater treatment facilities.

For 11 weeks in the summer, upperclass students from several different majors at UNL will work through one-day assessments with manufacturers and municipal wastewater treatment plants to find ways to reduce their water and energy use, reduce their carbon footprint, as well as slash solid and wastewater production.

Bruce Dvorak said the grant employs interdisciplinary teams of students representing such majors as civil, chemical, environmental, electrical, mechanical and biological systems engineering to work with businesses on "improving sustainability while saving money."

An example of one project is a central Nebraska packing plant where the students focused on generating value-added outputs for sale out of their current waste steam. This change not only will save the firm money, but helps to cut down on transportation costs of those materials, as well as their environmental footprint.

The program is funded by a combination of grants from the U.S. Environmental Protection Agency (EPA), U.S. Department of Energy and Nebraska Department of Environment and Energy.

In celebration of the 30th anniversary of the Pollution Prevention Act, UNL received a grant to take on projects ranging from improving the efficiency of food processing plants to the metal manufacturing industry.

UNL will receive about $236,000 to send students to four different companies in both 2021 and 2022 to provide on-site technical assistance.

EPA Region 7 Administrator Jim Gulliford said it's not unusual for

students to land positions at the companies where they gain practical experience during the summer programs.

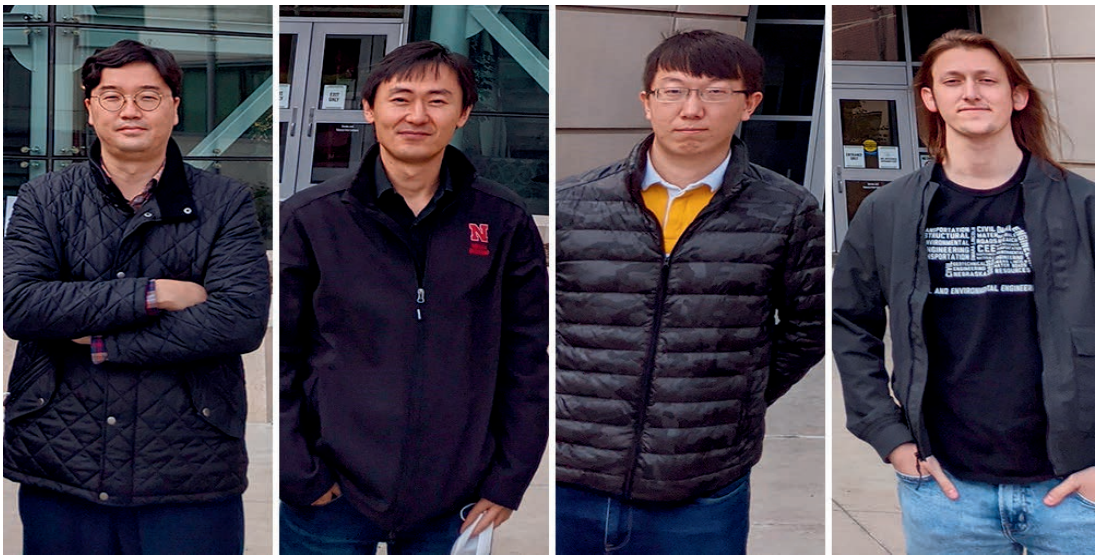
During the pandemic, the students synthesized implemented recommendations from past assessments, and prepared a set of 3-to-5 minute videos highlighting common approaches to reduce energy. These videos are aimed at helping facility staff identify areas of their plant that may require further examination to capture energy savings.

Those interested in learning more about this program or setting up an assessment can contact Dr. Bruce Dvorak at bdvorak1@unl.edu.

Watch the student videos to help reduce energy and water usage.

engineering.unl.edu/iac/niac-webinar-videos/

Developing new barrier material could make nuclear waste disposal safer



(From left) Jongwan Eun, assistant professor of civil and environmental engineering; Seunghee Kim, assistant professor of civil and environmental engineering; Yuan Feng, Ph.D. student in civil engineering; and Patrick Benda, senior in civil and environmental engineering.

Story by Karl Vogel / Photos by Craig Chandler

In the decade since the U.S. government shut down funding of its biggest high-level nuclear waste disposal site, America's nuclear power plants have been without a designated facility in which to store the hottest, most-radioactive spent fuels.

Working on a three-year, $800,000 grant from the U.S. Department of Energy and looking many millenniums into the future, a research team headed by Nebraska engineering faculty is developing a new barrier material that would make disposal and storage of spent nuclear fuel a much safer proposition.

"Long-term degradation of these types of spent fuel can require they be stored more than 10,000 years," said Jongwan Eun, assistant professor of civil and environmental engineering. "That's a surprising time period. And with concerns about the materials that have been used for years, we have to meet this environmental challenge."

In 2011, the U.S. halted funding for the Yucca Mountain Nuclear Waste Repository in Nevada. This left American utilities and the federal government without a designated long-term storage site for high-level radioactive waste, which takes thousands of years to decay.

"They are piling spent fuel next to the power plants," Eun said. "There is pressure to develop a permanent place for radioactive waste, and the DOE is spending research money to investigate the fuel cycle – generating the material, operating, and disposal. Our project is developing a new material for disposal safely and looks to meet the environmental challenge as well."

Eun is collaborating on the project with Seunghee Kim, assistant professor of civil and environmental engineering, adjunct faculty member Yong-Rak Kim, who is also professor of civil and environmental engineering at Texas A&M University, and the Sandia National Laboratories.
"We have been working on other energy issues for years, it was only natural for us that we look at the issue of geological storage of spent nuclear fuel," said Seunghee Kim.

Current disposal protocols have stayed the same for decades, including the way the disposal sites are constructed, Eun said. Typically, this requires tunneling deep into the earth and building a bunker that will house metal drums filled with the radioactive spent fuel. These bunkers are often encased in layers of soil and harder materials, such as concrete.

Some of these spent fuels are radioactively hot – up to 200 degrees Celsius (about 400 degrees Fahrenheit), Seunghee Kim said. These

> Current disposal protocols have stayed the same for decades, including the way the disposal sites are constructed.
>
> - Jongwan Eun

Ferdinand Calunan

types of temperatures can create cracks in the materials storing nuclear waste.

Thus, the Nebraska team is looking at adding an inorganic microfiber, like glass, to bentonite to create a less-permeable and more-durable and heat-resistant material to store the spent fuel.

"For other infrastructure projects – like construction of large buildings or paving roads – we mix inorganic fibers into concrete or soils and give the material mechanical and engineering properties. This is a new idea for a spent-fuel waste disposal facility," Eun said.

According to eia.gov, the United States in December 2019 had 58 active nuclear power plants in 29 states, including one in Nebraska – the Cooper Nuclear Station near Brownville. In October 2016, the Omaha Public Power District (OPPD) shut down the Fort Calhoun Nuclear Station north of Omaha. The facility isn't expected to be fully decommissioned until at least 2058.

In the U.S., spent fuel from nuclear power plants is usually stored thousands of feet underground.

One of the major concerns about nuclear waste storage in Nebraska is the leaching of radioactive spent fuel into the massive aquifer that lies below the state's surface.

A Bentonite specimen

"We want to make sure we put something strong and durable between this fuel and Nebraska's groundwater system," Seunghee Kim said. "We want to make sure that it will be OK and protect all of us in the future."

Resources

Jongwan Eun
engineering.unl.edu/cee/faculty/jongwan-eun/

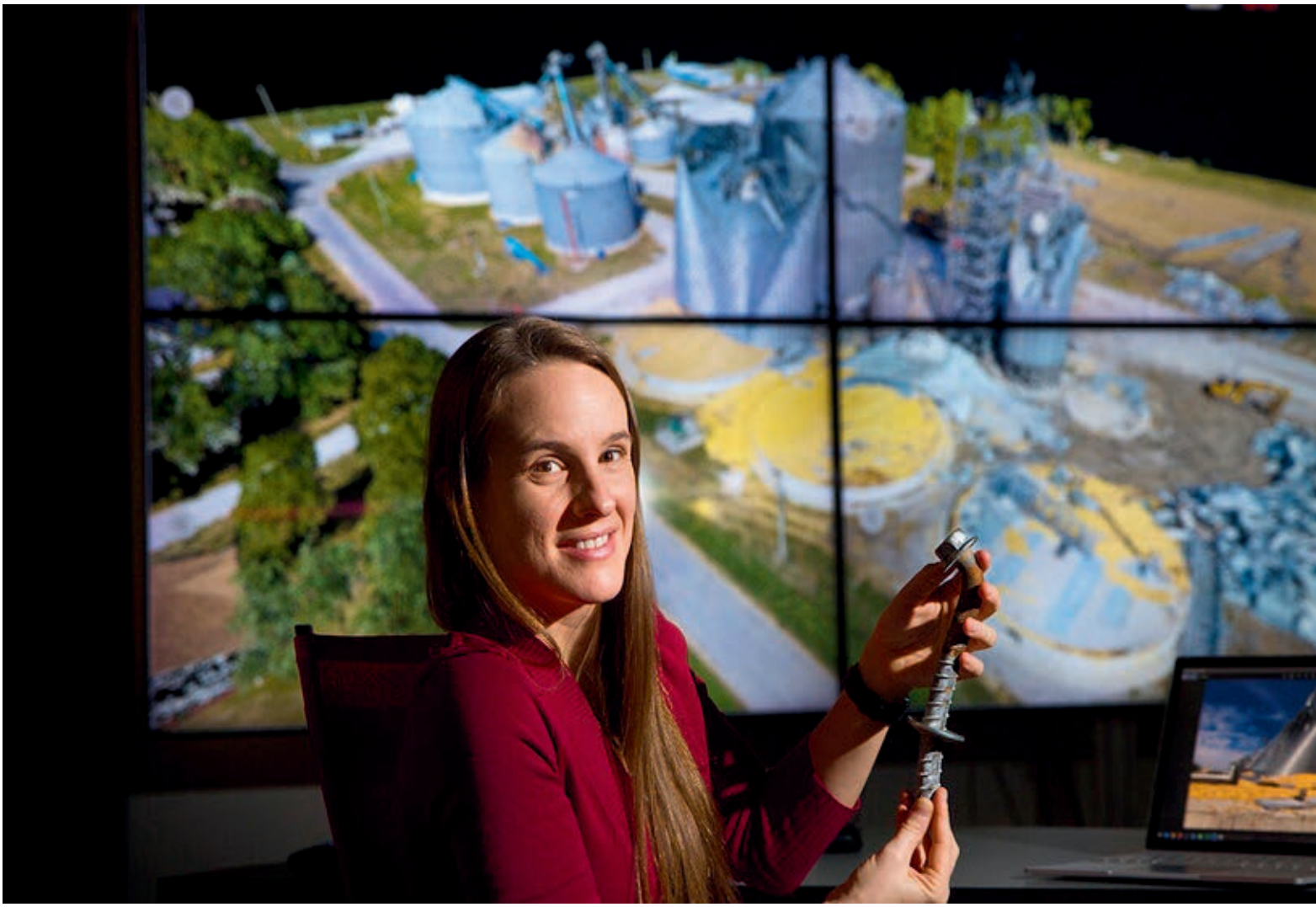
Seunghee Kim
engineering.unl.edu/cee/faculty/seunghee-kim/

Yong-Rak Kim
https://engineering.tamu.edu/civil/profiles/kim-yong-rak.html

Department of Energy
https://www.energy.gov

Sandia National Laboratory:
https://www.sandia.gov

Nebraska researcher studies derecho impact with eye toward improving silo design



Christine Wittich compares a damaged anchor from the field with three-dimensional point cloud data of the structure.

"There's a huge part of the fabric of the United States that we can't account for right now" in community resilience. But it's really critical."

Story by Dan Moser / Photos by Craig Chandler

On Aug. 10-11, 2020, a derecho swept across the Plains, producing widespread high, straight-line winds; extreme, torrential rain and hail; and an outbreak of weak tornadoes. The storm killed at least four and left behind significant damage in agricultural areas along a 750-mile path. In fact, its estimated $7.5 billion toll made it the most damaging thunderstorm event in American history.

It was also largely unnoticed outside the Corn Belt at a time when the presidential election, pandemic and racial unrest were dominating the news.

"This was a huge event, but it didn't receive much coverage, which was one of the huge motivators for me to study it," said Christine Wittich, assistant professor of civil and environmental engineering at the University of Nebraska–Lincoln.

One of her research areas is community resilience – improving infrastructure to make it less susceptible to natural hazards and reducing the impact of damage to the communities. Most research in this field has focused on urban and suburban areas; for example, how buildings can withstand hurricanes or earthquakes. Here was an opportunity to focus on the resilience of critical infrastructure in rural communities. The storage bins and silos dotting the rural landscape often hold thousands of bushels of grain or hundreds of tons of livestock feed. When those structures are damaged or destroyed, the impact is felt locally but can also disrupt the U.S. economy and global food production.

Wittich already had begun researching rural resilience, and she obtained a one-year, $45,000 grant from the National Science Foundation to focus on the derecho's aftermath. NSF's Rapid Response Research funding mechanism, known as RAPID, enables the agency to quickly process and support research that addresses an urgent need.

"There's a huge part of the fabric of the United States that we can't account for right now" in community resilience, she said. "But it's really critical."

Storm damage to agricultural infrastructure such as silos is common but tends to be isolated to individual farms and acreages. The derecho's effects were felt along a path that included Nebraska, Iowa, Illinois and Indiana, with the most serious damage in Iowa. In that state alone, researchers had a rare opportunity to study damage to thousands of structures. There was no widespread structural damage in Nebraska.

Wittich began by poring over news articles and documentation of structural damage in Iowa, hit hardest by the storm. She gathered information from the National Weather Service about wind speeds and other conditions in various areas. Then she headed into the field, studying damage, talking to landowners, documenting damage and correlating it with the weather data she'd compiled from NWS.

(cont'd.)

Wittich also used a drone to get aerial views of the damage, including close-up looks at roof damage. Her team noted crop damage, too.

She's now back in her lab studying the data. Her findings have potential to influence standards for new construction and lead to solutions that safeguard existing structures.

Her goal is to establish key parameters that may affect structures' ability to resist high winds, including foundation type, anchorage depth and baseplate design.

Wittich also is investigating how wind speed affects the probability of structural failure, a critical piece to advancing knowledge of structural vulnerability and identifying regions that are especially vulnerable to widespread damage from strong winds. Until engineers better understand these fundamental research questions, agricultural and rural communities will continue to be devastated by high-wind events, Wittich said.

Research could lead to recommendations for future silo construction and ways to remediate existing structures. For example, civil engineers studying hurricane damage developed hurricane clips that could be added to make existing homes less susceptible to high winds.

3-week session offers new opportunities for CEE students

The 2020-21 academic year offered several new challenges to students, faculty and staff; however, it also offered several new opportunities through the modified academic calendar. To accommodate travel restrictions and quarantine guidelines, Nebraska's Fall semester ended before Thanksgiving and Spring semester started in the last week of January. This allowed for two three-week mini-sessions with condensed intensive courses.

Faculty in CEE offered three new courses: Machine Learning in Civil Engineering taught by Assistant Professor Grace Jin, Infrastructure Sustainability through the Envision Rating System taught by Professor Libby Jones, and Technical Writing in CEE: Journal Manuscripts co-taught by Professor Shannon Bartelt-Hunt and Assistant Professor Christine Wittich. A total of 40 CEE undergraduate and graduate students took advantage of the opportunity to take these three courses and many more enrolled in offerings outside the department.

Three-week courses such as these were intended to help students develop critical career and research skills as well as gain additional credits towards degree completion. For example, the technical writing course by Professors Bartelt-Hunt and Wittich aimed to provide Ph.D. students with targeted guidance on journal article preparation. Wittich indicated "Academic writing in this context is critical for success as a Ph.D. student, but it is often quite difficult for students in the beginning. This course was intended to help students hit the ground running and disseminate their research more quickly." Over the three-week duration, each student prepared a draft journal manuscript on their current research and workshopped each section with a group of their peers. Students indicated that the course helped push them to meet deadlines on their writing and to practice giving and receiving critical feedback.

The nearly 20 students in the Infrastructure Sustainability course offered by Dr. Jones all became certified as Envision Professionals (ENV SP certification) and used their skills to evaluate the sustainability of our Engineers Without Borders' chapter project in Madagascar. Students noted the value of not only learning more about the Envision infrastructure rating system but also gaining professional certification.

While it is unclear if additional three-week sessions will occur in future academic years, the success of these courses was clear and they may be adapted into permanent courses occurring during regular semesters or summer sessions.

NSF RAPID grant offers unique insight into teaching during a crisis

Story by Grace Panther

The alarming spread of the COVID-19 pandemic spurred a national emergency, forcing many universities to announce in mid-March 2020 that all face-to-face courses would be delivered remotely for the remainder of the semester.

During this time, Discipline-Based Education Researchers (DBER) Dr. Grace Panther (PI, Civil and Environmental Engineering) and Dr. Heidi Diefes-Dux (CoPI, Biological Systems Engineering) saw an opportunity to study changes to teaching as a result of COVID-19 mandates. In just a few days, they wrote and submitted a National Science Foundation (NSF) grant that was funded.

The overall goal of the NSF funded project was to identify instructors' thinking and emotional themes that could be revealed through their teaching-related activities and community engagement.

To accomplish this goal, changes in the teaching experiences of instructors during the crisis were tracked by collecting and analyzing data acquired through surveys and interviews. The initial data collected was between April and May of 2020.

Two research questions guided the project: 1) During a crisis, how do engineering instructors' experience a sudden change in course delivery (with a focus on thinking, emotions, and community engagement)? 2) How do these experiences vary throughout the duration of the crisis?

In terms of activities that instructors engaged in during Spring 2020, it was found that many instructors engaged in learning something about teaching (self-directed) and community-based activities during weeks 12 and 13 and instructors found this to be atypical activity (Figure 1). Engagement in activities leveled off and were perceived as being more typical starting in Week 14.

The findings revealed that more than half of the instructors felt their emotions were atypical during the first 4 weeks of the transition compared to typical during the last three weeks of the data collection period. Instructors' reported their emotions as more positive than negative. The

Grace Panther (left), assistant professor of Engineering Education in Civil and Environmental Engineering, and Heidi Diefes-Dux, professor of Engineering Education in Biological Systems Engineering

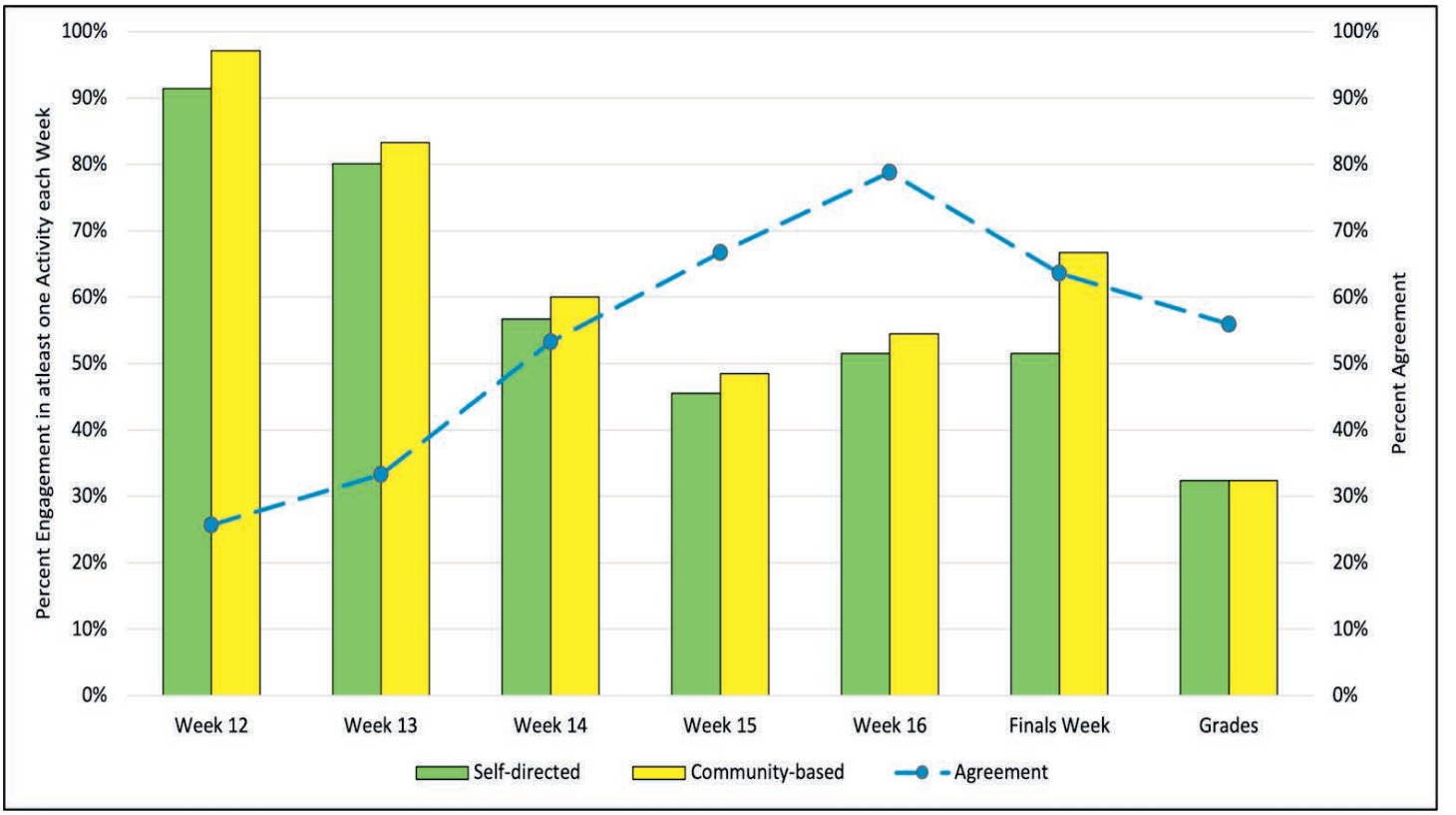


Figure 1. Engagement in self-directed and community-based activities each week and overall agreement of typicality in the two categories of activities (n = 30-36 depending on survey)

most common challenges themes that instructors cited included engaging students, designing and implementing assessments in an online environment and grading. The most common success themes cited by instructors pertained to grading, the instructor completing tasks relative to the course design and implementation such as creating videos and assessments.

The work conducted as part of this NSF RAPID grant will contribute fundamental knowledge on instructors' teaching-related activities and community engagement in the face of an urgent need to deliver courses differently. This research could also help shape the design of professional development opportunities that promote adoption of research-based pedagogies and instructional technologies.

The ~$225,000 NSF grant provided funding to study not only the initial transition to remote teaching in Spring 2020 but also the continued impact COVID-19 has had on teaching through Spring 2021.

Data collection and analysis is ongoing and will continue until Spring 2022. Findings from this work have been presented at the XDBER conference (March 2021) and will soon be presented at the American Society of Engineering Education (ASEE) (July 2021) and the Frontiers in Education (FIE) (October 2021) annual conferences.

This work was made possible by a grant from the National Science Foundation (NSF #2027471). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

> "Historically, instructors have been slow to align their teaching with current best-practices; it is very rare that something prompts rapid adaptation, so documenting these changes is groundbreaking."
>
> - Grace Panther

Nepal to Nebraska: Earthquake tragedy drives Shrestha to engineer a safer future

Story by Scott Schrage / Photos by Craig Chandler. Originally published in Nebraska Today.

A spoonful of rice, an indelible hum and a swaying chandelier. Then, a thought: This is it. This is it.

"It" was the end of a life only 16 years lived. Except that, mercifully, it wasn't.

Just a few minutes before noon on April 25, 2015, Yajyoo Shrestha was sitting down to eat with his family in Kathmandu, the capital of Nepal and a city that nearly 1.5 million call home.

He had just scooped a first helping of lunch onto his plate when two of Earth's own began violently scraping against each other roughly 50 miles to the northwest. The resulting energy, which would register as a 7.8-magnitude earthquake, raced toward Kathmandu.

Shrestha can remember the swinging of the light fixture above, the certainty it would plummet at any moment. He can call to mind "the weird humming that the Earth makes" when it quakes, the way it blended with the screams and shouts of family and neighbors to form a terrible ensemble that eventually dissipated but still reverberates.

"I had hopes of doing so many things in life," the Husker said of his thinking then. "I had these dreams, realistic and unrealistic, set for myself: 'Someday I'm gonna go places I've never been, do things I've never done.' And in that moment, I was like, 'I'm not gonna grow old. I'm never gonna see myself graduate from high school. I'll never see the world like I'd hoped to. My life ends here.'"

Shrestha and his family would survive. More than 8,000 Nepalese would not. Countless would be left with no place to live, their homes among the more than 600,000 structures toppled by the quake. Several lethal aftershocks arrived in the following weeks.

"Everything came to a pause," Shrestha said. "We were like, 'We don't care about school. We don't care about work or anything else. It's just about survival for now.'"

The quake had brought Kathmandu to its knees, but the city, after mourning the loss of so many lives and destruction of so many cultural touchstones, eventually regained its feet. Shrestha did, too, salvaging inspiration from the trauma and the tragedy.

"Up to that point, I was unsure about what I was going to do," he said. "I had an idea that maybe I wanted to do civil engineering. But after the earthquake, and after so many people lost their lives, and after I saw so many houses tumble down, I was like, 'Yeah, this is something that I do want.'

"It was an experience that definitely changed the way I look at life."

Six years later, Shrestha is graduating with his bachelor's degree in civil engineering from Nebraska, where he'll also begin pursuing a master's in structural engineering this fall. But his path to the Cornhusker State was far from a straight line. He'd never been to the United States; the idea of attending college there wasn't on his radar even as he wrapped 10th grade and prepared for his next two years of school, which Nepalese typically attend at a university or college.

Then a friend mentioned a Cambridge-affiliated pre-university program that was gaining popularity in Nepal. Shrestha earned a scholarship and entered the program, whose highest-achieving students usually studied abroad. He eventually applied to multiple universities in the States, pop culture-inspired visions of California and New York dancing in his head. Rejections and a lack of scholarship support, though, forced him to take a gap year.

"Then I learned about the University of Nebraska–Lincoln. I said, 'Sure, let's give it a shot.'"

In exchange for that shot, Nebraska U offered Shrestha a scholarship package more generous than any other. So, by August 2017, he was jetting off for the States, connecting in Chicago before flying to Omaha. The final leg? A shuttle bus to Lincoln.

"And I just remember there being cornfields," he said, wondering how many kernels of truth were hiding in the stereotypical jokes he'd heard about the place. "I was thinking, 'Is this really what it's like? I came for new experiences, for fun. I came for a busy city life. This is not what I had imagined.' But that was just the initial impression."

The differences between Kathmandu and Lincoln were real and undeniable. The cities, after all, were separated by more than 7,500 miles of distance, roughly 3,500 feet of elevation and more than 1 million people. By the time he arrived at his new academic home, Shrestha half-expected to learn that he'd be spending the next four years taking classes in just a handful of buildings.

Instead, some fellow Nepalese students he'd found over Facebook — and who were allowing him to crash at their

(cont'd.)

place until his own housing opened up — began showing him around East Campus. When Shrestha learned that it was only part of the university, then saw the Nebraska Union while taking in City Campus, concern gave way to pleasant surprise.

That fall, about 15 fellow Nepalese freshmen enrolled at Nebraska. Those burgeoning friendships, along with the experience of International Orientation and his membership in the Nepalese Students Association, also quelled the early disquiet.

"That really did help us a lot," he said. "I couldn't have done it without the initial support."

That winter, Shrestha saw snow for the first time. Academically, he was experiencing another first: not knowing exactly where he resided in the scholastic pecking order. In Nepal, Shrestha was used to a system that ranked every student's performance during an academic year. From first through 10th grade, he was top of his class. In 11th and 12th, he was top 3. It became, he admitted, a bit of an obsession.

"Now that I look back on it, I would say it was a little bit of an unhealthy expectation that I had of myself: 'I have to be the absolute best. Nobody else can come first. I have to keep this position,'" he said. "Did that make me want to study more? Yes. But was that the healthiest way to go about it? Probably not."

Without the pressure of a ranking system weighing on him at Nebraska, Shrestha decompressed and loosened up, realizing that he could learn to live with an A- or even a B+ every once in a while.

"I was the smartest kid in the class (back home), but I had to realize at some point that I was not the smartest in the world," he said. "That was a really important ego check and reality check for me. You can be good. You can try to be better than yourself. But you don't have to be better than everybody else."

Even if he wasn't the best, though, his best seemed to be more than enough throughout his first two years at Nebraska. The second semester of his sophomore year, he earned his first 4.0 GPA. The following summer, Shrestha became the first-ever Nepalese orientation leader with New Student Enrollment.

"I have a story to tell, and you don't see a lot of people from Nepal," he said.

"You don't necessarily see a lot of people who look like me and value the things that I do. Something that I've always been big about is representing my country, being a voice for my country. I knew I had to be the first one.

"I was like, 'This is me at my prime. Everything is going so well. I'm just killing the college game.'"

Yet Shrestha was about to face a wholly unfamiliar challenge that would leave him struggling to keep his feet. The beginning of his third year was making him feel like a third-rate student.

"When I reached my junior year, I was like, 'Now I definitely know I'm not the smartest,'" he said. "The question was, 'Am I dumbest?'"

Strestha (front left) leads an incoming class of first-year Huskers onto Tom Osborne Field as part of the Big Red Welcome in August 2019. Photo by Craig Chandler, University Communication

His kryptonite? The four-credit course CIVE 341: Introduction to Structural Engineering, taught by the fittingly named Joshua Steelman, associate professor of civil and environmental engineering.

"Every homework (assignment)," he said, "I'd sit down, start the homework, and I'd have tears in my eyes, like, 'I can't do this.'"

Other moments gave him pause, too, like when he saw classmates opening their laptops, pulling up YouTube and scrolling through recommendations full of engineering videos. His own recommendations were full of ballroom dancing videos — he'd become a member of the UNL Ballroom Team — and movie trailers. Was he single-minded enough to become an engineer? Was he in the wrong field? Should he switch majors? Could he afford to switch majors?

And for the first time in his life, he was constantly having to ask for help: from classmates, from teaching assistants, from Steelman during office hours. The latter felt like admitting to himself — and maybe worse, revealing to Steelman — that he wasn't nearly as smart as he'd once believed.

"'If I can't solve this on my own, maybe I'm not good enough,'" Shrestha said of his thinking at the time. "That was my narrative the entire semester — until the end, when I was like, 'This is it, though. This is me learning.' You're not expected to know everything in the beginning. This is why we're taking the class. This is where we get to learn."

Though he did "horribly" on the first exam, his willingness to ask for help, combined with a newfound mettle — Never give up. Just keep going. You never know what's going to happen next, he told himself — ultimately prevailed. He was ready to gladly accept a B in the course. Anything but a C would do.

"And then I saw an A," he said, "and I literally recorded myself jumping up and down, because I was so excited."

As thrilled as he was, Shrestha said the course meant far more to him than just a grade or even the copious content knowledge he picked up during those arduous 16 weeks. It reignited and reaffirmed his passion for structural engineering, he said, in a way that prior engineering courses — the ones he sailed through while plugging numbers into equations — never could.

"With (CIVE 341), it was like, 'I want to know how to do this.' And the fact that I could not initially, and the fact that I was struggling to know why things were happening, is why I got more interested in it," he said. "Because I really need to know how things are working. I want to know why things happen the way they do.

"As challenging as the class was, I will always be grateful for it."

Steelman's tutelage also convinced Shrestha that Nebraska was the place to pursue his master's. In just a few months, Shrestha will also begin a research assistantship with the Midwest Roadside Safety Facility. Though probably best known for designing the life-saving SAFER barriers that line NASCAR and IndyCar tracks, the facility also engineers and evaluates a range of components designed to protect highway motorists.

He'll be taking that assistantship, and entering the master's program, with Steelman as his adviser.

"It's like a full-circle moment," Shrestha said. "I was always intimidated by him as a professor. I see him as a mentor now."

Shrestha isn't sure whether he'll remain in the States, return to Nepal or even end up elsewhere after finishing his master's. His life to this point has taught him to take the upcoming day at face value, he said, and do it again when the next one arrives. That doesn't stop his family from asking the question, especially given that his first return trip to Nepal, planned for this summer, was derailed by the pandemic. For now, with COVID-19 cases rising again in Nepal, Shrestha said he can't risk the chance of being unable to get back in time for the fall semester.

The ache of going four years without seeing his parents and two sisters in person is acute enough, he said, that he tries not to think about it much. But until he can, he said the relationships he's formed at the university — with the Nepalese community, especially, but also friends and classmates and professors the world over — are sustaining him, even as they help him realize dreams he once feared would be dashed in rubble.

"I'm thankful for my family, who believed in me more than I believed in myself," he said. "And I'm thankful for everybody I've met at Nebraska, because everybody has had a part to play in me becoming who I am today.

"It's very funny, because there's always a reason — everything leads up to specific things in life. I (once) thought, 'I don't believe in those things,' but life has its own path, and sometimes it's just magical how things turn out."

Student Spotlight

Classroom skills support student internships

My name is Grace Becker. I'm a senior civil engineering major here at UNL. One of the things I enjoy most about studying civil engineering is that it gives you the unique opportunity to have a hand in both design and construction. So far, I have two summers of internship experience in construction on very different projects.

My first project was a local healthcare job I joined after my sophomore year. By the end of the summer, I found myself coming into the new semester with a fresh perspective. Having the opportunity to work in this industry bridged the gap between design construction. I had the opportunity to witness firsthand the design principles I was learning at school in action.

One of my bigger responsibilities on this job was making sure all the materials that came on site met strict design and safety standards. Being a healthcare job there were a ton of small details that we as a contractor were on the hook for: from the small margin of tolerance in the composition of the concrete slabs to the unique structural demands in wards of the facility that had to accommodate special medical equipment. Without knowing it I was getting a preview of the design criteria and principles that I'd be exercising in my junior and senior year.

When I was negotiating where I'd be working the next summer, I emphasized that I wanted to work on a heavy civil project. I ended up getting to travel 16 hours out of state to live in Texas for the summer working on a rehabilitation project that was being done in the middle of an active ship port.

This project posed a long list of challenges like being in the middle of a COVID hot spot, trying to keep a schedule during hurricane season on a construction site that required life jackets as PPE, and the security concerns involved with such a critical commercial hub.

A lot of the labs we take as civil engineering students at UNL cover standardized ASTM guidelines and tests. I remember this past summer in particular we were pouring a series of drilled shafts for the ship wharf. When you do big concrete pours like this you have to run a series of tests at different points during the pour to make sure everything is consistent.

Because of a lab we did in Materials of Construction (CIVE 378), I knew how to perform the concrete slump test and interpret its results. The summer before that thanks to Geometric Control Systems (CIVE 221) I knew enough about surveying to take up more responsibility as an independent member of my team. My company also sent me on site visits through the summer. Thanks to Introduction to Environmental Engineering (BSEN 326) I had enough context to ask good questions during the tour and learn more from the engineers on site than I would have otherwise.

Going into your senior year lets you reflect on years past. For me, it's evident that my internship experience

Grace Becker, senior

was a crucial part of my learning. The skills I gained at UNL greatly contributed to my success over the summer. This then translated to greater motivation and insight during the school year.

Through internships, I built a vast professional network and experienced design principles in action leading to a broader and more in depth understanding of the pointed "what" and "why" of the principles and theory we learn in the classroom.

Samantha Corey, junior

My name is Samantha Corey. I am in my third year at UNL. I have always liked problem solving and learning about my surroundings, so I chose to study civil engineering. As I have been getting into specific civil engineering courses on topics such as highway engineering, environmental engineering, and materials of construction, I've realized even more that this is the right career path for me. It's so interesting to apply basic math and science concepts to study and improve the infrastructure that I interact with every day, such as roads and waterways.

I had my first engineering work experience in my sophomore year when I worked as a Research Assistant at the Midwest Roadside Safety Facility. This is a UNL research organization that performs crash tests to ensure that roadside barriers can withstand vehicles crashing into them.

It was very exciting to be able to make a positive impact on highway safety through my work. I used AutoCAD to draft drawings of vehicle trajectory and hardware deformation. Additionally, I helped examine photos and videos and prepare technical reports to analyze the hardware's resistance to crash tests.

In the summer after my sophomore year, I had the opportunity to start working as an intern at JEO Consulting Group in the Transportation Department in Omaha. I later was able to continue to work in their Lincoln office part-time during the school year. In this role, I was able to gain experience in multiple areas of civil engineering, since I was undecided on which I was most interested in. I did a lot of work drafting and modifying roadway construction plans alongside professional engineers. This included planning out structures and pavement that would need to be removed and constructed, drawing roadway cross sections, and helping design roadway profiles. I also did some work in JEO's new Traffic and Technology Department, where I analyzed crash data and wrote reports for a few traffic studies to determine the need for additional safety measures on roadway segments.

My favorite project that I worked on over my summer internship was designing a storm sewer system for a residential area. Following a drainage manual, I went through flow calculations to determine the size of storm pipe and number of inlets needed. After going through many iterations of the system design with my supervisor, I ultimately wrote a report describing the system and why decisions were made in the final design.

This project and my internship as a whole was a really great learning opportunity. I was able to apply classroom knowledge in a real-world setting, gain experience with software such as Civil3D and MicroStation, and learn how to navigate many different reference materials that are used in the field of civil engineering.

My internship at JEO has fully immersed me in all aspects of the design process that the engineering industry follows. I have assisted with projects in all stages, from preparing bid documents and cost estimates to working on the final design and construction plans.

My supervisors have been great at giving me significant project tasks and treating me as a team member with equal responsibility and not just giving me easy assignments as an intern.

Overall, from this internship experience I have increased my professional network, gained knowledge in technical and non-technical engineering skills, and have truly enjoyed the work I've done.

Taylor Drahota, senior

My name is Taylor Drahota. I'm a senior civil engineering student at the University of Nebraska-Lincoln with an emphasis in structural engineering. As of June 2020, I started at Olsson which is a consulting firm located in the Haymarket of downtown Lincoln. Working here has been a such a great opportunity for my career development. I have been working with the Nebraska Road/Bridge team in particular. With such a diverse workload, I have been able to gain hands on experience through many different tasks.

Initially, there was a significant learning curve with some of the software we use on a daily basis. This was especially challenging with many employees working remotely. Having to rely solely on video and team chats was an adjustment nonetheless, but I managed to make it work to the best of my ability. Starting in the summer also allowed me to dedicate more time and effort towards learning and improving.

As my technical skills progressed, I was able to perform more difficult tasks. This pushed me out of my comfort zone which has benefited me in the long run. Understanding these work concepts has given me an advantage in my coursework as well.

After my initial progression with drafting and smaller tasks, I was finally prepared to perform my first design. The structure was a box culvert made of reinforced concrete. This was my first time designing which presented many new challenges. After the fact, I can definitely say the first one is always the toughest.

Since then, I've performed 3-4 different designs for smaller structures and have been fortunate enough to see these projects from start to finish. This part of my internship was extremely exciting and allowed me to complete a major milestone in my early career. Although I have a long way to go, I find this career path challenging yet very rewarding.

The consulting industry is something I've learned to love. The fast-paced work and constant challenge has allowed me to become a more successful problem-solver. Getting a better grasp on all this has allowed me to collaborate effectively with my supervisors and peers. My interactions with coworkers (remote and in person) are ultimately what I loved the most about my internship experience. Everyone was extremely helpful, always making sure I was on the right track.

Working at Olsson has allowed me to build a ton of new relationships to aid my development as a young engineer. Even with the limitations of 2020, we were able to adapt quickly which gave me the best possible experience I could have hoped for. I can say with confidence that my development and experience were prioritized as an individual up to this point. That says a lot about the company's core values and how they treat their employees. I highly recommend a civil engineering career path as well as any type of internship experience. It will pay dividends in the long run allowing, an individual to find what they are truly passionate about in real-world practice.

Boblowende S. Ilboudo

B.S. Civil Engineering, UNL; M.S., Structural Engineering

My name is Boblowende S. Ilboudo. I was born and raised in Ouagadougou, Burkina Faso. I grew up in an environment where there were a lot of construction sites. I was curious to know the science behind the structures and what it takes for them to stand so nicely.

My civil engineering journey started at the 2IE institute in Burkina Faso. I then moved to the United States in 2014 and after engineering prerequisites at Metropolitan Community College, I transferred to University of Nebraska-Lincoln to earn a bachelor's degree in Civil Engineering and a master's degree in Structural Engineering thereafter. It has been a wonderful journey at University of Nebraska-Lincoln with great professors and fellow students.

As a junior student I had the opportunity to work as an intern at the Iowa Department of Transportation. It was a full-time opportunity during the summer and part-time during the fall and spring semesters. While at Iowa Department of Transportation, I was certified as a highway technician to check constructors' work based on the state standard specifications. I performed slump and air tests on concrete before they could be served on the site, assisted in sheet piling and soldier piling, and learned the different processes in a highway construction.

After graduation I joined AECOM in Omaha as a structural engineer to design railroad bridges, culverts, and temporary shoring for a few years while working on my master's degree in Structures, Business and Economics. I was working in a team with which experience was shared and strengths were well distributed. Depending on the type of project we had on hands, everyone in the team was able to tackle it but younger engineers were paired with well experienced seniors to check their work and guide them through the processes. I was lucky enough to be working with a professional that was patient and knowledgeable.

Later, I was able to take my experience to Union Pacific as a structural engineer to continue working on bridges and culverts and gained a good experience in project management. I was also screening the outsourced projects

Boblowende working for Alaska Railroad Corporation

to make sure they followed the house standards. I was part of the structures design team and was involved in many exciting projects where we had to come up with solutions for complex issues.

After these few years of experience, I was reached out by the Alaska Railroad Corporation to take an executive position as a Structural Engineer. They were looking for the right candidate for a few years and found me as a good fit to this role. I was honored and have been in this position for a few months while finishing with my degree remotely with a few classes left. So far, I have been working on buildings load ratings, culverts design, marine docks caisson covers, and old bridges inspection and layouts.

Pam Dingman

B.S. Civil Engineering, 1991, UNL

> *I think civil engineering is where I always should have been. I have a great passion for it, but where I am today is a very different place than where I was 30 years ago when I had to stand up for myself and fight.*

Article by Karl Vogel | Photography by Craig Chandler

For all she's accomplished in the typically male-dominated world of engineering, it's easy to think of Pam Dingman as more than a role model. After earning a civil engineering degree from the University of Nebraska–Lincoln in 1991, Dingman worked in numerous firms, including becoming the first woman stockholder in her engineering company in the early 2000s. A few years later, she left to join Engineering Design Consultants, and in 2005 she acquired the company and became one of a handful of women to own a United States-based civil engineering firm.

In 2013, she was chosen from four candidates and appointed to the job of Lancaster County Engineer, and in 2014 defeated another candidate to become the first woman in the U.S. to win a contested county engineer election. Along the way, she's earned numerous awards, blazed trails and opened doors for women in engineering. Just don't call her a "pioneer."

Times have changed, Dingman said, and women achieving success in any field has long ago ceased to be a novelty. "In this millennium, why do we have to have 'pioneers'? That makes it sound like we're still in the 1970s," Dingman said. "We really need to cross that bridge and not turn around."

That empowerment was not part of Dingman's path to engineering. Though she was "quite proficient" at playing the violin and viola while in high school in the 1980s, Dingman was attracted to STEM fields and wanted to pursue an engineering career. Still, encouragement from adults was hard to find. A school guidance counselor tried to nudge her into pursuing music or, perhaps, attending a technical school to be trained as an electrician. After taking a year of music and pre-engineering classes at Wayne State College, Dingman joined the U.S. Army ROTC and transferred to the University of Nebraska–Lincoln. The agreement with the Army paid for her education with the stipulation that she obtain an engineering degree. Discouraged from seeking a degree in mechanical engineering, Dingman remained determined to become an engineer. It's a type of setback many women have faced, but one Dingman now calls serendipitous.

"I think civil engineering is where I always should have been. I have a great passion for it, but where I am today is a very different place than where I was 30 years ago when I had to stand up for myself and fight," Dingman said. "Unfortunately, the college didn't have the great advising programs it has now or experts to help you find your path."

That, Dingman said, is why it remains important for women engineers to be mentors and facilitators for the next generations and why she continues to create opportunities for women.

"When I arrived at County Engineering, we had a work floor that had zero gender diversity, and I was suddenly in that leadership position," Dingman said. "Today, we have five full-time engineers — three of which are women. That (gender diversity) is something we as engineers need to work on. It's difficult because women can still end up as engineers in places where they're the first or only woman. Any time that happens, you're definitely breaking ground and it's incumbent that you make room for others to follow you, to create more room for all of us."

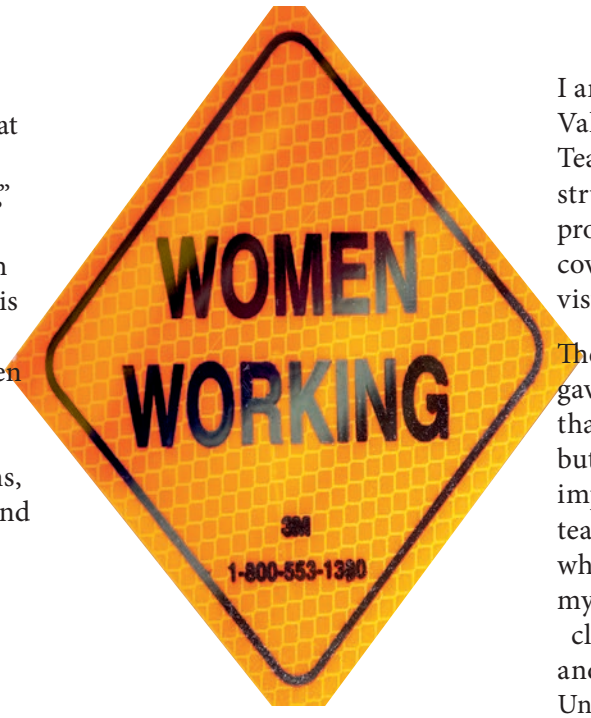
Creating that literal and figurative space for growth is in the College of Engineering's plans, which include a building project that begins this summer, goals to increase both the numbers of faculty and students in the college, and a desire to drive more economic growth for the State of Nebraska.

Putting women at the forefront could be a key component in achieving those goals.

According to fall 2018 figures, 498 of the 3,077 undergraduates in the College of Engineering were women — about 16 percent.

"We need to keep more engineers in the state, and to do that we need more engineering jobs that will keep them here," Dingman said. "That's even more important for women engineers. When women leave Nebraska, they have a tendency to not come back.

"What makes me so proud to be an alumnus is that Dean Lance Pérez is dedicated to creating a diverse engineering environment. That's going to be important for the state moving forward."



Soon after graduation, I received a job offer from Valmont Industries (Valley, NE) to serve as a Structural Design Engineer within their International Division. In this role, I designed tubular steel structures manufactured at Valmont's facilities around the globe. The structures were installed in over 25 countries and used to support transmission and distribution lines, highway lighting, sports lighting, and traffic lights.

After receiving my Professional Engineer License in 2008, I enrolled in the MBA program at UNO which I completed in 2013.

My role at Valmont has changed and evolved over the years. I have also served as a Project Engineer, Project Manager, and Business Director. I have trained and managed engineers, managed non-technical aspects of projects, and led sales and commercial activities in Latin America.

I am currently working with Valmont's Product Development Team helping to develop disguised structures which will allow cellphone providers to expand wireless network coverage while having a minimum visual impact to urban areas.

The University of Nebraska not only gave me the technical knowledge that I needed to become an Engineer, but also helped me to develop other important skills in leadership, teamwork, and problem solving, which I use on a daily basis in my work. Starting with English classes, then an engineering degree, and finally an MBA, my studies at the University of Nebraska provided me with a solid foundation.

My studies laid the groundwork for a very interesting and fulfilling career path; one that I never dreamed of while working in the transportation lab during that summer of 2002. I will never forget my experience as a student especially the trust and support I received from faculty and staff, particularly Dr. Jones, that contributed to making my dreams become a reality.

Alumni: Then & Now

Ann Williams, P.E.

Vice President and Nebraska/Iowa Water Business Group Manager, HDR

B.S. Civil Engineering, 1996, UNL

Coming to UNL…

I was raised in York, Nebraska where my first exposure to engineering came from my dad, who taught me drafting in high school. I was motivated to attend UNL by a combination of many things, including great scholarships, a tight-knit Civil Engineering community, proximity to my parent's washing machine, and of course, Nebraska football!

While at UNL…

During my four years at UNL, I was involved in many student organizations, including Kappa Alpha Theta, Student Alumni Association, College of Engineering Ambassadors, and the Chancellor's Innocents Society, as well as many civil engineering student groups. Each of these organizations gave me a chance to develop and polish critical leadership, communication, and networking skills that have helped to advance my career in ways beyond my traditional engineering curriculum. In addition, I had professors who took an interest in my development as an engineer, including Dr. Bruce Dvorak. I was interested in wastewater treatment and Dr. Dvorak became a trusted mentor who opened my eyes to the myriad of opportunities available in the industry. Years later, we continue to collaborate on topics facing the next generation of engineers.

Since Then…

I began working for HDR at the Omaha headquarters in 1997. I joined the company when it was relatively small, yet it was an engineering powerhouse that afforded me diverse opportunities to explore numerous aspects of civil and environmental engineering. Over the years, I have been fortunate to serve in many roles, from a groundwater modeler on a low-level nuclear waste disposal facility, to assisting with planning for a regional wastewater system, to helping clients recover after the devastating floods of 2019. In addition, I've served as the Nebraska/Iowa water lead for business and client development. I am currently the Water Business Group Manager for our Nebraska/Iowa area. In my latest roles, I've been able to remain engaged in the engineering profession in a variety of ways. I am active in recruiting students and graduates and have a particular passion for helping my company create a diverse workforce and inclusive environment. I serve on several boards that help promote diversity in the engineering industry and provide STEM engagement opportunities, including the ACE Mentor Program and Girls Inc. of Omaha.

Garrett Martindale

Railroad Bridge EIT, HDR

B.S. Civil Engineering, 2016, UNL; M.S., 2018, UNL

Coming to UNL…

I was raised just outside of Gretna, NE and attended Gretna Public Schools for elementary, middle, and high school. My interest in engineering was sparked by my dad who as well is a civil engineer. Growing up, I assisted my dad with building shelving in the barn and livestock fence around the acreage while he taught me valuable lessons from his experience of designing and directing construction for railroad bridges. We are also avid Husker fans. Walking through the UNL campus on the way to Memorial Stadium for football games, I always knew I wanted to be a student here when I attended college.

While at UNL…

My time at UNL truly helped set me up for success in my current position at HDR. As an undergraduate student, I was very involved with the student chapter of the American Society of Civil Engineering (ASCE). I was the ASCE President for one year and steel bridge captain for two years. In these leadership positions, I strengthened several interpersonal skills including public speaking, clear communication, and organization. In the workplace, these traits help me share my ideas and concerns while working efficiently. As a graduate student, I had the opportunity to participate in research advised under Dr. Richard Wood focusing on bridge inspections, system identification, and LiDAR. I helped record and process accelerometer data on various bridges and multistory buildings. The data was used to evaluate how complex structures respond to different loads, estimate the current structural stiffness, and calibrate computer structural models to detect any structural damage. From this experience I collaborated with others, learned independently, and managed tasks from various projects. UNL has shaped me into the young professional that I am today, and it makes me proud to be an alumnus.

Since Then…

Since graduating with my master's degree, I have been working as a Railroad Bridge Engineer in Training at HDR, Inc. in Omaha. In this position, I perform structural survey, analysis and design services for Class I and short line railroads. A typical day at work involves performing steel, reinforced concrete, and prestressed concrete design for various bridge substructures, superstructures, and retaining walls. One of the most notable projects that I have worked on was the design and detailing of a 133' through plate girder railroad bridge. I was able to visit the shop where the bridge was fabricated before it was sent to the project site (pictured). The girders are nine feet deep and the span weighs around 225 tons. The process of a project going from a concept, to a design on plans, and then seeing it in person is extremely satisfying.

Brian Dunnigan

Vice President, Olsson

B.S. in Civil Engineering, 1981, UNL

Coming to UNL…

I am from Lincoln and attended UNL on a track scholarship. My father was a civil engineer and was my inspiration to pursue a degree in engineering.

While at UNL…

During the lab portion of the surveying class when we were able to be outside surveying, I realized that I wanted to be in a profession where I could work on projects that required working both indoors and outdoors. This class solidified my choice to pursue a civil engineering degree.

Since Then…

I have been involved in civil engineering my entire professional career. I have worked in areas of transportation, structural design, and water resources. Prior to joining Olsson six years ago, I worked for the Nebraska Department of Natural Resources (NeDNR) for 28 years, the last 6 years I served as the Director of NeDNR. During this time as Director, I lead the state's technical response in interstate water litigation that was heard by the United States Supreme Court. At Olsson, I am a subject matter expert in water resources and enjoy working with clients on a wide variety of water resources projects across the country.

NEW FACULTY

Matthew Williamson

Associate Professor of Practice

Dr. Matthew Williamson joined the Civil and Environmental Engineering Department in August 2020. The primary focus of his appointment as Assistant Professor of Practice is teaching. He aims to bring to the classroom a wealth of knowledge and insights gained through a diverse background in industry and academia.

Williamson strives to emphasize project- and team-focused learning, and make connections to the current state of engineering practice. Williamson received B.S., M.S., and Ph.D. degrees in Civil Engineering from Kansas State University.

He has worked for public and private engineering stakeholders including the state department of transportation as well as large and small private consulting firms.

Faculty page: https://engineering.unl.edu/cee/faculty/matthew-williamson/

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