



Designing, Creating, and Teaching in Schoolyard Gardens

**Presented by: Tamberly Conway, Martin Bomar,
and Michael Hill**

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www.pollinatorlive.pwnet.org



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U.S. Forest Service
National Forests and Grasslands in Texas



PollinatorLIVE



U.S Forest Service/partnership program

Using education and action to address changing landscapes
and pollinator decline

Working to promote landscape scale restoration



Gardening

- Schoolyard gardens
- Creating a garden
- Native plants
- How to start a garden
- Pollinator friendly practices
 - Celebrating Wildflowers

http://pollinatorlive.pwnet.org/gardening/howto_creating.php





How many of you have already created a garden?



✓ Yes

✗ No

- Teacher resources
 - Lesson plans
 - Citizen science



PollinatorLIVE

- Provides students and teachers with a fun, interactive way to learn about pollinators
- Teachers may use pollinators and their habitats as a resource to meet science standards
- Get students, educators and communities involved in citizen science
- Become knowledgeable, engaged and active conservationists

Buzz in for our next

PollinatorLIVE webcast and broadcast

"Nature's Partners: Pollinators, Plants, and People"

Wednesday, April 13, 2011

Lady Bird Johnson Wildflower Center

Austin, Texas





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Supporting Partners

- USDA Forest Service
- US Department of Agriculture: NRCS, NIFA , FSA
- Partners in Resource Education
- US Fish and Wildlife Service
- American Forest Foundation: Project Learning Tree
- American Public Gardens Association
- Discover Life
- Lady Bird Johnson Wildflower Center
- Monarch Watch
- National Environmental Education Foundation
- National Garden Clubs, Inc.
- National Science Teachers Association
- National Wildlife Federation
- North American Pollinator Protection Campaign
- Prince William County Public Schools
- Smithsonian Institution: National Zoo, Natural History Museum
- Wildlife Habitat Council



Let's pause for questions
from the audience



An Earth Day Garden at **Ashland Elementary School, Manassas, VA** ***Our Outdoor Learning Adventure!***



- Inquiry Based Learning -
- VA Science SOL's -
- Student Involvement -

Martin Bomar, Parent Volunteer
USDA-Farm Service Agency





PART 1

A poll about Your School...

To create or enhance your school garden, which are the most important elements to its success?

A Space

Parent Volunteers

Teacher Support

Enhance Curriculum

\$\$

Student Interest

Custodial Support

Administration Support



Inquiry Based Learning



Your School...??

To create or enhance your school's garden,
what are your instructional goals?

Grow Food

Break Area

Pollinator Habitat

Fish Pond

Recreation

Conduct Experiments

PART 2

Supporting Science SOL's

Academic **content** for essential components
of K through 5th grade
science curriculum:

Earth Science

Biology

Chemistry

Physics

Supporting Science SOL's

Specific **content strands** are included in Elementary School science SOL's

- Scientific Investigation
- Force, Motion, Energy
- Life Processes
- Resources Management
- Patterns, Cycles, and Change
- Living Systems
- Interrelationships in Earth Systems
- Matter



Supporting Science SOL's

Garden instructional areas to support
Science SOL concepts:

- **Food Production**
- **Pollinator Garden**
- **Recycling**
- **Outdoor Classroom**
- **Weather Data Station**
- **Fruit Production**
- **Water Garden**
- **Sensory Garden**
- **Recreation and Reflection**



Let's pause for questions
from the audience





Food Production





Food Production





Pollinator Habitat



Pollinator Habitat





Fruit Production





Water Garden



Recycling and Composting





Weather Data Recording



Sensory Garden



Outdoor Classroom



Recreation



Reflection



Let's pause for questions
from the audience



PART 3

Your School...??

Student and Parent Involvement: Connecting Service and Learning

**Does your school have a volunteer or
service-based student club?**

A YES

B NO

C Not Yet!

Student Involvement: Connecting Service and Learning



Student Involvement: Connecting Service and Learning

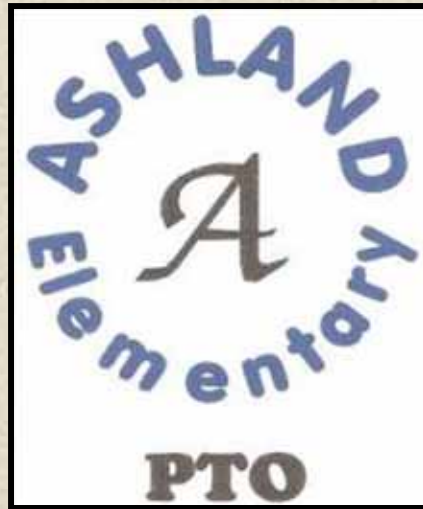


Student Involvement: Connecting Service and Learning



Community Involvement

Sowing Seeds
of Learning





Final thought...
Grow a garden...
... Grow a Child



Mike Hill, USFS Sustainable Operations, Washington Office





Bailey's School, Fairfax VA. 3 Gardens Comparison





Three Spaces:



Planting Beds – various contributors

1

2

Existing courtyard garden – developed with USFS

3

New Pollinator Garden – developed with USFS

North



Planting Beds -- southwest corner:

Raised beds used by youth for crop planting, edibles

- Working
- Lots of traffic
- Components:
 - Raised beds
 - Pathways
 - Concrete learning platform





Planting Beds -- southwest corner:

- Intensively used
- Area cannot be secured
- Work space, not aesthetic
- Large, flat area
- Subject to change in use





Courtyard Garden – center of school:

- Intensive installation
- Long-term project
- Secured space





Courtyard Garden – center of school:

Components:

- established plantings
- Unique features
- Pond = life
- high quality materials





Courtyard Garden – center of school:

- Center of school
- Intensive installation
- Expensive materials





Courtyard Garden – center of school:

- Pond = professionals!
- controlled access
- Connected to classroom



Pollinator Garden – at southeast corner of school building near temporary classrooms:

pollinators, habitat, nature observation

- Intensive installation vs. security issues
- Art fence
- Heavily revised design
- Components:
 - Learning platform
 - Defined planting areas
 - Border fence
 - Trellis, fountain more rain barrels (pending)



Pollinator Garden – at southeast corner of school building near temporary classrooms:

- Foot traffic
- Area cannot be secured
- Installation of art fence, rain barrels
- Future installations – approvals?





Let's pause for questions
from the audience





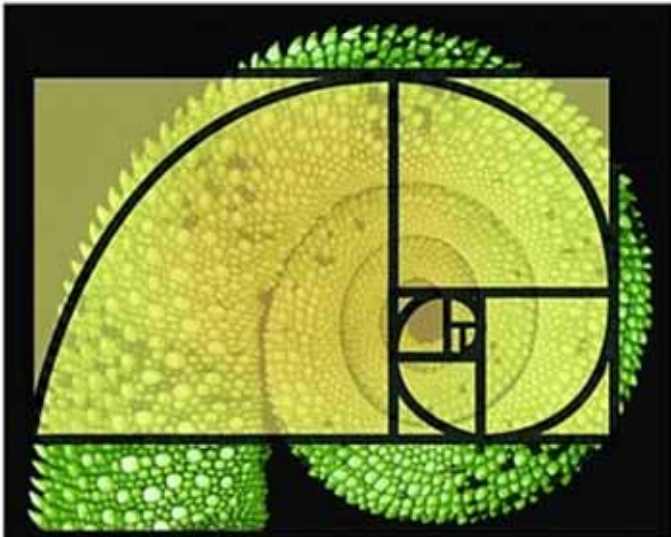
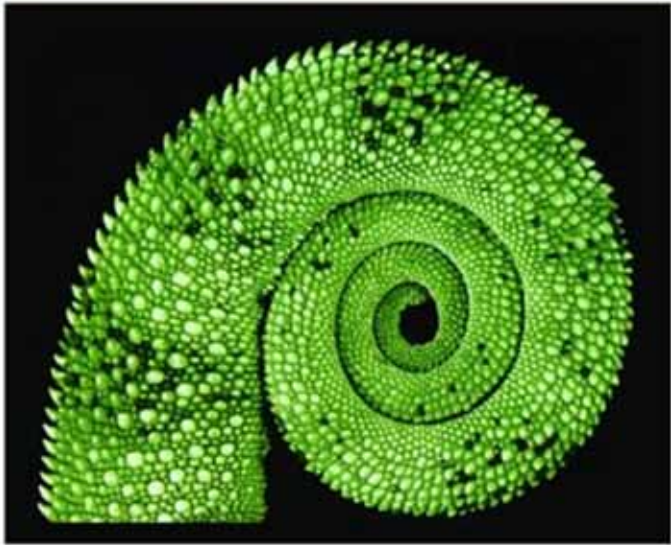
Site Questions:

How many of you:

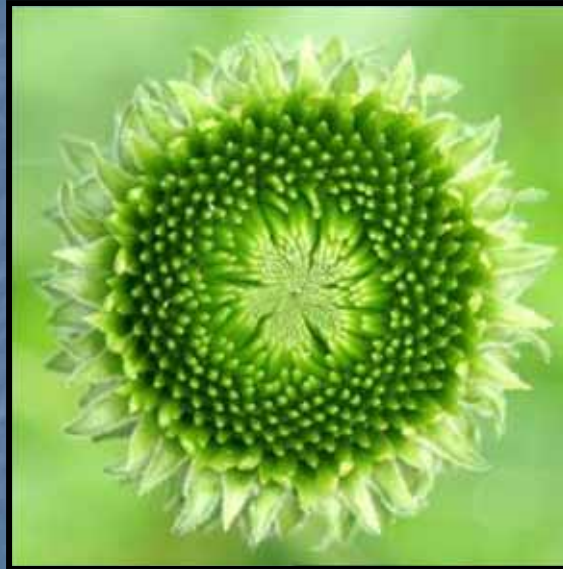
- Have an accurate map/drawing/aerial photo of your proposed site – or know where to get one?
- Know which direction is north on your site?
- Have a drawing of the proposed garden at a measurable scale?
- Have samples of some of the materials you will use in your school garden?

Concept Development

The Fibonacci Pattern is found at every scale



Chameleon Tail - Fibonacci Pattern



in the natural world, from small to large

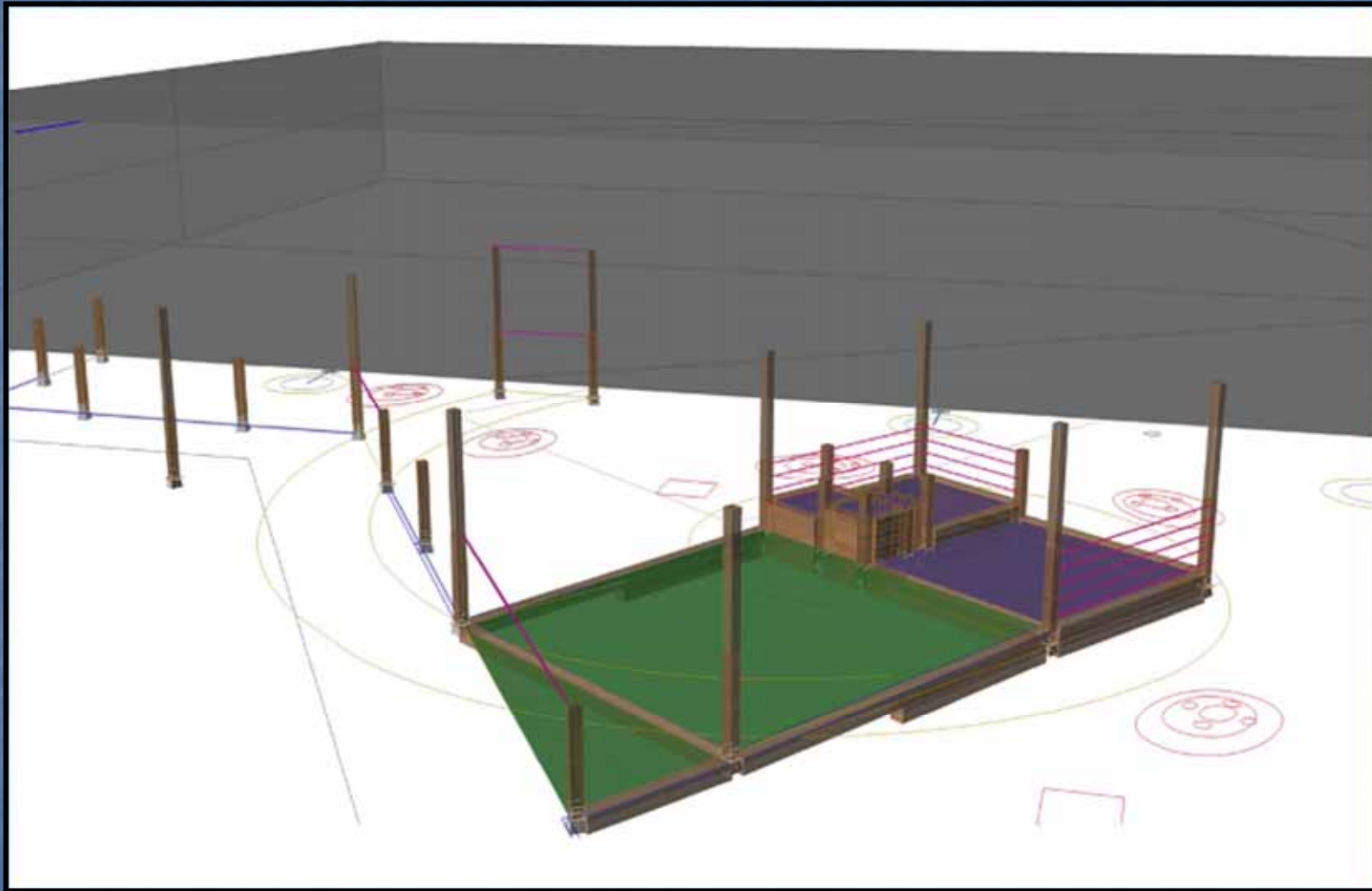


Schematic Design



Multiple levels with wooden trellis; extended pathway across concrete walk, into lawn

Design Development



This 3-D model shows the construction based on the drawing on the last slide



Design Development



The final construction was vastly simplified – cost, ease of construction, safety

Think about the drawings you just saw. What has been taken out of the final job?



Construction



Remove turf and install wood base – 6x6 landscape timbers



Construction



What seemed like a small area took several cubic yards of fill dirt and gravel to fill



Construction



Install filter fabric before installing metal edging and surface pattern

Construction



Students were very excited during the construction process

Construction



Students take responsibility for installing plants

Construction



Students found larval and mature butterflies in the 1st year – 25 wild butterflies banded

Construction



Detail of platform – levels, surface pattern

Construction



Platform with art fence in foreground

How many years did it take teachers to collect enough pickets for the fence?

a) 18 months b) 5 years c) 3 years



Let's pause for questions
from the audience



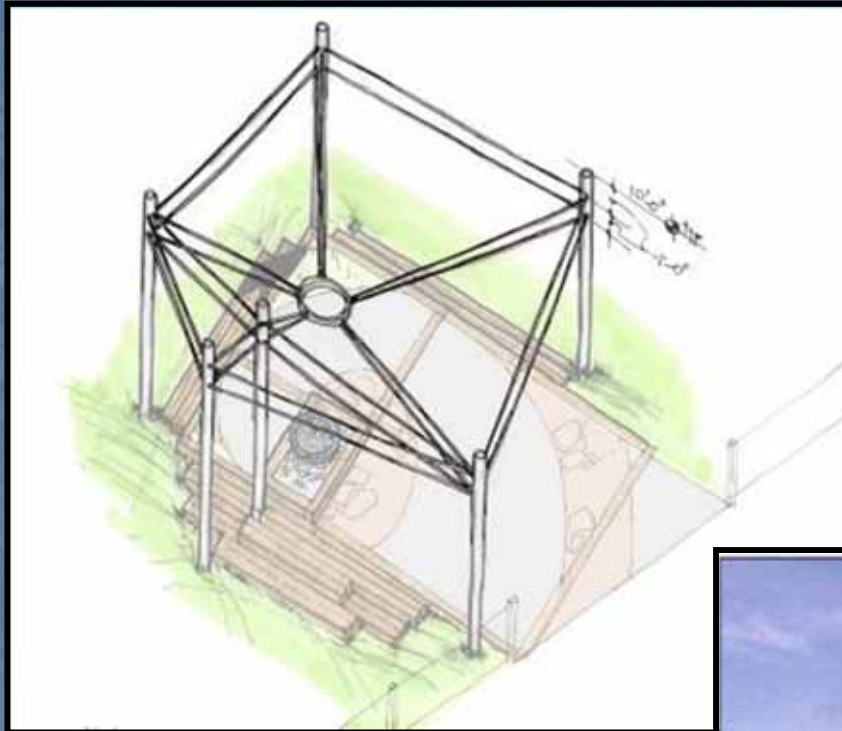


Process Questions:

How many of you:

- Have at least 2 other sources of material/funding support?
- Have an activity planned to involve students in designing the garden?
- Have accessed professional assistance for construction or design? Pro-bono service is required of most professional associations!
- Know what offices/officials will need to approve your garden installation? You may need approvals from officials besides school managers.

Next Phase

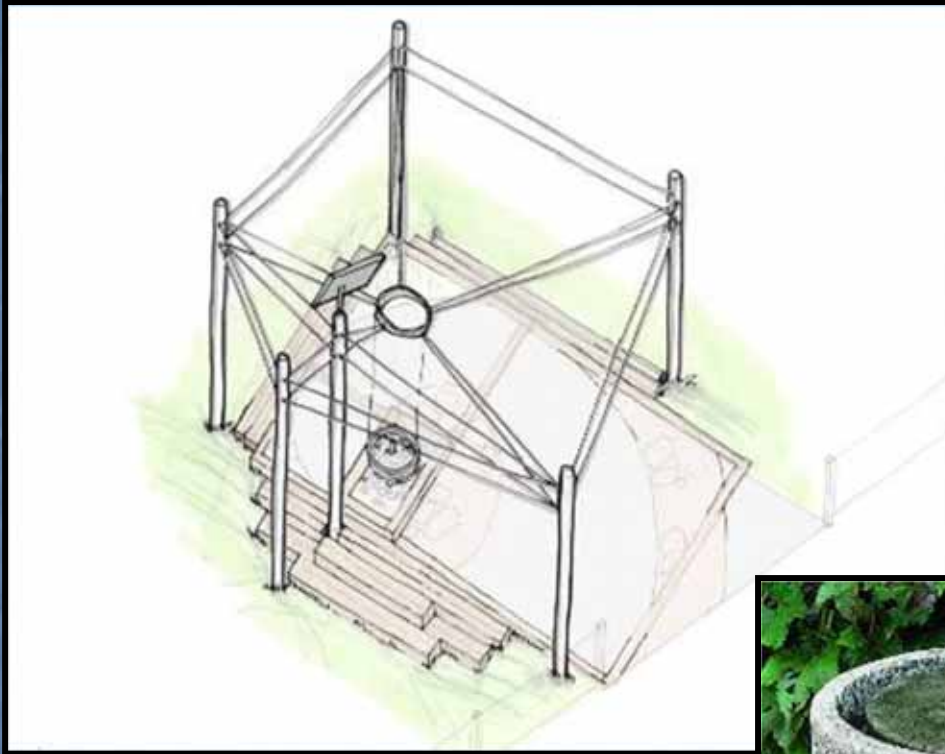


Revised trellis – 10-ft. tall steel posts typical of cyclone recreation fence, tennis courts

Why use a mundane material like this?



Next Phase

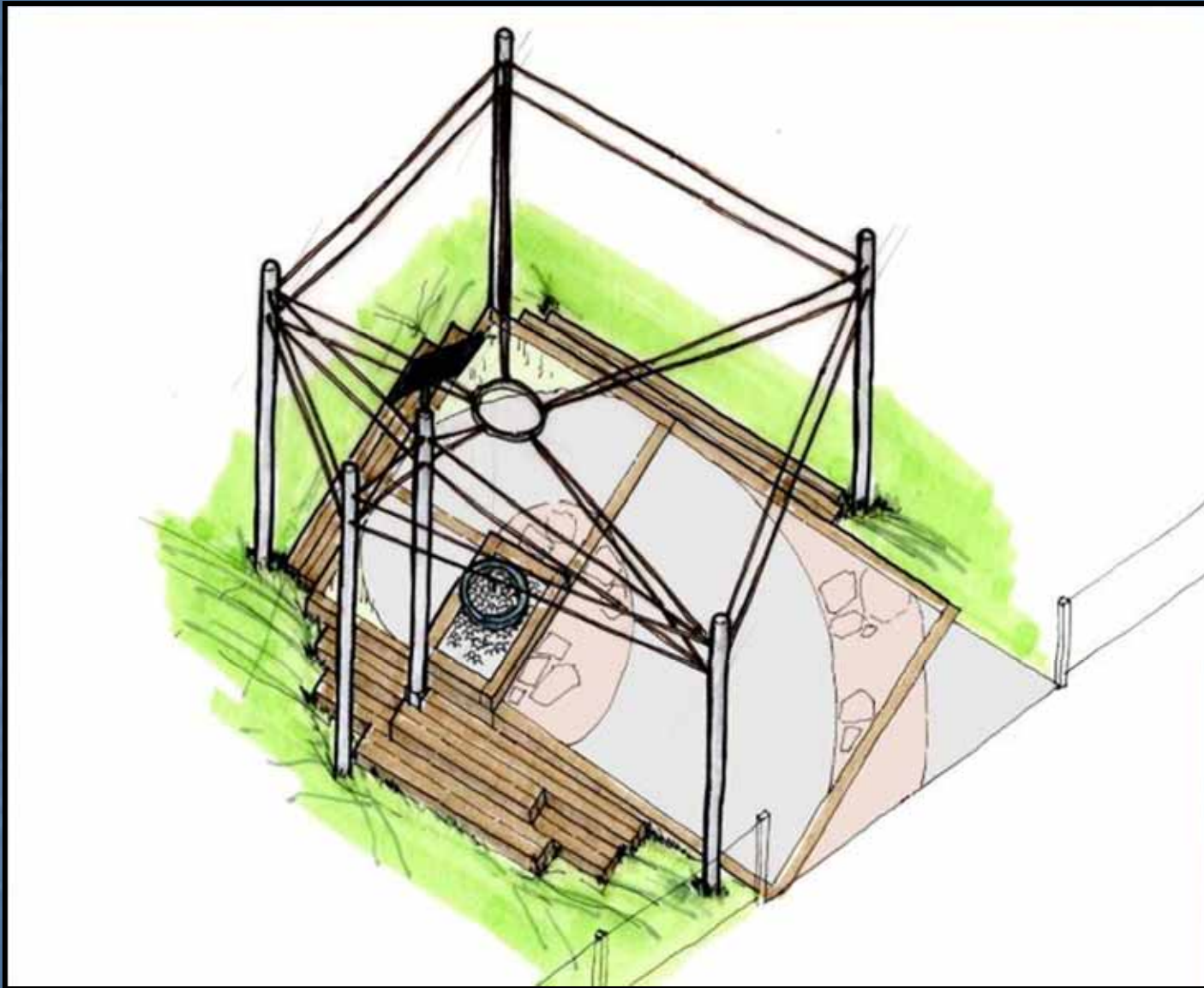


Stone fountain, pump
attached to solar panel



What
lessons can
this
installation
teach?

Next Phase



Proposed design

Core messages

- Determine what kind of help you need and get it
- Understand the site – what's above and below ground
- Understand necessary approvals
- Simplify design, construction and materials
- Clear design focus – 1 to 3 key elements
- Manage time frame – phases show progress
- Involve students, teachers and parents



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