

NC LESSON PLAN

The earlier the better. That's the motto that Dr. Christie Cavanaugh lives by when it comes to literacy and children.

Research shows that students who can read at grade level by the end of third grade are more likely to graduate from high school, earn a college degree or credential, and experience economic success in adulthood. But only 36% of North Carolina's fourth graders were proficient in reading in 2019, and that number drops to just over 20% for low-income fourth graders.

Last year, Cavanaugh was chosen by the Board of Governors as one of eight literacy fellows to create a framework to guide all UNC System faculty who prepare preservice teachers for literacy instruction.

"There's a lot that goes on with young children that sets them up on a path for success in the areas of language and literacy," says Cavanaugh, a clinical associate professor in the School of Education.

"This framework will ensure our teachers have the essential knowledge and skills regardless of which educator prep program they attend across the state system."

Exposure to language through rhymes and songs and even interacting through physical touch can increase brain activity in infants and affect their ability to read and write in later years. But Cavanaugh says that even without those early experiences, students can still excel, they just have to be taught what practitioners call "foundational skills."

"We should have high expectations for all children and for ourselves," she says. "We have to provide rich experiences no matter what children come into our classrooms knowing."

The framework will focus on the period between kindergarten and third grade. During this time, Cavanaugh says educators teach things like decoding – how to translate printed words to sounds for reading – and encoding – how to use

sounds to build and write words. These, she says, are fundamental building blocks for literacy down the line.

"Children also require rich language experiences," she says, to build skills in areas like vocabulary and syntax. Kids need to comprehend words – and how they fit with other words – to read and write.

Many of the methods in the framework aren't new, but the idea of a common, evidence-based method of preparing teachers for literacy instruction is. "There aren't many states that offer this level of guidance yet," says Cavanaugh.

"We're talking about impacting a lot of teachers who will in turn impact lots of children."

by Sayaka Matsuoka

learn more at myreadingnation.com
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Cavanaugh demonstrates literacy instruction methods in the School of Education's Michel Family Teaching Resource Center. Photo: May 2021

DIVING IN DEEP

Two UNCG researchers are recognized for their unique approaches and potential for far-reaching impact.

INFORMATION AND ANALYTICS RESEARCHER AWARDED PRESTIGIOUS NSF CAREER AWARD

Imagine reading thousands of complex, technical articles, and then painstakingly marking all of the important concepts within each one and connecting them across all scientific publications over time.

That scenario describes the traditional process biologists use to catalog knowledge – using biological ontologies –





Asked Siri to identify a song lately? Then you've used deep learning, the type of machine learning at the heart of the work Manda and her collaborators Dr. Somya Mohanty and graduate student Pratik Devkota (r-l) are conducting. Photo: June 2021

and make it accessible to scientists across the globe. This work requires enormous resources, says bioinformatics specialist Dr. Prashanti Manda. "The process is slow, tedious, and impossible to scale."

It also contributes to a bottleneck, where databases aren't as updated as they should be, and scientists can miss critical connections.

Manda and her collaborators are attempting to develop an open-source artificial intelligence application that can create ontologies automatically.

"We're trying to teach a machine to do what a human can do intuitively," she says.

Manda was recently awarded an NSF CAREER Award for the project. These prestigious grants support early-career faculty with the potential to become academic role models in the integration of research and education.

Ultimately, the project seeks to help scientists recognize important biological concepts from literature more efficiently. "We hope these methods will supplement human labor," says Manda, "and free up researchers to focus on scientific inquiry."

SCHOOL OF EDUCATION PROFESSOR NAMED AN AAAS FELLOW

For a young person, it's hard to imagine growing up to be a scientist or an engineer if you don't see scientists or engineers that look like you. Dr. Edna Tan is changing that, one young person and community at a time.

"Professionals in STEM are often white males. There's a lack of representation of people of color, and women," she says. "How children are introduced to STEM and how they engage with it influences whether they regard STEM as something they can or want to do."

Last year, Tan was elected as a fellow of the American Association for the Advancement of Science, or AAAS. She is the first woman at UNCG to receive this coveted honor from the world's largest multidisciplinary scientific society.

AAAS fellows are selected by their peers for efforts that advance science, that are scientifically or socially distinguished. Dr. Tan's research explores how we design

STEM teaching and learning that is both impactful and equitable, with a focus on underrepresented populations.

Her approach calls for deep embedment within communities over long periods of time. Building trust and personal relationships are key, she says, because successful learning environments are developed in collaboration with the youth and teachers they engage.

Tan's co-authored paper "Rethinking High-Leverage Practices in Justice-Oriented Ways" recently won the Journal of Teacher Education's Outstanding Article Award.

Her goal for STEM learning, she says, is "learning where youth can be rightfully present, where they can be themselves, and where they can become who they want to be."

by Matthew Bryant • learn more at go.uncg.edu/manda | go.uncg.edu/tan