

# STEM

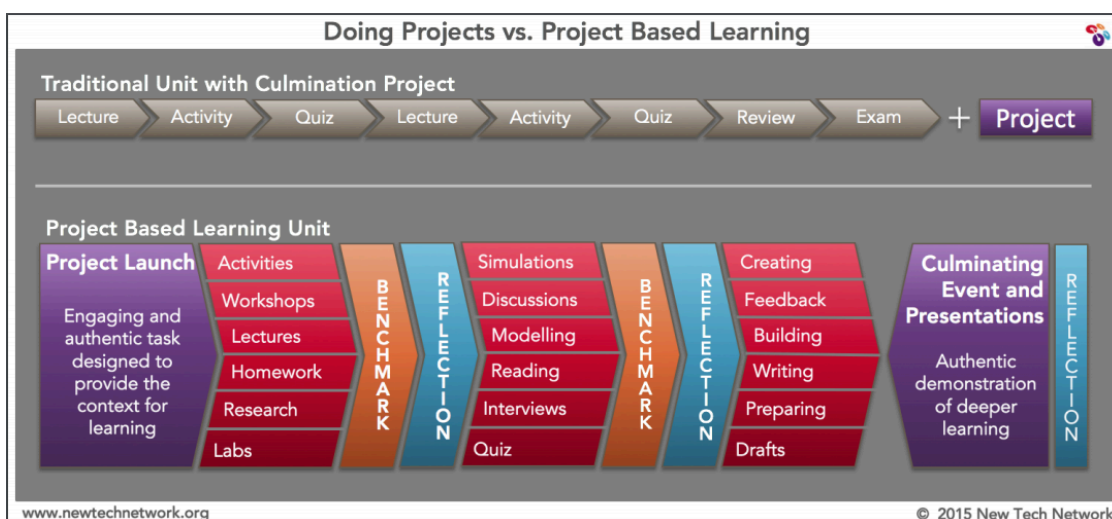


Students utilize the design thinking process, scientific inquiry, and mathematical practices to address design and real-world challenges.

## Project Based Learning, connections to the real world, and building success skills

The STEM projects include science, engineering, math, as well as social sciences to connect to the real world. The project units all generally follow the framework below.

Through project based learning, students can make greater connections between the skills and knowledge they build while learning about scientific and mathematical concepts and real world challenges. Outside of building content knowledge, students also build [success skills](#) such as:



thinking critically and solving complex problems; working collaboratively; and communicating effectively. Most of the activities in the curriculum were designed to put more of the cognitive load on students, as opposed to simply providing information. This can be seen in the 6th and 7th grade curriculum in which students engage with [slow reveal graphs](#).

## Grade Level Driving Questions and Final Products

Grade	Theme / Driving Question	Final Product
6th	<b>Climate Change:</b> How can buildings be designed to mitigate and prepare for the effects of climate change will have on my community?	Green building design
7th	<b>Humans and the Environment:</b> How can we use our scientific knowledge to survive apocalyptic conditions?	Apocalypse survival kit
8th	<b>Physics, engineering and graphing data:</b> How can you design a thrilling roller coaster with limited supplies?	Roller coaster prototype
9th	<b>Environmental Justice and Design Thinking:</b> How can we create a product or service that will solve/mitigate a challenge in our community?	Eco-business pitch and business plan

# Resources for STEM teachers

## Lessons and activities

Lessons and activities for almost every day of the summer are available at the [Teacher Center](#). They are organized as a calendar. There are around 1–3 flex days included to give space for field trips, assemblies, as well as time to catch up. Make a copy of the calendar and the lessons so that your team can adapt the calendar/lessons to your particular class.

## STEM Materials

*Almost* all materials will either be part of the site’s general supplies or in the STEM Box. All materials in the STEM box, except disposables, should be returned at the end of the summer in the condition it was received (e.g. clean mason jars, containers, etc.). Each grade has a weekly materials list. Please make sure that you ensure you have all of the requisite materials ahead of time. Each student will also receive a folder with three prongs for handouts and paper.

[6th Grade Materials List](#)

[7th Grade Materials List](#)

[8th Grade Materials List](#)

[9th Grade Materials List](#)

Work with the IC to have all materials and prepare weekly materials at the end of each previous week, not day of.

## Tips for Planning

### Whole Summer Planning

- ☐ **Backwards Plan:** All of the lessons build up to the final product. Understand what you and the students are heading towards, think about what students need to know and be able to do, *then* go through the lessons.
- ☐ **Preview Calendar:** Look at the calendar to understand the flow of the summer. You may end up moving some lessons around (make a copy) to accommodate for any field trips or assemblies your site may be having.
- ☐ **Plan team-teaching:** Utilize [team-teaching resources](#) to plan how you will work together.

### Weekly Planning (Fridays)

- ☐ **Reflect:** Think about the week you just went through. What is working? What isn’t? Are there any students you need to follow up on? What were you able to accomplish as a class? How are you doing as a team?
- ☐ **Adjust Calendar:** Sometimes classes speed through activities and other times it takes longer to get through an activity. On Fridays, take a look at where you are and adjust your calendar(s) accordingly (if necessary).
- ☐ **Materials Planning:** Look at the materials needed in the upcoming week. Locate all materials. Take inventory. Do you have enough materials for your class? What materials do you need to bring from home / request students to bring in / request to be bought? Organize and clean previous week’s materials and return to the STEM box.
- ☐ **Plan Ahead:** Take a glance at the lessons ahead. What do you need to prepare? Who will be taking a lead in each lesson? Utilize the “teacher moves” section at the end of each lesson to plan out the week.

### Daily Team Planning (8:05 – 8:55 am)

- ☐ **Review lessons:** Do activities/handouts ahead of time to help you anticipate questions and support needed.
- ☐ **Think through and plan Teacher Moves:** Review topics and roles to identify who will lead what part of the lesson. Use the [Teacher Moves template](#), also at the end of each lesson, to plan and reflect on each lesson.
- ☐ **Prepare materials:** Prepare posters with prompts and visuals, and videos (if needed). Make copies of any handouts. Organize materials for any labs and think about how you want students to pick up/clean up materials.
- ☐ **Reflect:** At the end, complete the reflection on the Teacher Moves table and adapt/modify for students’ needs.