YES! Project Guide

Youth Eco Solutions

Category: Water Quality and Conservation

Project Title: Creating a Water Conservation Plan

Approximate Cost: $100

Desired Results

Project Goal: **Students learn how to analyze site to create a water conservation plan that addresses water storage, distribution and diversion practices with the goal to improve water quality.**

UNDERSTANDINGS	ESSENTIAL QUESTIONS
• Assessing water needs and resources • Understanding your watershed • Water Management and Conservation Plan • Water collection and distribution using rain barrels • Water storage with rain gardens • Water distribution and diversion with swales • Water storage, diversion, and soil regeneration with Hugelkulters	• What is my current water conservation plan like? • How do you evaluate water conservation at a chosen site? • What is my current water budget? • What is an ideal water conservation plan? • What resources can be implemented in a water conservation plan? • What are the benefits of water conservation resources? • How do I create a water conservation plan using various methods? • How do I measure the success of my water conservation plan?

Knowledge and Skills Acquisition

Students will know…	***Students will be skilled at…***
• How water is currently used on their site • Their watershed • Their water budget • Various methods for water collection, diversion, and distribution • What swales and Hugelkulters are	• Analyzing a site for water storage and distribution • Locating and understanding watersheds • Building rain barrels • Designing rain gardens • Building and understanding the benefits Hugelkulters • Building and understanding the benefits of swales • Designing a Water Conservation Plan • Collecting data to assess Water Conservation Plan

• Know how to design and build rain gardens and rain barrels • How to collect data and analyze information • How to design and implement a Water Conservation Plan from start to finish	

Data

Impact Evidence: Students will use qualitative information to build knowledge base and create water conservation plan. To analyze the implementation of their water conservation plan, they will collect data and observations using quantitative data.

Qualitative (observations and descriptive data):

- Gathering information on current water conservation data
- Locate and analyze your watershed
- Create detailed ideal water conservation plan with step by step direction and timeline
- Design, build and implement methods to improve water conservation

Quantitative (numerical data):

- Calculate current water budget
- Gather data on current measurements of run-off, water retention in soil, and water collection on side
- Consistently conduct analysis of water conservation plan and modify as needed

Timeline

This is a project that is intended for one YES! Season, starting with planning and then implementation and analysis of Water Conservation Plan.

1. Background Knowledge and Understanding: Steps 1-4 in Process
2. Water Conservation Plan: Step 5 in Process (Write plan, draw plan, create timeline and steps to complete plan)
3. Implement Plan: Create water management practices and implement into landscape
4. Gather Data and Analyze: Take observations of water runoff and storage prior to implementing plan, gather observations and data
5. Modify Plan and make changes as needed. Continue to gather data.

Process

1. Identifying Water Needs and Resources and ideal water usage plan
2. Identify current sources of water and ideal sources of water (location of rain garden, natural barriers, rain barrels)
3. Understand your watershed and implement in water plan (Where will water go, where do I want water to stay or go?) – understanding runoff
4. Using past climate/weather records, calculate your water budget by estimating annual rainfall at your location
5. Using data and resources create "Water Conservation Plan" implementing water storage, procurement, and a variety of distribution methods

Method 1: Rain Gardens (water storage, procurement, and distribution)
Method 2: Rain Barrels (water storage and procurement)
Method 3: Swales (water distribution and diversion)
Method 4: Hugelkulter (water and organic matter storage and diversion)

Resources

Water Management Practices: (Steps 1-4 in Process) – Permaculture
https://permacultureapprentice.com/permaculture-water-management/
Locating Your Watershed: https://help.waterdata.usgs.gov/tutorials/site-information/what-is-my-watershed-address-and-how-will-it-help-me-find-usgs-data
Raingarden Design: The Blue Thumb Guide to Raingardens Book ($25 Amazon)
How to Build a Raingarden Example: https://www.familyhandyman.com/garden/how-to-build-a-rain-garden-in-your-yard/
Rain Barrels:
How to Build: https://www.instructables.com/id/How-to-make-a-rain-barrel-1/
Kits on Amazon: https://www.amazon.com/EarthMinded-Rain-Barrel-Diverter-Parts/dp/B005CJFBJE
Swales:
How to Build: https://www.tenthacrefarm.com/how-to-build-swale/
Swale and Rain Garden You Tube Video: https://www.tenthacrefarm.com/how-to-build-swale/
6 Steps for Building a Swale: https://regenerative.com/magazine/six-steps-building-swale
Hugelkulter:
How-To: https://morningchores.com/hugelkultur/
You Tube Video: https://www.youtube.com/watch?v=RtMIld3clEM