Overview of Summer Learning Programs

Summer learning programs (SLPs) are designed to provide students with additional opportunities for learning and growing during the summer months. Systems should strive to create opportunities for all students to access a summer learning program.

Overview of STEM

STEM (Science, Technology, Engineering, and Math) experiences are an essential part of a well rounded education and should be embedded in a summer learning program. Through an interdisciplinary approach to learning, STEM allows students to work through project based explorations to analyze, synthesize, and create.

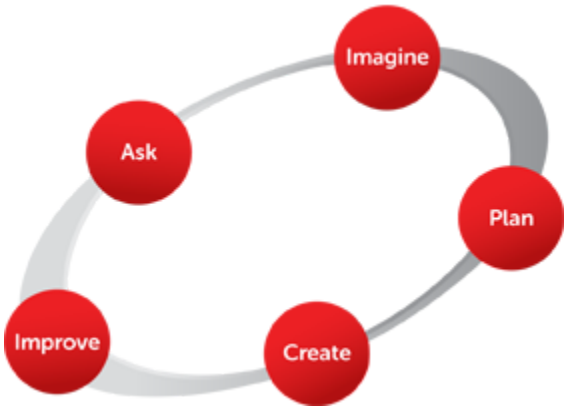
STEM Best Practices and Approach

STEM and Computing Science are maximized through the integration of the skills, content, and thought processes across the core curriculum. Students are most engaged with STEM and Computing Science when it occurs in relatable experiences connected to the real world.

Technology proficiency is best developed through integration within meaningful quality learning experiences. Computer skills should not be taught or drilled in isolation; rather, they should be developed and applied through other core and enrichment activities.

Computational Thinking, a contribution from the field of Computer Science, is a key component of the Louisiana Student Standards for both mathematics and science. The following four strategies can be utilized in STEM learning experiences to promote students' computational thinking and encourage problem solving.

- *Decomposition* involves breaking down a task or problem into smaller problems. Students draw on prior knowledge, observations, and ideas to begin their investigation.
- *Pattern recognition* involves mapping similarities and differences or patterns among small (decomposed) problems, and is essential for helping solve complex problems. Patterns show similarity and disparity and help with predictability.
- *Abstraction or pattern generalization* is essentially filtering out (i.e. ignoring) unimportant details in order to make a problem easier to understand and solve. This enables students to develop their models, equations, an image and/or simulations to represent only the important variables.
- *Algorithm design* is the creation of a model, protocol, or problem solving methodology for the event at hand.



The **Engineering Design Process*** provides a framework for designing and structuring student experiences in STEM. Students begin by **asking** questions about a problem and **imagining** possible solutions. Then, students move on to **planning** for and **creating** solutions and ultimately iterating and **improving** upon the solutions. It's important to note that this cycle is fluid and students should have the flexibility to flow from one phase of the process to another and back again as needed.

*adapted from Museum of Science, Boston

LEAs who decide to offer SLPs to students within their jurisdictions must also offer the same program access and opportunity to participate to students with disabilities, and LEAs must be prepared to provide any IEP related modifications or reasonable 504/ADA accommodations.

Websites and Resources			
Science	**Technology**	**Engineering**	**Math**
Summer learning is an opportunity to extend core science that is grounded in a high quality curriculum. Science enrichment as part of a STEM program could incorporate resources such as: OpenSciEd Covid-19 & Health Equity Units for K-2, 3-5, and middle school are multidisciplinary storyline units that allow students to engage with three-dimensional learning centered around the Covid-19 Pandemic. MOOSE, an online learning platform from the Maine Department of Education, has integrated learning modules for all ages. Ology offers virtual and hands-on explorations on topics such as genetics and paleontology. STEM from the Start, in partnership with PBS, provides rich activities designed for science standards for grades PK-2.	Code.org offers free lessons in computer science that can be done as modules, add-ons, or supplemental activities. Scratch is a free coding programming environment from MIT with a variety of examples and games that kids can replicate or design their own. For grades 4-8, Google CS First lessons and activities are designed to engage students artistically in coding and computer science. Students can learn digital citizenship and Internet safety through Google's Be Internet Awesome resources designed for educators.	PBS Engineering Projects for Kids is a source for videos and activities grouped by theme. Teach Engineering is a robust compendium of curricula, projects, ideas, and maker challenges. Try Engineering includes resources to help novice teachers add engineering opportunities alongside a core math and science curriculum. Engineering is Elementary is a research-based resource with both free sample activities and curriculum for purchase. STEMNOLA's Nola@Home activities are quick and easy ideas to engage from anywhere.	See the Accelerate Math resources for guidance on providing individualized core math supports as part of a summer learning program. Additionally, math enrichment as part of a STEM program could incorporate resources such as the following: NCTM Illuminations offers engaging lessons for PK-High school that are standards based. Mathematics Assessment Project (6- high school) offers 100 lessons focused on developing math concepts and solving non-routine problems. Texas Instruments Education offers standards-designed activities for use with TI graphing calculators in grades 6-high school.

Community Resources

Opportunity	Guest Speakers	Virtual Field Trips	In Person Field Trips	Details
LIGO	Yes	Yes	Limited Capacity Livingston	Louisiana's LASER Interferometer Gravitational Wave Observatory (LIGO) is the site of the discovery of gravitational waves. A large Science Education Center is an exploration space for field trips. LIGO now offers virtual field trip options. Staff will use Zoom, Google Meet or Microsoft TEAMS to conduct an activity with your in-class or at-home virtual students.
SciPort Discovery Center	Yes	No	Limited Capacity Shreveport	SciPort Discovery Center is a hands-on science exploration center with its own IMAX theater and Planetarium. The facility offers a variety of field trip options and outreach opportunities for educators.
Knock, Knock Children's Museum	No	Yes	Limited Capacity Baton Rouge	Knock, Knock Children's Museum features 18 Learning Zones that are hands-on, interactive exhibits where kids pk-5 learn through play. A sensory learning zone has facilities and activities designed for children with special needs.
Children's Museum of Acadiana	No	Yes	Limited Capacity Lafayette	The Children's Museum of Acadiana is dedicated to STEAM. It offers many great hands on activities and several video lessons with printables. There are also activities for outdoor explorations Pk-5.
Audubon Nature Institute	Yes	Yes	Limited Capacity New Orleans	The Audubon Nature Institute has been a field trip location for schools and guest speakers for many years. Resources include online learning opportunities.
Barn Hill Preserve	Yes	No	Based in Ethel but will travel	Barn Hill Preserve has 50 species of animals on site. They offer a FREE mobile program and a selection of LIVE animal ambassadors Arrangements/reservations need to be made to secure a visit.

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Baton Rouge Zoo	Yes	No	Baton Rouge	The Baton Rouge Zoo hosts a variety of educational programs and resources for teachers. Virtual activities and speakers are available.
Alexandria Zoological Park	Yes	No	Alexandria	Alexandria Zoological Park is a smaller zoo that hosts a variety of educational programs such as bio bag backpacks.
Shreveport Aquarium	Yes	Yes	Limited Capacity Shreveport	Shreveport Aquarium features interactive learning experiences and an AQUAdemy with printable lessons for teachers.
Exploring by the Seat of Your Pants	Yes	Yes	No	Bring science, exploration, adventure, and conservation to students with Exploring by the Seat of Your Pants through virtual field trips and interactions with experts. Educators can tune in to events listed on the calendar and even sign up for camera spots to allow students to ask questions.
Nepris	Yes	No	No	Nepris is a free resource to allow you to connect industry professionals in STEM to your classroom virtually! The speakers can be live with a Q and A or you can find pre-recorded talks.
Skype a Scientist	Yes	No	No	Skype a Scientist is a way to bring a scientist into your classroom virtually. They offer printables, activities, and real scientists doing real research to answer students' questions!
Speaking of Science	Yes	Yes	No	The Speaking of Science (SoS) program by LA EPSCoR provides students in every type of school FREE exposure to the best researchers in Louisiana. All of these speakers are Louisiana based.
MoMath	No	Yes	No	MoMath is based in New York City and offers an augmented reality math series, a gallery of math art, virtual field trips, and free mathematical puzzles!

Project Matrix

The Summer Learning Program Matrix provides a snapshot of the cross-curricular connections among projects. This chart will help teachers see integration opportunities when planning for summer learning experiences.