Creativity at the Core

Module 18

Reuse STEAM

Developed by Humboldt County Office of Education and SCRAP Humboldt

Section: **K-2 unit: Part 3**

Section Title: **Expand the "Loop" Through Creative Reuse**

A Professional Learning Module Designed for: **K-2 Teachers**

CONTENT OUTLINE

Purpose:

Students learn about, and are inspired by, creative reuse as way to expand the "life span" of paper fibers. They draw from the results of their experiments to create a formula for new recycled paper, experiment painting with paper pulp, learn about the color wheel, and document their work by creating an iMovie.

Time: 2 hours 30 minutes

Grouping: Whole class and small groups

Standards:

Please see associated standards files

Slides: 43-73

Handouts:

"Handout iMovie or Video Editor.pdf"
"Handout Paper Needs Module 18"
Handouts A through I: Colors In Spanish
"Handout Elements and Principles of Art.pdf"

Materials:

Papermaking supplies (please see Paper Needs handout)

Media Resources:

See description in next section

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PROCESS/ACTIVITY

Creative reuse sees all materials as equal and doesn't discriminate between new and used. One doesn't need brand new canvas to paint on, when the definition of what a canvas could be is expanded and broadened to encompass all materials. By holding all materials as equal, versus valuing them differently if they are new or used, we extend the lifespan of that material, thus conserving the natural resources that material is made from. By viewing objects as materials, we expand how we see them.

Creative reuse, also known as upcycling or repurposing, is the process of taking materials or products that are unwanted for their original function and with the addition of **creativity**, they are then **transformed** into something else. For example, a bottle cap from a soda bottle could be reimagined and reused as an earring, or a washer, or checker pieces or used as a wheel on a handmade car. By expanding the definition of how we see, think and use materials, we infuse creative problem solving into projects.

The Ultimate Paper

1. Students use what they have learned about paper fibers and paper types to design their own recycled content paper and will model the manufacturing process in their own classroom. Ask students to revisit Graphic Organizer #1 and to consider which combination of paper fibers would make the "ultimate paper". Consider the rankings for strength, how many times the paper fibers may have already been recycled, or perhaps interesting colors or textures, etc. when choosing paper with fibers that, when blended together into pulp would yield the highest quality paper.

♣ Note: Paper samples that did not breakdown in water have been treated with a coating that enables them to have "wet strength". Wet strength treatment is used in packaging that could become moist due to condensation (frozen food boxes, six-pack carriers), paper products that carry food and liquids (paper plates and cups, milk cartons), and in items where the contents inside cannot be exposed to moisture (paper ream wrappers). These cannot theoretically be recycled because the paper fibers will not breakdown into pulp when blended. Keep this in mind when consider the students' recycled paper "recipe".

2. Batches of paper pulp are blended up in accordance with the formulas students designed and students create actual sheets of recycled paper. Please see accompanying PowerPoint for papermaking instructions.
3. Newly made recycled paper sheets are tested again using the student-designed strength tests to determine the *Ultimate Paper*!
4. The fibers of some of the originally collected paper types were too weak and short to be recycled as they had reached the end of their "lifespan." *How can people avoid throwing these away? What ideas do students have to creatively reuse things like egg cartons or avoid using disposable paper products like tissues?*

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PROCESS/ACTIVITY

Art skills

1. Skill: Color wheel: youtube video: https://www.youtube.com/watch?v=eGrGkJtSLsk
2. Powerpoint (in Spanish with English script notes) and handout included.
3. Have students experiment with creating a color wheel, mixing primary and secondary colors.
4. Texture experiment graph, see handout
5. Making pulp paint with recycled paper, construction paper and a blender.

Demonstrating Knowledge

Students will demonstrate understanding of the unit by creating an iMovie trailer (iPad) or We Video (android). See handout. Examples are shown in accompanying PowerPoint presentation. View a sample iMovie trailer created during a piloting workshop for this module here:
https://drive.google.com/file/d/0B3t1l-cJ-FW1QmNQdVRmWTB5bGM/view

Additional video resources:

http://www.recycling-guide.org.uk/science-paper.html Child-like images of 6 steps in paper recycling process

https://www.youtube.com/watch?v=isEV-mCFPiY Excellent video of factory processes, but no narration so is a bit confusing… but fascinating to watch!

https://www.youtube.com/watch?v=wa7DBd1tE2E Great brief history of paper making – paper being made from trees was a late 18th century invention of a French scientist who was inspired by a wasp nest he saw on a walk in the woods.