GEN READY

A Capital Area STEM Learning Coalition

STEM Education to Employment: A Roadmap for Change

According the Education Commission of the States report in 2017, Louisiana students have made some limited progress in math over the past decade, but not enough get the chance to learn rich and challenging content that inspires or prepares them for college and careers, particularly in STEM fields. With STEM fields set to grow as much as 10% by 2027, as opposed to non-STEM jobs at 5%, it is obvious that Louisiana needs more STEM talent and needs it NOW.

The Commission identified certain indicators that hold our state back, including:

- Progress in math continues to falter
- Students of color lag the farthest behind
- Time spent teaching elementary science is inadequate
- Teachers still need STEM instructional methods and content knowledge strengthening as well as tools
- Increased access to advanced courses and computer science needed
- General lack of awareness of STEM careers and industry needs

Background: For the past few months, GEN READY (thanks to a grant from ExxonMobil to the Foundation for East Baton Rouge School System) sought creative solutions and partners from our community to respond to these challenges and ensure a robust STEM pipeline of talent. Throughout the process, GEN READY asked experts and practitioners across the region why, despite the effort by many regional organizations, there is still such a gap between jobs and skilled employees. Issues of access, awareness, and coordination were conveyed.

GEN READY will create systemic change in how the Capital region collaboratively prepares students for success through STEM.

An Ecosystem Approach: GEN READY is a regional coalition, or "ecosystem" that is designed to address the lack of coordination within the field, a challenge that has stalled progress in closing equity gaps and dramatically improving students' STEM literacy. By relying on coordination between unlikely partners—such as school districts, teachers, parents, higher education institutions and informal STEM programs—GEN READY will transform the local infrastructure for ensuring more students, particularly underserved and underrepresented students, develop the knowledge and skills they need to succeed.

GEN READY will bring increased focus and advocacy to STEM education in our region in the following ways:

- Create a network of cross-sector partners that leads to deeper engagement and greater understanding of local needs and drives alignment.
- Convene people and resources in support of STEM learning.
- Incubate, evaluate, and scale new or existing breakthrough ideas in STEM teaching and learning.
- Plan and attract community support so the most urgent STEM education opportunities are being addressed and results are collectively measured.

GEN READY IS POWERED BY DIVERSE PERSPECTIVES. INTERESTED IN BECOMING PART OF THIS EFFORT?

- ADVISORY BOARD: Influential cross-sector partners and potential funders who meet six times a year to discuss ongoing matters and strategies, assess progress, and determine new actions.
- WORKING GROUPS: Issue- or sector-related experienced, collaborative, influential people grounded in best practices who meet regularly to identify key partners, review data, develop strategies and help drive implementation.
- COMMUNITY-AT-LARGE: Participants in the ongoing design, implementation, or reporting process.

GEN READY VISION

GEN READY's vision is for ALL citizens to have future-ready STEM skills necessary to prepare for and thrive in our region's evolving workforce. Gen Ready will accelerate solutions to the region's STEM challenges by forging collaboration among businesses, educators, communities, and private philanthropies.

Four key focus areas known to improve STEM education outcomes were identified to communicate priorities and desired actions and achievements to realize impact. These focus areas form the basis of a roadmap that is used to guide GEN READY activities and actions (e.g., investments, programmatic initiatives, partnerships, and advocacy).

- Future-ready student learning experiences
- Effective educators, in and outside of school time
- Engaged and aligned partners – PK-16, workforce development, and employers
- Informed community and partners

GEN READY is a member of the national STEM Ecosystems Community of Practice.

STEM ecosystems

Vision: ALL citizens have future-ready STEM skills necessary to prepare for and thrive in the capital region's evolving workforce.

Future-Ready Students…
are able to think critically, design, and apply concepts and content from science, technology, engineering and math to understand and solve problems, complete coursework and projects. Early on, students develop interest and confidence in STEM topics and develop a sense that a STEM career might be possible for them.

Effective Educators…
use a project-based and integrated approach in teaching science, technology, engineering and mathematics (STEM) content, consistently breaking down barriers between subjects in hands-on, engaging and relevant ways – REGARDLESS OF SETTING. Instruction is guided by the practices of Next Generation Science Standards and evidenced best practices.

Informed Community…
is engaged and equipped to support and inspire youth and young adults with a wide range of STEM learning and relevant career exploration opportunities, particularly among underrepresented and underserved groups. The entire community understands what it means for students to be STEM literate and future-ready.

Engaged Partners…
embrace the value of a STEM education for ALL youth and understand the level of encouragement, work-based experiences alignment, and policies required to dramatically increase STEM literacy, skills, and career pursuits of students at all age levels, particularly those underrepresented in STEM fields today.

Future Ready Students

Effective Educators

Informed Community

Engaged Partners

Guiding Principles

HOPE

GEN READY is about HOPE for the next generation of creative, skilled, adaptable problem solvers who will meet the needs of an ever-evolving workforce.

EXCELLENCE

GEN READY strives to be associated with quality, success, and excellence. The expertise and passion held by our partners and stakeholders will help to hold us accountable in providing high quality data, communications, and experiences.

EQUITY

GEN READY is inclusive and seeks to bring equity to STEM learning opportunities, regardless of the setting. Right now, data points to unfair disadvantages in STEM access for women and minorities, and that has to change.

RELEVANCE

GEN READY must evolve with advances in education and workforce opportunities – encouraging inter-disciplinary inquiry and innovation for solving real world problems.

LOCAL BUT GLOBAL

GEN READY is focused on our unique local community in Baton Rouge and the surrounding region, but it is also about helping to prepare today's youth for tackling problems and needs, learning applicable skills, and obtaining careers of global relevance.

COMMUNITY DRIVEN

GEN READY represents a movement of our diverse community. It is inclusive of all members of our youth population, business and industry, educators at all levels, policy makers, community groups, and must engage families.

CONNECTIVE

As a collaborative, GEN READY must be connective and connected. By sharing minds, resources, success measures, and effort, GEN READY can advance the most important goal of all: preparing our young people for success – through STEM.

What does community-wide collaboration look like?

IMPACT:
- Generations of citizens ready for opportunities in the workplace and success in life
- A strengthened regional workforce and economic vitality

Goal 1: Increase student interest, participation and achievement in STEM

Evidence-based solutions: Early activity exposure +informal; Public awareness; Facilitate career exploration and access to options; Connect STEM with content related to informed citizenship; Research-based instructional methods; Align learning with career-based skills

What we've learned	Suggested Activities	Success Indicators
- More students are taking advanced courses but are simply not interested in STEM as a career - Females and students of color and poverty demonstrate disproportionately low interest and ability in STEM on ACT - Equal opportunities in STEM are not available to our learners, especially for ethnicities underrepresented in STEM and those in rural areas - Preschool and elementary age students may not have many opportunities to study STEM. - Student and parental awareness and access to STEM career building information and opportunities is inadequate - Although the state has begun to address STEM education needs through policy, curriculum and other incentives and resources need adequate funding	**1. HIGHLIGHT SUCCESSFUL STEM EDUCATION** Expand on EBRPSS' common framework for delivering high-quality STEM education and highlight successful programs and resources. Besides the common framework tool, examples include: - STEM Programming Self-Assessment Tool (for reviewing and/or growing a program) - Tools & plans for integrating STEM (during and out of school time) - Portal for sharing resources, curriculum, and model STEM programming in all settings in the region online **2. AWARENESS BUILDING PLAN** - STEM career-building roadmap for youth/parents - Tools for hosting STEM family Expos - General awareness campaign - promote STEM professions - Work with existing programs to promote STEM, i.e. libraries, informal science **3. POLICY ACTION** - Policy and funding to deliver exemplary curriculum and professional development - Graduation requirements - Pathway approvals and courses - Advocate STEM education emphasis to ALL PK-20 education leaders - Incentivize STEM certifications	# and diversity of students expressing an interest in, participating in and completing PK-12 high-quality STEM programming and courses. # and diversity of students expressing an interest in, participating in and completing PK-12 out-of-school time high-quality STEM programming. # and diversity of students, families, community members & industry partners interested in, and with knowledge of STEM fields and career opportunities. - Support for and adoption of policy to advance STEM pipeline. - Increased availability of workers and STEM hires

Goal 2: Increase number of effective STEM educators in all settings

Evidence-based solutions: Aligned PD for PK-16 in STEM teaching methods; Pre-service teacher STEM PD; Teacher PD and externships

What we've learned	Suggested Activities	Indicators
- Wide variety of definitions of STEM literacy and skills, & how to integrate - Practicing educators (nor graduates of teaching programs) lack evidence-based practices cutting edge techniques and methods of a modern STEM classroom - Too few underrepresented populations in STEM teaching programs - Educators lack awareness workforce practices, in-demand STEM skills, & career opportunities - Teachers lack planning time to collaborate on STEM integration - Education leaders may not be aware of teaching strategies that enhance learning and attract underrepresented in STEM - LaSTEM, state-level STEM initiative, is addressing teacher preparation and support	**1. PROFESSIONAL DEVELOPMENT PK-20** - Instructional approaches that encourage inquiry and integrate knowledge and methods across STEM, arts, and humanities - Methods that encourage innovation and entrepreneurship - Integration of mathematics, including data science and problem-based learning across disciplines - Advancement of computational literacy, which includes digital literacy, cybersafety, and computational thinking - Use of digital platforms for teaching and learning - Campus-based STEM teams and leadership - STEM curriculum and practices for out-of-school-time providers **2. RESOURCES** - Curriculum and instructional resources and technology - Common framework for planning and/or growing model STEM programs - Tool for tracking and promoting OST offerings - Grants and recognition programs - Convenings – share best practice and research **3. POLICY ACTION** - Incentives to recruit, retain and reward teachers and increase diversity among teachers - Funding and state-level STEM education strategy	- PK-12 STEM courses led by effective STEM educators - Schools led by effective STEM leaders - STEM awareness across the nine-parish region - Partnerships, resources, funding and policies for STEM education

Goal 3: Increase engagement of post-secondary and business communities

Evidence-based solutions: Alignment between degree programs and changes in workplace; Use of labor market projections to determine new degree options and training resources; Mentoring for underrepresented groups; Teaching of STEM tools; Encourage adults to reemploy in new STEM careers through post-secondary credentials

What we've learned	Suggested Strategies	Indicators
• Graduates of teaching programs are not always prepared to use cutting edge techniques and methods used in a modern STEM classroom. • Incentives are needed to recruit more STEM students to consider education as a career path • Incentives to encourage STEM professionals to enter teaching field • Need diversity in STEM teaching • Isolated examples of successful business-education partnerships and tools for building and sustaining these • Businesses don't always understand the needs of education sector • School culture may make it difficult for teachers and leaders to pursue partnerships • Number of valuable teacher externships need to be expanded • Need platform for communicating opportunities to partners and disseminating tools	**1. TEACHER PREPARATION** • Pedagogy reform for schools of education focusing on STEM integration and math, science, and computer science content **2. PRE-COLLEGE & COLLEGE RECRUITMENT EFFORTS** • Plan for increasing awareness of STEM careers and degrees for PK12 – post-secondary students • Remediation programs to complete certificate or degree programs • Industry podcasts/videos • List of workforce aligned pathways **3. PARTNERSHIP TOOLS** • For building crucial work-based experiences, mentoring, and advisories for high school and post-secondary students • Industry-based toolkit for engaging high school and post-secondary students **4. POLICY ACTION** • Playbook focused on building appropriate workforce-aligned career pathways • Incentives to promote opportunities and tools to create clearly-aligned career pathways	• PK-12 STEM courses led by effective STEM educators • Schools led by effective STEM leaders • Graduates from post-secondary institutions with STEM degrees or certificates • STEM education priorities linked to workforce needs

Goal 4: Increase broad family & community support for STEM education as a priority for the region.

Evidence-based solutions: Service learning; Staff spread best practices based on data with region; Communications tools and plan; Showcase STEM in public events with stakeholders

What we've learned	Suggested Strategies	Indicators

• Need for shared vision and strategy for region
• Region is STEM "rich" with initiatives and organizations, but coordination "poor." Opportunities are isolated, unaligned, and uncoordinated
• Need method for tracking STEM workforce supply and demand
• Lack central communication plan and strategies, particularly to address equity in general and how to grow underserved and underrepresented in STEM
	1. COMMUNICATE STRATEGY
	• Communications Plan
	  • Launch - Disseminate network goals and intended outcomes
	  • Scheduled communications for sharing stories and tools to spur public action by audience
	  • Website and convenings to spur engagement, information sharing, tools, and strategies
	2. AWARENESS CAMPAIGN
	• Build public awareness, will, and access
	3. EVALUATION AND METRICS DASHBOARD
	• Establish regional baseline metrics
	• Indicators and metrics to track progress of program and regional talent production goals
	4. MOBILIZE FUNDING AND SUPPORT
	• Identify key support needed from key players
	5. POLICY ACTION
	• Continue to work with LaSTEM to prioritize STEM education in budgets, policies, etc.
		• Graduates from post-secondary institutions with STEM degrees or certificates
		• STEM education priorities linked to workforce needs
		• STEM awareness across the nine-parish region
		• Partnerships, resources, funding and policies for STEM education