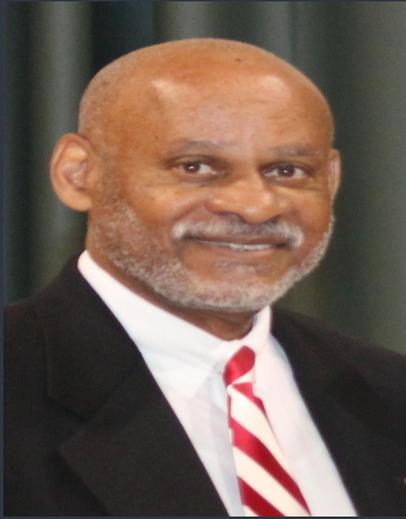


Issue 3

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Lawrence P King

Publisher

By focusing attention on developments, achievements, and issues that are critical to the advancement of minorities in science and engineering, we seek to hasten the adoption of remedies and corrective actions by all with a stake in America's leadership role in technology.

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STEM NEWS CHRONICLE™

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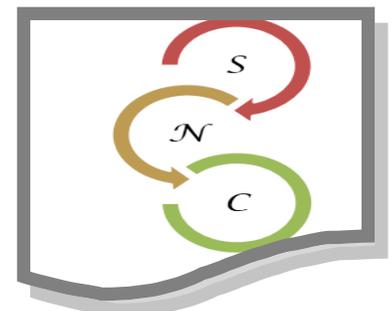


The problems that plague science and math teaching of our children in rural schools and the Black and Brown students trapped in under-resourced urban schools with poorly trained and overworked teachers has become as chronic, as the opioid crisis.

Origins of the disparate education and employment of persons from non-European cultures differs from other nations. We have long held that if our collective workforce development mindset were to change, there would be more Latino and Black students turned on earlier to math and science.

This newsletter gives contributors as advocates for minorities in technologies, a platform to present perspectives on solutions for science and engineering advancement, on the question of "what works".

Alternative viewpoints expand the question by asking, for whom, where, and when? Let us hear from you on solutions with merit?



The **STEM Education Coalition** is pleased to announce that the Society of Hispanic Professional Engineers, or SHPE, has joined its Leadership Council.

SHPE's vision is "a world where Hispanics are highly valued and influential as leading innovators, scientists, mathematicians, and engineers." SHPE is comprised of a network of professional and student chapters throughout the nation.

The organization is headed by CEO Raquel Tamez and Board Chair Miguel Alemany. Executive Director of the STEM Education Coalition James Brown says, "I am excited to welcome SHPE to our Leadership Council. SHPE's unique perspective on diversity in engineering enhances the voice of the Coalition tremendously. We look forward to working with Ms. Tamez and her team to advocate for policies that expand the engineering pipeline and make STEM careers and education more accessible to all."

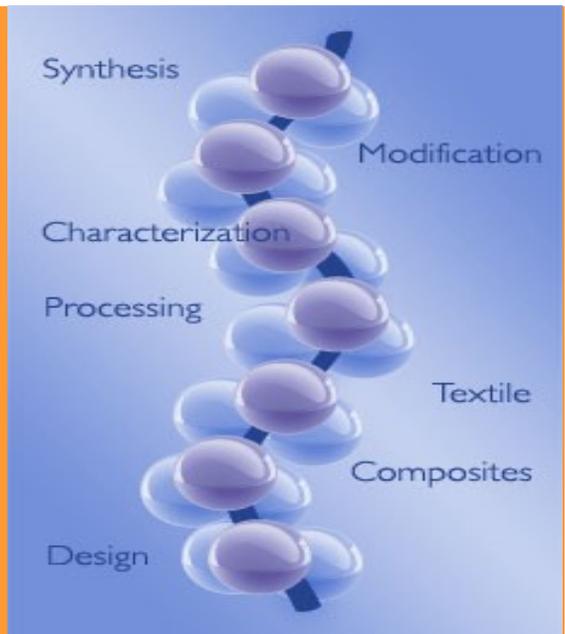
Articles requested

We want to feature African American polymer scientists who can provide his/her perspective on either of these issues.

- New development in materials
- Importance of minority and women participation

Their input will be among others of approximately 300+ words in length for an audience of technical professionals and educators promoting greater participation of African Americans in engineering and science. The articles will appear in the next STEM NEWS CHRONICLE distributed to 8,000 readers nationally.

Please share or request with your network of colleagues and request they contact me by **June 30th**.



A reason for More Black Technologists to Collaborate

The good news is that the number of American teens who excel in math is increasing. The bad news is that the growing ecosystem of high school math enthusiasts lacks students of color.

The largely extracurricular world of math circles, competitions and summer camps is overwhelmingly white, Asian and Asian-American. These programs are often filled with students from well-off families, with parents who are professionals, many in technology or related fields, who see math as a key pathway of entry to increasingly selective colleges.

Many underrepresented students live in communities where access to and knowledge of such opportunities are lacking. That makes it even more difficult for many enthusiastic African American and Latino students to participate in math enrichment programs and later compete for admission to top programs in science and technology.

The singular efforts of the **NTA, NOBCCHE, NSBE, BDPA**, etc. are great and worth replication. However a more significant improvement in the education of those behind us in K12 can be achieved by helping them overcome math anxiety and the perception of educators and administrators that the only place for them is the achievement gap.

Students of Color Face Persistent Disparities in Access to Advanced STEM Courses

By Stephen Sawchuk STEM EDUCATION COALITION

The proportion of students of color who take high-level math and science courses continues to trail that of their white peers—jeopardizing those students' ability to master the knowledge they need to secure a college-preparatory diploma.

What's more, the segregation of American high schools is a factor in students' access to these types of courses. Schools that serve disproportionate numbers of black and Latino students offer fewer advanced math and science courses, such as calculus and physics, than do schools with more white students. For upper-level math coursework, it's likely that school composition has a relationship to what classes are offered: About 5,000 high schools, the data show, had high levels of Latino or black enrollment (defined here as schools with more than 75 percent black and Latino). And they offered advanced math and science at lower rates than other high schools.

Our Connection in Spain

Hi Larry,

Here there are some comments about your Newsletter. It is just a point of view of a teacher who had spent a year teaching in the US with a J1 Visa and who loves his job:

I don't know where is the issue with the 85,000 H1B Visa applicants. Couldn't be increased the number of scientist and engineers graduated un US colleges and universities at the time of maintenance the number of Visa applicants?.

In a global world, knowledge must be global and shared. Here in Europe universities we have thousands of Asians, Africans, Americans and Australians students. Every single student will be a new focus of knowledge, like Huygens un waves propagation. The fact we have to take care of is that we need the best teachers everywhere, from pre-K to upper education.

Thank you for sharing your Newsletter.

Regards, Gonzalo Reina

STEM Images formed Early

A study released by NSF conducted by Andrew Meltzoff, professor of psychology, University of Washington and Andrei Cimpian, associate professor of psychology, New York University conclude that children acquire stereotypes about STEM at surprisingly early ages. The conclusions addressed gender influences and not racial.

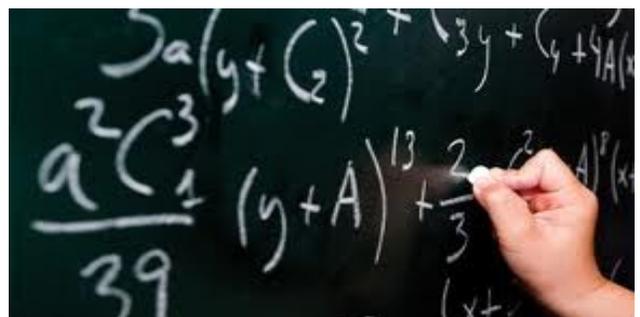
These stereotypes matter because they are internalized by children and influence children's own developing self-concepts. The researchers say, "children's beliefs about STEM are malleable, and the right interventions at the



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right time hold promise for sparking early interest and engagement with STEM."

Now this is not a revelation since those with experience with increasing the participation of persons of color in STEM have historically documented how stereotypes and lack of role models heavily influence decisions and perceptions of Latino and African American children concerning a career as an engineer or scientist.



Bias in Engineering Education

Women and people of color are a growing part of the US population. Yet, the participation of women, blacks, Latinos, and Native Americans in engineering and other STEM fields remains woefully underwhelming, according to National Science Foundation data. There are expanding efforts to encourage and support the entry of more women and people of color into the engineering workforce, but there is a significant challenge to the recruitment and retention of diverse talent that can't be ignored. This article focuses on the education pipeline.

A team of NC State researchers is taking the lead in an effort to better understand and address perceived bias in engineering education programs across the country. The work is being done with funding from the National Science Foundation's Directorate for Engineering.

One goal for the project is to develop a suite of best practices which can be implemented by universities to reduce perceived bias in graduate engineering programs, and possibly for other STEM graduate programs. Perceived bias refers to instances in which people feel they are being stigmatized in some way due to their race, gender, sexual orientation or religion.

Phase one of the project, which launches in 2018, involves interviewing a small group of graduate students from engineering programs across the United States. The interviews will focus on identifying ways in which students perceive bias in their graduate programs. "We will then use the information gathered during these interviews to develop a phase two of the project: a survey that will be sent to a large, national sample of engineering graduate students," says Cheryl Cass, co-principal investigator of the project and director of undergraduate programs in **NC State's Department of Materials Science and Engineering**.

The goal of the survey is to collect nationally representative data on perceived bias, while also collecting sufficient data from under-represented groups to get an accurate assessment of their experiences.

"One thing we want to capture here is how perceived bias affects the development of engineering identity in graduate students," Cass says. "Some previous studies suggest that self-identifying as an engineer can help engineering students persevere and succeed. We want to know if and how perceived bias influences this."

"We're really talking about intersectionality here, and the extent to which these students can incorporate engineering into how they view themselves," says Mary Wyer, principal investigator of the project and an associate professor of psychology at NC State. "People are complex. How does engineering fit into one's identity as a man, woman, straight, gay, white, black, Asian, Hispanic, Native American, or any combination of those or other characteristics?"

In 2020, the researchers will begin phase three of the project, which involves conducting another round of qualitative interviews with the students who were interviewed in phase one. The phase three interviews will address whether the national survey results resonate with the students, as well as what their experiences have been during the intervening two years. Study participants will also be asked to record video diary entries when they experience bias, and submit those entries to the research team on a weekly basis.

"Going through all of this data, we will be looking for structural and organizational problems that may contribute to systemic bias," says Matthew Bahnson, a psychology Ph.D. student who is working on the project.

"We will also be looking for opportunities, over the course of the project, to engage with engineering educators to get their feedback on what we are learning," Wyer says. "This may help us identify examples of large and small changes that can be made to help students of all kinds feel like they are on equal footing," Bahnson says.

<https://news.ncsu.edu/2018/03/tackling-perceived-bias-2018/>