

Ethiopian Fulbright Hays Curriculum Project 2017

University of Pittsburgh

Farm to Table in Wolaita Curriculum Unit: *Ethnobotany in Wolaita and Indigenous Ethiopian Technology & The Modern Maker Movement*

Abstract: Indigenous Ethiopian Technology & The Modern Maker Movement

Grade Levels: 5, 6, 7

Focus: Students will learn about cultural innovation in the Ethiopia; specifically, they will develop an understanding of how individuals have utilized natural resources to create handmade tools and artifacts that have been used over decades to accomplish everyday chores. It is important for students to appreciate the cultural intelligence and innovativeness in the development of Ethiopian tools and artifacts in that individuals have successfully adapted to their environment by using these uniquely designed tools for generations and continue to use them nowadays.

There are 3 lessons included in this section, *Indigenous Ethiopian Technology & The Modern Maker Movement*, of the Farm to Table in Wolaita Curriculum Unit. The background information and resources for both teachers and students contained in each lesson is interchangeable as it can be used for each of the assigned project-based learning activities:

Lesson 1: Cultural Knowledge Embedded in the Crafting & Use of Tools: handmade tools for everyday use in Wolaita

Lesson 2: Creating String from the Common Milkweed Plant

Lesson 3: Create Makerspaces and Organize a Trash Faire

Author: Darla Gerlach, EdD

Lesson Plans

PA Core Standards: 3.3 (Earth & Space Sciences); 4.1 (Ecology); How People Use Tools & Techniques to Help Them Do Things and How Creative Thinking & Economic & Cultural Influences Shape Technological Development: 3.4.5.A1; 3.4.3.E1; 3.4.6.A1; 3.4.7.A1-A2; 3.4.5.B2-4; 3.4.6.B3-4; 3.4.7.B2-4; 4.4 (Agriculture & Society); 4.5 (Humans & The Environment)

Technology

Attachment D: The PowerPoint, **Farm to Table in Wolaita Curriculum Unit: Indigenous Ethiopian Technology & The Modern Maker Movement**, coordinates with these lesson plans.

Attachment E: Interview with an Ethiopian Gardener

<https://pitt.app.box.com/s/oqhgb5inx4180b1g44e5imj2ioa7jvuk> for Lesson 1.

Expectations/Goals (for Lesson Plans 1-3)

Students are challenged to promote sustainable management and conservation of natural resources within their communities.

Essential Questions

Each section and lesson plan poses questions and discussions for the student/class.

Lesson Plans

Lesson 1: Cultural Knowledge Embedded in the Crafting & Use of Tools: handmade tools for everyday use in Wolaita

Background Information

In preparation for this lesson, teachers should review the following sites as a reference for the PowerPoint, students' discussions and related assignment.

Lesson Procedure

Students should view Slides 1-17 of the PowerPoint, **Farm to Table In Wolaita Curriculum Unit: Ethnobotany in Wolaita and Indigenous Ethiopian Technology & The Modern Maker Movement**.

Students should view the following short video which highlights the skills of an Ethiopian gardener sharing his knowledge of traditional skills associated with his trade:

<https://pitt.app.box.com/s/oqhgb5inx4180b1g44e5imj2ioa7jvuk>

Ask students the following questions for a class discussion:

1. In what ways can you document in the slides (1-17) and the short video how individuals in the Wolaita culture are promoting indigenous knowledge?

2. What challenge will the Wolaita culture face in the future for the preservation of traditional knowledge/skills passed down from one generation to another?

Ask students to complete **Attachment F**: "This is like my history."

Lesson 2: Creating String from the Common Milkweed Plant

Background Information

In preparation for this lesson, teachers should review the following resource:

☞ Showy Milkweed: Preparing to Survive. Kenneth D. Nunn. 2011-2013.

<http://www.preparingtosurvive.com/milkweed.html>. This site explains multiple uses of milkweed particularly how Native Americans use it in their daily lives.

Lesson Procedure

Teachers should view Slides 18-21 of the PowerPoint noted below. Harvest stalks of milkweed for the class to make string. Milkweed can be found near ponds, creeks, open fields and even alongside roads in some neighborhoods. Arrange groups of students in the classroom, 3-4 students in a group are ideal for this cooperative learning activity. Usually one stalk of milkweed per group is sufficient for the students to gather fibers to make string.

Students should view Slides 18-21 of the PowerPoint, **Farm to Table In Wolaita Curriculum Unit: *Indigenous Ethiopian Technology & The Modern Maker Movement.***

Students can be instructed to make one large piece of string per group or for each group member to make his/her own strand of string. This activity encourages students to share their techniques of collecting the milkweed fibers and connecting and twisting the fibers to achieve a lengthy piece of string without breakage. After students have made individual strands of string or one large piece of string per group, distribute rulers and index cards or a piece of paper. Students should measure the length of the string and record it on the paper then they can attach the piece of string on the paper. Instruct students to write group members' names on the paper. Students' results should be posted in the classroom so that others can share their success in learning this skill and reflect on the concept of how the Wolaita people craft string from false banana and how Native Americans and other cultures create this hand made item from natural resources for everyday use.

Lesson 3: Create Makerspaces and Organize a Trash Faire

Background Information

In preparation for this lesson, teachers should review the following resources:

- To familiarize yourself with the framework for maker-centered learning, use these educator resources:

☞ Agency by Design: <http://agencybydesign.org.s219538.gridserver.com/>
("Investigating the promises, practices and pedagogies of maker-centered learning")

☞ <https://www.edutopia.org/blog/makerspaces-school-and-community-successes-chris-obrien>

☞ http://www.carnegiemnh.org/uploadedFiles/CMNH_Site/Learn_with_Us/Downloads/ELC_Catalog.pdf

☞ Project Zero: <http://www.pz.harvard.edu/topics/global-cultural-understanding>

☞ Maker Movement Reinvents Education – Newsweek
<http://www.newsweek.com/2014/09/19/maker-movement-reinvents-education-268739.html>

☞ How to Be a Global Thinker, Veronica Boix Mansilla.
<http://www.ascd.org/publications/educational-leadership/dec16/vol74/num04/How-to-Be-a-Global-Thinker.aspx>

Lesson Procedure

Students should review Slides 22-29 of the PowerPoint, **Farm to Table in Wolaita Curriculum Unit**, *Indigenous Ethiopian Technology & The Modern Maker Movement*.

Ask students the following questions to generate a class discussion:

1. How do individuals' critical thinking skills and innovativeness help their culture become sustainable for the future?
2. How do individuals in the Wolaita culture repurpose discarded items in their environment into useful tools for everyday use?
3. How is the practice of repurposing an effective method of conserving resources in the Wolaita culture and your culture?
4. Tinkering is described as "a playful way to approach and solve problems through direct experience, experimentation, and discovery." (Martinez & Stager, 2013, p.

32). Have you ever used this method of problem solving in school or home? Did you create an item using tinkering? Describe how you created your product.

Activity: Create a Makerspace at School and Design a Repurposed Product

1. Ask students to collect recyclable materials such as plastic containers; foam trays from products purchased at the grocery store; colorful packaging and boxes that will be discarded; scraps of unused fabric; bottle caps; scraps of yarn and thread; buttons and jewelry; and many other items. Ask students to bring these materials to school, and they can organize the items into boxes.
2. Create a space within your classroom or school library so that students can work with their peers to brainstorm, design and construct a repurposed product. The product can be a practical object to use in school, an office or home or a product designed for aestheticity.
3. Students should have the opportunity to browse all of the recyclable and discarded items and select things that they can use in their finished products. Allow time for students to draw illustrations of their ideas for their products; share their ideas with their peers, and experiment with the construction of their recyclable materials and discarded objects.
4. While students are engaged in the problem-solving process of this project and “tinkering”; guide their efforts by reminding them of 3 simple stages in the process:

TMI

Think: Brainstorming; gathering materials; deciding who to work with (or alone); setting goals; sketching; researching

Make: Play; tinker; experiment; construct; deconstruct; ask questions

Improve: Your creation either works or it doesn't; you're either satisfied with your creation or you're dissatisfied. Either way, “fix it or make it better”; discuss your creation with your peers; use different materials; think about ways in which you solved other problems

(Martinez & Stager, 2013, pp. 52-54).

5. After students have completed their projects, organize a *Trash Faire* at school or the community library to display their repurposed items. Distribute note cards to students and ask them to neatly write the following: his/her name or group member names, a title for their product, the product's intended purpose—if it has a specific use or if it is for aesthetic purposes and the materials they used in the project. Display this information beside the students' products.

6. Ask students to reflect on how they transformed unused materials into a repurposed item and what they would change in the problem-solving process if they completed this project again.

References for this lesson plan:

Burke, J. J. (2014). *Makerspaces: A Practical Guide for Librarians*. Rowan & Littlefield, Lanham, CA.

Egbert, M. (2016). *Creating Makers: How to Start a Learning Revolution at Your Library*. Santa Barbara, CA.

Fleming, L. (2015). *Worlds of Making: Best Practices for Establishing a Makerspace for Your School*. Thousand Oaks, CA.

Martinez, S. L. & Stager, G. S. (2013). *Invent to Learn: Making, Tinkering, and Engineering in the Classroom*. Torrance, CA.