Rainwater Harvesting for School Gardens

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Introduction

My Background

- Reside and teach in Prescott, Arizona
- Classroom teacher in a 3rd/4th grade classroom
- Background in environmental education with emphasis on water and wildlife
- Developed exhibits and educational programs at local zoological sanctuary and museums
- School garden co-facilitator at Primavera School and Skyview School (Prescott, AZ)
Overview of Presentation

- Why school gardens?
- The role of water education in school gardens
- History of Primavera School garden project
- Successes and challenges of school gardening
- Curriculum and lesson plans
- Other water education projects
- New opportunities
Primavera Learning Garden
Why School Gardens?

- hands on and hands dirty!
- engaging and authentic
- project-based approach to learning academic standards
- multi-sensory approach to learning
Why School Gardens?

**Science**
- WATER! geology, life science, weather, ecosystems, genetics, energy, matter, force and work

**Math**
- graphing, measuring, data analysis, calculations

**Social Studies**
- natural resources, economics, history, cultural literacy, agriculture, native people
The Role of Water Education in School Gardens:

Students recognize and experience water’s essential role on Earth
- Life forms
- Life cycles
- Physical cycles

Water conservation
- Innovative and responsible water use: RAINWATER HARVESTING
- Awareness of local climate
History of Primavera School Garden Project

- Established the garden site in Spring 2009
- Organized community work days
- Wrote grant to obtain an 1,100 gallon rainwater cistern
History of Primavera School Garden Project

- Installed rainwater cistern (gravity-fed system)
- First growing and harvest season was a success!
- Students preschool-5th grade participated
- In 2010 another grant helped purchase a pump for rain tank.
History of Primavera School Garden Project

- **Fall 2010** pump was installed
  - Water meter, timer and float installed
  - Goal was full automation
- **Spring 2011**
  - Connected tank to drip system
  - Garden improvements for pest control
  - Maintenance and repairs
  - Planting
History of Primavera School Garden Project

✿ A bountiful harvest fall 2011!
Successes and Challenges

**Challenges**
- Garden pests and diseases such as rabbits, aphids, gophers, leaf curl, and mold
- Growing season vs. school calendar
- Ongoing work and maintenance (time and labor intense)

**Successes**
- Student excitement about learning and gardening
- Aesthetic benefits to school campus
- Food production and sales (fundraiser)
- Enrichment of math, science and social studies curriculum
Curriculum and Lesson Plans

In the growing season students are in the garden several times a week

- Maintenance: planting, watering, weeding
- Harvesting veggies and seeds
- Making sketches
- Testing soil nutrients
- Observing birds and insects
- Estimating # of gallons in the rain barrel
- Tasting foods
- AND MORE!

Composting of food scraps at school
Composter at Skyview School
Curriculum and Lesson Plans:  
Climatology and Mathematics

- Ongoing data collection
- Students track and record daily measurements of
  - Precipitation
  - Temperature
  - Estimated # of gallons in rain tank
Curriculum & Lesson Plans: Economics

- Student-led farmer’s market
- Students harvest veggies and sell them after school
- Students tally and record profits and expenses and keep ongoing financial records
- Money earned is reinvested into the garden
Curriculum and Lesson Plans: History and Culture

- Students learn about history and native people through their foods and farming methods
  - Plant Hopi corn
  - Plant “three sisters” (corn, beans, and squash)
  - Attempt to grow crops using dry farming methods
  - Heirloom varieties of veggies grown
Other Water Education Projects:
Water Quality Monitoring

- Students collect water quality data at Butte Creek twice monthly.
- Students are young scientists analyzing the water of the creeks.
- Students connect with riparian habitat and understand its function.

Curriculum developed by Primavera instructor Dan Jannone
Other Water Education Projects: Water Thematic Unit

- Study and explore the history and sources of water in Arizona and the world.
- Field Trip on the Colorado River below the Glen Canyon Dam.
Other Water Education Projects: Desert Thematic Unit

- Climate patterns
- Plant and animal adaptations for desert life
- Human adaptations for desert living- including RAINWATER HARVESTING!
- Water conservation
Other Water Education Projects: Passive Rainwater Harvesting at Skyview School

- Strategic planting and drainage designed to capture rainfall and direct it toward vegetation
New Opportunities

A grant will be submitted this fall to help purchase a rainwater cistern for Skyview School’s community garden.
THANK YOU!

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🔹 Questions
🔹 Comments
🔹 Discussion