

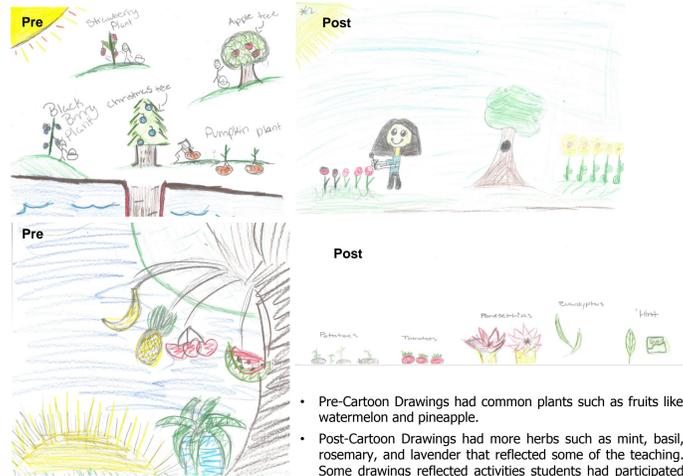
# Promoting Cultural Inclusion on a School Campus: Research Results From a Pilot Program

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## Abstract

Through a Faculty Incentive Grant that was made possible by the University Corporation at Monterey Bay, we partnered with Los Arboles Middle School in Marina to conduct ethnobotanical research and create models of gardens that promote cultural inclusion and connection to nature in their school campus. We planned and led one-hour classes twice a week for three months. The project took place from October to December of 2018 through an elective course. In this presentation, we will share the evolution of students' thinking and what we learned about fostering inclusive science education through a culturally-inclusive approach.



### Students drew a Pre and Post Cartoon Drawing

- Students drew 34 different plants in the Pre survey and 36 different plants in the Post survey
- Cultural uses for plants that were drawn were Pumpkins, Christmas Trees, Pointsettias, and Day of the Dead Celebration Marigolds
- The Post-Cartoon Drawings included more writing that explained how students used the plants or how their families used plants.

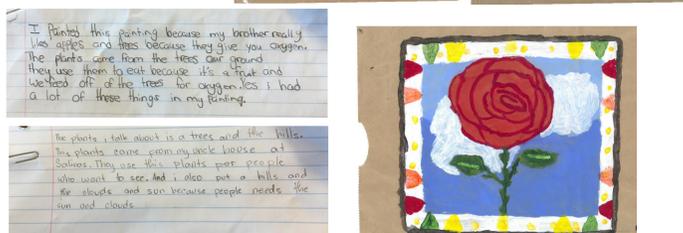


### (left) Photovoice Activity:

Students were split into groups and walked around their school. They were asked to take pictures of things they liked (green frames) and things they did not like (red frames). Each group made a poster with their pictures and the whole class did a gallery walk to see what other groups took pictures of and why.

### Amate Bark Paintings (right):

Students were asked to paint the plants that they talked about in the interviews they did with their friends/family or they could paint pictures of plants from their own lives that they liked. They painted on paper bags to represent the Amate bark native Mexicans would paint on.



## What is Ethnobotany?

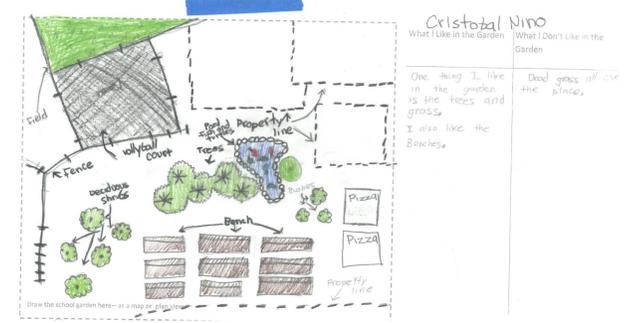
As a discipline, ethnobotany seeks to understand the traditional knowledge and customs people have for plants, including for medicines, foods, religion, or other cultural practices. We drew from the ideas of ethnobotany as a means to engage students in thinking about plants, and we sought methods that would get students to think about the plants that are part of their lives, and a part of their families' cultural practices. We were interested in whether an ethnobotanical approach would increase students engagement or interest in science and their school grounds.

## Methods

CSUMB students carried out different activities which included:

- Photovoice and a walking tour
- Student-led interviews with family and friends
- Amate bark paintings
- A guest speaker from Marina Tree and Garden Club who presented culinary herbs
- A landscape drawing and visioning exercise
- Foods and cooking from around the world

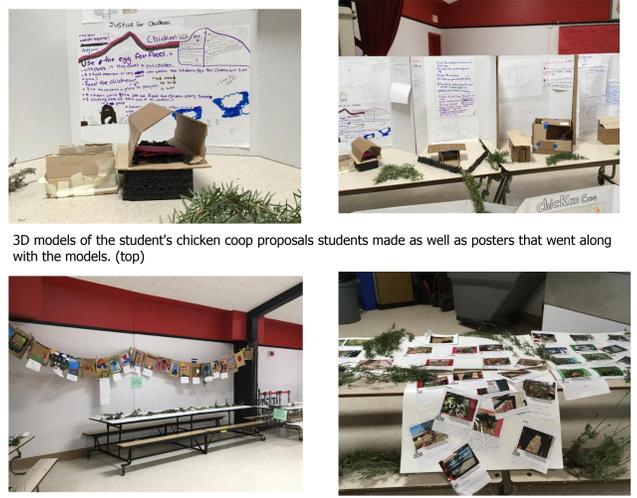
After the landscape visioning, middle school students voted for the projects they wanted to work on. They voted for building a chicken coop and a rose garden. They built 3D models of possible chicken coops and planted primroses in their garden.



### Landscape Drawings (top and right):

Students were shown a presentation on gardens at other schools and were shown how to draw with a bird's eye view. Students drew what their garden looked like and then the next day they were asked to draw in the things they wished they could have in their garden. Some of the things students drew included more trees and plants, a pond, trails, a gazebo, and more benches.

Los Arboles Middle School had an Art Night where parents and students could see the work they did over the quarter. The students in our research presented their paintings, their photovoice posters, and 3D models of chicken coops they built. (Bottom)



3D models of the student's chicken coop proposals students made as well as posters that went along with the models. (top)

Amate bark Paintings and interview notes (top)

The photovoice posters on display (top)

Students who voted to plant a rose garden got to plant primroses in their outdoor classroom. (It was the wrong time of year to plant roses, so we made this substitution) (right)



Examples of the slides we showed students about history of foods from around the world. We also tried to choose places that represented some of the students' own family heritage, including Mexico, Romania, and the Philippines.

## Results

The research we carried out at Los Arboles Middle School brought about very different results from the results we were expecting.

- We had a class with a very high number of English learners and students with learning and behavioral differences.
- We did not see much change in student engagement or interest in learning over the semester, but students were most engaged with landscape drawing, chicken coop planning and research, planting, and cooking
- The students who voted for the rose garden enjoyed planting primroses and wanted us to come back the following semester
- After our presentations and our guest speaker, students wrote and drew more about herbs

Students voted to have a chicken coop in their outdoor classroom, which is far from what we were trying to connect them with, which were plants. However this showed us that students will invest their efforts and creativity into something they care about:

- Students wrote professional letters to their principal to ask for permission to have a chicken coop
- Researched how to take care of chickens
- Students built 3D models of different chicken coops and made posters for them, reflecting the research they had done
- Parents volunteered to help build the chicken coop, with plans for this to be constructed in the summer.

## Suggestions and Reflections

When applying this research to future classes or groups of students we suggest:

- Reversing the order of the lessons which would mean cooking with students on the first day, planting the next, doing plant presentations, then landscape drawings, and family interviews. We believe this would allow them to work from the most accessible and concrete aspects of plants first before moving into recommendations for the greenspace.
- Having a higher teacher-to-student ratio
- Integrating more art projects or drawing into the lessons because students really enjoyed having the freedom to be creative and express themselves
- Having an open mind and being flexible with changing plans
- Being aware of the diversity of students in the class to better accommodate lesson plans

## Special Thanks to:

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