



Virtual Experiential Learning Activity Gives Recognition to Algal Aquaculture in Maine

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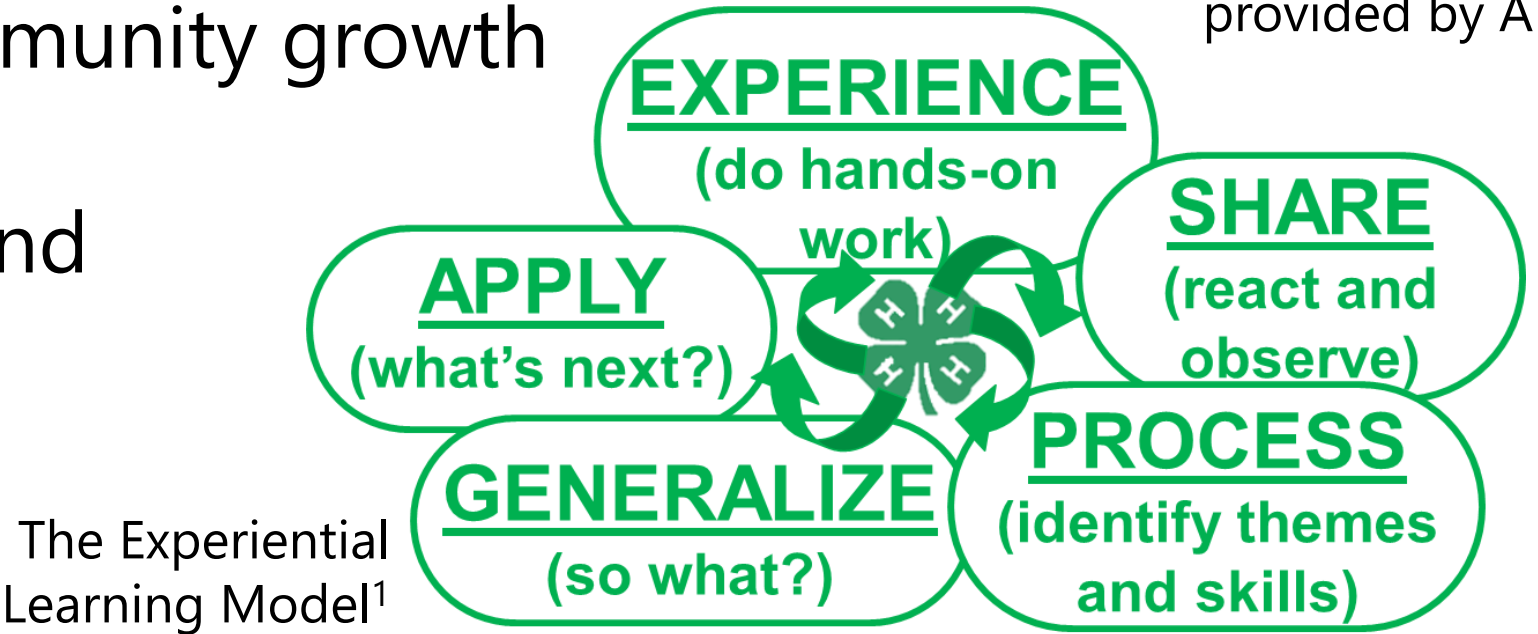


Introduction

- It is beneficial for Maine youth specifically to recognize the organisms and industries growing off their coast. Maine's seaweed products are projected to surge 6-8 times their current value in the next decade.²
- 4-H is a nationally-run youth development program that promotes personal and community growth through hands-on learning experiences.¹
- The UMaine 4-H Summer Learning Series is an interdisciplinary range of workshops and clubs, designed to address the need for virtual learning opportunities.
- The 4-H Experiential Learning Model is a five-step method that encourages life-skill development.¹



Photo of kelp and aquaculturist provided by ARI



Objective

Create a virtual experiential learning activity for the UMaine 4-H Summer Learning Series that **introduces youth to algal aquaculture in Maine and the gelling abilities of alginate**, a structural component of kelp.

Implementation

Dr. Susan Brawley, a distinguished algal expert and professor at the University of Maine, introduced this activity to me in *SMS 491: Algal Aquaculture*



The original "seaweed lava lamp" made in *SMS 491*

To replicate and implement this activity:

- Attended the Virtual Experiential Learning workshop offered for 4-H Summer Learning Series presenters.
- Developed workshop outline based off the 4-H Experiential Learning Model.
- Assembled youth-friendly activity kits and additional learning materials.
- Used evaluation tools to close the activity and gage success.



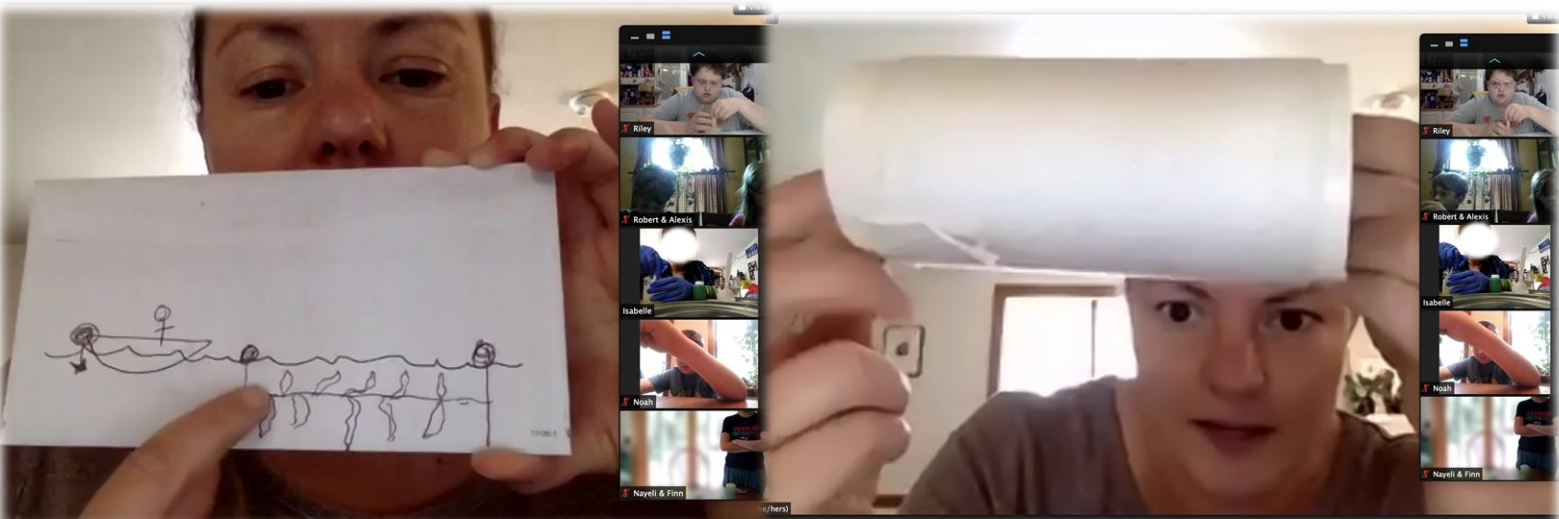
"Making Seaweed Lava Lamps" activity kits



Presentation slides representing the "closing circle", when youth provide feedback

Results and Reactions

Icebreaker;



Melissa Malmstedt sharing how kelp is harvested with drawing and spool.



Robert and Alexis M. drawing. (Photo posted by their mother in the 4-H Summer Learning Series Facebook group)

Doing the experiment;



Clyde H. stirring sodium alginate solution



Lauren Trainor showing how much paint to add



Riley M. stirring paint into sodium alginate solution

Sharing the results;



Haley K. stirring her "seaweed lava lamp"



Noah excitedly shares his "seaweed lava lamp"



Clyde H. showing off his alginate bead "dinosaur"

Learning Outcomes

4-H Experiential Learning Model

How it applied to this workshop

- | 4-H Experiential Learning Model | How it applied to this workshop |
|---------------------------------|---|
| EXPERIENCE | <ul style="list-style-type: none">Participants who seemed distracted or disinterested at first became more engaged.Participants replicated lab procedures at home (received materials and methods, used PPE, followed instructions, and made observations).All participants were able to make their own "seaweed lava lamps". |
| SHARE | <ul style="list-style-type: none">The icebreaker activity allowed participants to share their thoughts and feelings about the subject.Youth shared the process and outcome of their experiment with each other. |
| PROCESS | <ul style="list-style-type: none">At the end of the workshop, youth shared their favorite thing, something they learned, and how well the workshop went by using evaluation tools such as "Glows and Grows" and "Fist to Five".The feedback was positive and informs future educators that this was a successful activity. |
| GENERALIZE | <ul style="list-style-type: none">Participants were shown common food products that use alginate and kelp during the workshop so they can identify them in the grocery store.Including the Kelp Krunch Bar to the activity kits was a direct and delicious way to introduce them to the industry of algal aquaculture. |
| APPLY | <ul style="list-style-type: none">The participants of this workshop received additional learning materials, with information and resources about the experiment.The existence of alginate in kelp was emphasized during this activity, which introduced youth to topics and businesses in marine science.This activity stimulates future careers in the industry and exposes youth to interdisciplinary learning. |

References

¹ 2021, Sarah Sparks, UMaine 4-H Cooperative Extension, Additional materials from the Virtual Experiential Learning Workshop, Adapted from the 2005 Minnesota 4-H Curriculum Committee
² 2020, Peter Piconi, Island Institute; Rob Veidenheimer, Pentallact; Bob Chase, EPR, "Edible Seaweed Market Analysis", pp.30

Acknowledgements

- This activity was created by Dr. Susan Brawley and can be found on the Phycological Society of America's website, where you can find other educational materials related to algae! *Point your smartphone camera at this QR code!*
- Thank you to Maine Coast Sea Vegetables for donating a box of Kelp Krunch bars to the activity kits of the 4-H participants.
- Materials provided by UMaine 4-H Cooperative Extension; funding for my internship by Maine EPSCoR & Cooperative Extension Animal Health Lab.

