Implementation Planner

Goals for STEM in the Program

Clarify goals for incorporating STEM into your program. Work with staff to develop short and longer-term goals, and ensure that all work as a team to achieve them.

Check all that apply, then develop your own plans in more detail, specific to your program.

Our program will incorporate more STEM to:

- ❑ **Expose**: Increase children's exposure to STEM through activities such as periodic outdoor experiences, field trips, and science center and museum visits
- ❑ **Experience**: Increase children's experience with STEM through, for example, regularly scheduled hands-on science activities, short-term inquiry projects, math games and puzzles, vocabulary use, design-build challenges, committee projects, field trips outdoors, and technology projects
- ❑ **Engage**: Increase children's engagement with STEM though regularly scheduled activities, student-directed inquiry projects, longer-term team explorations and more complex projects, or curriculum lessons
- ❑ **Enrich**: Enrich student's experience and knowledge of STEM through student-directed projects and inquiry, career explorations, internships, expert partners, site visits, and additional resources
- ❑ **Expand**: Expand depth and breadth with expert support and partnerships, diversifying fields, internships, longer-term inquiry projects, community problem-solving projects, and presentations
- ❑ _____
- ❑ _____

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Strategies and Techniques

Choose overall strategies and specific techniques that fit within your goals. Time, resources, and staff, and engaging students are a few of the most important strategies you must consider.

Dedicate Time

When will you schedule STEM? Keeping simple basic materials available should be the everyday norm. In addition, many STEM elements can be worked into program times such as snack and homework. During snack time, committees can present weather and news reports (including vocabulary, measurement, presenting data, giving reasons), conduct surveys, and manage distributions and menus. During homework time, students can do hands-on projects to supplement classroom learning, or homework time can begin with mental math contests, puzzles, or guessing games. Homework is also a good time for vocabulary expansion and questioning. Physical education can include sports stats, outdoor explorations, counting, and measurement, and enrichment time is wide open for a range of exciting options.

What can you include, when?

Snack	
Homework	
Enrichment	
Physical Activity	
Other	

How often can you schedule STEM activities? You can plan to have activity centers available every day, plus one day a week for more in-depth projects or club time. Or you may have dedicated lesson or project time two or more times per week. The key is to map out times and maximize opportunities to bring in STEM.

Monday	Tuesday	Wednesday	Thursday	Friday

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Aligning With the School Day.

Understanding how to meet a student's needs starts with communicating with school day leaders and teachers. Use the chart below to identify the steps you will need to take to strengthen the partnership with school day staff and strengthen your STEM offerings in the out-of-school time.

Connect With School Content	Readily Doable	Somewhat Complex	Challenging
Know each participant's school, and list names and contacts			
Set up contacts with science, math, and technology teachers in students' schools			
Obtain copies of standards or school goals for STEM			
Work with staff to pinpoint standards to target in the program			
Review activities and projects for ways to include STEM objectives based on standards			
Provide classroom teachers with evidence of students' STEM activities in afterschool			
Ask teachers for recommendations for websites, projects, or other materials			
Include afterschool staff in STEM professional development provided by schools			
Get lists of key vocabulary, terminology, and questions to incorporate			
Target oral vocabulary development for all, with particular attention to English language learners			
Obtain curriculum, textbooks, and other reading and reference materials			
Let teachers know STEM homework projects can be supported in afterschool			
Attend school STEM events, such as science fairs; invite teachers to afterschool STEM presentations and events			
Observe what children are working on for STEM homework; discuss with students and ask for explanations and thoughts			

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Mapping Resources

Think broadly about resources in your building and local area, partners and organizations, sources of materials, activities, projects, and curriculum, and the vast amount available on the Internet. Don't forget: even your own building, play yard, or street is loaded with opportunities for STEM!

Consider developing and tapping resources with students, with STEM projects such as:

- Create a local Google map highlighting STEM resources
- Research, identify and invite speakers in STEM fields
- Plan, budget, and conduct fundraisers for field trips
- Research and map local habitats to explore or for conducting inquiry projects
- Identify local experts to invite to lead a special program
- Build inquiry projects around particular sites (such as hospitals or laboratories) or systems (such as water and sewer)

Use the following chart to map out resources you can utilize in your STEM activities.

"Check" the opportunities you may have at hand or add your own.

STEM to Visit	Have Access	Seek Locations/ Activities	Ideas
Aquariums			
Science museums and planetariums			
University laboratories			
High school science and technology labs			
Technology centers			
Zoos, botanical gardens			
Hospitals, clinics, medical laboratories			
OTHER			
Exploring in the City			
Parks, playgrounds, street trees, tree pits, rocks			
Animal life (birds, insects, worms, pets, squirrels, rats, mice), animal shelters, veterinarians			
Water, sewer, and sanitation systems			
Construction sites, bridges			
Gas, electric, and communication systems			
Factories, machine shops, auto repair			
OTHER			
Exploring in the Country			
Ponds, lakes, streams, oceans, tidepools			
Fields, woods, pastures			
Farms, animal breeders, feed stores			

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STEM to Visit	Have Access	Seek Locations/ Activities	Ideas
Farmers, veterinarians, animal hospitals			
School grounds, playing fields, buildings			
OTHER			
People, Expertise			
Parents, family members with STEM-related jobs			
Parents, family members who are scientists, engineers, architects, doctors, laboratory technicians, computer engineers, software developers, or other professions			
Digital game and software developers			
University faculty or students with STEM expertise			
Science center or museum personnel			
Graphic designers			
OTHER			

Train Staff

Staff are the front line resource in bringing STEM into the program, and to keeping it going. Skilled staff know how to capture and build on children and youth interests, generate enthusiasm, and expand and deepen learning and experience. Leaders should also tap into staff interests and talents, and encourage staff to share their enthusiasm with students. Staff are involved more with STEM related material than they realize, from bike repair and auto mechanics, to caring for pets, to food, health, and nutrition, to computer graphics, music, and animations. Help staff tap into their inner STEM skills, and expand their own horizons!

Staff need training in:

- ❑ Understanding the importance and goals of incorporating STEM in the program
- ❑ Seeing themselves as STEM activity and project leaders
- ❑ Creating STEM activity centers and maximizing everyday STEM
- ❑ Using STEM vocabulary and questioning
- ❑ Creating STEM activities linked to school content
- ❑ Communicating with teachers and schools
- ❑ Finding and using resources
- ❑ Other

How much time is available, and when, for staff training?

- ❑ During orientation
- ❑ During staff meeting time
- ❑ During program breaks
- ❑ In conjunction with school teacher professional development
- ❑ At conferences

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- ❑ In professional development sessions scheduled during the year
- ❑ Other

Topic	Date	Time	Who Participates	Who Leads

Preparing and Engaging Students

It is important to make STEM an integral part of your ongoing program and ensure that students are engaged. Assess the strategies and techniques below as readily doable, somewhat complex, or challenging from the standpoint of your program, feasibility, and time. Commit to increasing STEM short and long term.

Use the following chart to plan strategies you can use to prepare and/or engage students in STEM activities.

Increase Exposure With Everyday Activities	Readily Doable	Somewhat Complex	Challenging
Provide simple materials such as blocks, boxes, measuring spoons, cups, graph paper, construction paper, scissors, shapes, and puzzles			
Set up activity centers for explorations with varied materials or structured activity kits			
Use STEM vocabulary regularly			
Ask questions to probe for explanations and reasons			
Talk with teachers about school STEM activities and content			
Provide measuring materials such as scales, rulers, tape measures, thermometers and activities for using them			
Provide materials such as clocks, calendars, charts, graphs, weather and seasonal vocabulary			
Provide construction materials such as straws, toothpicks, sticks, tape measures, paper, tape, glue, and string, and create building challenges			
Schedule regular guessing games and mental puzzles			
Create snack committee to handle quantities, nutrition reports, taste surveys, budgets, or other			

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Increase Exposure With Everyday Activities	Readily Doable	Somewhat Complex	Challenging
Create program of field trips to outdoor sites			
Create program of guest presenters on STEM related jobs			
Schedule visits to museums and science centers			
Obtain copies of textbooks and reading materials to keep available			
Augment library and computer use with STEM-related books, magazines, and websites			