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UPDATE: BRBYTES RECEIVES ADDITIONAL $4 MILLION IN FUNDS

LSU Media Center

BATON ROUGE – An interdisciplinary team of LSU faculty and staff, in partnership with East Baton Rouge Parish School System, or EBRPSS, teachers and administrators have received an additional $4 million grant from the U.S. Department of Education. These funds will be used to improve and expand opportunities in computational thinking and computer science in five public school districts. With a total of $5 million in federal support, LSU will be able to expand the successful LSU Computing STEM Pathway from East Baton Rouge Parish to four additional parishes in rural Louisiana—Pointe Coupee, West Feliciana, Washington and Evangeline.

The initial $1 million grant from the National Science Foundation, or NSF, Computer Science for All program supports the project titled "BRBYTES: Baton Rouge: Bringing Youth Technology, Education and Success," which began Oct. 1. With an additional $4 million grant from the U.S. Department of Education, the team will also be able to further develop the curriculum for the 9th grade course, Introduction to Computational Thinking, and be able to assess its effectiveness over the next five years. This course integrates teaching the fundamentals of computing and programming while reinforcing mathematics content in a project-based setting.

LSU was among 41 recipients nation-wide to be awarded the U.S. Department of Education's Education Innovation and Research, or EIR, grant. The LSU team scored fifth amongst the 27 awards granted in the early-phase Science, Technology, Engineering and Math, or STEM, category of proposals, just behind the Smithsonian Institution, Code.org, Massachusetts' Education Development Center and Old Dominion University Research Foundation in Virginia.

"Everybody on our team is passionate about providing opportunities for all students in EBRPSS and throughout Louisiana to engage in high-quality computing courses. The Department of Education award will allow us to study the effect of LSU Computing STEM Pathway curriculum in student math scores, accumulation of computer science and advanced math credits, and graduation rates," said Juana Moreno, associate professor in the LSU Department of Physics & Astronomy and the LSU Center for Computation & Technology, who is the principal investigator of both projects.

A recent report by the National Science & Technology Council's Committee on STEM Education identified building computational literacy and, in particular, making computational thinking, an integral part of all education in order to achieve the goals for American STEM education.

Moreno and her collaborators' plan encompasses several strategies to grow computational literacy and computational thinking in public schools. Her team has developed a five-year plan for introducing computing in all EBRPSS middle and high schools, where every student takes at least one computing course in grades 6th-12th. To lay the foundation, they will increase the awareness among principals, counselors and parents about careers in computing and the importance of equity in the recruiting and advising of students in this area.

The team will develop new courses and expand existing ones in computational thinking and computer science for 7th to 10th grade students.

"The LSU Computing STEM Pathway is designed to foster students understanding on how the 'Big Ideas in Computing' are relevant to their lives, so, they are well-informed citizens in our digitally-driven world," said Fernando Alegre, LSU Gordon A. Cain Center research associate and co-principal investigator.

LSU researchers will work closely with EBRPSS practitioners using the Research Practitioner Partnership model to increase the number of minority teachers who are willing and ready to teach computing courses as well as encourage the use of culturally responsive practices and pedagogies to inspire underrepresented groups.

"Our team is committed to promoting equity and to attracting more students from historically disadvantaged groups into computing fields," said Lori L. Martin, LSU Department of Sociology and African & African American Studies professor and co-principal investigator.

Beyond Baton Rouge

"With this federal support, we will offer Introduction to Computational Thinking, a cornerstone course in the LSU STEM Pathways, in 10 East Baton Rouge public high schools and seven rural public schools serving about 2,270 students total. The impact of the LSU STEM Pathways, which besides computing also includes pre-engineering, digital design and emergent media and biomedical sciences high school courses, will be transformational for Louisiana," said Frank Neubrander, interim executive director of the LSU Gordon A. Cain Center and co-principal investigator on the EIR grant.

The development of the Introduction to Computational Thinking curriculum started four years ago at EBRPSS Lee Magnet High School. The number of students taking the course grew from 200 students in 2017-2018 to 400 and now this year, enrollment is close to 700 students. The Department of Education's EIR grant will help the educators evaluate and improve this class within the standards of the U.S. Department of Education "What Works Clearinghouse."

In addition, the educators will refine the curriculum to better align it with math standards and make it more culturally relevant. In order to better serve the distant rural school districts, the project leaders will offer portions of the teacher training online.

"LSU is invested in computing education at many levels. In a related project, also funded by the U.S. Department of Education, we are piloting a new undergraduate course on computer science teaching methods taken by future teachers. With this course, we use the Introduction to Computational Thinking curriculum as an example of innovative curricula developed with the computing for all philosophy in mind," said David Kirshner, LSU Gordon A. Cain Center associate director and co-principal investigator on the project.

"With the continued and expanded partnership with LSU, our teams will further continue to collaborate to make the East Baton Rouge Parish School System a role model for computing education in Louisiana. We expect more districts to join us in the near future as we expand 21st century learning opportunities for our students," said Ben Necaise, East Baton Rouge School System associate superintendent and co-principal investigator.

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Center for Computation & Technology
2003 Digital Media Center • Telephone: +1 225/578-5890 • Fax: +1 225/578-8957