Think Make Create LABS

The Makerspace Playbook

Issue #22: July 2023

TMC ON THE MOVE: SUMMER PREPARATIONS

In preparation for another busy summer season, here are a few things to consider when planning outside activities with your mobile makerspace.

- **Issue #20**, we shared 'tips and tricks' on summer sun safety.
- **Issue #11**, we talked about what materials might be helpful to prepare for 'on the move' locations. This has some of our favorite go-to purchases for outside spaces.
- **1st aid kit**: A good one doesn't need to cost much, but is essential.
- Easy clean-up: lay down a tarp underneath your work area.
- Walk through your location: remove any pokies (goat heads) in the grass or hard/sharp surfaces and protrusions (large rocks or sprinkler heads), this will help you secure a safer location for all your littles who either won't pay attention or may find them and injure themselves.
- Don't be afraid to take a break! You want kids to stay engaged and have fun, and sometimes that means walking away from their work to come back with fresh, new ideas!

~ Claire Sponseller, Area Extension Educator, University of Idaho Extension 4-H

Spotlight on You: South Dakota

This past month, our Eastern South Dakota TMC mobile lab traveled to Alcester, SD. While onsite the students and staff were able to take part in one of our exciting new activities: strawberry DNA extraction.

Any good science experiment starts with a fresh reminder of safety and the importance of using personal protective equipment (PPE). It also helps that when students put on a lab coat, goggles, and gloves they start to FEEL like a scientist and that can make all the difference.

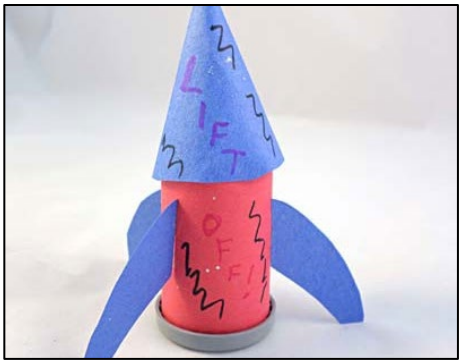
Students started the procedure by selecting a strawberry and smashing it into tiny bits inside a plastic ziploc bag. This begins the breakdown of strawberry cell walls which ultimately allows us to extract DNA. Next, students and staff discuss the composition of cells and how beneath a cell wall is a highly flexible cell membrane. This membrane is more difficult to break apart through physical means so we must use chemical methods at this phase. Students made the connection that soapy water is effective in breaking down bacterial cell membranes and sanitizing our hands when we wash them. This same principle is true for strawberries, and this is why a solution of soapy water helps us break down the strawberry cell membrane and release the DNA contained within the cell. Students then filter the resulting solution and then carefully pour cold rubbing alcohol to force the DNA to rise out of the solution. At this phase we can use a toothpick or cotton swab to collect the DNA that comes out of solution where the alcohol and soapy strawberry layers meet.

What makes this experiment so impactful is that students are able to reliably obtain a result, and the scientific explanations at each phase can be differentiated based on the age of the students. Older students can explore the cell biology at play in greater detail, while younger students can focus on measuring, motor skills, and the idea that DNA is like a recipe for our bodies to make new cells.

This experiment uses simple household materials to create a learning opportunity that can be adjusted for nearly any age group. It's also a wonderful way to help students envision themselves as scientists and give them the confidence that they can do it.

~Jeff Sebern, Director of Programs, South Dakota Afterschool Network

Give It A Try: Baking Soda Rockets



There are a few different versions of this activity, but Science Buddies uses old film canisters which often makes for a more 'controlled' rocket. In their version of Baking Soda Rockets, all of the materials are inexpensive and cost less than $1/youth. This is a fun outdoor activity that gets kids moving and excited. Plus in this lesson, there are great questions to further explore the design and build of each rocket, providing a few more excuses…I mean reasons…to launch again and again. Easily adaptable for a wide range of ages, but precaution should be made and safety groundrules should be set before you begin.

For more seasonal activities ideas, check out the Science Buddies STEM Calendar!

~ Claire Sponseller, Area Extension Educator, University of Idaho Extension 4-H

Put it Into Practice: Themes Increase Relevance

Themes are a powerful way to connect children to learning and create fun, engaging programs. When a theme is interesting, kids get excited about participating in activities and lessons. And when themes are familiar to kids, they can connect the program content with their own lives.

Themes unify activities and subject areas by tying them together. A thematic program could include fictional stories or non-fiction books, craft projects, science demonstrations or explorations, and games, all adapted to the theme. In this way, themes can also make program planning easier by focusing activities and providing a backbone.

For example, a summer camp planned around the theme of "insects" could include stories like *The Very Hungry Catterpillar*, lessons on different types of insects and their adaptations, songs about bugs, nature walks looking for insects, and games addapted to the theme (i.e. "Sharks and Minnows" could become "Spiders and Flies.")

~ Amy Post, TMC Labs Coordinator, Idaho Out-of-School Network

Tips and Tricks: STEM Calendar for Educators

Did you know that July is the best month to eat ice cream? July 4 is Independence Day in the U.S., and it's a great day to throw a mad tea party. This month also presents unique opportunities to comb the beach and peer at the moon!

Check out the STEM Calendar for Educators from Science Buddies to learn about celebrations, events and anniversaries throughout the year. Use this calendar to chose themes for programs and activities. Here's what's happening in July:

- National Ice Cream Month
- July 1-7: Clean Beaches Week
- July 4: Independence Day
- July 4: Alice in Wonderland Day
- July 20: Anniversary of Apollo Moon Landing

~ Amy Post, TMC Coordinator, ION

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