



From Alchemy to the Zoo: Speaking of Science Delivers STEM to Students

Something as simple as a paperclip can unlock the curiosity of students who are meeting a real scientist for the first time. Dr. Ghanashayam Joshi engages students in a paperclip exercise where they bend the paperclips and try to guess when and where they will break. This leads the students into a discussion about what research scientists do and how his research on metal fatigue at Southern University is contributing to the development of new and stronger materials for space stations and airplanes. Often the students are amazed that this research is happening right here in Louisiana and that they can be researchers someday.

Dr. Joshi is a faculty participant in Speaking of Science (SoS), an entire bureau of top researchers available to travel to classrooms anywhere in Louisiana. Over 57,000 students have been reached by SoS speakers over the past 17 years. The SoS program is managed by Louisiana EPSCoR and funded by the National Science Foundation and the Louisiana Board of Regents. Speakers are available for kindergarten through college classrooms at no cost to the schools.

As the SoS program grows, new types of connections are being made, including an upswell of requests for SoS speakers at school STEM events that engage the entire student body and their families in a variety of presentations and hands-on activities.



Students react to questions during “The Scientific Method for All” presentation at the Immaculate Conception Cathedral School’s Young Engineers Society in Lake Charles, Louisiana. The speaker is Dr. Diola Bagayoko, Southern University System Distinguished Professor of Physics and Dean of the D. M. R. Spikes Honors College at Southern University.

On another front, a new outreach program to reach inmates is being piloted by Dr. Chester Wilson, Associate Professor of Electrical Engineering at Louisiana Tech University. This new initiative teaches inmates how to encourage their children to explore STEM concepts and consider attending college in a STEM field. The response has been phenomenal!

In his presentations, Dr. Wilson reveals how 3D printing technology is providing a path to leverage our ability to combine ideas with the information age. “In only a few years, everyone in America will have access to a laptop, a 3D printer, and a drone. That means that every young person has the toolkit to invent, prototype, apply for a patent, write a business plan, and kickstart a new business. This puts everyone on a

level playing field, limited only by their ability and hard work. Imagine what outreach and training will do for Louisiana’s STEM graduate students of the future,” said Dr. Wilson.

Both Dr. Wilson and Dr. Joshi are performing research as part of the NSF EPSCoR-funded Consortium for Innovation in Manufacturing & Materials (CIMM). The advanced manufacturing industry is rapidly growing in Louisiana. From the CIMM research team alone, 15 speakers are ready to present their cutting-edge research and experience with 3D printing, metal fatigue, nanotechnology, smart materials, computer modeling, engineering, supercomputing, and more.

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New SoS speakers:

Dr. Brian Adams
Assistant Professor of Biology and
Physical Sciences, University of
Holy Cross

Dr. Rakitha Beminiwattha
Assistant Professor of Physics,
Louisiana Tech University

Dr. Brian Crother
Professor of Biological Sciences,
Southeastern Louisiana University

Dr. Lehman Ellis
Assistant Professor of Biology and
Chemistry, University of Holy
Cross

Dr. Darryl Holliday
Assistant Professor of Food
Science, University of Holy Cross

Dr. Ghanashyam Joshi
Professor of Mechanical
Engineering, Southern University

Dr. Suniti Karunatillake
Planetary Scientist, Louisiana State
University

Dr. Daniel Kuroda
Assistant Professor of Chemistry,
Louisiana State University

Dr. Jayalakshmi Sridhar
Assistant Professor of Chemistry,
Xavier University

Dr. Peter Yaukey
Professor of Biology, University of
Holy Cross

Newest SoS presentations:

Materials Science

- Fatigue of aircraft materials
- 3D printing: The future of manufacturing
- Revolutionizing technology through smart materials
- 3D printing of foods: Moving beyond plastics

Mathematics

- Mathematics underlying marvelous engineering and technologies

Chemistry

- Alchemy and the birth of modern chemistry
- Chemists as investigators in industry and environmental organizations
- Chemistry of artists' colors
- The poor man's battery: A penny's worth hands-on experiment

Science

- How to engage students in STEM activities: Practical examples for parents and teachers of K-12 students
- Counting planetary sand grains with computer vision
- A story of water on Mars from maps of hydrogen and sulfur
- Living science fiction on Mars and beyond
- Hurricanes of Louisiana
- Urban birds of New Orleans
- Field trips to Audubon Zoo or Jean Lafitte National Park
- Snakes in film: Farces and facts
- What's in a name? The topsy turvy world of scientific names
- Oysters: Good news - bad news
- Earth is a microbial world with a few contaminating organisms
- Food Science and its impact in today's world
- The role of different branches of science in drug discovery
- The Origin of Species: What did Charles Darwin say?
- Golden lessons I learned as a Physics Ph.D. student
- Protein kinases and human diseases
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