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MakerPlaces: An Approach to Culturally Relevant Engineering Education (Resource Exchange, Diversity)

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As a postdoctoral scholar Robert has developed programs, lessons, and resources to support Navajo non-profit Key'ah Rural Manufacturing Alliance (KARMA) in expanding access to culturally relevant engineering education in the Navajo and neighboring reservations.

Dr. Merredith D Portsmore, Tufts University

Dr. Merredith Portsmore is the Director for Tufts Center for Engineering Education and Outreach (www.ceeo.tufts.edu).

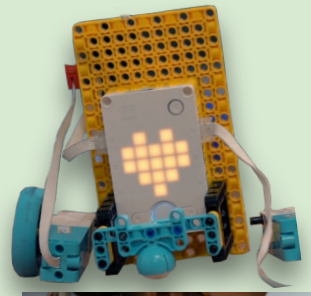
Keanu Jones

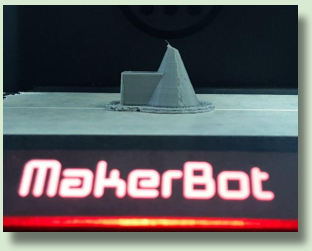
MakerPlace

Overview

MakerPlace: An approach to culturally relevant pre-college engineering education emphasizing the relationship to *place* from a Navajo approach.

What we're sharing: Two culturally relevant technology, engineering, and arts (TEA) lessons freely available online at the included links.



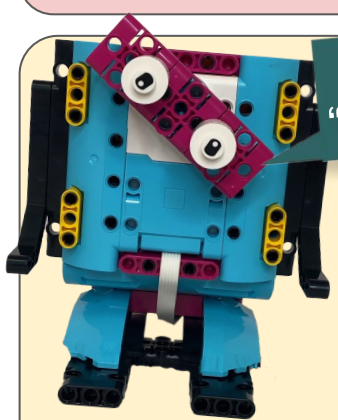


MakerPlace Objectives

- Ignite engineering interest for pre-college learners.
- Supporting workforce development and entrepreneurship, across Navajo and neighboring reservations.

Codevelopment

MakerPlaces exist in diverse spaces, from schools to community centers. Lesson are co-developed with local stakeholders in an iterative process of configuring materials and understandings in relation to community needs.



Dinésh chįįn yinish yé
"I am robot"

KARMA
Ke'yah Advanced Rural Manufacturing Alliance

Contact
KARMA - wiikarma.technology/contact
Dr. Robert Hayes - robert.hayes@tufts.edu

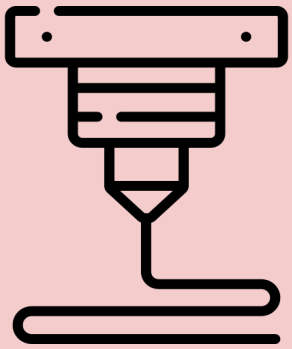
Scan to learn more

Example CAD Lesson: Make Your Own Jewelry

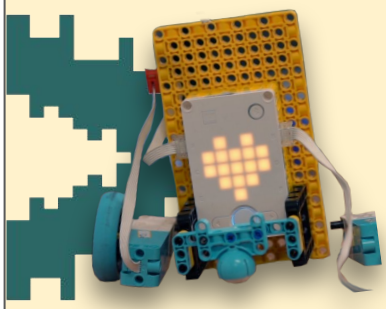
Lesson Overview

- ★ Objective: Learning TinkerCAD and 3D printing basics through traditional Navajo craft
- ★ Grade level: 3rd-8th grade
- ★ Time to complete: < 1 hour for design, plus ~5-30 minutes per printed piece

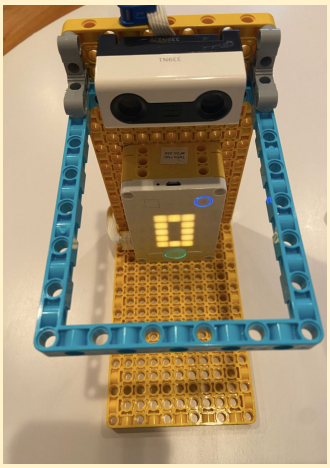
View the lesson



Example Robotics Lesson: Count to 10 in Navajo



Lesson Overview



- ★ Objective: Learning robotics and Navajo language together
- ★ Grade level: 4th-6th grade
- ★ Time to complete: < 1 hour

View the lesson

T'áátá'í (One)
Naaki (Two)
Táá' (Three)
Díí' (Four)
Ashdla' (Five)
Hastáá (Six)
Tsosts'id (Seven)
Tseebíí (Eight)
Náhást'éí (Nine)
Neeznáá (Ten)