



Think Make Create

LABS

# The Makerspace Playbook

Issue #15: November 2022

## TMC ON THE MOVE

Sanford Health and the South Dakota TMC program have developed a partnership aimed at showcasing a variety of health care career fields to students in our state. We know that developing interest in STEM at an early age is important, but aligning those activities with real world career fields can have an even greater impact. The Sanford Promise program has a stated purpose of providing outreach support for STEM education in accordance with the Sanford Research Center in Sioux Falls. Through this collaboration we can use the many benefits of a mobile STEM lab to reach a wider audience in our state. Our pilot project for this partnership was the creation of a blood typing experiment to highlight the work of a phlebotomist. Through the experiment we can give a tangible example of the type of work done by people who work in this field and stimulate further discussion about how and why this work is so important. Our hope is that in the coming year we will have developed several more experiments in alignment with health care careers which will be made available to any program that reserves a TMC trailer.

*~Jeff Sebern, Director of Programs - SD Afterschool Network*



## Spotlight on You: GPIS City Build 2040

On October 17<sup>th</sup> and 18<sup>th</sup>, 65 elementary and secondary students in Grand Island Public Schools (GPIS) gathered to participate in Beyond School Bell's City Build 2040 project. The City Build 2040 is a hands-on experience for K-8 students to use mostly recycled materials to build a representation of their town as they want to see it in the year 2040.

In the 2040 City Build, students will work with peers, city and business leaders, and event facilitators to design a city with a focus on housing, businesses, parks and recreation, transportation, water management systems, and renewable energy. Project coordinators in Grand Island work with GPIS 20 high school student mentors and 25 UNL Honors students to help facilitate and guide the experience.

Supplies included a tremendous amount of cardboard collected by GIPS staff and supplies from the Think Make Create Lab such as multi-colored duct tape, pipe cleansers, Crayola crayons, markers, and construction paper were key building materials.

The two-day session took place from 4-6 pm each day. On the second day, parents, grandparents and caretakers were invited to come see what their students had created. Students provided commentary on why components of their city were so unique and why they want these components in their city.











City Build 2040 is a great way to get youth hands-on experience in engineering and team building, as well as a great way to engage families and communities.

*Sandy Day, Beyond School Bells*

# Give It A Try - Blood Typing

Blood typing is a simple experiment that appears more complicated on the surface. Many of the blood typing kits available to educators allow for a realistic experience without any of the risks of "real" blood samples. A collection of synthetic blood samples are provided in each kit with a series of antibodies (A, B, and Rh) used to test the samples. Red blood cells with antigens on the surface of the cell will separate from solution based on the antibody they are exposed to. For example, an A+ blood sample contains both type A antigens and Rh antigens on the cell surface. When exposed to A or Rh antibodies this blood sample will form an agglutination reaction and form clumps after mixing. When this sample is mixed with B antibodies no reaction would occur because this blood type does not contain type B antigens. For those looking for a realistic experiment that highlights some of the work done in the healthcare field, blood typing can be an authentic learning experience that sparks curiosity in the students you work with.

~ Jeff Sebern, Director of Programs SD Afterschool Network

Blood Type				
	A	B	AB	O
Red Blood Cell Type				
Antibodies in Plasma	 Anti-B	 Anti-A	None	 Anti-A and Anti-B
Antigens in Red blood Cell	 A antigen	 B antigen	 A and B antigens	None
Blood Types Compatible in an Emergency	A, O	B, O	A, B, AB, O (AB <sup>+</sup> is the universal recipient)	O (O is the universal donor)

To explore more go to: [Blood typing: MedlinePlus Medical Encyclopedia](#)

## Put it Into Practice

Out of school STEM Education is well-positioned to provide youth with opportunities, relationships and the foundation they need to build and grow 21<sup>st</sup> century life skills. Through use of positive youth development practices, afterschool program staff can enhance STEM education and help youth engage with their communities, schools, organizations, peer groups, and families. Click2SciencePD.org is a great resource for staff to learn more about positive youth development practices in STEM learning. Additionally, creators of Click2Science had developed Click2ComputerScience and Click2Engineering. Learn more about these resources by using the links below.

Click2Science – [click2sciencepd.org](http://click2sciencepd.org) – This site focuses on the intersection of computational thinking and positive youth development.

Click2ComputerScience – [click2computerscience.org](http://click2computerscience.org) – Click2ComputerScience is committed to equipping out-of-school time educators with what they need to facilitate engaging, hands-on computer science learning experiences.

Click2Engineering – [click2engineering.org](http://click2engineering.org) – Designed to help out-of-school time staff understand engineering and facilitate authentic engineering activities with youth.

~ Julie Boyle, Nebraska Extension

## Tips and Tricks

Click2SciencePD.org has many resources for out-of-school time staff members to learn how to support positive youth development through STEM education. Check out these resources at [click2sciencepd.org](http://click2sciencepd.org):

- Managing Groups During STEM
- Giving Youth Control
- Encouraging Collaborative STEM Work
- Facilitating Inclusive Learning Experiences
- Developing a STEM Identity
- Making Connections to STEM Careers
- Connecting to Prior Knowledge and Experiences

~ Julie Boyle, Nebraska Extension

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