UA LITTLE ROCK | EXPECT MORE

RESEARCH in the ROCK

SUMMER 2024

What's Inside

UA LITTLE ROCK

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CARNEGIE CLASSIFICATION
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MEMBER, UNIVERSITY RESEARCH MAGAZINE ASSOCIATION

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Letter

Over my years as director of the Office of Research and Sponsored Programs (ORSP), I have seen the exponential growth in sponsored funding at UA Little Rock. This growth in research, community programming, and creativity strengthens our commitment to create a thriving education and research-focused environment in Central Arkansas that affects our community and beyond.

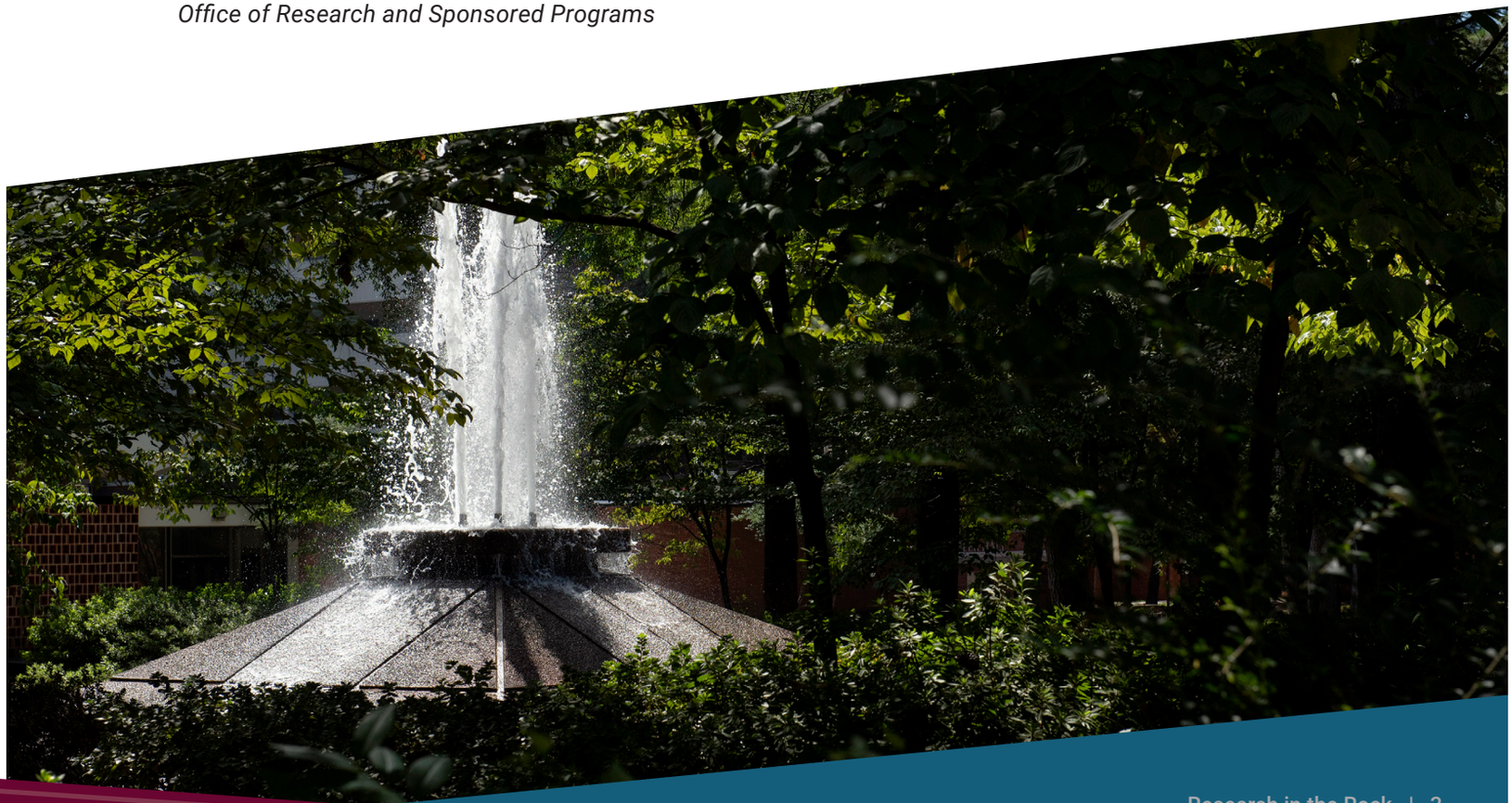
The mission of ORSP is to support principal investigators as they seek external funding that will turn their ideas into real-world solutions, whether it's a new scientific discovery, a program to help disadvantaged communities succeed, or creating a compelling work of art that helps us think in ways we haven't before.

Research administration is a vital part of a healthy teaching and research-focused institution. As regulatory compliance increases throughout the funding landscape, it is essential for us to clear the path for principal investigators to apply for the funding they need to bring their ideas to life and ensure that rules are being followed.

UA Little Rock is home to several pioneering researchers and community service leaders, many of whom have shaped my own career today. Their effects on the research and educational landscape can be felt in several concrete ways. I hope after reading this issue, you come away with an appreciation of the work our faculty, staff, and students put in every day to better our world.

Tammie Cash

Tammie Cash, *Director*
Office of Research and Sponsored Programs



Research News

Chemistry Professors Receive Instrument to Increase Research and Teaching

Drs. Mohammed Goodarzi and Noureen Siraj were awarded $50,000 from the Arkansas IDeA Network of Biomedical Research Excellence (INBRE) to acquire an ultra-speed centrifuge for biomedical research. This instrument will augment a wide array of chemistry research and teaching applications, such as drug development, proteomics, and metabolomics research.

Agarwal Presents Research at NATO Symposium

Dr. Nitin Agarwal, the Maulden-Entergy chair and distinguished professor of information science at UA Little Rock, recently presented his research at the NATO Science & Technology Organization Symposium on Mitigating and Responding to Cognitive Warfare. This symposium increases understanding of cognitive warfare and its effects, which will lead to more effective prevention and mitigation strategies and countermeasures to increase security among nations and within NATO.

Scan the QR code for the full story.

UA Little Rock Student Research Featured on Reality TV Program

Research from UA Little Rock alumnus Josiah Johnson focused on the reality television show "Small Business Revolution." His research, entitled "Main Street Business Initiatives and Crime in Small Towns," was published in the Journal of Economic Behavior and Organization. Johnson completed his research for the Donaghey Scholars Program at UA Little Rock.

Scan the QR code for the full story.

Glazier Awarded Faculty Excellence for Research and Creative Endeavors

Dr. Rebecca Glazier, associate professor of political science, was awarded the 2023 Faculty Excellence Award for Research and Creative Endeavors. The award recognizes extraordinary faculty in teaching, research or creative endeavors, and public service. Glazier is known for her extensive research in how faith groups impact our community.

Scan the QR code for the full story.

Yang Inducted to Arkansas Research Alliance

Dr. Mary Yang, professor of information science, is the newest inductee in the Arkansas Research Alliance, a prestigious group of scientists and researchers in the state who have significantly contributed to the state's research focus. Each fellow receives $75,000 to advance their research. The ceremony was held at the Arkansas State Capitol on Aug. 10, 2023.

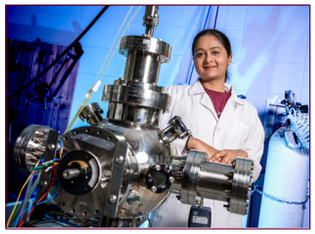
Scan the QR code for the full story.

Space Grant Consortium Hosts Path to Prosperity Workshop for Small Businesses

On Jan. 24, the Arkansas Space Grant Consortium hosted a regional economic development workshop on the UA Little Rock campus to provide resources to small businesses in the state. The South-Central Path to Prosperity Workshop is geared toward small businesses, financial institutions, community development financial institutions, trade groups, local, state, and Federal agencies, community leaders, nonprofits, and community-based staff representing organizations.

Scan the QR code for the full story.

Doctoral Student Wins National Materials Science Award from AVS



Ranjitha Hariharalakshmanan, a UA Little Rock student in the applied physics doctoral program, won the prestigious Dorothy M. and Earl S. Hoffman Award from the American Vacuum Society (AVS). AVS is an interdisciplinary professional society that supports networking among academic, industrial, government, and consulting professionals involved in a variety of science and engineering disciplines.

Scan the QR code for the full story.

Kanekar and Otundo Contribute to Public Health Research on Social Media Ethics

Dr. Amar Kanekar and Dr. Joseph Otundo from the School of Counseling, Human Performance, and Rehabilitation have recently published a chapter in the new book “Effective Use of Social Media in Public Health” on the ethical use of social media. Edited by Kavita Batra and Manoj Sharma, this book addresses the growing use of social media in conducting and disseminating research findings and covers an array of issues from cyberbullying to diversity and inclusion.

Scan the QR code for the full story.

Ghosh Wins Award for Best Technical Paper

Dr. Sujan Ghosh from engineering was awarded the Al Sonntag Award from the Society of Tribologists and Lubrication Engineers. This prestigious award is given to a society member who has authored the best technical paper on solid lubricants the prior year.

Scan the QR code for the full story.

RESEARCH NEWS

Strengthening Communities Through the

People look to religion for all sorts of reasons: for peace, for guidance on how to live their lives and make sense of the world, for communion with something greater than themselves, and more. After the racial justice protests in the summer of 2020 sparked by the murder of George Floyd, many people turned to their faith to address issues of race and seek greater understanding in how to promote justice according to their principles.

Dr. Rebecca Glazier

A long-running project led by UA Little Rock Political Science Professor Dr. Rebecca Glazier has been investigating how people look to their faith communities when addressing racial justice, and how they can work within those communities to address issues of race. In this project, Glazier and her team surveyed congregations of various faith traditions around Little Rock, examined sermons given in city churches in the weeks after Floyd's death, interviewed Little Rock clergy and national experts, and held focus groups with congregation members. Afterward the project team created resources for congregations to address racial justice and held a summit for local religious leaders to engage on the subject.

The Little Rock Congregations Study

Glazier started the Little Rock Congregations Study in 2012 as a way to get her students out of the classroom, and as an outgrowth of her own research background. Glazier explained that her background is in international relations and U.S. foreign policy, and that she had conducted a study on people whose religion motivated them to help resolve international conflicts. This led her to notice similarities between these international peacemakers and people in Little Rock. These local people were also motivated by religion, she said, to dedicate themselves to working on issues like racial justice and helping the homeless, "in a way to bring peace to their communities right here in our city."

"That's when I founded the Little Rock Congregations Study with this goal to try to understand faith-based community engagement and really to get my students engaged in that research and to give them a high impact, engaged learning experience," she said. In the time since, she said, more than 200 undergraduate and graduate students have participated in the research. Dr. Gerald Driskill, a professor of applied communications, has also been a vital collaborator in the project. For the past few years, the project has also worked with Research Practicum Teams from the Clinton School of Public Service.

Lens of Faith

Looking back over how the congregations study has evolved over its many years of existence, Glazier recalled that its initial focus was more overtly political. "In 2012, the presidential election was Mitt Romney, who was a Mormon candidate. So people were talking about religion a lot. And Barack Obama," she added, "there was some controversy about the church that he had attended in Chicago, where the pastor had talked a lot about race, and people were very interested in religion.

Members of the Little Rock Congregations Study share their research at the religious leaders summit.

"So I said, why don't we study some congregations and see how people's religion is affecting the way that they vote, or the way that they think about politics, or the way that they make political decisions?"

The response, Glazier recalled, wasn't exactly what she expected. "We got a little bit of pushback from the congregations who were like, 'We don't want to talk about politics at church. Why are you asking so many questions about politics?'" It's important for a community-based project like the congregations study to be responsive to the community, Glazier pointed out, so the study shifted away from questions about party politics. Questions about political activity–like whether people vote, donate to campaigns, or try to get their neighbors to vote–are still a part of the study, but they fit within a larger context of people's community engagement and the ways they are thinking and talking about community issues.

> "We had all these community leaders talking with each other and sharing with us and brainstorming on what the major issues in our community are, and one of the key issues that rose to the top was race relations."
> *— Dr. Rebecca Glazier*

For the past several years, the study's work has focused on the intersection of race and faith. Glazier said the study had been asking questions about race since the beginning, but the issue came into clearer focus at a 2019 summit of religious leaders.

"We had all these community leaders talking with each other and sharing with us and brainstorming on what the major issues in our community are, and one of the key issues that rose to the top was race relations," Glazier said.

The study does a major data collection every four years during presidential elections, Glazier said. "So as we started prepping for 2020, we decided to put more questions about race onto our surveys," she added. "And then of course the summer of 2020 was this huge racial reckoning with the murder of George Floyd."

The group got a grant from the Society for the Scientific Study of Religion to further their investigation and worked with a team from the Clinton School to interview national leaders on faith-based racial justice efforts around the country.

The research team has presented an academic paper on the study at the American Political Science Association Conference, and it is under review for publication. "What we saw in our data is that race relations is the number one issue that people in Little Rock want to see their congregation get involved in helping to solve," Glazier said. "They see their place of worship as a safe place to talk about race and they want their religious leaders to help them through these difficult issues."

Religious leaders, though, may lack the tools to lead their congregations in those discussions. "A lot of clergy, I think, are a little bit afraid to bring up race because they think it's going to make people uncomfortable and that they're not

What we Learned about Race from the Little Rock Congregations Study

Racial Division is Major Problem

78% of congregation members said the Little Rock has a problem with racial division

88% of clergy said the Little Rock has a problem with racial division

4th race relations was the 4th most important issue in Little Rock

But there is Reason for Hope

Race relations is the number one issue people want to see their place of worship engaged in helping to solve

The vast majority of clergy (64%) believe race relations will get better--and they are in a position to help make that happen.

We asked African-American Pastors in Little Rock about race, collaboration, and their experiences. This is what we learned:

1

They share a concern over racial divisions.

"...there has to be a deliberate approach to break[ing] down those walls ... especially the traditional Black churches with the traditional White churches."

"unity is a fundamental Christian value ... we are terrible at it ...one of the many black eyes on the public face of Christianity...the way that racial and socioeconomic things separate us."

2

They face challenges with collaboration.

There is a long history of "taking care of our own" rooted in experiences with segregation and discrimination.

Sometimes experiencing exclusion: "if you are not part of that church or someone at that church, you probably are not going to know what they are doing."

3

They are seeking to engage with both the past and the present.

"We recognize that race ... all injustice, was a long-standing kind of scar"

"The focus of the black community ... faith ... pushes us towards ... equality ... economic security ... social concerns

Key Community Questions

- How can we encourage dialogue between clergy and congregants across racial lines?
- What communication practices encourage working together towards common goals?
- How can we listen and learn from our history while working together for a better future?

UA LITTLE ROCK

LRCS Little Rock Congregations Study

Learn More about the Research and our Methods
Visit our website: research.ualr.edu/lrcs
Follow us on Facebook:
facebook.com/LittleRockCongregationsStudy
Contact Dr. Rebecca Glazier, raglazier@ualr.edu

going to want to hear about it," she explained. "But in reality this is the issue that people want to see their congregation do something about, and they think that religion has a place in talking about race and in helping us make progress on race and in healing the divisions that have been caused by racial trauma and racial injustice in the past."

So the study group also prepared resources for congregations and held a free summit for religious leaders in Arkansas. That summit, held in November 2022 at UA Little Rock Downtown, included sermons from religious leaders and a panel of people from congregations around Little Rock talking about their work on racial justice–ranging from book groups to a podcast. Clergy members who attended the summit were also given a commitment form that they could sign committing themselves to work toward racial justice, and some of the study's grant funds went toward free books on the subject for attendees.

Dr. Glazier speaks at the Religious Leaders Summit, held at UA Little Rock Downtown.

After the Summit

Glazier noted that participating in future research by the congregations study was one of the options on the commitment form, opening an opportunity for future research. The study group continued its data collection on race with a "community conversations" event in May 2023. At the event, held at the Reynolds Building Atrium at UA Little Rock, members and leaders from a wide array of religious groups, as well as the Little Rock community, were paired for one-on-one talks about pressing issues. The team's research showed that, after the discussions, participants perceived the trustworthiness of each race higher across the board. Many participants even kept in touch with their conversation partners.

The study group also wrote another paper that focuses more on the resources they've created and on the results of the summit, which they presented at the Religious Research Association Annual Conference in the fall of 2023. Glazier has written a book covering the study's first decade called "Faith and Community: How Engagement Strengthens Members, Places of Worship, and Society," which is being published this year. The study group is also starting to plan for future efforts, focusing on sharing their results with the community and providing them with resources.

In all of their efforts, Glazier said, the study group members work to keep the community focus of the project in mind. "We're trying to listen to our community partners. We've been working with these congregations for more than a decade, and we want to do work that is valuable and helpful to them." Community members' concern with issues of race and their desire for resources to address those issues were big motivations for the study's focus over the past few years. Glazier also noted that a responsiveness to community needs helps the study, too, by helping motivate community members to participate. "We want them to feel like the things that we're doing are going to be valuable," she noted. "When we give a report back, or we tell them what we found, they think, 'Yeah, this is interesting and we care about this work too. We want to be a part of it.'"

Glazier was awarded the American Political Science Association's 2023 Distinguished Award of Civic and Community Engagement in recognition of her work on the study, with the award committee saying it "exemplifies how political science scholarship can improve civic life in partnership with community partners."

Glazier repeatedly stressed how vital the community is to the study. "We're so grateful for the congregations that we work with, for the members, and for the clergy leaders, because the research that we do wouldn't be possible without them," she said. "Not only are they just so, so gracious with their time and their expertise, but when they're talking to us about religion, they're really sharing part of their soul with us."

Scan the QR code to read more about the Little Rock Congregations Study.

Mathematics instructor Melissa Hardeman works with students in her Strong Start to Finish Initiative class.

PATHWAYS

Strong Start to Finish

What happens when students arrive at college unprepared for their basic math and writing courses? At UA Little Rock and colleges across Arkansas, that answer has changed in recent years. As a result, more students are making it through these basic classes and making progress toward their degrees.

Many of the changes came as part of the Strong Start to Finish (SSTF) program, which included nearly all two- and four-year higher education institutions in the state and was funded by the University of Texas at Austin's Charles A. Dana Center. The effort, led by the Arkansas Department of Higher Education, focused on ensuring that students who arrive at college unprepared are enrolled in co-requisite support courses–extra one- or two-hour labs taken along with a core course that help them master the main course's material. Faculty at UA Little Rock are tracking the results of this effort and constantly looking for ways to improve students' performance. "It is exciting to see how student outcome data can give us insights on where to intervene with curricular and student support to make a meaningful difference in our students' lives," said Dr. Erin Finzer, associate vice chancellor for academic affairs. "Our math and composition faculty and advisors have taken advantage of SSTF's professional development in scaling co-requisite support, multiple measures placement, supporting diverse student needs, and equity dashboards to build upon improvements already underway in their developmental courses."

The statewide effort of SSTF has wrapped up, but the state's work with the Dana Center is continuing. The latest collaboration involves the center, the Arkansas Department of Higher Education, the Arkansas Department of Education, and representatives from high schools and two- and four-year institutions. In the Launch Years Initiative, collaborators are working to expand math pathways to the high school level, to better align the high school curriculum with the state's college-level efforts. Finzer served as the central Arkansas co-lead of that effort, and Dr. Annie Childers has joined the initiative, which also includes work with high school math teachers and a partnership to provide peer mentor and tutors for high school students. "While we are working to improve math education at the college level, we will be using some of these same interventions at the high school level," Finzer said.

Three UA Little Rock employees helped lead the Strong Start to Finish effort on campus: Childers, associate professor and graduate coordinator in the Department of Mathematics and Statistics; Dr. Melvin Beavers, assistant professor and director of composition in the Department of Rhetoric and Writing; and Carla Griffin, student development specialist for the Donaghey College of Science, Technology Engineering, and Math.

Childers said the work to overhaul the way math is taught at the university began even before the SSTF initiative, going back more than 10 years. She recalled her work with Melissa Hardeman, a senior mathematics instructor, on a task force that recommended measures, including math pathways and co-requisites, for statewide adoption. The task force's recommendations led to the Dana Center's funding of SSTF. "It was kind of all simultaneously happening where we were doing work," she recalled. "We were also part of this task force, and then the Dana Center came in and said, 'Hey we want to fund the state of Arkansas to push this to all your four-year and two-year institutions.'"

"That helped our department because it got the administration involved, and then it got Dr. Finzer involved where she was able to come and be the overhead support," Childers said. Now, with more than 93% of state institutions of higher education accepting quantitative literacy, "as a state, we've made huge progress in these efforts."

Childers' work hasn't just involved implementing the changes; she's also been studying them, and the effects they've had on students. She has published several papers on the efforts, with co-authors Dr. Lianfang Lu, Xixi Wang, Joshua Hairston, and Timothy Squires. "All the data shows that when comparing how we're doing things now to before, our pass rates have increased, our persistence is better," she said. "The students are staying, less dropping out over time, and so everything's pointing out that what we're doing now is good." There is, however, always room for improvement, she noted, and so she and others at the university are continuing to study data on student outcomes in search of ways to make learning at UA Little Rock even better.

One thing worth noting, Childers said, is that "The percentage of students coming to UA Little Rock unprepared in math is increasing, and so it's more important than ever to make sure that we are serving these students in the correct way and not just throwing them into something where they're not going to be successful."

"We want to make sure we're putting them in a program that we know can ultimately help them and get them on the path to graduation."

UA Little Rock was an early adopter of many of these changes, Childers noted. "We've been at the forefront of these initiatives, whereas another campus may have been one of the last ones to adopt these recommendations," she said. "We've been fortunate enough to be one of the first ones to adopt these recommendations, so we could be seen almost as a leader in the state of these efforts."

Pathways

The first part of Strong Start to finish for mathematics was the pathways effort, Childers said. It started even before she arrived at UA Little Rock in the 2013-14 school year, she recalls. The move came from recognizing that "not every student should have to take college algebra for their major–college algebra for some students is an obstacle and a barrier to graduation," she said. This led to the development of quantitative and mathematical reasoning (QMR). Students are divided between the two pathways based on their intended majors. "Your STEM majors still take college algebra because they need calculus," she said, and algebra is a first step leading to it. QMR is intended for non-STEM majors.

Describing the content of the QMR course, Childers said, "quantitative reasoning has several focuses. They do

personal finance, how to pay off loans–application based–doing a budget, things that are applicable to students' lives. And they do measurement, they work with problems involving measurement of doses and statistics, reading graphs, reading charts, what do you see in the news? How can you tell if this is real? Is this not real? Is this true?" Another place that UA Little Rock is leading in math pathways, Childers said, is that the university is one of the first in the state where nursing majors accept quantitative reasoning. The QMR course has been updated to include the algebra knowledge that nursing students need as a prerequisite for a required chemistry course. "We altered our

QMR class in such a way that we were able to incorporate logarithms and some of these things that they wanted nursing students to have and why they were still hanging on to college algebra," Childers recounted. With nursing being UA Little Rock's largest academic program, this change has opened up the QMR course for many more students. There's the potential for another pathway, Childers said, "the third pathway that's gaining traction in other states is the statistics pathway, where maybe you don't need college algebra, maybe not QMR, but maybe you really need stats."

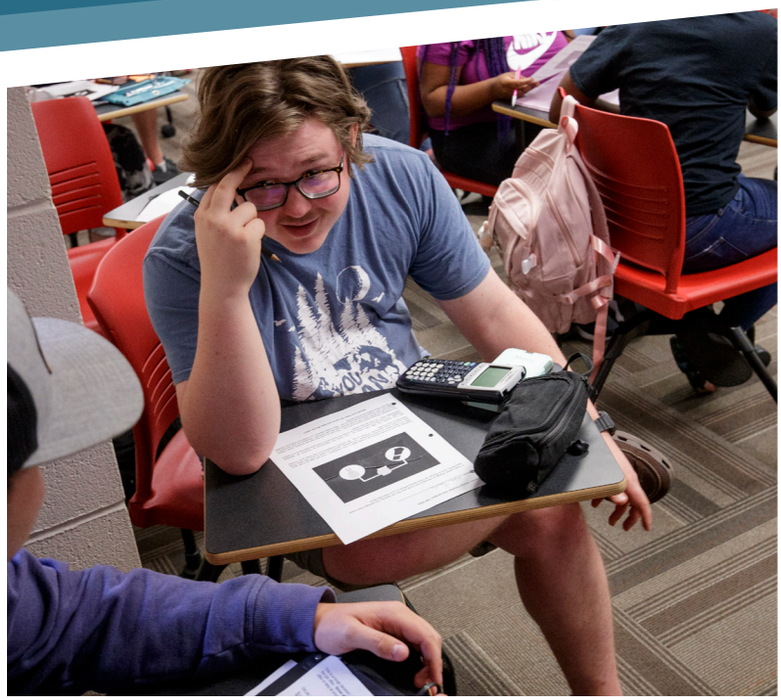
Co-requisites

Another prong of Strong Start to Finish is the move to co-requisite classes. Under previous models, students who were unprepared for college math were placed in developmental classes–as many as four semesters of non-credit-bearing courses–that they had to pass before they were allowed to take college-level math. "You can imagine students getting lost in this pipeline," Childers said. "The percentage of those that started and finished is so low." Under a co-requisite model, many students are allowed to take the regular college algebra or QMR class, but they also take a support lab concurrently. At UA Little Rock, the lab is one hour, but Childers said other institutions have two- or three-hour classes. "There's lots of ways that you can design this," she noted, and emphasized the difference it has made for students, "it's worked really well, and it's really increased our pass rates in these classes and for this group of students."

The university first moved to a co-requisite model for math in Summer 2016. "We actually were already implementing this on our campus," before the Strong Start to Finish initiative, Childers said, "and so we were really ahead in a lot of this work."

The Department of Rhetoric and Writing began using the co-requisite model in 2013. "Students placed in our Composition Fundamentals course also take the credit-bearing Composition I course during the same semester with the same instructor," Beavers said. "This is what's called the ALP (Advanced Learning Placement) model. We are using the ALP model for students that need additional support in writing while taking the credit-bearing Comp I course. We are exploring ways to create a reading course that serves a similar function."

Childers has also been researching the effectiveness of the co-requisite model. With her colleague Dr. Lu, an associate professor of mathematics and statistics, she has written several papers on the subject. In one, she said, they studied three of the different developmental math models that have been used at the university. "We call them Model 1, Model 2, Model 3. Model 3 is our co-req model that relates back to this Strong Start to Finish," she said. "And basically we compared the three in all different ways, and pass rates, enrollment, consistency, and duration for completion were all up, while the equity gap was significantly less for Model 3."



"Basically, this new model that Strong Start to Finish is promoting statewide and that really is a nationwide thing," she said, "now our research has shown it to be promising" based on its implementation at UA Little Rock.

"Co-req is working. We've got this great pass rate in the 70% range," Childers noted. From 2017 to 2022, the Department of Mathematics and Statistics improved the success rate for developmental math students in algebra and QMR classes from 55% to 70%.

The model is so promising that Childers said they're looking at ways to expand its reach. Under the first version of the co-requisite model, students with lower test scores were still required to take a Foundations course before enrolling in college-level math. The questions they're asking now, Childers said, are "What if we can allow more students to take co-req? You know what if there's those lower level ones that are still in a Foundations class? What if we allow them to take it?" So the university has piloted an algebra class with a two-hour support lab for those students. "And so we're still piloting and looking at ways we can continue to do better and increase success rates and close equity gaps," Childers said. "It's a continuous improvement type deal."

This is another area where they're continuing to look for ways to improve, Childers said, noting that they're reviewing data from the first semesters to evaluate how well the index does at placing students and whether it can be refined or improved.

Advising is also critical for making sure students get into the right classes for them, and Childers noted that the support from Strong Start to Finish has been crucial in making sure the university's advisors are supported and have the resources they need.

In addition to continuing to evaluate the math placement formulas, Childers said she thinks a statistics pathway is one of the ways she sees Strong Start to Finish developing in the future, with the possibility of state leaders encouraging it at other institutions.

Placement

The third prong of the initiative involves placing students in these classes. While students used to be placed based only on their test scores, Childers said, "there's all this data and research that says: 'How are you going to place a student based on one test score? What if they're having a bad day? What if they're not a good test taker?'" The push, instead, is for multiple measures for placement.

"What it means is we have formulas that are programmed in Banner now called the math index," Childers explained, referring to the university's student records and registration system. "It places students based on high school GPA, years since high school graduation, and their test score, and it weights them. And it's pretty complicated. All these formulas for each different test score. And basically it takes all these scores. It puts it in a weight, and it spits out the math index score." UA Little Rock started using the math index for placement in the Fall 2022 semester. The index, Childers said, can help students who are recent high school graduates with higher GPAs. "It gives students the opportunity, who have a higher high school GPA, to place higher. Now, if they've graduated 10 years ago and made a 4.0.? We're not–it's been 10 years right?" Childers noted. "But if you've graduated in the past four years and you made higher than basically a 3.0, it can increase the math course that you place in. So rather than maybe having to take the co-req, maybe you can just take the regular, standalone college algebra."

> That's the mission, right? Trying to do the best we can for our students.
> — *Dr. Annie Childers*

In any developments, however, she said educators are keeping a focus on what's best for students. "That's the mission, right? Trying to do the best we can for our students."

Amid all the changes involved in Strong Start to Finish, Childers said, "we've got to be conscious of these students, and we've got to make sure that our programs and our placement and the mathematics that these students are getting are helpful to them. And that's why we've got the pathways, the placement efforts, and the co-requisite efforts."

Finzer also emphasized the program's focus on building student success. "If you have a student who can't pass college algebra, who does that serve? They have some college but no degree to show for it," she said. "If we can place students in a math pathway where they are successful, they will be more competitive in the workforce and more successful in lifelong learning."

Scan the QR code to learn more about the nationwide effort.

Building a Legacy

Five UA Little Rock researchers have recently been inducted into the Arkansas Research Alliance Fellowship Program, a prestigious designation that showcases researchers across the state who make a contributable impact to the state's research and economic pipeline. Each fellow in the program receives a $75,000 grant paid over three years.

The Arkansas Research Alliance (ARA) collaborates with five research institutions and the FDA's National Center for Toxicological Research: UA Little Rock, UA Fayetteville, UAMS, UAPB, and Arkansas State University. Established in 2008, the ARA aims to cohesively bring together universities, industries, and government to impact economic growth and development in Arkansas.

According to a report from TEConomy Partners, ARA has impacted the Arkansas economy by $1.3 billion and secured $205 million in research funding.

ARA sees UA Little Rock as an important catalyst for their mission to create a robust research and economic infrastructure in the state.

"UA Little Rock is an essential pillar in the research leadership structure that elevates Arkansas's competitive position in the country's economy," ARA said in a statement. "The ARA Academy of Scholars and Fellows, which is proud to include highly productive researchers at UA Little Rock, outperforms the rest of the country as measured by any number of yardsticks. For example, this group's average sponsored research per principal investigator is 3X's the national average and patents per $1M of research funding are 4.5X's the national average. The high-powered intellectual capital on this campus has been the cornerstone of our capital city's role in building Arkansas as a state of discovery and innovation."

Each year, ARA hosts an induction ceremony at the Arkansas State Capitol with the governor. Dr. Mary Yang was the newest inductee into the ARA Academy, along with six other researchers from the other member institutions.

UA Little Rock Inductees

Dr. Mary Yang is the newest inductee into the ARA Academy at UA Little Rock. Yang is the Director of the Midsouth Bioinformatics Center, a comprehensive program that provides advanced computational resources to students, faculty, and staff who need access to life science data. Yang is also professor of information science at UA Little Rock. She is the founding editor-in-chief of the International Journal of Computational Biology and Drug Design. She holds a Bachelor of Science in Engineering and Physics from Hunan University, a Master of Science in Experimental Solid State Physics, a Master of Science in Electrical and Computer Engineering, and a doctorate in Computational Science and Physics from Purdue University.

Dr. Mariya Khodakovskaya became an ARA Fellow in 2021. Khodakovskaya is known for her groundbreaking research in using nanomaterials for crop improvement. Along with being a professor of plant biology, she has authored four book chapters, over 42 peer-reviewed journal articles, one outreach article, and 69 abstracts for research conferences. She holds a Bachelor of Science in Biology from Far Eastern Federal University, a doctorate in Plant Physiology from the Institute of Biology and Soil Science at the Russian Academy of Sciences, and a post doctorate degree in biotechnology from the University of Connecticut. Khodakovskaya regularly incorporates her students in her research, allowing them to actively engage in plant biology research in her lab.

Dr. Nitin Agarwal became an ARA Fellow in 2018. He is internationally known for his work in emerging cyber social behaviors on various communication and social media platforms. Agarwal is the director of the Collaboratorium for Social Media and Online Behavioral Sciences (COSMOS) at UA Little Rock. Additionally, he is the Jerry L. Maulden-Entergy Chair Professor of Information Science. He holds a Bachelor of Technology in Information Technology from the Indian Institute of Information Technology and a doctorate in Computer Science from Arizona State University. As the director of COSMOS, Agarwal hires graduate assistants to help them gain experience in areas such as machine learning/artificial intelligence, social media forensics, advanced predictive modeling, and UX/UI design.

Dr. Tansel Karabacak, who was inducted in 2017, is the interim director of the School of Physical Sciences at UA Little Rock. He is an expert in nanostructured and thin-film materials research and is widely known for his groundbreaking work on glancing angle deposited (GLAD) nanostructures. He received his Bachelor of Science in Physics at Middle East Technical University in Ankara, Turkey, and Master of Science and doctorate in Physics from Rensselaer Polytechnic Institute in Troy, New York. Karabacak is passionate about exposing students to his research and teaching them the intricacies of thin film manufacturing. He has mentored several students who have presented in the Student Research and Creative Works Expo.

Dr. Alexandru Biris became an ARA Fellow in 2015. He is the Director and Chief Scientist for the Center for Integrative Nanotechnology Sciences at UA Little Rock. His direction of the center has trained students from numerous backgrounds and prepared them for future careers in research and development. The center houses state-of-the-art lab facilities to research novel uses of nanotechnology, nanomedicine, and nanotoxicology. Biris holds a Bachelor of Science in Physics and a Master of Science from Babes Bolyai University of Cluj-Napoca in Romania and a doctorate in Applied Science: Engineering Sciences and Systems from UA Little Rock. As the director of the center, Biris hires graduate assistants each semester to work in the nano research labs to create unique nanomaterials for numerous unique applications.

Thanks to the dedication of UA Little Rock researchers and the ARA, our university will continue to positively impact the research and economic output in our state and create new opportunities for students everywhere. This aligns with UA Little Rock's strategic mission to enhance research opportunities and creative endeavors, serve as an active partner in the community, and prepare students for success.

Arkansas Research Alliance

Scan the QR code for more information about the economic and societal impact of Arkansas Research Alliance or go to their website: aralliance.org/impact-study

DUCTEES

New Research Experiences

Two Criminal Justice Professors Create a Unique Opportunity for Undergraduate Research

Dr. Tusty ten Bensel

Dr. Robert Lytle

For the past two years, students have gathered on campus over the summer to learn about criminal justice research and make their own contributions to the field. Now, Dr. Tusty ten Bensel and Dr. Robert Lytle are preparing for the third year of their NSF Research Experience for Undergraduates (REU): The Scope and Consequences of Hate Crime Victimization in the South. Under the National Science Foundation program, 10 undergraduate students–chosen from over 100 applicants from around the country, and studying fields as diverse as journalism, law, political science and psychology–spend eight weeks living and working in Little Rock, learning how to conduct criminal justice research and producing their own scholarship.

Ten Bensel, an associate dean in the College of Business, Health, and Human Services and a professor in the School of Criminal Justice and Criminology, said the experience has been fantastic. "It has been a joy to teach undergraduate students from across the country how to do research, focusing on a topic that is so important right now," she said. She and Lytle, an associate professor in criminal justice and the school's graduate coordinator, recalled how the project got started, with a small budget from the college and the Graduate School. "It was a budget line from grad school and the college, four or five students a year and just kind of sitting in the conference room and working through research," Lytle recalled. The program spent two years as a pilot, and Graduate School officials encouraged them to apply for the NSF program. "We were able to write a very strong proposal because we knew the ins and outs of what was needed to do a program like this" from the pilots, ten Bensel said, "and we could speak to what the students learned from the pilot programs. It provided us with a very solid foundation to make an ask at NSF." She emphasized how much the institutional support helped them get the program off the ground: "It was us, but it was also the support of the university that made this happen. We are very grateful for the support."

Although Lytle and ten Bensel prepare the topics of research and supervise the undergraduates in the program, they emphasized just how hands-on the REU is. "We mark Point A very clearly for them, give them a general idea of where to go, and then they follow through for most of the rest of it," Lytle said. Ten Bensel added that they provide instruction and supervision of each step in the process. "We're coaching them through" the steps of research, she said, with workshops, activities, and feedback on the work. They emphasized how much work the students do, though. "We provide them direction. We provide them the training, and then it's amazing how much they bring to the table," ten Bensel said.




Reaching Beyond the Classroom

What started from humble beginnings is now a robust program that offers new opportunities in criminal justice studies that are already impacting the community. The program's impact is being felt in several ways, they said, including in recruiting students to graduate school in criminal justice. "We've had several of those students come into our program," Lytle explained. "Two of those students have already graduated and are working in the criminal justice field right now as we speak in Central Arkansas. So it's also having an impact beyond just the program; we are able to get students engaged in grad school, get them engaged in the system, which is awesome." The summer program also provides an opportunity for graduate students to serve as mentors–three UA Little Rock graduate assistants worked with the undergraduates in the program in 2023, in addition to the professors involved in it.

Ten Bensel reiterated that the impact on the undergraduates in the program runs deep. "Many students commented how grateful they were regarding the one-on-one mentorship they experienced in our program. Some even expressed that they have not had many mentoring opportunities before at their own institution," she said. She and Lytle keep in touch with many of the REU students, whether they're discussing publication opportunities related to the REU, other research questions the students are developing, or letters of recommendation for graduate schools or fellowships.

There's also the impact the program is having on the field of criminal justice, Lytle said. "We're getting a bunch of data out of this that I think could be really, really wonderful in terms of–especially more locally–in terms of being able to provide maybe some information that could help agencies" on the subject of hate crimes, he noted.

The program's third and final year of National Science Foundation funding will be this summer, and the professors are planning for a two-pronged research project. "We will be talking to police officers about what they know about hate crimes, basically what they're trained in regarding hate crimes," ten Bensel said, "and then we'll be talking to legislators." One focus of the work with legislators will be hate crime legislation that passed a few years ago in Arkansas. "We've been trying to get a hate crime bill passed in Arkansas for a number of years," she recalled, "and different versions have gone up the hill and not passed for various reasons. Recently, a hate crime bill was passed in Arkansas." So this year's students will be looking at that process–including the obstacles that the effort faced–as well as the effect the new law is having in the state. The law enforcement side of the project will examine the knowledge and training officers have, as well as resources that they might need for identifying hate crimes.

Beyond this summer, ten Bensel and Lytle said they're looking at their options for continuing to research hate crimes. They'll keep working with the students on the data, with the hope of getting the students to the point of disseminating their research, whether through publication, presentations, or as resources for area law enforcement agencies.

Ten Bensel has also started thinking about further directions the research could take. "The bigger plan, for me, has always been to collect data across multiple states. And so once we're done with Arkansas, which has been a big project, moving on to another Southern state and then moving on to another Southern state," she explained. "That's definitely the long term goal. We want to have a better understanding of what hate crimes look like in the South." Beyond that, she said, they might look at other groups than Muslims, like racial or ethnic groups or the LGBTQ community. "It's been something that our students, our grad students, are really interested in," she said. "We will continue this work in different ways."

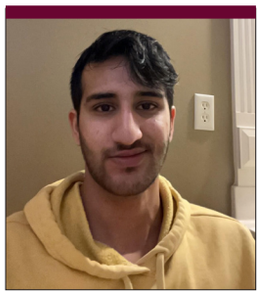
> "We want to have a better understanding of what hate crimes look like in the South."
> — *Dr. Tusty ten Bensel*

This award is funded by the National Science Foundation. Any opinions, findings, and conclusions or recommendations expressed are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Scan the QR code to learn more about the REU program.

2023 SURF WINNERS

UA Little Rock students have won Student Undergraduate Research Fellowship funding through the Arkansas Department of Higher Education. The competitive program allows students from all universities across the state to develop their own research and creative projects under the supervision of a faculty mentor.



Student: Mohammad Rayaan
Mentor: Dr. Noureen Siraj
Title: Synthesis and Characterization of Sodium Deoxycholate for Drug Release Application
Area of Study: Biology

Mohammad Rayaan is researching how sodium deoxycholate can be used to improve drug delivery in the body to treat infections. Rayaan and mentor Dr. Noureen Siraj will put drugs into hydrogels, gels mostly composed of water, to see if this combination will effectively release drugs at the target and kill infections in the body.

Student: Sarbjot Singh
Mentor: Dr. Noureen Siraj
Title: Porphyrin Based Tunable Nanomaterials for Photodynamic Therapy Application
Area of Study: Biology

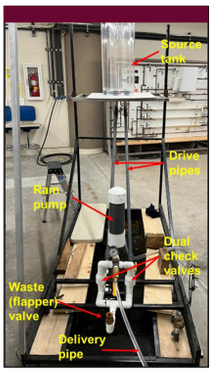
Sarbjot Singh is synthesizing and characterizing porphyrin-based tunable ionic nanomaterials. These uniquely eco-friendly nanomaterials exhibit enhanced photophysical properties. Mr. Singh explored these promising materials as a photosensitizer for photodynamic therapy for various types of cancer treatment and infections.

Student: Abigail Frye
Mentor: Dr. Scott Woolbright
Title: DNA Barcoding of Prairie Soil Microbes: Land-Use Change and Legacy Effects in Native Grasslands
Area of Study: Biology

Abigail Frye is investigating how changes in land use have affected below-ground composition in native tallgrass prairies. Frye and mentor Dr. Scott Woolbright will use next-generation DNA sequencing to complete a pilot study on prairie microbes to better understand the ecological effects of changing land use throughout time.

Student: Armin Mortazi
Mentor: Dr. Noureen Siraj
Title: Combination Therapy Approach to Combat Multi-Drug Resistant Bacteria
Area of Study: Biomedical Chemistry

Armin Mortazi is developing an approach to combat antibacterial drug resistance. By merging an ionic synthesis of a dye with a commercial antibiotic, he's developed a dual-killing mechanism that creates a photothermal therapeutic effect. Under the guidance of Dr. Noureen Siraj, the goal is to introduce this new antibiotic approach to the market.



Student: Cody Capocelli
Mentor: Dr. Ashokkumar Sharma
Title: An Innovative Unit for Wastewater Collection and Measurement for Energy-Independent Hydraulic Ram Pump System
Area of Study: Fluid Power

Cody Capocelli and mentor Dr. Ashokkumar Sharma developed and evaluated the performance of a hydraulic ram pump system to serve communities that do not have easy access to clean water. The project team will use a custom energy-independent unit to produce accurate volumetric measurements to determine how the ram pump system can effectively serve underdeveloped communities in the world.

Student: Julia McPeake
Mentor: Peter Scheidt
Title: Modern Life: Representing Communication Technologies in Art
Area of Study: Fine Arts with Graphic Design Emphasis

Julia McPeake is in the process of creating a multi-media art project aimed at deepening viewers' understanding of their relationship with communication technologies. She is using found e-waste wires, such as phone cords and ethernet cables. During the spring 2023, Scheidt helped McPeake construct three 20 x 40-inch cradled panels, made from wood and transparent plastic. These panels will serve as the canvas upon which the wires and machine-cut vinyl will be placed.

Student: Joshua Manley
Mentor: Dr. Sujan Ghosh
Title: Fabrication and Characterization of MoS2-Based Solid Lubricant for Industrial Applications
Area of Study: Engineering and Engineering Technology

Joshua Manley and mentor Dr. Sujan Ghosh are studying the uses of MoS2 thin films in the aerospace industry and how to improve their corrosion and oxidation resistance. They will use a Selective Laser Sintering process on an aluminum substrate to fabricate an MoS2 coating enhanced by Ti3Al2C nanoparticles.

2024 SURF WINNERS

Student: Kolton Claybrook
Mentor: Dr. Wei Zhao
Title: Reducing Tetramethylammonium Wastewater Volumes with Near Zero-Energy Forward Osmosis
Area of Study: Chemistry

Kolton Claybrook is investigating how to reduce the output of toxic tetramethylammonium (TMA) in wastewater. TMA is a chemical compound used in the semiconductor industry. He will use forward osmotic reduced graphene oxide membranes to concentrate TMA to reduce the output volume in wastewater while enriching TMA for reuse.

Student: Fallon Tolbert
Mentor: Dr. Wei Zhao
Title: Reduced Graphene-Oxide-MoS2 Composite Membranes for Selective Removal of Onium Cations from Wastewater
Area of Study: Chemistry

Fallon Tolbert is investigating how to filter the toxic chemical compound triarylsulfonium out of wastewater from semiconductor plants. She will use reduced graphene oxide and molybdenum disulfide composite membranes to remove this compound without consuming much energy.

Student: Yvonne Rodriguez
Mentor: Dr. Neveen Shafeek Amin
Title: Examining Push and Pull Factors Among Oaxacan Immigrants in Arkansas and Natives in Oaxaca: A Comparative Case Study
Area of Study: Sociology

Yvonne Rodriguez, a double major in Sociology and Political Science, is examining specific factors that compelled immigrants from Oaxaca, Mexico, to the United States. She is also examining factors that kept Oaxacan residents from emigrating to the United States. Under Dr. Neveen Shafeek Amin's supervision, Rodriguez is utilizing a mixed method approach to examine her research questions. She has been conducting face-to-face interviews and web-based surveys with Oaxacan immigrants and residents, 18 years and older, in Arkansas and Oaxaca.

Student: Nistha Neupane
Mentor: Dr. Noureen Siraj
Title: Synthesis, Characterization, and Surface Functionalization of Gold Nanoparticles
Area of Study: Chemistry

Nistha Neupane is designing three different shapes of gold nanoparticles. She will characterize these nanoparticles using transmission electron microscopy and dynamic light scattering. She will also use three different dyes to functionalize the gold nanoparticles to improve the nanoparticles' phototherapeutic activity and better understand their effects. Gold nanoparticles are widely used in the biomedical field.

Student: Armin Mortazi
Mentor: Dr. Noureen Siraj
Title: Synthesis and Characterization of Carbon-Based Adsorbent for Antibiotics Removal
Area of Study: Chemistry

Armin Mortazi is developing an effective carbon-based adsorbent material to remove antibiotics from wastewater. Antibiotics can endanger and kill essential bacteria in the environment. Additionally, overexposure to antibacterial medications can cause the growth of antibacterial-resistant bacteria. Mortazi will create the adsorbent material using isolated soy protein doped with ammonium polyphosphate.

Student: Macey McLaughlin
Mentor: Michele Noiset
Title: Reimagining Grimms' Fairy Tales: DIY Pop-Up Art Kits for All Ages
Area of Study: Illustration

Macey McLaughlin is creating do-it-yourself pop-up art kits based on Grimms' Fairy Tales. The goal of this project is to provide a unique, engaging, and interactive way for people to explore and develop their own creativity. McLaughlin will attend the Penland School of Craft to hone her paper sculpting skills to ensure the kits are of the highest quality possible.

Student: Susan McClain
Mentor: Dr. Jiabin Fan
Title: Understanding the Sexualization and Objectification of Gender in Print Advertisements Over Time: An Intersectional Approach
Area of Study: Illustration

Susan McClain is investigating the sexualization and objectification of women in print advertisements in the past three decades. She will see if this problem is still prevalent today, and identify the specific ways that advertisers objectify and enhance stereotypical gender roles. She will also investigate if racial identity plays a role in gender sexualization in popular media.

Student: Jack Seabaugh
Mentor: Dr. Kamran Iqbal
Title: Enhancing Human-Computer Interaction through Accurate Hand Gesture Recognition
Area of Study: Electrical and Computer Engineering

Jack Seabaugh is investigating the capabilities of surface electromyography with machine learning to enhance hand gesture-based communication and interaction. This type of interaction is important for multiple applications such as sign language interpretation, human-robot interaction, and assistive technologies for individuals with disabilities.

Student: Aaron McCollum
Mentor: Dr. Sujan Ghosh
Title: Development of Oxidation Resistance of Ni-Cr Thin Films Enabled by Chromium Underlayer
Area of Study: Mechanical Engineering Technology

Aaron McCollum is developing nickel and chromium thin films on stainless steel substrates. These types of thin films can keep essential equipment used in the oil and gas industry from rust and corrosion.

WINNERS

SPOTLIGHT ON

Student Researcher: Armin Mortazi

Armin Mortazi is a junior studying biology and chemistry at UA Little Rock. During his time here, he has worked on numerous research projects with his mentor, Dr. Noureen Siraj, an associate professor of chemistry. He has presented his research at the Student Research and Creative Works Expo, the STEM Capitol Research Expo at the Arkansas State Capitol, Arkansas INBRE, the Materials Research Society Symposium, and the Arkansas Bioinformatics Consortium.

He is also the recipient of two Student Undergraduate Research Fellowship (SURF) grants from the Arkansas Department of Higher Education and two UA Little Rock Signature Research Experience Grants.

Tell me about your newest SURF project.

We wanted to address the problem of antibiotics in water systems. When a patient is prescribed an antibiotic regimen, they sometimes feel better before the drug treatment is over. In that case, they will either return the remaining medication to the pharmacy for proper disposal or flush it down the drain. When people flush medication, the antibiotic enters the sewer system. We're trying to create a carbon filtration system to remove antibiotics that have been flushed into the water system.

How do antibiotics affect water systems?

Antibiotics are prescribed to kill bacteria but the ones that don't die, become resistant. These types of bacteria are sometimes called resistant bacteria or "superbugs". This is bad news because if a person has been diagnosed with resistant bacteria, the only way to treat them is with a stronger dose of antibiotics to kill the bacteria. If the patient doesn't dispose of the strong antibiotic properly, then the same cycle can repeat.

What was your 2023 SURF project?

Last year I researched different ways to treat bacterial infections by making a combination drug using a dye and a normal antibiotic. This combination drug allows us to use an infrared laser to create Photothermal Therapy. The dye component in the combination drug absorbs the infrared laser and heats the bacteria to weaken it, while the antibiotic component will chemically kill the bacteria.

What is it like to work with your mentor, Dr. Noureen Siraj?

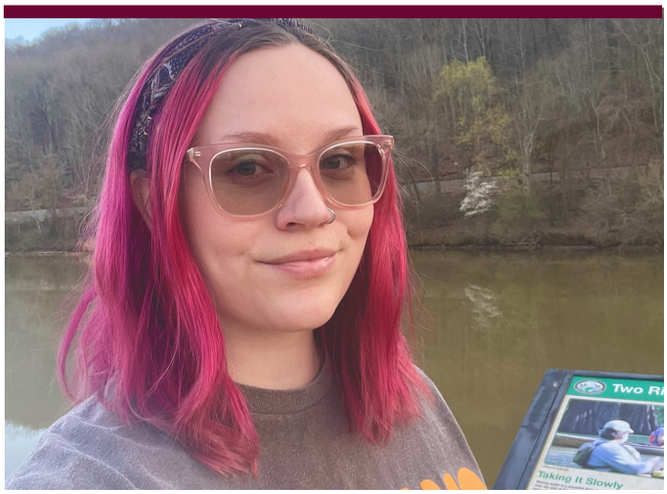
I'm very thankful to be working with her. She's been a great mentor and has guided me through my dozens of questions for both research and general schoolwork. She's very kind, knowledgeable, but also strict, and strict mentors create great scientists. Dr. Siraj is an outstanding academic scientist. She has an open-door policy which is super helpful when my experiments go wrong!

What are your plans after graduation?

I have learned over my courses at the university how doctoral studies and medicine are similar and different from each other. Along with attending UA Little Rock, I have worked as a phlebotomist, pharmacy technician, and patient care technician at a local hospital. I have also been a volunteer for two health clinics, Harmony Health where I am a phlebotomist, and Health on 12th where I am a receptionist. I enjoy working and interacting with patients, which helped solidify my decision to go on to medical school after graduation.

SPOTLIGHT ON

Student Researcher: Kitty Dirksen



Kitty Dirksen graduated from UA Little Rock in December 2022 with a Bachelor of Science in Biology. They now work at Arkansas Analytical in an environmental quality testing lab. Their project "How Hot is Hot? Quantitative Analysis of Capsaicinoids from Campus Garden Grown Peppers" won first place in Undergraduate Life Sciences at the 2023 Student Research and Creative Works Expo.

Tell me about your project.

I measured the levels of capsaicinoids in peppers. We did this because the Scoville scale is very subjective. That's the way of measuring pepper's heat that most people are familiar with, but it wasn't designed very well. It works by diluting samples until testers can't taste the heat anymore. That's going to be different for every person. It's also lacking a reference standard, lacking statistical repetition. And then there's rapid taste fatigue; if you just keep eating peppers, you might get numb to them.

We were actually measuring the capsaicinoids, which give peppers the heat. We grew the peppers ourselves in the Campus Garden at UA Little Rock. We dried them out, ground them down, and then did the extractions. We then measured it in a High-Performance Liquid Chromatography-Mass Spectrometry(HPLCMS) machine. You tell the computer the mass you're looking for, and it will just pull out things that are of that mass and measure the levels. Since we know what mass the capsaicinoids are, we are able to identify and measure it.

How did you get involved with this project?

I volunteered in the garden for a couple of years, so I was working with Dr. Stephen Grace a lot already, and then I took botany and plant physiology with him. I really like the plant-focused biology classes. I asked him if he had any research to do, and he was very excited.

What was it like to work with Dr. Grace?

He's one of my favorite professors, so I really wanted to work with him. He started the garden at UA Little Rock. It's huge, and I can't get over how he did that himself.

He goes over things very well. He's very thorough, but then he let me take over and do the extraction process myself. He sat with me for the majority of the time on the HPLCMS, because undergraduates usually don't get to use that machine. He's super nice, and he definitely knows what he's talking about, and he's good with answering questions. I had a great time.

What effect did this project have on your professional path?

It helped me get the job, for sure. When I had my interview, I just went on and on and on about my project, and they liked that. They were also familiar with a lot of the amazing UA Little Rock professors. I think that's what's helped the most.

What are your professional goals?

I want to do something to combat the climate crisis. A big part of stopping the climate crisis is through research, and I would love to do more plant research. We're getting close to where we're going to have global crop failures, and I want to see if we could add glandular trichomes to more plants. That would help crops not dry out so badly.

Defending our Cyberinfrastructure

UA Little Rock Team Leads Effort to Make Arkansas a Hub for Cybersecurity Innovation

On an upper floor of the Engineering and Information Technology Building, in a room that stretches the length of the building, a new kind of learning network is taking shape. The project stretches to all corners of the state, through shared teaching tools for students and opportunities for businesses small and large.

Dr. Phillip Huff

While the initiative has myriad aspects, Dr. Philip Huff, director of cybersecurity research at the Emerging Analytics Center, described the overall structure of the work as three pronged, focusing on education, workforce development, and innovation.

The goal? To put Arkansas on the map as a location for cybersecurity talent and innovation.

The overall project encompasses numerous funded projects, including a congressionally directed project through the Department of Energy to improve cybersecurity education for the energy industry.

Dr. Sandra Leiterman

The growing cybersecurity team also includes Dr. Sandra Leiterman, who conducts educational research and program development, Senior Staff Sergeant William Cox, who comes from the 223rd Cyberspace Squadron at the Little Rock Air Force Base, and former FBI instructor Rebecca Passmore.
The team is working with the Cybersecurity Consortium for Innovation (CCI), which he described as "the umbrella initiative that includes the Forge Institute. They're a nonprofit entity that's directed by the state to manage cybersecurity for a lot of small businesses." UA Little Rock is also teaming up with UAPB; UA Fayetteville; and community colleges including UA Pulaski Tech, Cossatot, and Hot Springs.

Beyond the potential losses any business could face from a cyberattack, cybersecurity in the energy industry is especially vital. A cyberattack there has the potential to cascade through the economy and upend the lives of anyone and everyone in the country. Arkansas is a particularly great place to study cybersecurity for the energy industry, Huff pointed out, in part because of two organizations based in Little Rock, "Southwest Power Pool and MISO…are operating the power grid for like a third of the nation, and then we have a lot of really large utility organizations in the state with Entergy, Arkansas Electric, American Electric Power." The presence of these industries in the state "just makes it a nice place to study this problem," Huff said. The work can also apply to energy more broadly, including the oil and natural gas industries, Huff pointed out.

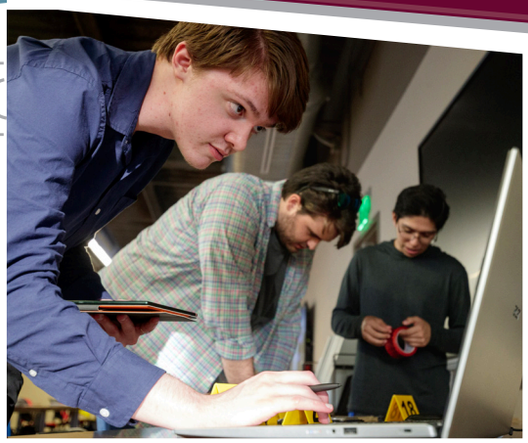
In the innovation part of the project, Huff said they are working to develop tools that can automate cybersecurity solutions. In the education prong, they're developing a cloud-based learning platform for training. "You can't exactly take students and throw them in front of a power plant and say, 'Here, just poke a few buttons and see how this thing works,'" he pointed out. The final prong, he said, is developing the community and industry partners. "Having industry partners that are engaged in the process is absolutely a requirement to developing innovation," Huff said, "because you need to be close to the problem sets.

We could just do innovation, but if we didn't have the workforce development piece, the training and education, nobody's going to come to the table."

Education and Training

Huff's education work focuses on developing a training platform for students. And while a testing platform is vital for the electric sector, they're finding a way to make it economically feasible. "We're virtualizing that," he said, "putting it on the cloud to where, for very little cost, we can put as many students as possible into these environments as they're studying." The platform, Huff said, is "very much like they were in front of a huge power plant, understanding: How does the system work? What turns the lights off? How do you protect the system?"

The Cyber Arena, as the platform is known, allows cybersecurity training to scale up to meet the demand for trained professionals in the field. "If we decided to build up the Cyber Arena infrastructure, it would cost us millions of dollars and we'd have to hire tons of people to operate it," Huff said. "But instead we use the cloud, and we pay maybe a few cents an hour for the students to use it, so it really scales well. We have about 2,000 students a year going through the Cyber Arena in one form or another." The cost works out to a few dollars per student, per semester, Huff estimated, noting that since the cost is subsidized, the students don't have to pay even those few dollars. "That's all something they're receiving as part of their education here."



And the Cyber Arena doesn't only benefit students at UA Little Rock. "It's open source -- anybody can participate in the development of that platform," Huff noted, adding that "We're in control of the development of that project, and so we can do other interesting things on top of it."

Students from across the state are going to benefit from this work, too. Under the CCI, they're building up the Cyber Learning Network (CLN). "That's an initiative Erin Finzer led through the Office of Skills and Development," Huff said. "We have a $2.7 million grant that we're going through right now, where we're building out an education environment in here, but with all the community colleges, with UAPB, where we have a shared degree path and even in some cases a shared curriculum." This allows students access to a combination of the best online instructors and hands-on instruction.

The project's educational component also includes an operational part, where students (mostly undergraduates) will get the chance to work in the Emerging Analytics Center (EAC), putting their learning into practice and providing cybersecurity services to small businesses and nonprofits across the state. The environment at the EAC, Huff said, is "very similar to what they would be in, working in a real-world Security Operations Center [SOC]" at a larger company. Smaller businesses and nonprofits, Huff said, "would otherwise not be able to have these services, very expensive services. They may get hit by ransomware and just not know what to do."

The team's educational work doesn't stop with college students. Outreach at schools and targeted education initiatives build interest and skills, and outreach is essential to building a quality degree program with enough students. Actively engaging underrepresented populations, including women and minorities, and promoting cybersecurity careers in rural communities not only opens doors for those students to rewarding technology careers, but it will also strengthen the talent pipeline with varying perspectives to drive more innovation.

Through targeted workshops and conferences, Leiterman works to empower young women and girls to defy stereotypes and biases and pioneer leadership in the cybersecurity field. The outreach initiative also involves directly engaging students in their communities. Via the CLN's robust ties with community colleges, Leiterman and her team can connect specifically with minority, low-income, and rural students. This raises awareness that cybersecurity careers are accessible for them.

Summer programs and internships round out the outreach program. Over the last three years, more than 500 students applied to attend cybersecurity summer camps, including the prestigious GenCyber camp; the only one in Arkansas. GenCyber is financially supported by the National Security Agency, the National Science Foundation, and other federal partners to increase student diversity in cybersecurity college and career readiness pathways at the secondary level.

Yet sparking lasting passion in students to pursue cybersecurity careers involves more than short visits and summer exposures. UA Little Rock, a founding member of the National Cybersecurity Teaching Academy (NCTA), has supported this mission through a Center of Academic Excellence Community grant, offering scholarships to over 90 teachers from 32 states. An additional 40 teachers from Arkansas completed the program thanks to funding from the Arkansas Department of Education. This graduate-level certification enables participants to teach concurrent high school courses–allowing students to gain early college credits in cybersecurity. By securing additional funding to train a second cohort starting this summer, UA Little Rock is taking significant steps to ensure the next generation is well-equipped with strong foundations in cybersecurity.

Workforce Development

Hands-on education, Huff said, is one of the first steps in building a more talented workforce. "Lots of companies have these 24/7 SOCs, if you will, and so we're putting [students] in that environment not just to do education, but to apply their knowledge and help companies."

Getting companies and the professionals who work for them involved is another key component. The Emerging Threat Information Sharing and Analysis Center (ET-ISAC), a cybersecurity threat intelligence sharing platform intended to boost the SOCs at area companies, is part of that. Huff's group is also running threat-hunting boot camps to help companies build their capacity, as well as to build industry connections and refine education offered through the CLN. Part of the CLN, too, is developing certificates to help working professionals boost their cybersecurity skills and tailoring curricula for specific industries, like the energy sector. That workforce involvement is key to bringing together their education, workforce

development, and innovation work, Huff said: "We're bringing the community to where they see the value of the ET-ISAC. But they're also helping us better understand, what are some ways that we can innovate?"

All of the aspects build on one another, Huff said. "Those same students" working with the EAC, he noted, "They are bringing the research workforce into the CCI. And so, you know we're addressing the workforce pipeline, but several of those students will also help address the innovation pipeline in cybersecurity. Even if they don't, it's a great experience, just to have hands on before you get out into the workforce so you have a more talented workforce."

There's a great need for cybersecurity professionals–Huff said about 3,000 jobs in the industry are available at any given time, with about 7,000 over the course of a year. When you open that up to include remote jobs available to Arkansans, he said, the number rises to 20,000. "The reason for all of those jobs is because it's such a hard problem to solve, so much data," Huff said. "You need so many people that are working on this problem constantly and have a specialized skill set that they're able to understand: How do the bad people get into the networks, and how do we stop them from doing that? It's not easy. Not easy to understand either of those."

Dr. Phillip Huff shares insights as part of a cyber course.

Research and Innovation

Where research comes in, Huff said, is in automation for cybersecurity. "One of the challenges with cybersecurity is you have so many attacks and they come from places that, they're not geographical, they come from anonymous places," Huff said. "Oftentimes they don't manifest themselves in the way physical attacks do, because they're through computers. They're through the Internet. Things that are difficult for us humans to understand. And then when it happens, we're very vulnerable because it's really hard to kind of piece together what went wrong and what can we do better?"

With the core goal of making computers more secure, Huff said, "a lot of times, we just don't have the tools to do that because you're dealing with data sets that are so huge… you don't have time to analyze the problem, and the threat is changing on a continuous basis." Part of the solution is increasing the cybersecurity workforce, of course, but another part of the solution is enabling cybersecurity professionals to do more. Huff's teams aim to use Large Language Models (LLM) and machine learning artificial intelligence "to really boost human performance to where they can make decisions that are at this level of a machine, that they otherwise wouldn't be able to. Kind of the needle in the haystack problem – they're going to be able to find something that only a machine would be able to find, but they need a human to actually apply that protection."

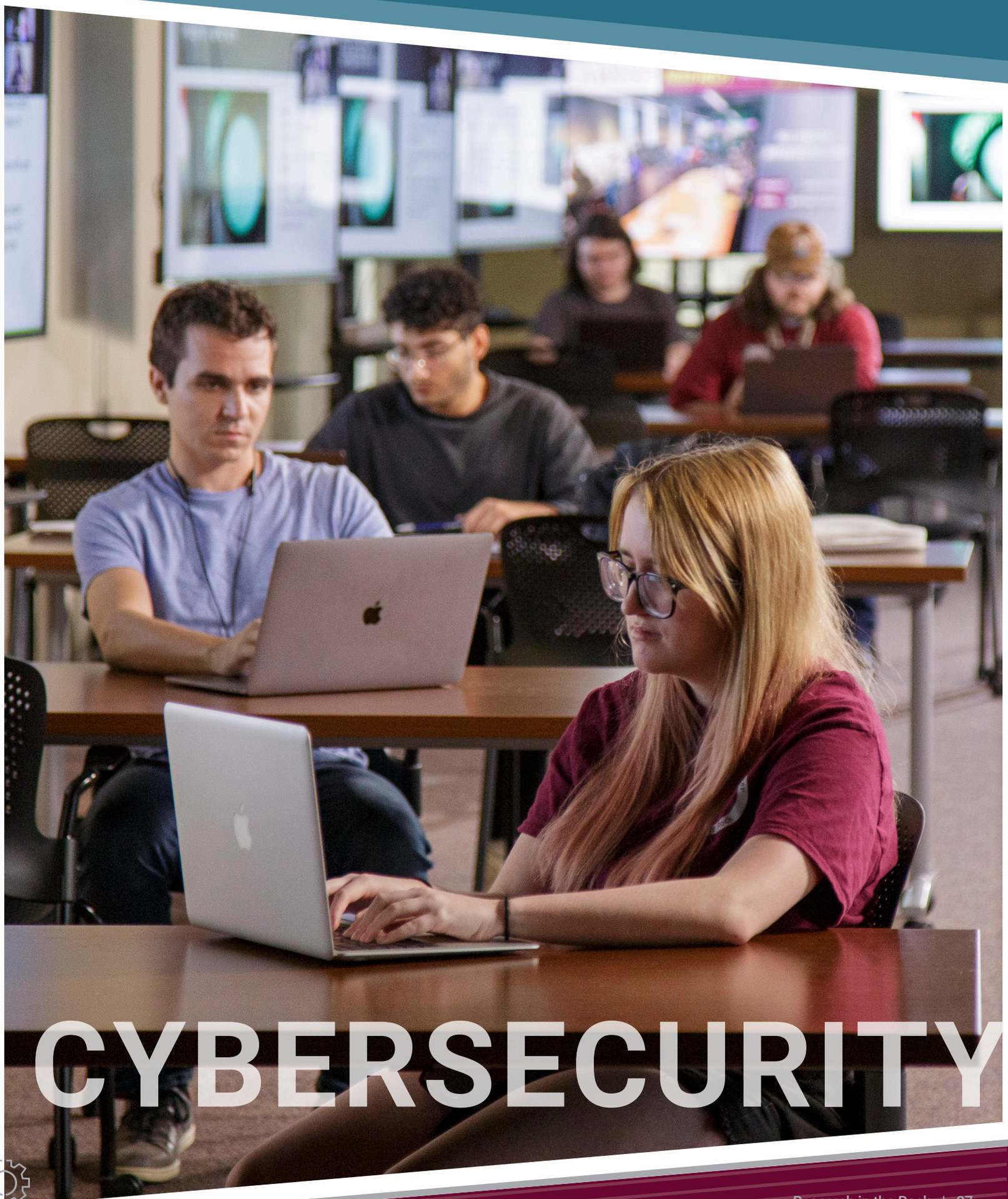
This is where ties to industry established in the other prongs of Huff's work become vital. Artificial intelligence, he pointed out, needs data to learn from. "One of the deals with cybersecurity artificial intelligence is you just don't have access to a lot of data," Huff explained. "People aren't willing to share a lot of the data." Beyond training students and helping companies and nonprofits that otherwise couldn't afford their own SOCs, Huff said, there's a further benefit for innovation in that "it gets us data so that we can use artificial intelligence, [and] develop artificial intelligence that can solve a lot of the cybersecurity problems."

Another key to innovation are the ties to businesses, especially their use of a threat sharing platform that allows them to communicate threats they're facing. "We have a threat sharing platform that allows entities to communicate threats," Huff explained. "And then we are able to automate threats -- just a way to share information. That's the Information Sharing and Analysis Center. We need an information sharing and analysis platform, to where it's a web-based, cloud-based solution that entities can sign up, be a part of, and share information; and then we can disseminate information through that. That's where a lot of the machine learning takes place, the AI."

"We can do those same type of models, LLM, make that available in the cloud and automate a lot of the things that we would have humans spending weeks and weeks trying to analyze and come up with a solution," Huff said, "while a computer can see that same information, come out with the data that's necessary, and just do that at the speed of the cyber threat."

Through the ET-ISAC, Huff said, he and his team are "focusing on cybersecurity in the energy sector that meets the needs of Arkansas. We're doing so through those three areas of innovation – training, education and workforce development – that make this very, very valuable for the students. They have a realistic environment to train in. They have the ability to innovate. They can participate in innovative solutions that will help them in their career. And returning workforce, they're engaged with us. We have industry engaged with us, so we're developing the right community, the right environment where that creative spark can take place."

Any opinion, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Security Agency.



CYBERSECURITY

FOCUSING ON a NEW Life

Criminal Justice Study Provides Vital Feedback on Probation Program

How do groups working on programs with goals such as reducing recidivism and improving parolees' reentry into society know how well they're achieving their goals? In many cases for groups in Arkansas, the answer can be found at UA Little Rock with the School of Criminal Justice and Criminology. Studying another group's efforts might not seem like the most common activity, but Dr. Tusty ten Bensel, associate dean in the College of Business, Health, and Human Services and a criminal justice professor, said it's something for which the school is known. "We have a strong reputation in Arkansas for having skilled faculty researchers and program evaluators," she said. "We get a lot of people that reach out to us when they need various types of research done for their agency." That, she said, is how she and Dr. Robert Lytle, an associate professor of criminal justice, started working on a program evaluation contract for the United States Probation Office for the Western District of Arkansas.

They're now in the third year of the contract evaluating the FOCUS reentry program, and the project was recently extended to run for another year. The work is a process and outcome evaluation, which ten Bensel described as "looking at whether they have implemented the program goals that they've set for themselves accordingly, and whether their outcomes match what they intended to do." The program was built from scratch in the Western District, and the UA Little Rock team's work has had an important role in helping it evolve. As a new program, FOCUS started with smaller cohorts, and the researchers started by providing "insight into what the staff had initially wanted to accomplish in the program or thought they were going to implement," ten Bensel said. "After the first cohort of probationers went through the program, we conducted follow-up interviews with the staff to understand what worked and what program components may need some tweaking," she recalled. "And based on these interviews and program observations, we were able to make recommendations on possible changes that may make the program stronger."

The reentry program focuses on high- and medium-risk people, and involves multiple stages, which can include spending time focused on substance use, group therapy, and a cognitive approach called Moral Reconation Therapy (MRT). "All of them go through that MRT training, which is really intended to kind of change decision making and kind of highlight some of those issues," Lytle said. The program is meant to be highly customized to each individual's needs. "The idea is that these participants should have received treatment for various needs that they have, including things like substance abuse," Lytle added. "But also they're getting resources and support to help them find steady employment, steady housing if they need it, family reunification, those types of things that are going to be a little bit more person specific. But we know those things are important, they're important in successful reentry." The program also involves more personal attention from parole staff, and even from one of the Western District judges, Judge Timothy Brooks. The idea behind that, ten Bensel said, is that people in the program understand the value "when they are having extended face-to-face time with the judge who communicates how much he cares about their success and when parole officers are investing additional time and resources for their success," which can serve as a deterrent to reoffending.

The evaluation from UA Little Rock will not only tell the probation office whether their program has reduced recidivism, ten Bensel said. It will also help their case if they want to share the program with other districts. Many federal grants look for the evidence of efficacy that a program evaluation provides, she said. "When you apply for federal grants, evidence from a program evaluation can provide support for your proposal." A program evaluation can also help convince other probation districts, she noted. "If there is a desire to extend this program to other districts, our evaluation reports can provide insight on how the program worked in the first site.'"

> "If there is a desire to extend this program to other districts, our evaluation reports can provide insight on how the program worked in the first site"
> — *Dr. Tusty ten Bensel*

The work also provides a vital opportunity for criminal justice students. The contract includes funding for a graduate assistant position to help with the work. "One of our doctoral students is doing a lot of the footwork on this, in terms of the meeting observations and the interviews," Lytle said. Getting graduate students hands-on experience with program evaluations is a priority for the school, ten Bensel said. "That experience is so amazing, because when they are faculty in the future or they're wanting to go out into the field, they already have experience on how to conduct a program evaluation." Program evaluation, she noted, has become a vital skill for doctoral students in criminal justice; "it's one of the skills that we like to teach them: how to do agency work, how to do contract work and how to do program evaluations."

Highlighting Arkansas Voices

Center for Arkansas History and Culture Works to Preserve

At the end of the Vietnam War, Arkansas played a major role in world-changing events when Fort Chaffee, just outside of Fort Smith, was chosen as one of four main entry points for refugees from the conflict. The first plane, which carried 70 refugees, arrived on May 2, 1975, and 50,809 refugees were processed through Fort Chaffee over the next seven months.

Amid that upheaval, Dr. Johnye E. Strickland, now a professor emeritus in English at the University of Arkansas at Little Rock, began a project in 1976 to record oral histories from the refugees in Fort Smith. The work was funded by a grant from the Ford Foundation. The project lasted more than a decade, and Strickland made more than 200 recordings.

Now, the Center for Arkansas History and Culture (CAHC) is working to preserve those recordings, which are part of a collection of donated material from Strickland. The center received a grant from the Arkansas Natural and Cultural Resources Council (ANCRC) to fund the preservation and digitization, and for a digital exhibit based on the materials.
"It's a special collection," said Jess Porter, the center's executive director. "It's something that I think will provide insight into a unique chapter in the history of Arkansas."

Cody Besett, the former student success archivist at the center, was the initial archivist for the project; Emily Summers Yarberry, the center's processing archivist, has since taken over. Besett recalled that the center received an earlier collection from Strickland, who worked at UA Little Rock when she got the oral history grant and taught at the university from 1991 to 2001. "She was really interested in writing and then poetry, particularly haiku, and so this collection had some of her research material related to those topics," Besett said. "Also a little bit about some of the classes, mostly from the 80s and going into the early 90s, that she taught." Then, the center got another collection–a much larger one–from Strickland's daughter, which led them to seek the grant.

> "There is also another element to this project that I think is special, and that's the intimacy of it. When you're listening to these recordings, you hear these things."
>
> *— Laura McClellan*

Laura McClellan, the center's assistant director, was pleased to receive the new materials and stressed the importance of keeping related materials together for research value. She gave an example: "If you had some research material at UALR, and then you also had some at Oklahoma State, and then you have some at Florida, you're not going to get the complete picture of that person or their research." Strickland's daughter remembered the collection at CAHC, McClellan said, and so they were able to add the newer material to the existing collection."We received this extensive collection," McClellan said, "that had a ton of A/V in it, mostly audio recordings, and then there was some other print material."

"Oral history was a huge part of her life," Jerry Griffin, a graduate student working on the project, said of Strickland's audio recordings. "And not just for herself; she had students go out and do oral history. And we have many of those recordings and some of those transcripts as well." Public history graduate student Margaret Stone also worked on the project.

The refugee oral histories are a unique resource that will help researchers and the public gain insight into a vital part of Arkansas and world history. Besett noted that histories of the refugees have, so far, relied on a limited number of oral histories recorded decades after their time at Fort Chaffee. The recordings in Strickland's collection, he said, haven't been referenced anywhere else. They were made "at the time that the refugees were here in Arkansas, in Fort Smith. So I think that is probably the most important part of this entire collection."

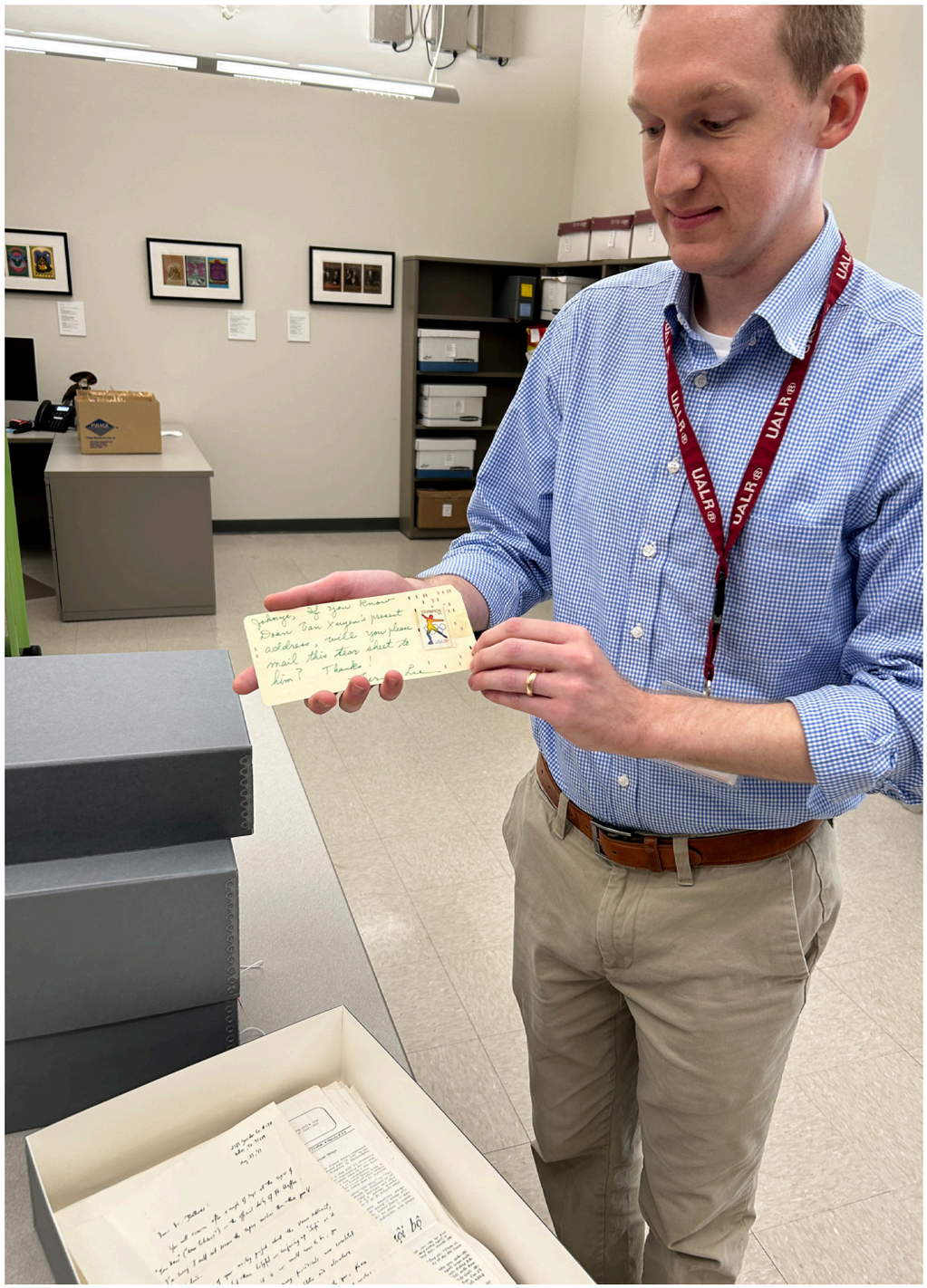
The papers in the collection include the questions Strickland asked, McClellan said, things like "How were you evacuated? How many people did you bring with you? What did it mean to you to get out of there?" Some other questions included things like "How much were you paid?" Besett said, "Which is an interesting one. What we've seen is a lot of the people who worked for the army of the Republic of Vietnam were paid very little.

and Share Oral Histories of Vietnam War Refugees

And then also some questions that we've been able to use for our content for our upcoming web exhibit: Where were you born? What was your involvement with the war?" Strickland also asked about people's culture, Griffin said, questions like "What do you do in your free time now? What did you do back where you were from? Also, what types of food did you eat? So, it adds more of that personal narrative to these people. Whenever you're listening to them talk, you get to hear more and more details that you might not be able to find in, say, a simple Google search."

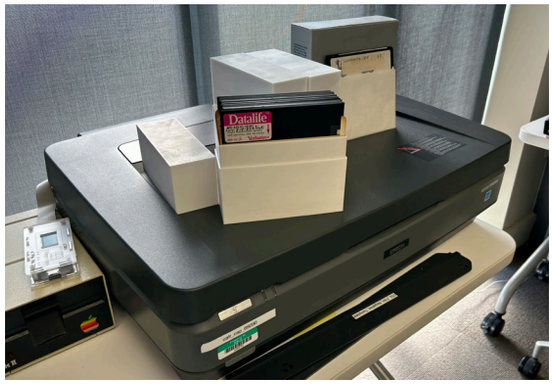
The fact that oral histories are recordings, McClellan says, sets them apart in a different way. "There is also another element to this project that I think is special," she said, "and that's the intimacy of it. When you're listening to these recordings, you hear these things. These are people that are in a vulnerable place in their lives, and they are sharing some pretty significant points about their lives." Listening to them, she said, is "like a little conversation that you're kind of listening in on, of this person in the middle of this significant point in their life." The team's proposal for the ANCRC grant also notes how the refugees' displacement shows up in the interviews, whether touching on the places they lost or their efforts to establish new places for themselves in America.

Strickland also followed up with some of the refugees, seeing how they adapted to life in the United States and integrated themselves into society here. Besett said the collection contains postcards and camp newspapers sent to Strickland well into the 80s, as well as items like a newspaper clipping about a film that starred one of the refugees.



Archivist Cody Besett shows part of the Strickland collection, a computer punch card used as a postcard.

Strickland's work with the oral histories also stretched over a decade, he said. "She didn't close out that grant until about 1988." Although he said the center doesn't usually keep planning documents for oral histories, they decided they would in this case. "This program to capture the voices of these Vietnamese refugees, it was just so time-consuming for her," he said. "My idea is that they will provide a little bit more context into the planning that was associated with this." The collection includes questionnaires in both English and French, a common language for educated Vietnamese; budgets for the project; Strickland's writing on the refugees; reports done through Fort Chaffee; transcripts; and even material produced by the resettlement effort. Preserving Strickland's collection and making it available presented its own set of challenges, and the center's team sometimes had to get creative. One of the first issues was dealing with the sticky shed syndrome on many of the tapes. The syndrome, caused by a deterioration of a binder in the tape, was resolved by baking the tapes in a scientific oven–work the center was able to do after purchasing one of the ovens through a previous ANCRC grant. The tapes in the collection–a total of 678 audio recordings comprising 431 cassette tapes, 210 reel-to-reel tapes, and 37 microcassettes, plus one Betacam videotape–were sent out to be digitized. Besett and Griffin had to expand and rework the finding aid for the collection–the list of topics and people touched on by the material that researchers consult when deciding what material to request and examine. "I spent about a week listening to bits of each one," Griffin said of the recordings, "to identify what each one was and what it would potentially fit into."



The CAHC team used a 3-D printer to make archival-grade containers for floppy disks in the collection.

There was also the challenge presented by the 86 floppy disks in the collection. "There were quite a number of her writings on the refugees and then some transcripts that she ended up having to finish going into the 80s, just because they took too long, that we had to figure out ways to get them off of the floppies so people could use them," Besett said. That involved finding an old Apple II computer and floppy drives, as well as figuring out how to protect the disks while copying their information. "Cody had to do a lot of research to determine the best methods and any specialized software he might need. Laura had to jump on eBay and get us the right hardware that we would need," Porter recalled. The team had to find software that could copy the information on the disks, especially given the limitations of the old computer's RAM. They sometimes had to repair the hardware. And they had to protect the information while they were working with it. "Some of the random research that we had to do, that someone working with these back in the 1980s would have known, but it's something as simple as: putting some tape around this will make it to where you can only read it," Besett explained. "Which is important for us because we don't want to do anything that would accidentally edit this." The team also had to come up with an archival way to store the floppy disks. "There are no archival-grade containers for these floppies," Besett said. Instead, he found files for 3-D printed floppy disk holders and made some using a polyester-based material. "The plastic in here is not going to affect these, so that should be good for long-term storage," he noted.

The team's next challenge was making the collection accessible. While the archive's physical materials are stored in a controlled environment in the space the center shares with the Central Arkansas Library System's Roberts Library, the team knows that not everyone who might be interested in the material can or will make a trip to their location in downtown Little Rock. So, an essential part of the project is a web exhibit. "This exhibit will allow anyone to go in and explore these materials to get a sense of the work that Johnye Strickland was doing," Porter said. Dr. Kristin Mann, a history professor at UA Little Rock, is developing a curriculum for K-12 students exploring the project and the era it represents.

Work on the web exhibit is ongoing, and Porter said they're excited to try out new tools and more interactive ways to present the material. "It's fascinating history, and so we want to make that much more accessible through the website, so you don't have to come and make an appointment," he said. "We want people to be able to get a taste of it and see what this is all about." They anticipate the exhibit will be ready later this year. When it's finished, it will be available at ualrexhibits.org.

McClellan reiterated that, although the archives are a vital resource for scholars, they don't only serve scholarly research. "If you're reading this article, this resource is for you. There's something here for you," she said. "It doesn't matter who you are, there's something here for you."

Equipping Parents

MidSOUTH Program Helps Parents with Challenges of Raising Children

Raising children is one of the hardest, most challenging tasks many people will undertake in their lives, as well as one of the most rewarding. However, it isn't something that needs to be done alone. In addition to their own family and community resources, some parents in Arkansas are benefiting from parenting tools available through MidSOUTH at the University of Arkansas at Little Rock. Through the Positive Parenting Program (also known as Triple P), MidSOUTH practitioners are helping parents navigate the challenges of raising resilient, competent, and confident children.

The Triple P program is divided into five levels, starting with Level 1's public outreach and awareness. Level 2 offers group seminars, shorter one-on-one meetings on specific challenges, and other light-touch interventions. Level 3–referred to as primary care since it is delivered through doctor's offices in Australia, where Triple P was developed–involves a series of short meetings on issues parents are facing. Level 4 involves a series of 10 hourlong, in-home sessions that gives parents intensive one-on-one support. Level 5 is intended as intensive support for families with complex concerns and additional risk factors that have not changed as a result of participating in a lower level of intervention. MidSOUTH uses Level 5 Pathways as an add-on to Level 4 to help parents with partner support, emotional regulation, and stress coping skills. MidSOUTH has been using Triple P since 2020. Most of their work focuses on referrals from the Division of Children and Family Services (DCFS), part of Arkansas's Department of Human Services, to provide families with Triple P Level 4.

Since 2020, upwards of 1,300 families have been referred to participate in the Level 4 program through MidSOUTH, according to Triple P Program Director Sharon Long, M.S.–including parents, grandparents, caregivers, and fictive kin (unrelated adults who have "a strong and positive emotional tie" to a child, such as teachers, neighbors, or godparents). More than 850 families have completed the 10-week program–a rate that MidSOUTH Assistant Director Greg Smith, DSW, LCSW, noted is higher than many in-home programs. Part of the reason, Smith said, is that "we work so hard to get into these homes. It's voluntary; the families do not have to take this program." And they sometimes face resistance from families, he noted. "Sometimes they don't initially want the services. We meet the families where they are; we encourage them to participate and partner with them. We let them know this parenting program is going to be different. It will be tailored to their needs." Another reason for the program's success is the way it empowers and equips parents, Long said. "We're able to go in and really give the parents some confidence and some ability to say, 'This is what I need. I know why my case [with DCFS] was opened. This is what I need.'"

Since children must be in the home for Triple P Level 4, removal is one of the reasons a family might not complete the program. Smith noted, however, that MidSOUTH's practitioners can seek exceptions to that rule, for instance starting the program several weeks before children are placed back in a home after being in foster care. But access through MidSOUTH had been limited to families involved with DCFS.

Last year, MidSOUTH received funding for a one-year pilot of community-based Triple P. This part of the program, which uses Triple P Levels 2 and 3, focuses on preventing the kinds of problems that might lead to DCFS involvement, in addition to giving more parents the skills to cope with more common challenges. About 25 practitioners at 14 partner organizations have been trained to provide public outreach, seminars, and shorter customized one-on-one sessions on specific parenting issues. These organizations include community-based schools, educational co-ops, and transitional living programs for homeless families.

"What we've done with Level 2 and 3 is spread the word about positive parenting to a wide range of parents and caregivers," Long said. MidSOUTH is providing for social workers and others with these organizations to be trained; providing the program materials, such as tip sheets, booklets, and presentation aids for seminars; and supervising newly trained practitioners to make sure they have what they need for success.

Before this, "if an organization called and said, "How can we get Triple P?"" Long said, MidSOUTH would not be able to provide these services but would try to connect them to other resources to meet their needs. However, Long said, "During the pilot program, what they could do was send one of their educational people to us at Triple P, they could get the training and they could be the practitioner that delivered it." The pilot funding also included codes for online Triple P, for parents who can't attend sessions in person or by videoconference, whether because of tight schedules, lack of internet access, or some other issue. Long said the practitioners who've been trained through the pilot have reported early successes, including that "maybe parents don't feel the stigma of reaching out and asking for help as they have in the past." MidSOUTH is working to secure funding to continue training community Triple P practitioners beyond the pilot.

Triple P ties into MidSOUTH's larger focus of child welfare, Smith noted, which includes training DCFS workers and resource families (also known as foster families), as well as MidSOUTH's other main focus, which is substance misuse prevention. "A lot of people don't get the connection," he said, but "you cannot separate substance misuse and child welfare. They're so intertwined." Children raised in homes with substance misuse are at higher risk for substance misuse themselves, he noted, and they might not be picking up the best parenting skills. Removing a child from their home can be traumatic, and the removal puts them at higher risk of social and mental health problems, so the preventive effects of a program like Triple P are vital, he said.

Long emphasized that any parent can benefit from programs like Triple P. "It's for every parent at one or more of the levels of intervention," Long said. She was careful to note that Triple P isn't the only good parenting program available, and she offered some advice to parents looking for one: "I want to know it's evidence-based. I want to know it's effective. I want to know what will help me be a better parent and person." In the end, she said, "I want my children to be happy and confident and grounded. I want them to have their needs met. I want them to know how to meet the needs of others. I want them to be able to do that within a structured, disciplined environment, that's not punitive."

2023 Expo Award Winners

The 2023 Research and Creative Works Expo was held on April 21, 2023 in the Jack Stephens Center. This dynamic event showcases a unique variety of projects from the hard sciences to the arts and humanities. Every year, the expo shows the Central Arkansas community how innovative, diverse, and creative UA Little Rock graduate and undergraduate students are in solving unique problems and creating vibrant works of art. Each presentation is judged by the Undergraduate Research and Creative Works Committee for creativity, uniqueness, and impact. Below is the list of winners from the 2023 expo.

ENGINEERING

Undergraduate

1st Joshua Risk, Taylor Anderson
Title: Sygnas Reactor

2nd Luke Staggs
Title: DIY Solar Tracking System

2nd Timothy Davis, Cody Capocelli
Title: Design, Construction, and Testing of Waste-Water Recovery System for Hydraulic Ram Pump

3rd Taylor Andorson, Joshua Risk
Title: Pre-Processing of Diverse Solid Waste Materials into Consistent Quality Feedstock Suitable for Energy Production

Graduate

1st Philip Ojo (Part of group for 1st place undergrad)

Title: Sygnas Reactor

CREATIVE WORKS

Undergraduate

1st Emma Chambers
Title: From Pigment to Paint

2nd Anna Vollintine
Title: The Effects of Sleep Deprivation on Learning and Executive Function

3rd Brice Horn
Title: Heather Guidero Summer 2023 Internship

3rd Isabella Miller
Title: "Bleeding Heart" Poems about the South

Graduate

1st John Hopkins
Title: 3D Creature Sculpture: Prints and Scans

2nd Amelia Loken
Title: Bridging the Disability Digital Divide Through State Telecommunications Equipment Distribution Partners

3rd Allen Brim
Title: Are Media Agents of Influence and Social Change in Street Naming? Making a Street Name Case for Dr. Martin Luther King Jr. With Media Advocacy

PHYSICAL SCIENCE

Undergraduate

1st Arisha Ishtiaq
Title: Investigation of the Mechanism of Enhanced Photothermal Effect of Combination Ionic Nanomedicines

2nd Sarbjot Singh
Title: Synthesis and Characterization of Mono-Substituted Cationic Porphyrin as a Photosensitizing Agent for Photodynamic Therapy (PDT)

3rd Joseph Alley
Title: Microwave Synthesis of Alkynyl Hydrazones from Carbonyl Compounds

3rd Taylor Lackey, Gabriel Bertram
Title: Design and Construction of a High Temperature Induction Furnace for Synthesis of Large Area Tungsten Oxide Nanostructures for Future Photocatalytic Device Applications

Graduate

1st Samantha Macchi
Title: Renewable P, N Co-Doped Carbon (PNDC) as Anode Material for Sodium Ion Batteries (SIBs)

1st Jamie Freeman
Title: Applications of Cobalt(II) Heteroscorpionate as Single Molecule Magnets

2nd Tina Hesabizadeh
Title: Synthesis of TeO2 Nanoparticle for Biomedical Application

2nd Ronia Kattoum
Title: The Impact of Perceived Instructor Mindset on Student Outcomes in Gateway Chemistry Courses

3rd Mavis Forson
Title: Synthesis and Characterization of Pyrphyrin-Coated AuNPs for Synergistic PTT-PDT

3rd Ghusoon Al Bazzar
Title: Synthesis and Characterization of Low-Cost High-Performance ZnO-TiO2 Core-Shell Nanorods

LIFE SCIENCE

Undergraduate

1st Kitty Dirksen
Title: How Hot is Hot? Quantitative Analysis of Capsaicinoids from Campus Garden Grown Peppers

2nd Colleen Zaller
Title: Perspectives and Practices in Serving Multilingual Populations

3rd Abigail Frye, Monica Tompkins
Title: DNA Barcoding of Prairie Soil microbes: Land-Use Change and Legacy Effects in Native Grasslands

Graduate

1st Adeniyi Oyebade
Title: Synthesis, Characterization and Antibiotic Activities of Azithromycin Derivatives

1st Katelin Weldin
Title: Impact of Victim Age on Charges and Convictions in CSA Cases

1st Seth Cook
Title: Real-Time Log-Phase measurement Using an IoT-Controlled Photobioreactor

2nd Shabnam Manafzadeh, Tina Hesabizadeh, and Kari Vinzant
Title: Selenium Nanoparticles as Enhancers of Seed Germination and Plant Development

3rd Mujeebat Bashiru
Title: Cellular Uptake and Cytotoxicity of Combination Naomedicines

INTERDISCIPLINARY

Undergraduate

1st Luka Woodson
Title: Medical Imaging Annotation

2nd Kelsey Loraditch
Title: Racial and Ethnic Maternal Health Disparities: A Survey of Arkansas Nurses

3rd Mohamed Albeik
Title: Bee-Liner

Graduate

1st Adeniyi Oyebade
Title: Synthesis, Characterization and Antibiotic Activities of Azithromycin Derivatives

2nd Amelia Loken
Title: Bridging the Disability Digital Divide Through State Telecommunications Equipment Distribution Programs

3rd Liliane Poirot
Title: Building Smart Lab Instruments for Enhanced Data Collection and Collaboration in Labs

HUMANITIES

Undergraduate

1st Kaitlin Jackson
Title: Black Masculinities in Alice Walker's "The Color Purple" and Toni Morrison's "Song of Solomon"

2nd Brittney Dudra
Title: An Analysis of American Police Academy Training and Officer Use of Force

3rd Yvonne Rodriguez
Title: Why Arkansas? A Comparative Case Study on the Push and Pull Factors of Oaxacan Immigrants in AR

Graduate

1st Chantel Moore
Title: Mother Knows Best: The Role of Positive Communication and Conversation Orientation between Adoptive Mothers and Adopted Teenage Children

2nd Emily Housdan
Title: City of Little Rock: A History of Urban Fracture

3rd Morgan Gianferante
Title: A Pandemic of Information: How Millennials Engaged with Content on Social Media Related to COVID-19

EDUCATION

Undergraduate

1st Justin Washington
Title: Philosophy of Education: P4C Curriculum for K-5

1st Dareon Buffington
Title: Grit & Resilience: The Importance of Communication in Completing a College Degree

2nd Cole Dwyer
Title: Application and Refinement of the Protein Landscape

3rd Ariel Hudson
Title: Absence of Creative Writing Impacting the Learning Capabilities of Students in the Little Rock Public School

Graduate

3rd Joseph Scott
Title: Re-Examination of Public Four-Year Institution Administrator Attitudes in Arkansas Toward Two-Year College Education

COMPUTER SCIENCE

Graduate

1st Sayantan Bhattacharya, Qudirat Akanji
Title: Indo Pacific

2nd Mainuddin Shaik & Billy Spann
Title: Role of Multimedia in Connective/Collective Actions

3rd Haydar Al Rubaye
Title: Utilizing the Power of Extraction and Visualization of Narratives to Improve Text Comprehension

SOCIAL WORK

1st Sahana Bettadapure
Title: Examining TEA's Barriers to Provide a Safety Net

ORAL PRESENTATION

Undergraduate

Taylor Lackey
Title: Design and Construction of a High Temperature Induction Furnace for Synthesis of Large Area Tungsten Oxide Nanostructure for Future Photocatalytic Device Applications

Julia McPeake
Title: Modern Life: Representing Communication Technologies in Art

Ariel Hudson
Title: Absence of Creative Writing Impacting the Learning Capabilities of Students in the Little Rock Public School

Graduate

Seth Cook
Title: Real-Time Log-Phase Measurement Using and IoT-Controlled Photobioreactor

Iris Denmark
Title: Comparative Study on the Chemical and Physical Activation of lignosol-Based Co-Doped Carbons for Energy Storage Applications

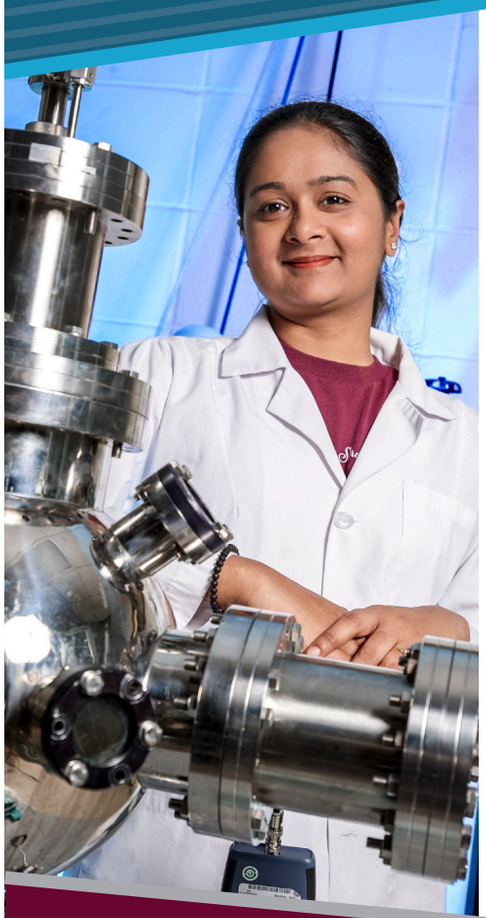
Joseph Scott
Title: Re-Examination of Public Four-Year Institution Administrator Attitudes in Arkansas Toward Two-Year College Education

Amelia Loken
Title: Bridging the Disability Digital Divide Through State Telecommunications Equipment Distribution Programs

Emily Housdan
Title: City of Little Rock: A History of Urban Fracture

Lotenna Nwana
Title: Computational Analysis of the Belt and Road Initiative (BRI) Discourse on Indonesian Twitter

Anulika Nwashili
Title: Analyzing Twitter Discourse about Uyghur Women's Rights During COVID-19



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