

SEPjr / CSforAllNYC

Planning A Maker Month Event

Name:

Notes:

The SEPjr Maker Month

Maker Month is an opportunity to engage students through creative hands-on building activities. Integrated into the Physical Computing content, students will be challenged to build models of computer components and computer systems, design Makey! Makey! Controllers and create accessories for the BBC micro:bit. The activities provide students an opportunity to better understand how computers receive, process and represent information. As well as the different ways we physically interact with computers. Students are able to explore the computer science practices of analyzing, prototyping, and communicating, through activities that focus on students making a physical computer science artifact.

The Maker Movement

The Maker Movement comes from a community of tinkers, creators, and inventors who have developed a Do It Yourself (DIY) approach to making, manufacturing, and creating. It is an opportunity to explore new technologies and how they can be applied to current practices in areas such as manufacturing, fabrication, agriculture, and entertainment. But it is also an opportunity to revisit and recognize the value in learning about old tech, low tech and no tech. Through the Maker Movement people are creating new ways of engagement, expression and exploration.

Choosing An Event

The first step to planning your Maker Month is choosing what type of event you would like to run, which can focus on a single activity, project or unit. Teachers may identify one day during the month and have the students complete a specific activity. An activity is usually one or two lessons where students complete a single project. The projects are usually unplugged and require minimal materials.

Activity	Project	Unit
Teachers identify one day during the month and have the students complete an activity.	Teachers schedule multiple activities throughout the month to complete a final project.	Teachers schedule a full unit for the month or beyond that incorporates specific CS lessons and activities to complete a final project.

Promoting Your Event

Maker Month is an opportunity to encourage all students to participate in a making activity. It is important to identify student interests and connect them to the practice of making. Similar to a school fair or field day, Maker Month should be promoted in the same way. Beginning with an overall theme for the event, such as “Craft Computing”, students and staff can create promotional material such as posters, flyers and t-shirts. This is a great opportunity to include other content areas, such as art, writing and reading. If the event includes multiple activities throughout the week make sure to provide a schedule well in advance to avoid any conflicts or time restraints. Make sure to include information about your class’ event in the school newsletter, PTA newsletter, school website or morning announcements.

Preparing An Activity

Because there is an emphasis on making, the activities focus on the unplugged approach to computer science education. However, online activities can still be a valuable way of teaching students about prototyping, testing and iterating. Unplugged activities are hands-on kinesthetic opportunities that help students understand complicated concepts in a relatable way. Unplugged activities allow for students to use a variety of materials and approaches to demonstrate physical computing. Online activities can be connected to the design process, such as using planning documents, illustration software or research. Online activities can also include creating a digital project, such as a game or 3D model.

It is also important to identify if the content is teacher or student guided. Teacher-guided are lesson plans that require some advanced teacher preparation and student-guided require minimal prep-time and are self-guided, allowing students to work at their own pace and skill level.

Prior Knowledge

The Maker Month activities are designed for teachers and students with little to no prior experience in computer science and physical computing. Leading up to the event, teachers may choose to teach an introduction to The Engineering Design Process or show a video providing students with some prior knowledge. Introduction to physical computing may include lessons around Computer History, What Makes A Computer A Computer, MaKey! MaKey! Or micro:bit.

Devices

Because the Maker Event is around building and creating a physical computer science artifact there may not always be a need for devices. It is important to consider-

- What type of devices will students use? (laptops, desktops, tablets, MaKey! MaKey!, micro:bit)
- Will students need Internet access?
- Can the school's WiFi handle the traffic?
- Does the activity have additional hardware requirements?
- Will students need to log in to a device?
- What are some other accessibility needs for students?

Materials

In addition to hardware, activities will require additional materials, i.e. scissors, tape, glue, paper, markers, or even glitter. It is important to take inventory of what your class has available and then determine if additional materials can be ordered. It is also important to identify any printed materials and templates that will be needed.

Grade Level

It is important to remember that the goal of hosting an event is to engage students and build excitement about physical computing. Even though activities will offer a recommended age or grade range, teachers should be flexible in choosing an appropriate activity. Teachers can choose an easier lesson for students with little to no exposure to computer science or a tougher one to challenge those students who have more experience. Knowing the students' ability, interests and what they find most engaging will help determine the best tutorial. Prior to the event teachers may want to conduct an interest survey or simple informative assessment.

Reflection

Every event should plan for a way that students and teachers can reflect on the experience. Exit slips, a survey, or journal entry are all great ways to provide feedback on what students have learned. Classes can also photograph and take videos of student presentations to share with the rest of the school and parents.

Celebration

One of the great things about the Maker Activities is the students create a physical artifact that can be put on display. Classes can show off their models, ask others to test

their controllers or present their accessories to classroom visitors. Teachers can also reward students with a Certificate of Making or a Maker Badge. Then at the conclusion of the event it is important to recognize those who participated and possible next steps and future opportunities. All of the activities are part of a larger unit around physical computing which could lead to further teaching content.

Additional Resources:

- [SEPjr Google Site: Maker Month Resources](#)
- [How Physical Computing Can Help Elem. & Mid. Schoolers](#)
- [Engaging Strategies for Physical Computing](#)
- [Physical Computing: A Key Element of Modern Science](#)
- [Sample Makey Makey Lesson Plans](#)
- [Instructables: Makey Makey Labz](#)
- [Makey Makey Courses](#)
- [Extensive list of conductive materials](#)
- [Paper Circuits](#)
- [Discover MakeCode Projects](#)
- [micro:bit Units](#)
- [Code Club w/ BBC micro:bit](#)
- [Make Ed](#)
- [Canon Creative Park: Paper Crafts](#)
- [Design Club](#)
- [Breakout EDU](#)
- [LEGO Education](#)
- [Dinah Zike's Foldables](#)

Maker Month: Event Planning Template

Event Type:	
Activity Type(s):	
Unplugged: 1. 2. 3. 4. 5.	Online: 1. 2. 3. 4. 5.
Participating Staff:	
Name: 1. 2. 3. 4. 5.	Role: 1. 2. 3. 4. 5.
Materials:	
Type:	Notes:
1.	
2.	
3.	
4.	


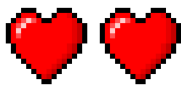

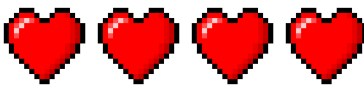
5.	
6.	
7.	
Devices:	
Type:	Notes:
1.	
2.	
3.	
Promotion Plan:	
Kick-Off Plan:	
Announcement:	Prior Knowledge:
Celebration:	

Checklist:


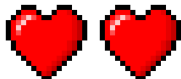

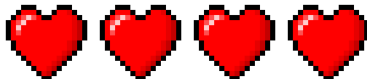
- ☐ Event Type
- ☐ Activity Selected
- ☐ Participating Staff
- ☐ Devices
- ☐ Materials
- ☐ Promote
 - ☐ Flyers
 - ☐ Posters
 - ☐ Parent Letters
 - ☐ Community Involvement
- ☐ Celebration

Additional Notes

Teacher Reflection

What was fun about teaching a Maker Activity?			
What was challenging about teaching a Maker Activity?			
How did my students react to learning a Maker Activity?			
What can I do differently next time I teach a Maker Activity?			
How would I rate my Maker Month experience?			
			
Additional thoughts:			

Student Reflection

What was fun about learning a Maker Activity?			
What was challenging about learning a Maker Activity?			
What is one thing you would share about your Maker Activity?			
How would I rate my Maker Month experience?			
			
Additional thoughts:			

Parent Letter

Dear Parents or Guardians,

We live in a world surrounded by technology. And we know that whatever field our students choose to go into as adults, their ability to succeed will increasingly depend on understanding how technology works.

As part of our effort to increase our students' understanding of computational thinking and computer science, we will be hosting a Maker Month Event. This will be an opportunity for students to explore and create using the computer science concepts and practices connected to physical computing. Not only do we want students to understand how computers work but we also want them to understand what makes a computer a computer and how we can interact with them.

During the event students will learn to design, prototype and build different models of computer systems and devices. We believe that encouraging students to make and build they can better engage and express their understanding of computer science.

We welcome all parents and guardians to get involved and ask how they can continue this learning at home.

Sincerely,

Thought Questions for Computer Science

Programming:

1. How can you interact with a computer?
2. What was challenging about the activity/puzzle?
3. What was surprising about the activity/puzzle?
4. What was easy/difficult about using a set number of blocks?
5. Is there a word you remember but not the definition?
6. Is there a definition you remember but not the word?
7. What happens when you rush to finish an activity?
8. How did you use a new block today?

Projects:

1. How would you describe your project to a friend?
2. What was something that did not work?
3. What was something that could be improved?
4. What are you interested in creating?
5. What was it like to remix someone's project?
6. What happens when you rush to finish a project?

Collaboration:

1. What two comments did you share?
2. What was easy/difficult about being the teacher?
3. What was easy/difficult about being a learner?
4. What might you need help with today?
5. What can you share today with one classmate?

Problem Solving:

1. What did you figure out today?
2. What problem or challenge would you like to solve?
3. What are you most proud of today?
4. How did you come up with your solution?
5. How do you fix something that is not working?
6. Where can you go for help?
7. What are some questions you have to ask for the next class?

Notes:

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COMPUTER SCIENCE FOR ALL