

# BASE STATION

Maine Mathematics & Science Alliance

**STEMports: Community Workforce  
Development through Augmented  
Reality STEM Learning Experiences  
# 1831427 | IRG FY2018**



## Project Principal Investigators

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**Ruth Kermish Allen, Co-PI, MMSA**  
**Gary Lewis, Co-PI, MMSA**

## Maine Community Partners

**Maine Organic Farmers and Gardeners Association - Anna Libby and Laura Sieger**  
**Maine 4H Extension - Ryder Scott and Tara Polock**  
**Hurricane Island Center for Science and Leadership - Jennifer Page**

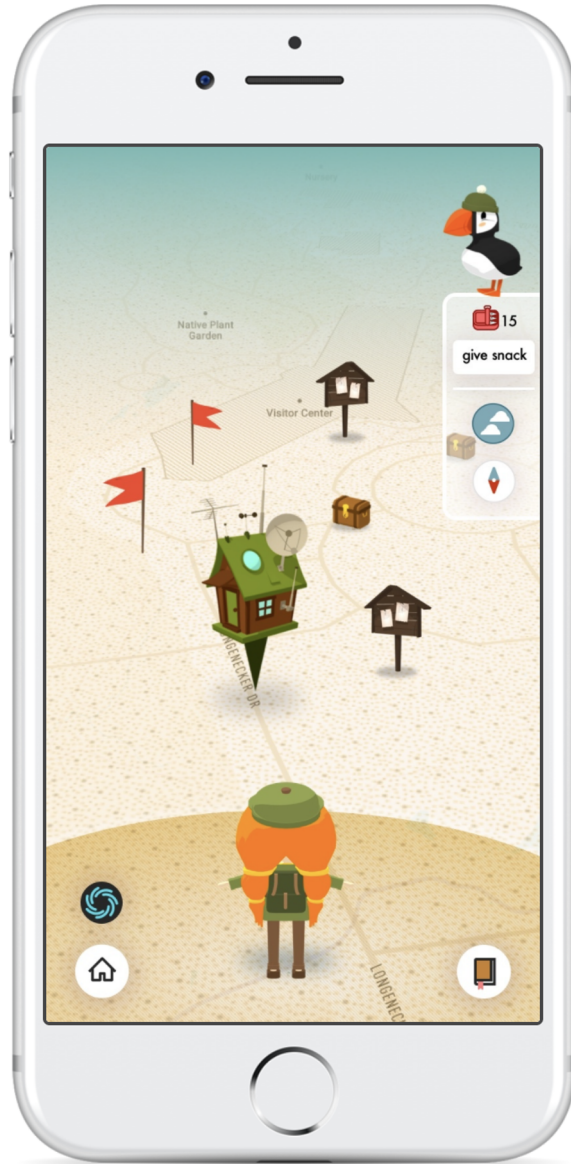


# Project Overview & Vision



- Understand how community game design and authoring activities impact rural STEM interest and workforce development
- Optimize design elements for workshops and game play to facilitate community connections and STEM learning

# Project Update



## BASE STATION APP

- Youth and partners part of the design process
- Created a warp function for remote play
- Available on iOS and open source on github

# Project Update



When it rains, it runs off!



Where does the rain go when it falls on the streets, roofs, and land around this old mill house? In this quest, you'll learn how engineers and architects design a built structures and neighborhoods to help keep water from pooling, causing erosion, property damage, and to minimize run-off into a local river, stream, lake, or other body of water.

START QUEST

## BASE STATION GAME LOOP

- Find a research station and quest around you or warp to one
- Follow prompts to collect field notes and visit tour stops
- Explore and observe something - maybe in your own community
- Build your field guide and feed the puffin!



# Project Update

**WEB-BASED EDITOR**  
for quest authoring  
and rapid prototyping

# Project Update

## VIRTUAL DESIGN WORKSHOPS

- Virtual collaboration through jamboards and zoom
- Iterative prototyping and warped testing
- Balance synchronous and asynchronous design work

The screenshot shows a virtual design workshop interface. At the top, there are navigation icons (back, forward, search) and a user count of +13. Below the navigation bar, there are two buttons: "et background" and "Clear frame". The main workspace is titled "Energy Locations" and contains several sticky notes of various colors (yellow, orange, blue, pink, green) with text describing energy locations and preferences. The notes include:

- the powerline near the 4h camp
- The lake right next to the museum can provide hydroelectric energy
- the pond near the canoes
- The solar panels on the pig pen.
- I would chose the solar panels on the museum
- There is a river that flows into the pond, South East on campus.
- the pond in alices acres
- There is a river that flows into the pond South East on campus.
- The solar panels on the museum.
- I would choose this too!
- I would also choose the solar panels not the museum
- Behind the stone house by the water front
- Behind the stone house by the water front for hydro power

On the right side, there is a chat window with a URL and some text: "https://do1gBWF50j4hjqINCH", "From Tara to Everyo", "If you are video bac", "From Kyr to Everyo", "How am I having th".

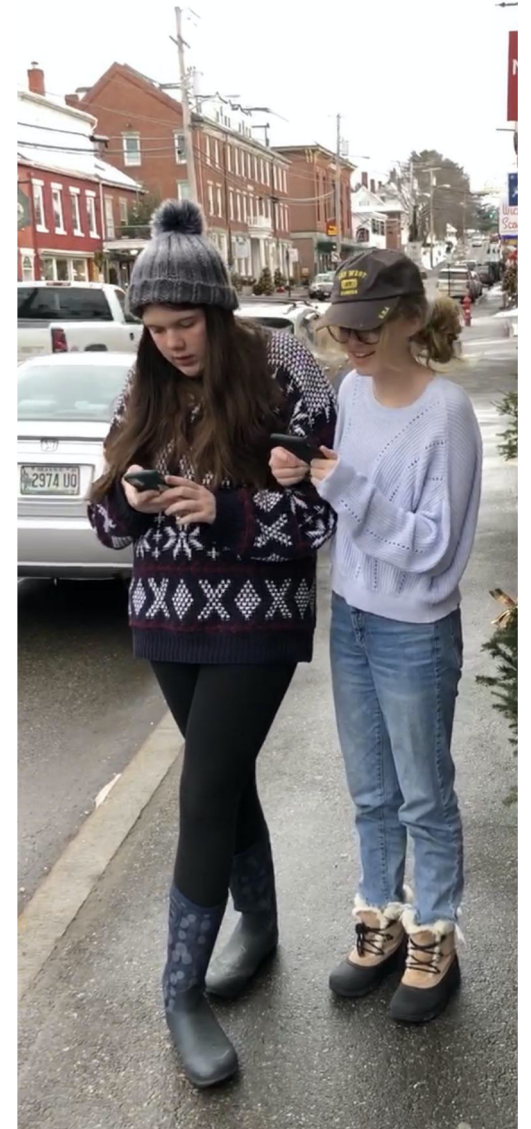
# Project Evolution

## Placemaking in Location-Based Learning Games:

The process of constructing augmented “places” within Base Station seems to link content, learning, and community in ways that are more relevant for players/learners.

## Influence of Design Roles and Spaces in the Co-Creation:

- Rethinking co-design process as not just about voice-and-choice or depth of design work,
- but about creating roles (content or workforce expert, game tester/ editor) and spaces that enhance the design work and impacts
- Structuring interactions to allow co-creation to emerge and not be forced



# Evaluating Impact on Communities

## **Base Station as a way to connect to the outdoors:**

“Initially, I was pretty hesitant. You know, being in environmental education and outdoor education, the thought of students walking around with technology—I thought would initially take away from the experience of being in nature, and being outdoors. And I've had to shift my thinking a little bit, to like, realize that some of those kids wouldn't be accessing the outdoors, were it not for the technology, and really looking at and exploring some of those aspects of nature, independently without the use of technology. So it's kind of like a gateway to introducing them to nature through something that they're, they're comfortable with already.”

***Teacher, project based and outdoor education***

## **Connecting communities through virtual play:**

“It also has the capacity to start connecting students to the island regardless of whether they're on the island, because they can create quests and work on them virtually. And then they could also take the quest that's on island and find ways to do a continuing quest back in their home community. So what does aquaculture look like on an Island? What does aquaculture look like in Damariscotta? ”

***Educator, informal science learning***



# Anticipated outcomes & success measures for next year

- Capture data analytics (open game data project)
- Conduct authoring workshops and collect data on the impacts of co-design and placemaking
- Research community connecting through network analysis

