

FINAL VERSION

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



LOUISIANA BOARD OF REGENTS

JANUARY 2018

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Part I: EXECUTIVE SUMMARY

ACT 392 of the 2017 Regular Session commissioned the Louisiana Science, Technology, Engineering, and Mathematics Advisory Council (LaSTEM). Under the auspices of the 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,
- 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, Superintendent of Education, Representatives from the LA Association of Independent Colleges and Universities (LAICU) and its ten member colleges and universities, the LA Board of Elementary and Secondary Education (BESE) representative, various teacher and educator association presidents, Governor's office appointees, faculty appointees, LA Department of Economic Development appointees, the LA Workforce Investment Council president, members of the LA House and Senate, and business representatives.

The LaSTEM Advisory Council is required by law to meet monthly for the first year. Since its first meeting in September 2017, the Council has reviewed the current landscape of existing and emerging STEM initiatives, established subcommittees and workgroups, as well as quarterly and annual milestones. The work of the Council has been divided into 3 main Subcommittees: PK-12 Education and Teacher Training, High School-Postsecondary Education, and Workforce training. The Council was created with no legislative appropriation or private donations attached. The primary author of the bill, Senator Sharon Hewitt, is spearheading the fundraising efforts.

As required by Act 392, this report provides an update of the work of the Council, emerging initiatives, and recommendations for legislation or policy changes.

LIST OF ACRONYMS

LaSTEM	Louisiana Science, Technology, Engineering and Math
LAICU	Louisiana Association of Independent Colleges and Universities
FIRST	For Inspiration and Recognition for Science and Technology
BESE	State Board of Elementary and Secondary Education
LDOE	Louisiana Department of Education
CSRA	Computer Sciences Corporation and Systems Research and Applications International
NICERC	National Integrated Cyber Education Research Center
BoR	Louisiana Board of Regents
CTEP	Certified Teacher Education Program
IB	International Baccalaureate
COSBP	Council of Student Body Presidents (BoR Statewide Initiative)
LOSFA	Louisiana Office of Student Financial Aid (BoR Statewide Initiative)
LOUIS	The Louisiana Library Network (BoR Statewide Initiative)
CIP-SOC	Classification of Instructional Programs – Standard Occupational Classification
STAR	Point system for rating jobs
OFC	Occupational Forecast Conference
B&I	Business and Industry
IBC	Industry Based Certificate
LED	Louisiana Economic Development

INTRODUCTION

This report, filed pursuant to ACT 392 of the 2017 Regular Session of the Louisiana Legislature, highlights the progress that the LaSTEM Advisory Council has made in just four months since inception. The law provides a list of tasks for the LaSTEM Advisory Council. As funding allows, the Council shall:

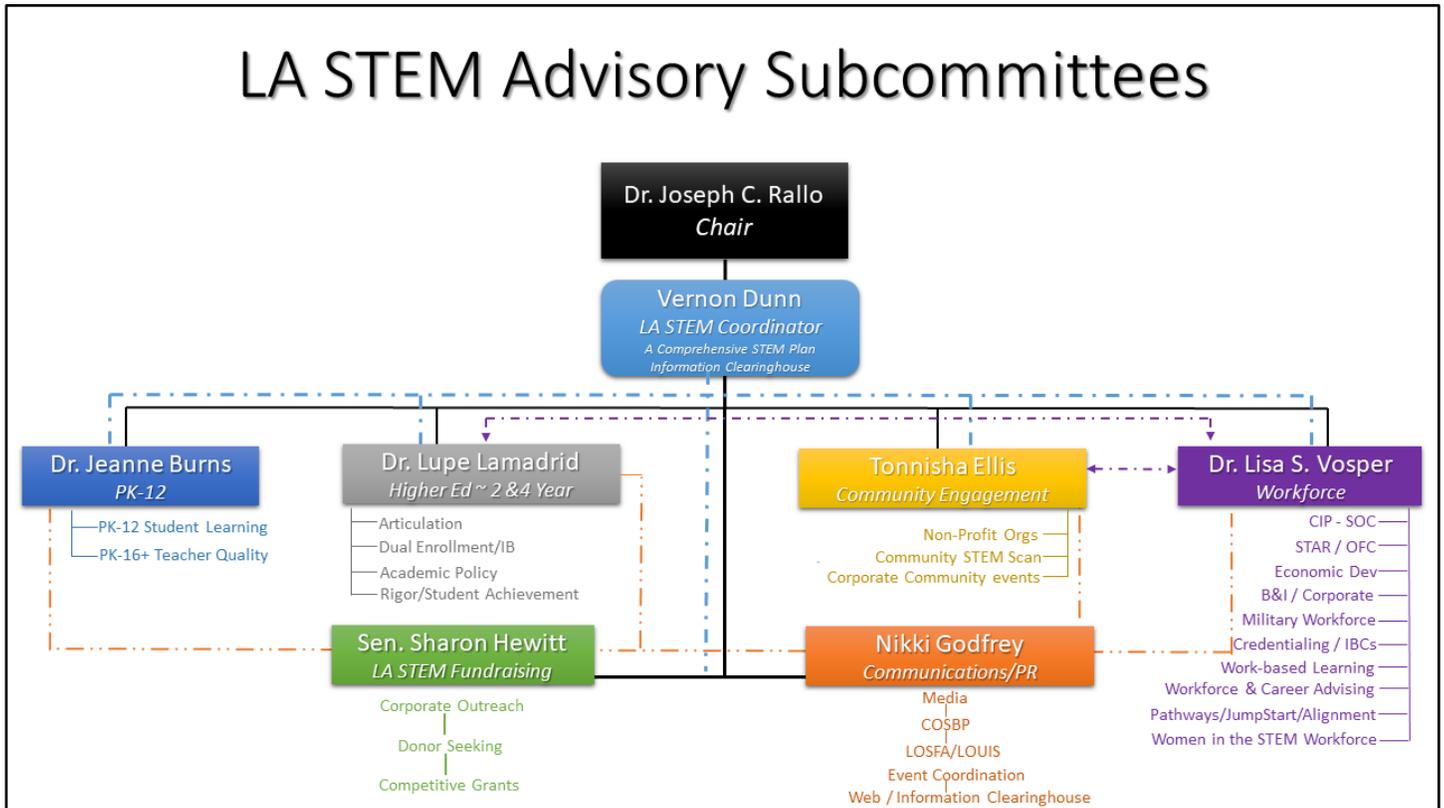
- Create a comprehensive, statewide STEM plan that contains clear objectives to guide the development of STEM education and STEM career opportunities and aligns elementary, secondary, and postsecondary STEM curricula, programs, initiatives and activities ,
- Coordinate all state STEM education-related 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, and other stakeholders in STEM education 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 a science and technology development program known as FIRST (For Inspiration and Recognition for Science and Technology) Robotics.

The legislation also outlines rules for meeting, funding, and creating a STEM diploma endorsement. The Council shall meet monthly for the first year, quarterly for successive years, and at such other times as called by the Chairman. The STEM Education Fund was created in the state treasury for the purpose of conducting student-focused, project-based, programs and competitions in STEM subjects, including robotics, coding, and design-build test projects in grades pre-kindergarten through college level.: The source of monies deposited into the fund shall be legislative appropriations and is exclusively for programs and initiatives prescribed by the Council. In addition, a separate account within the fund shall be established by the treasurer for the deposit of grants and donations received. Lastly, The Council will consult with BESE and the Louisiana Department of Education (LDOE) to create a STEM diploma endorsement that recognizes high school students that exhibit superior academic achievement in STEM fields.

With this charge in mind, the LaSTEM Advisory Council created a structure to manage the efforts of the Council (Figure A). Five general Subcommittees were established: PK-12, Higher Ed: 2- & 4-year, Community Engagement, Workforce, Communications/PR and Fundraising and Sustainability. After the first meetings of the Council, it was determined that due to the significant overlap of the work in high school and higher education that the Higher Ed: 2- & 4-year Subcommittee would become the High School and Postsecondary Ed Subcommittee.

FIGURE A: LaSTEM Advisory Council Subcommittees



Part II: BUILDING A ROADMAP FOR STEM EDUCATION IN LOUISIANA

After an initial review of some of the existing and emerging STEM initiatives in Louisiana, the Council set quarterly and annual milestones for the first year. In months 1-3, the Council did an environmental scan of all the “pockets” of STEM programs, foundations, ecosystems, and professional development opportunities available to Louisiana residents. Although the list is not exhaustive, it does capture the many of the STEM initiatives that Louisiana already has to offer. This environmental scan will provide the foundation for the “Information Clearinghouse” that will be a highlight of the LaSTEM website that is in development.

A few of the programs and organizations identified in the scan were given the opportunity to give a brief presentation to the Council at its monthly meetings. The presentations or “STEM Showcase” allowed the groups to highlight their successes in Louisiana, and talk about some challenges they’ve encountered as well as their plans for expansion should funding allow. The groups that have given presentations include:

- **September:** (Review of LaSTEM charge and statewide STEM Initiatives)
- **October:** FIRST Robotics
- **November:** CSRA (a merger of the former Computer Sciences Corporation and Systems Research and Applications International), Bossier Parish Community College, Northwestern State University of Louisiana and Louisiana Tech University Partnership
- **December:** Cyber Innovation Center (Bossier Parish, LA) and their National Integrated Cyber Education Research Center (NICERC)
- **January:** Operation Spark

The LaSTEM Advisory Council has also begun developing a plan to create a STEM culture and expectations in Louisiana by establishing its vision, and defining its goals, STEM definition, and STEM Literacy definition.

- **Vision:** *To create a STEM culture in Louisiana where every citizen is prepared to be successful in their daily lives and Louisiana is positioned as the go-to state for STEM talent.*

- **Goals¹:**
 - Create a culture that advances STEM excellence and promotes the value of STEM education.
 - Advance the perspective that STEM principles are woven into every aspect of daily life and not to be feared.
 - Increase the STEM literacy of the population such that Louisianans have the ability to compete and excel in the global economy.
 - Promote STEM-oriented integrative and experiential learning activities starting in early childhood and extending through adulthood.
 - Improve the size, alignment, level of mastery, and diversity of the pipeline of workers well-qualified for specific high-priority STEM jobs.
 - Develop a comprehensive communication strategy that helps to demystify STEM & build positive perspectives about STEM-intensive careers.
 - Expand access to high quality STEM education and employment opportunities for women, rural populations, people with special needs, underrepresented communities and other targeted populations.
 - Remove barriers that prevent education systems from recognizing STEM coursework for diploma requirements and postsecondary opportunities and responding to emerging STEM needs.

- **STEM:** For the work of the LaSTEM Advisory Council, Science, Technology, Engineering and Math (STEM) includes Natural Sciences, Computer Science (Information Technology), Engineering, Engineering Technology, and Mathematics. STEM may include many programs in other fields. The LaSTEM Advisory Council will establish a mechanism for review and approval and will publish an annually updated list of STEM programs by CIP (Classification of Instructional Programs) Code and other classifications as appropriate.

¹ This initial list of goals was approved by the Council at the December meeting. As progress is made, it will be updated appropriately as the Subcommittees refine the objectives of the Council.

- **STEM Literacy:**
 - STEM literacy is ensuring that everything that a student learns requires them to universally apply a set of core cognitive competencies²:
 - Critical thinking
 - Complex problem solving
 - Deductive and inductive reasoning
 - Problem sensitivity (understanding a problem exists)
 - STEM literacy requires that at graduation, a student possesses:
 - The ability to apply the cognitive competencies to problems arising in the workplace and in daily life
 - A baseline knowledge of core concepts in STEM fields
 - Proficiency in the use of common technology tools
 - The ability to effectively communicate complex ideas and concepts to diverse audiences
 - A habitual orientation toward adapting to change and learning independently
 - Qualities essential to modern life: reacting to failure with resilience, persevering through challenges, and innovating consistently and effectively

The next steps for the Council and Subcommittees are to identify SMART Objectives, current status of Louisiana STEM education related to those objectives, actions needed, success indicators, and a timeline for implementation. The January meeting consisted of a report out from the Workforce Initiatives Subcommittee as well as an update on the SMART Objectives of the PK-12 Education Subcommittee.

² Source: Georgetown Center on Education and the Workforce (GCEW)

Part III: SUBCOMMITTEE SUMMARIES AND RECOMMENDATIONS

The PK-12 Education Subcommittee reported out to the Council at the November meeting, the High School-Postsecondary Education Subcommittee reported out at the December meeting, and the Workforce Subcommittee reported out at the January Meeting. The following section highlights the work of those subcommittees to date.

PK-12 Education and Teacher Training (PK-12 Education)

The LaSTEM PK-12 Education and Teacher Training (PK-12 Education) Subcommittee used a multi-step process to develop draft SMART Objectives for the LaSTEM Advisory Council. The subcommittee members first identified questions that needed to be answered regarding STEM education for PK-12 teachers and PK-8 students. After Subcommittee members identified questions, the questions were shared with the full LaSTEM Advisory Council on November 28, 2017, and council members were asked to identify additional questions and identify potential outcomes for the identified questions. The Subcommittee then divided the questions into three groups and formed the following subgroups to have deeper discussions about the questions: Subgroup 1: Pipeline of Teachers; Subgroup 2: Integrative and Experiential Learning; and Subgroup 3: Access to High Quality STEM Education. The subgroups then met electronically to draft SMART Objectives that contained the objectives, status of the content of the objective, actions needed to address each SMART Objective, indicators that would demonstrate success, and timelines to implement the SMART Objectives. Once the draft SMART Objectives were developed by each subgroup, all SMART Objectives were shared with all Subcommittee members and the additional input was used to revise the draft SMART Objectives. On January 10, 2018, the Subcommittee shared the 12 draft SMART Objectives they had created for Goal 4, Goal 5, Goal 6, and Goal 7 with the full LaSTEM Advisory Council and requested feedback. Timelines for the SMART Objectives were provided for short and long-term outcomes.

Data were examined by the Subcommittee members, and it was determined that the 2016-17 LDOE Educator Workforce Report indicated that of 18,751 total math classes taught in public school in Louisiana, 1,953 (10%) were being taught by out-of-field teachers and 1,444 (8%) were being taught by uncertified teachers. The same report indicated that of 14,896 total science classes taught in public schools in Louisiana, 1,876 (13%) were taught by out-of-field teachers and 1,051 (7%) were taught by uncertified teachers. While all regions had needs, the greatest needs for mathematics were the northern and central regions and the greatest need for science was the central region of the state. When examining the number of new teachers being prepared through undergraduate and post-baccalaureate programs by university and non-university providers, it was found that an insufficient number of new mathematics and science teachers were being prepared to meet school and district needs. In some certification areas, very few candidates are pursuing certification in those areas. As an example, only two individuals completed programs for computer science certification in 2014-15 and 0 completed programs in 2015-16. Similar low numbers were found for physics with only three individuals completing programs in 2014-15 and 1 completing a program in 2015-16. These numbers reflect the number of individuals completing programs, but they do not indicate if a person actually taught in Louisiana. Candidates in many secondary undergraduate programs in Louisiana now obtain their degrees in a content area (e.g., Chemistry, Physics, etc.) in a College of Science with a minor in secondary education. Thus, they can pursue many different types of jobs in addition to teaching when they graduate. It was the conclusion of the Subcommittee that a variety of incentives for new and existing teachers need to exist to have a sufficient number of certified teachers to teach STEM classes in Louisiana's public schools.

The Subcommittee also determined that the Louisiana Department of Education is currently working with other states to develop a science curriculum for 6-8 grade students that will be aligned with Louisiana's new science standards. Plans exist to develop a science curriculum for other grade levels once the grades 6-8 curriculum is piloted and implemented. Districts may choose to use the Louisiana science curriculum or a different curriculum that meets their needs in the future. It was the conclusion of the Subcommittee that needs exist for PK-12 students,

pre-service teachers, and in-service teachers to have access to materials, resources, professional development and support to effectively integrate STEM-oriented integrative and experiential learning activities into schools in Louisiana. A need also exists to demystify STEM education.

Thus, 12 SMART Objectives have been developed by the Subcommittee for further discussions by the LASTEM Advisory Council that address the following:

1. Reducing the percentage of math and science classes statewide in public schools being taught by teachers who are not certified in the areas in which they are teaching.
2. Offering incentives to increase the number of individuals who complete teacher preparation programs and teach computer science and physics in Louisiana schools.
3. Recommending to the LDOE/BESE needed policy changes pertaining to mathematics and science areas of initial and add-on teacher certifications.
4. Building and field testing an open source curriculum that contains integrative and experiential learning activities for grades 6-8 students that will be aligned to Louisiana's science standards.
5. Developing a website with unique Louisiana phenomenon aligned to the Louisiana science standards.
6. Creating and publishing a STEM Guidebook which will provide Louisiana educators information regarding STEM education.
7. Implementing strategies that can be replicated in regions across the state to demystify the STEM field for PK-8 students and their teachers.
8. Providing initial and ongoing professional development to teachers, teacher leaders, educational leaders, and other educators who use the science curriculum developed by educators from Louisiana and other states.
9. Providing science teachers with the materials required to successfully implement integrative and experiential learning activities within the science curriculum adopted by local school districts.

10. Identifying and training Science Teacher Leaders to lead and support peers in schools in Louisiana.
11. Identifying and supporting STEM focused competitions (e.g., robotics) that involve professional development for teachers and experiential learning for students.
12. Adapting teacher preparation curriculums to address integrative and experiential learning within the new grades 6-8 science curriculum developed for Louisiana.

High School-Postsecondary Education

The issue of STEM attainment at the Postsecondary level is multi-layered and begins well before the student is admitted to their post-secondary institution. The Postsecondary Subcommittee of the LaSTEM Council agreed at its first meeting in October, 2017, that any substantive expansion to STEM attainment at the post-secondary level would need to include foundational intervention at the secondary level. The Post-Secondary Subcommittee thus identified present shortcomings that have impacted the growth of student majors and graduates in STEM fields. Currently, only 8% of students in the State are STEM eligible according to ACT's yearly summary report of the performance of Louisiana students, it is critical that any future initiatives in STEM attainment consider how to increase the pipeline of eligible students. Given this current status, the Post-Secondary Subcommittee identified opportunities throughout the secondary to post-secondary pipeline where deliberative collaboration and targeted resources could potentially impact student performance in STEM attainment. These were presented to the LaSTEM Council at the December, 2017 meeting. The Subcommittee then collaborated electronically to cull these opportunities into 10 SMART Objectives.

The Postsecondary Subcommittee identified 10 SMART Objectives addressing:

1. The identification of CIP codes to be considered under Louisiana's STEM designation,
2. Strengthening the secondary to postsecondary pipeline of students into STEM majors and careers,
3. Setting up an advocacy infrastructure to support and sustain statewide STEM initiatives,
4. Supplementing and incentivizing STEM activities for both teachers and students,

5. Ensuring STEM related policies are relevant and innovative,
6. Collaboration with LDOE to identify high quality STEM pipeline activities where students can receive high school credit or a diploma in recognition of these efforts,
7. Adjusting the high school core to include more STEM related courses and/or high quality activities,
8. Differentiating salary lines for secondary and post-secondary faculty who teach high level and high demand STEM curricula,
9. Creating experiential pathways/agreements with business and industry for secondary and postsecondary students with focus on those careers in 4 and 5 star rated jobs,
10. Expansion and incentivizing professional development programs in the STEM fields.

Workforce

The area of Workforce for the LaSTEM Advisory Council included a comprehensive list of areas of focus in line with the requirements of the state legislation. Specifically, ACT 392 provides the following tasks the Council: 1) to coordinate and oversee the creation, delivery, and promotion of STEM education programs; 2) to increase student interest and achievement in the fields of STEM; 3) to ensure the alignment of education, economic development, industry, and workforce needs; and 4) to increase the number of women who graduate from a postsecondary institution with a STEM degree or credential. As such there was pretty significant overlap and coordination of efforts required with the other Subcommittees and with other initiatives in the state.

The Workforce Subcommittee's work centers around addressing the following statistics:

- 71% of American jobs in 2018 will require STEM skills.
- In the past 10 years, growth in STEM jobs has been three times greater than non-STEM jobs.
- 80% of the fastest growing occupations in the US depend upon mastery of mathematics and scientific knowledge and skills.
- 58% of Louisiana's 4- and 5-Star Jobs are STEM-intensive jobs.

This is a critical concern for workforce since in Louisiana only 10% of students meet the benchmarks necessary to be considered STEM-ready according to ACT. For females, the data are more challenging. Women make up 50% of the workforce, and 24% of the STEM workforce, while 50% of those drop out in the first 10 years.³ Women are losing ground in computer science degrees awarded: roughly 23% in 2004 and 17% in 2014. Further, according to My College Options, interest in STEM for girls at graduation is declining: from 16.2% in 2012 to 14.3% in 2018.

For African Americans, there is also a stark reality. The 2002 ETS Report entitled “Meeting the Need” was then projecting that 60% of the U.S. population increase would be among Blacks and Hispanics and that reaching workforce goals for the STEM disciplines could not occur without mobilizing achievement among those now underrepresented groups. They go on to say: “Together these facts make it clear that meeting our nation’s future economic needs will not be possible without improving the math and science achievement of underrepresented minorities. This report documents the extent to which minorities are represented in science and engineering occupations.”

More recently, a 2016 US news report stated, “Low minority workforce participation in engineering and STEM generally is driven by low numbers of African-American, Hispanic, American Indian and other underrepresented populations pursuing degrees in these fields. Since 2000, underrepresented minorities have earned just 12.9% of all bachelor's degrees in engineering – a number that has remained flat. The percentage of blacks among engineering degree candidates has actually been declining for more than a decade and was only 3.5% in 2014 – well below the 13.2% that represents parity for African-Americans. (US News May 2016)

It is highly likely that the situation is the same or worse in our state. Also, even more important is the fact that Louisiana’s population has the second highest proportion of African-Americans in the nation. Louisiana cannot significantly increase the STEM workforce without also focusing on moving the needle for African-Americans.

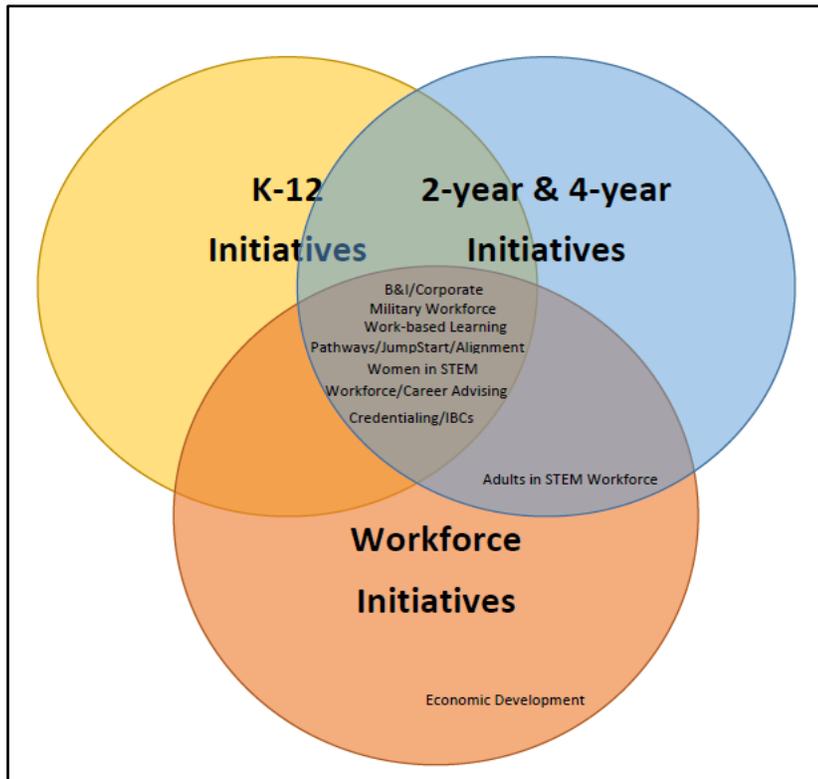
³ Million Women Mentors

The Workforce Subcommittee acknowledged the areas necessary to address the STEM workforce challenges. The following teams were established within the Subcommittee to address relevant issues:

- Business and Industry/Corporate/Economic Development
- Credentialing/Industry-based Certifications
- Workforce and Career Counseling
- Pathways/JumpStart/Alignment
- Work-Based Learning Efforts
- Women in the STEM Workforce
- Adults in the STEM Workforce
- Military Workforce

Selected fields aligned to occupations in healthcare and other industries will also be included for special emphasis, as identified by statewide and regional analyses and approved by the Council. The Subcommittee also recognized that significant workforce-related efforts, systems and resources exist that can undergird and support the work of the Subcommittee, including the State's CIP-SOC Crosswalk, which is under development; the Workforce Commission's STAR Rating System, and Workforce Investment Council's Occupational Forecast. In conjunction with the November LaSTEM Advisory Committee, the Workforce Subcommittee met and Council members and interested STEM Stakeholders volunteered or were drafted to serve on the respective teams. The Workforce Subcommittee designed **Figure B** to depict how its work overlaps and dovetails with the work of the other Subcommittees.

FIGURE B: LaSTEM Subcommittee Overlap by Workforce Initiatives

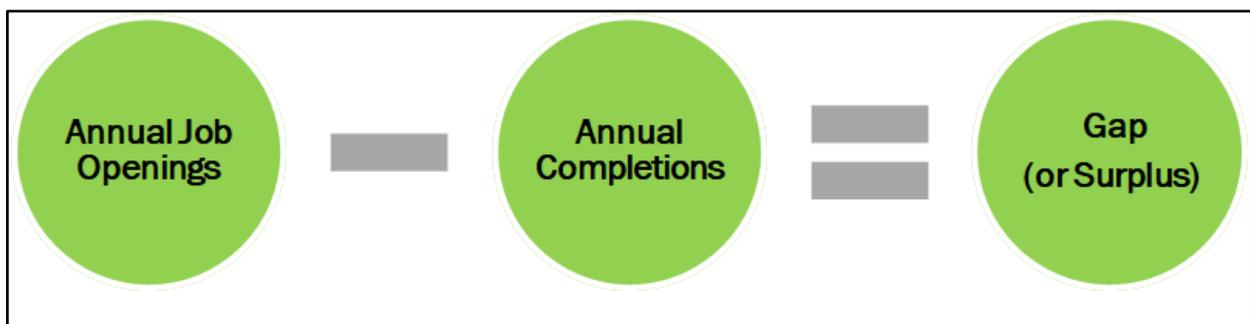


During the January LaSTEM Advisory Council meeting, the Workforce Subcommittee presenters concluded that:

1. Although STEM is not explicitly incorporated into the assessment of employer demand, highly-rated occupations are more likely to have strong STEM components.
 - a. Among all occupations in Louisiana, 40% have a positive STEM rating
 - b. Among 4- and 5-star occupations, 58% have a positive STEM rating
 - c. When considering the importance of STEM education and training within occupational classifications: there is a strong latent demand for STEM preparation.
2. Star Ratings reflect that there is unique regional demand.
3. STEM has important implications when considering workforce as a driver of economic growth.

4. Analyses identifying high-wage, high-demand jobs; economic driver jobs; and gaps between supply and demand must inform strategic decisions. See Figure C.
5. LED FastStart’s Tier Jobs Analysis identifies workers critical to economic driver industries and industries that provide essential services to our communities (FastStart is the workforce development division of Louisiana Economic Development)
 - a. Tier 1 (Economic Driver) Industries
 - i. Produce things of value and sell them outside the region
 - ii. Growth is limited primarily by availability and quality of workforce
 - iii. Wages are typically above average
Examples include: Manufacturing, Utilities, Industrial Construction, Software Development
 - iv. Tier 1 Jobs are 4- and 5-Star jobs employed in significant numbers by Tier 1 economic driver industries
 - b. Tier 2 Industries provide services essential to well-functioning, economically vibrant communities. Examples include: Healthcare, Education, Police and Fire Services. Tier 2 Jobs are 4- and 5-Star jobs employed in significant numbers by Tier 2 industries.
 - c. Tier 3 Jobs are all other 4- and 5-Star Jobs

FIGURE C: LED Formula for Determining Gap and/or Surplus



As depicted in [Figure C](#), LED FastStart’s Supply-Demand Gap Analysis compares demand for 4- and 5-star jobs (Annual Job Openings) to annual educational completers (Annual Completions) to determine a Workforce Gap (or Surplus). On behalf of the Workforce Subcommittee, LED

FastStart has completed an initial run of its Tier Jobs and Workforce Supply-Demand Gap Analysis based on 2017 employment projections approved by the Workforce Investment Council and 2017 completers of programs offered by all accredited Louisiana post-secondary institutions. These studies provide data to support LaSTEM's strategic focus on increasing completers in specific STEM fields, notably Computer Science, Cybersecurity and Data Analytics, Engineering and Engineering Technology, and skilled crafts relevant to industrial construction, production, and maintenance. Based on this, the Workforce Subcommittee is framing its SMART Objectives to move the needle in key STEM areas.

Community Engagement

The Community Engagement Subcommittee has assisted the LaSTEM management team with conducting a community scan of STEM related activities and initiatives statewide. This work includes engaging Non-Profit Organization and chronicling Corporate Community efforts. In this regard, the work of the Community Engagement Subcommittee supports the work of the Workforce Subcommittee

Communications and PR

The Communications and PR Subcommittee has the primary responsibility of messaging for the LaSTEM Advisory Committee. They coordinate media and media-related activities; manage all event coordination; facilitate the outreach efforts for LaSTEM with the Council of Student Body Presidents (COSBP), the Louisiana Office of Student Financial Assistance (LOSFA), and Louisiana Librarians Network (LOUIS). The Communications and PR Subcommittee is also responsible for designing the web presence and collateral information of the LaSTEM Advisory Council. The Website is currently under development.

Fundraising and Sustainability Subcommittee (Fundraising) of STEM initiatives

The Council has formed a small Subcommittee to spearhead fundraising and sustainability efforts, which is chaired by Senator Sharon Hewitt. Concurrently, the Communications and PR

Subcommittee has prepared marketing materials that will supplement any conversations with business and industry donors (Figure D). The LaSTEM Coordinator is also seeking federal grants from sources such as the National Science Foundation that will fuel pilot programs and supplement and ensure the longevity of existing STEM initiatives in Louisiana.

A comprehensive scan of existing STEM initiatives in Louisiana uncovered a wide array of successful and established STEM curriculum, after school programs, teacher training opportunities and other initiatives. The LaSTEM Communications and PR Subcommittee is in the process of building a website that will highlight all the amazing work being done in the state, identify the relationships with donors in different regions that have been successful, and identify the gaps that need further examination.

Figure D.1: Fundraising brochure (outside)

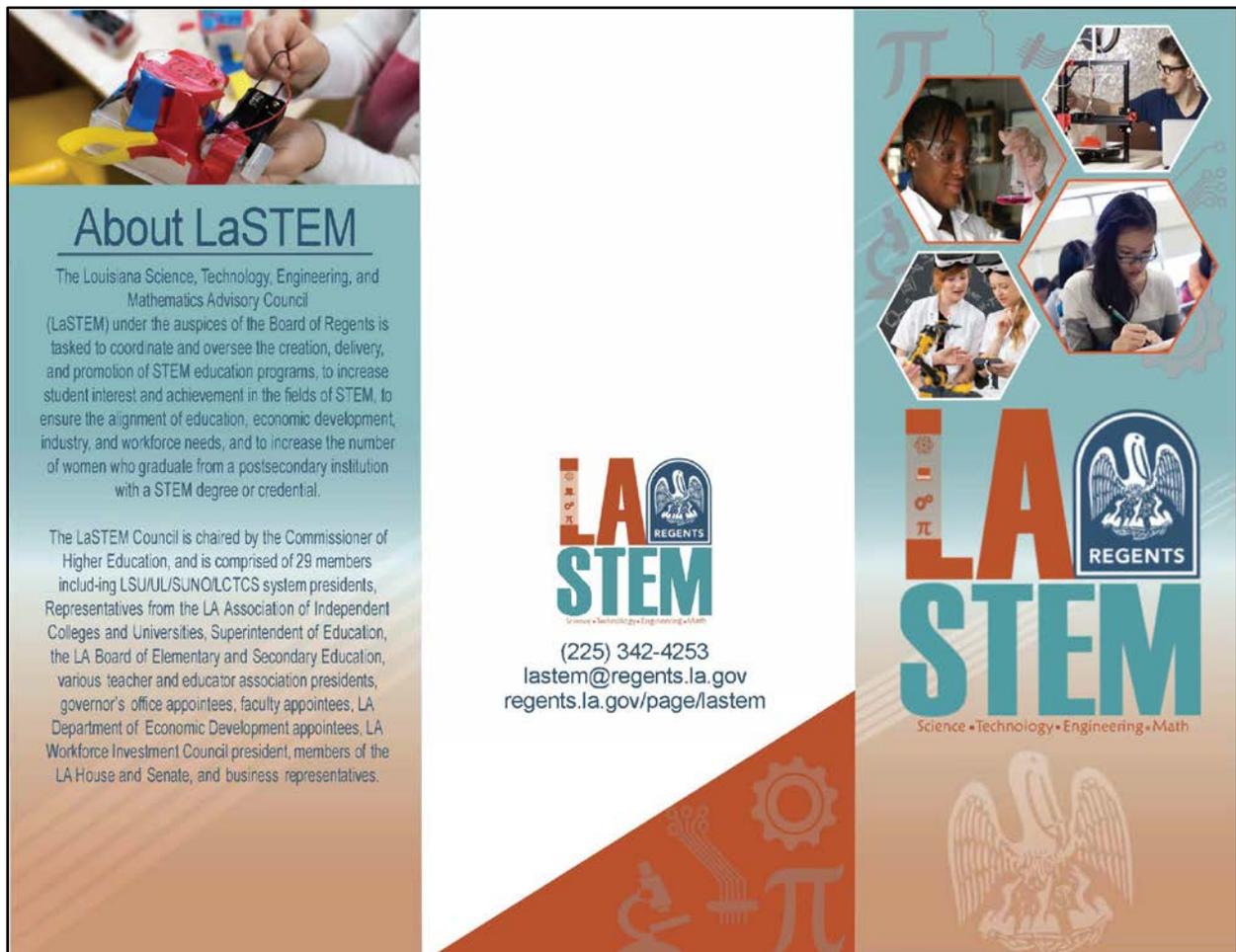


Figure D.2: Fundraising brochure (inside)

LaSTEMprint Sponsorship Packages

LaSTEM Champion Diamond Sponsor

(\$1,000,000 & above for 3-5 year commitment)

What this buys:

- o Training for your workforce:
 - > LaSTEM Student Internships with your company (Summer and/or Semester)
 - > LaSTEM Teacher Externships or 1-year Residencies. (Prof. Development)
 - > (Company Name) Teacher Fellowships
- o Access to statewide tracking and resource platform
 - > STEM Premier® subscription for all statewide institutions (33 licenses)
- o STEM pipelines/pathways (Curriculum/Education)
 - > Support for existing K-12 After School Programs, Experiential Weekend programs, or create new programs
 - > Support for FIRST (LEGO League Jr., LEGO League, Tech Challenge, and Robotics Competition)
- o STEM Resources and Materials
 - > Technology improvements: Laptops for schools, computer lab improvements that include company logos
 - > Curriculum development materials (examples)
- o Sponsorship for annual LaSTEM Annual Summit.

What you get:

- o Public rollout event at company's Louisiana headquarters or site. Event to be coordinated by BoR staff and attended by special invited community members and guests. Local news outlets to attend and live stream event.
- o Premier sponsor for LaSTEM Annual Summit.
 - > Sponsored workshop, opportunity to be a keynote speaker at the summit
- o Advertising on all LaSTEM promotional materials. Valued at:
 - > Personalized company banner on display at all LaSTEM meetings.
 - > Company logo on LaSTEM website
 - > Public acknowledgement in LaSTEM media advisories and recaps as well as at annual STEM summit
 - > Quarterly website showcase (Company Highlights)
 - > Distribution of organizations publication materials at meetings

LaSTEM Innovator Gold Sponsor

(\$350,000 - \$1,000,000 for 1-3 year commitment)

What this buys:

- o Training for your workforce:
 - > LaSTEM Student Internships with your company (Summer and/or Semester)
 - > LaSTEM Teacher Externships or 1-year Residencies. (Prof. Development)
 - > (Company Name) Teacher Fellowships
- o Access to statewide tracking and resource platform
 - > STEM Premier® subscription for all statewide institutions (33 licenses)
- o STEM pipelines/pathways (Curriculum/Education)
 - > Support for existing K-12 After School Programs, Experiential Weekend programs, or create new programs
 - > Support for FIRST (LEGO League Jr., LEGO League, Tech Challenge, and Robotics Competition)
- o STEM Resources and Materials
 - > Technology improvements: Laptops for schools, computer lab improvements that include company logos
 - > Curriculum development materials (examples)
- o Sponsorship for annual LaSTEM Annual Summit.

What you get:

- o Public rollout event at company's Louisiana headquarters or site. Event to be coordinated by BoR staff and attended by special invited community members and guests. Local news outlets to attend and live stream event.
- o Advertising on all LaSTEM promotional materials. Valued at:
 - > Personalized company banner on display at all LaSTEM meetings.
 - > Company logo on LaSTEM website
 - > Public acknowledgement in LaSTEM media advisories and recaps as well as at annual STEM summit
 - > Biannual website showcase (Company Highlights)

LaSTEM Leader Silver Sponsor

(\$5,000 - \$350,000 for 1-3 year commitment)

What this buys:

- o Training for your workforce
 - > LaSTEM Teacher Externships (Prof. Development)
- o Access to statewide tracking and resource platform
 - > STEM Premier® subscription for phased incorporation into statewide institutions (5-10 initial licenses)
- o STEM Resources and Materials
 - > Curriculum development materials (examples)
- o Sponsorship for annual LaSTEM Annual Summit.

What you get:

- o Advertising on all LaSTEM promotional materials. Valued at:
 - > Company logo on LaSTEM website
 - > Public acknowledgement in LaSTEM media advisories and recaps as well as at annual STEM summit
 - > Annual website showcase (Company Highlights)



PART 4: Early Wins and Future Directions

The Certified Teacher Education Program (CTEP) Scholarship

The PK-12 Education Subcommittee has worked together to identify SMART Objectives that have the highest potential to be implemented in these early stages since the Council was established. One of those early wins was to reinstate a program that would allow K-12 science teachers to further their education and training. Specifically, this PK-12 Education Subcommittee SMART Objective would address **LaSTEM Goal #5: *Improve the size, alignment, level of mastery and diversity of the pipeline of workers well qualified for specific high-priority STEM Jobs.*** The program, CTEP, will be initiated by a **\$200,000** commitment from the LDOE to be used by teachers to take math and science courses to help increase the number of classes taught in schools by certified teachers. Those funds will be available to qualified teachers as early as June 2018 through May 2019, and will continue in subsequent years as budget allocations allow. Once all of the LDOE's tuition funds are used, the law for CTEP will be reinstated by the BoR which will allow teachers to take university courses for free tuition if there is space available in the courses after the drop/add deadline. The allocation and subsequent implementation of the CTEP program is a major win for the Council, teachers, and the K-12 students in Louisiana.

VEX Robotics Grants

In December 2017, the Council partnered with the Robotics Education & Competition (REC) Foundation and VEX robotics to invite K-12 schools from every parish in Louisiana to apply for a robotics grant. This grant would place robotics equipment in each school or parish that applied, and would provide training for the assigned teachers in those schools to learn how to operate and maintain the equipment and teach their students. BoR staff received 35 applications, including one for the 10 schools in Lafayette parish, for this competition. The BoR staff and the Council approved all 35 applications and the teachers who would be implementing the program attended VEX Robotics and programming training on January 22-23. This is another win for the Council, as it provides access to robotics equipment and training in schools that have otherwise had little or no established robotics programs or curriculum. As a requirement, these schools

must establish a robotics team that will compete in an upcoming competition as well as at least one competition within the next academic year. Furthermore, this initiative aligns with **LaSTEM Goal #7: *Expand access to high quality STEM education and employment opportunities for women, rural populations, people with special needs, and underrepresented communities.*** VEX robotics and selected schools will be given the opportunity to show off their robots at a future Council meeting.

Festival de Robotique

The Second Annual Festival de Robotique, hosted by Senator Sharon Hewitt and sponsored by FIRST Robotics and Dow Chemical, will be held in May 2018 at the Louisiana State Capitol. This is a "friendly" robotics competition for Louisiana FIRST teams who competed in the World Championships. The purpose of the all-day competition is to showcase the talents of our STEM students to legislators, educators, and state leaders and to reward and recognize the students on the floor of the Senate. Last year's inaugural Festival de Robotique was attended by over 300 students and hundreds of guests.

Future Directions

The Council will continue to develop each Subcommittees' SMART Objectives and as funding allows, proceed in the implementation of these objectives. More STEM success stories from around the state will be provided the opportunity to present to the council and showcase their success, as well as inform the Council of the challenges they have encountered. This will allow the Council to continue on its mission to oversee the creation, delivery and coordination of STEM programs in order to create a new STEM culture in Louisiana!