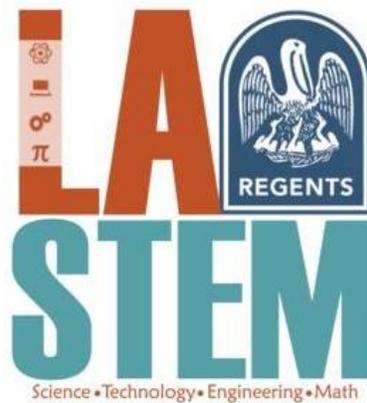


**LOUISIANA SCIENCE, TECHNOLOGY, ENGINEERING
AND MATHEMATICS (LaSTEM) ADVISORY COUNCIL
STATUS REPORT TO THE LOUISIANA
SENATE AND HOUSE COMMITTEES ON EDUCATION**



LOUISIANA BOARD OF REGENTS

JANUARY 2020

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Executive Summary

ACT 392 of the 2017 Regular Session, authored by Senator Sharon Hewitt, commissioned the Louisiana Science, Technology, Engineering, and Mathematics Advisory Council (LaSTEM). Under the auspices of the Louisiana Board of Regents, the LaSTEM Advisory Council is tasked to do the following:

- Coordinate and oversee the creation, delivery, and promotion of STEM education programs;
- Increase student interest and achievement in the fields of STEM;
- Ensure the alignment of education, economic development, industry, and workforce needs; and
- Increase the number of women who graduate from a postsecondary institution with a STEM degree or credential.

The Council is chaired by the Commissioner of Higher Education, and is comprised of 29 members including Louisiana State University, University of Louisiana, Southern University, and Louisiana Community and Technical College System presidents, the Superintendent of Education, representatives from the Louisiana Association of Independent Colleges and Universities (LAICU) and its ten member colleges and universities, the Louisiana Board of Elementary and Secondary Education (BESE) representative, various teacher and educator association presidents, Governor's Office appointees, faculty appointees, Louisiana Department of Economic Development (LED) appointees, the Louisiana Workforce Investment Council president, members of the Louisiana House and Senate, and business representatives.

As required by Act 392, this report provides an update on the work of the Council, emerging initiatives, and recommendations for legislation and policy changes. The LaSTEM Council was required by law to meet every month for the first year, beginning in September 2017, and did so until October 2018. The Council began quarterly meetings beginning in February 2019. An executive leadership team of representatives from the Louisiana Board of Regents, Louisiana Department of Education, Louisiana Economic Development, and Senate met monthly beginning

in September 2019 to handle all business between quarterly meetings. This year of hard work and success, outlined in this report, culminated with the annual Louisiana STEM Summit in November 2019, held at the Raising Cane's River Center in Baton Rouge, Louisiana. The Summit brought together 500 attendees from across the state and representing all constituencies with an interest in STEM and STEM education.

List of Acronyms

BESE	State Board of Elementary and Secondary Education
BoR	Louisiana Board of Regents
LDOE	Louisiana Department of Education
LaSTEM	Louisiana Science, Technology, Engineering and Math
LAICU	Louisiana Association of Independent Colleges and Universities
LEA	Local Education Authority
LED	Louisiana Economic Development
NICERC	National Integrated Cyber Education Research Center
STEM	Science, Technology, Engineering, and Mathematics

Part I: Introduction

This report, filed pursuant to Act 392 of the 2017 Regular Session of the Louisiana Legislature, highlights the significant progress that the LaSTEM Advisory Council made in 2019. The law provides a list of tasks for the LaSTEM Advisory Council, including:

- Create a comprehensive, statewide STEM plan that contains clear objectives to guide the development of STEM education and STEM career opportunities and aligns elementary, secondary, and postsecondary STEM curricula, programs, initiatives and activities;
- Coordinate all state STEM education-related programs and activities;
- Create a new STEM culture and promote activities that raise awareness of STEM education and STEM career opportunities;
- Integrate employers and educators by engaging business and industry, employers, professional and community-based organizations, STEM education stakeholders, and career and talent programs and activities;
- Encourage industry and business entities to provide funding, resources, and technical assistance to elementary, secondary, and postsecondary schools to promote interest in STEM discipline courses and career opportunities;
- Connect STEM education resources, initiatives, and programs regionally and throughout the state;
- Establish an information clearinghouse, to be housed at the Board of Regents, to identify and provide best practice resources for both the secondary and postsecondary educational systems and to review and acquire STEM education-related instructional materials;
- Empower STEM teachers and provide support for high-quality professional development for teachers of STEM subjects;
- As appropriate, join and participate in a national STEM network and collaborate with other states in STEM education program development; and

- Establish a competitive grants program to fund robotics competitions to provide students at all appropriate grade levels opportunities to improve STEM skills by participating in events sponsored by science and technology development programs.

The Council and Subcommittees developed this broad-based charge from Act 392 into five goals that guide the work of the Council and creation of the Regional STEM Centers (discussed in Part II). The LaSTEM Council goals are:

- **LaSTEM Goal 1:** Create a culture that advances STEM excellence; promotes the value of STEM education; advances the perspective that STEM principles are woven into every aspect of daily life; and increases the STEM literacy of the population such that Louisianans have the ability to compete and excel in the global economy.
- **LaSTEM Goal 2:** Promote STEM-oriented integrative and experiential learning activities starting in early childhood and extending through adulthood.
- **LaSTEM Goal 3:** Improve the size, alignment, level of mastery, and diversity of the pipeline of workers well qualified for specific high-priority STEM jobs, particularly expanding access to high-quality STEM education and employment opportunities for women, rural populations, people with special needs, underrepresented communities, and other target populations.
- **LaSTEM Goal 4:** Remove barriers that prevent education systems from recognizing STEM coursework for diploma requirements and postsecondary opportunities and responding to emerging STEM needs.
- **LaSTEM Goal 5:** Create a clear set of metrics, an accountability framework, and a funding and sustainability protocol to ensure the success of the Council’s work.

The Council set ambitious and purposeful goals and intends to begin the establishment of Louisiana Regional STEM Centers and Regional STEM Directors throughout the 2020 calendar year. The following section will focus on the great success that the LaSTEM Council has achieved in its second full year.

Part II: A Successful Year of Engagement in STEM Education in Louisiana

Advisory Council Meetings

During the 2019 quarterly meetings, the LaSTEM Council explored and discussed Regional STEM Centers and Regional STEM Directors. Also, the LaSTEM Council hosted STEM organizations and STEM Champions to present the exciting ongoing work around the state and opportunities for growth and development. These presentations and discussions occurred at the following quarterly meetings:

- **February:** Louisiana Workforce Commission and LED Workforce Gap Analysis
- **June:** NICERC and the Cyber Innovation Center
- **August:** Regional STEM Centers and Regional STEM Directors
- **November:** LDOE and the Chief Science Officers International Program

Subcommittees and Workgroups

As discussed in the 2019 status report, the work of the Council is largely divided into three subcommittees: PK-12 Education and Teacher Training, Postsecondary – High School, and Workforce. All workgroup and subcommittee efforts are overseen and coordinated by the LaSTEM Program Manager, Dr. David Lafargue. Subcommittees identified and defined SMART objectives, steps to implementation, and timelines for implementation. Some objectives were completed throughout the year while others are ongoing.

Two workgroups were created in November 2019. One group was tasked with assessing the establishment process of Louisiana Regional STEM Centers and Regional STEM Directors and creating request for proposal (RFP) documents to present to the LaSTEM Advisory Council in early 2020. The second group was charged with assessing opportunities for the promotion and awareness of Jump Start STEM Pathways and creating a statewide plan for Council review.

STEM Activities and Accomplishments

The second year of work for the LaSTEM Council included both successes of the Council itself and of the entities that make up the 29-member group. The following sections will highlight that work and the organizations and agencies that were vital to its success.

STEM Signing Day

On May 11, 2019, a STEM Signing Day, sponsored by Boeing, Chevron, and Tallo, was held at the National World War II Museum in New Orleans. During this inaugural event, twenty-three high school students signed letters of intent to study STEM fields at community colleges and universities. Signing days enable companies such as Boeing to recognize the hard work and commitment of students demonstrating great potential. Boeing has expanded its support of STEM Signing Days to ten cities throughout the nation, and this year more than 450 students committed to pursuing STEM degrees at these events.

Regional STEM Summits

Regional summits consisting of key stakeholders were held in late 2018 and 2019 across Louisiana. The purpose of the regional summits was to identify current and potential economic drivers of the region's economy, regional short-term and long-term aspirations, existing resources and new resources needed, and the planned coordination between the Regional STEM Centers and the LaSTEM Advisory Council to accelerate regional progress. These successful summits were held in the Southwest region in November 2018, Northshore region in March 2019, Northwest/Northeast region in June 2019, and Capital and Southeast regions in October 2019. The meetings were beneficial as they brought stakeholders together to focus on the items listed above. Many of the same needs were identified at each regional summit, such as the need for regional and statewide communication, coordination, and support. It was evident that these urgent needs must be prioritized as part of the establishment of Regional STEM Centers and engagement of Regional STEM Directors.

LaSTEM Annual Summit

The 2019 LaSTEM Annual Summit was held on November 7, 2019, at the Raising Cane's River Center in Baton Rouge, Louisiana. The purpose of this event was to showcase many of the dynamic Science, Technology, Engineering and Math programs Louisiana has to offer and the talented individuals who are invested in this work. A total of 500 stakeholders across Louisiana registered for this year's event. Commissioner of Higher Education Kim Hunter Reed delivered opening comments along with Senator Sharon Hewitt, Louisiana Economic Development Deputy

Secretary Brad Lambert, and Baton Rouge’s Mayor-President Sharon Weston Broome. Successful breakouts covering fifteen different sessions focusing on STEM outreach, STEM strategies and curriculum, STEM ecosystems, STEM school and industry partnerships, and STEM impact took place before lunch. Dr. Jeff Weld, Executive Director for the Iowa Governor’s STEM Advisory Council, delivered the keynote speech on the topic of implementing a statewide STEM network to optimize communication, resources, and support for STEM efforts in the state of Iowa. Regional breakout sessions were held to discuss implications of a statewide model, followed by a final session with Dr. Weld focused on specific implementation questions and closing comments.

Many organizations including Boeing, Dow, the REC Foundation, the Baton Rouge Mayor’s Office, First Robotics, Project Lead the Way, NASA, AT&T, Sivad, Girls Who Code, and the Cyber Innovation Center sponsored and/or attended the Summit. A survey of participants will help to inform planning for the 2020 event. Results showed a clear appreciation of the strong content provided, improved location, and professional volunteers. The student participation, showing their robots and discussing the critical thinking and coding necessary for success, was again the big highlight.

New STEM Jump Start Graduation Pathways

Four additional STEM-related Jump Start graduation pathways were approved by BESE in 2019. BESE approval of the Biomedical, Pre-Pharmacy, Pre-Engineering, and Cyber Security graduation pathways brings the number of Louisiana Jump Start STEM graduation pathways to eight and the total Jump Start graduation pathways to 55. The Jump Start STEM pathways began as a pilot group and has now expanded to 41 Local Education Agencies (LEAs), including charter schools and non-public schools, with 82 schools participating in at least one STEM Jump Start graduation pathway. As an example of participation, there were 2,757 students enrolled in four LSU STEM pathways in 2019. We look forward to growth and expansion across other regions throughout Louisiana. Upon completion, students receive a STEM workforce credential as part of their career or university preparatory diploma experience. Any Jump Start regional team can adapt or adopt these graduation pathways.

STEM Endorsed High School Diploma

At its October 2018 meeting, BESE voted to approve STEM diploma endorsement options for high school students. The endorsement was a direct result of language from Act 392 and includes two options:

- A silver seal on the diploma, which indicates a student has successfully completed a subset of required courses within a BESE-approved Jump Start STEM pathway; or
- A gold seal on the diploma, which indicates a student has successfully completed all courses that comprise a BESE-approved Jump Start STEM pathway.

A list of courses required to receive the endorsement is currently available on the LDOE website. Annually, prior to the beginning of the school year, LDOE will publish an updated list of courses required to receive the STEM endorsement. It is anticipated that the first large group will be awarded STEM diploma seals in May 2021. Going forward, the Council plans to continue expanding upon endorsement options to make seals available to a wider range of students, as well as encouraging students and school districts to actively pursue the seals.

Part III: Policy/Funding Recommendations and Summary

Regional STEM Centers and Regional STEM Directors

The gathering of regional stakeholders and the discussion of the creation of Regional STEM Centers was the primary focus of the LaSTEM activities in 2019. These Regional STEM Centers and associated Regional STEM Directors will need funding to launch. In February 2020, the Council will review and discuss proposed documents originating from the extensive work of the Regional STEM Center/Director workgroup and the leadership team, with feedback from regional and statewide stakeholders. The draft request for proposals (RFP) and associated documents outlining the structure and expectations of Regional STEM Centers will include a competitive cost-sharing program. If approved by the Council, Regional STEM Centers will be selected through a competitive process. Each Regional STEM Center may require a Regional STEM Director, administrative assistant, office space, and related expenses associated with daily work obligations as part of the cost-sharing agreement. While some regions may have the infrastructure to begin this work, most will need state and/or private support to create and sustain their Centers. All work of the Regional STEM Centers and Directors will be overseen by and coordinated with the LaSTEM Advisory Council and the LaSTEM Program Manager.

Many of the organizations that have presented to the LaSTEM Advisory Council, members of the Council, industry partners, and educational partners have indicated that they would benefit, and in most cases require, financial support from the LaSTEM Council. Indeed, other statewide STEM Councils, including those in Iowa, Idaho, Tennessee, and Nevada, provide competitive yearly supplemental funds to STEM organizations, teachers, and students. These councils receive yearly legislative appropriations from their respective state governments, as well as federal grants. To compete on a national scale, then, the LaSTEM Council needs substantial and sustained resources, as well as additional staffing to assist with federal grant writing and to accelerate the success of this critical work.

Summary

As part of Act 392 of the 2017 Regular Session of the Louisiana Legislature, the ongoing work of the LaSTEM Advisory Council continues to advance STEM efforts in Louisiana. Events such as the Regional STEM Summits and the statewide LaSTEM Annual Summit have allowed champions for STEM to discuss regional and statewide needs, showcase best practices, and network with key stakeholders. The addition of STEM Jump Start graduation pathways and STEM endorsed high school diplomas was a result of collaborations among educational and economic partnerships with support from the Council. The achievements in raising awareness and promoting STEM pathways for Louisiana would not have been possible without the collective efforts of those involved and the Council's coordination.

Leadership provided by the LaSTEM working groups and subcommittees continues to set the stage for establishing Regional STEM Centers. Establishing these Centers is vital to creating a statewide STEM network to share resources, communicate best practices, strengthen educational and business/industry partnerships, meet the needs of tomorrow's workforce, and elevate Louisiana as a leader in STEM. It is the hope and desire of the LaSTEM Advisory Council that all stakeholders understand and support the value and impact of the LaSTEM initiatives for Louisiana in 2020 and beyond.