

Engaging Youth in The Scientific Method at The Santa Rita Experimental Range!



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Background

- 2013 Community expressed want for UA/SRER and the historical headquarters' educational programing to be expanded
- June 2014 Freeport McMoRan call for proposals
- September 2014 PCCE selected as a grant recipient to reinvigorate the youth component of programing at SRER
- October 2014 Program Coordinator position filled

Two-Part Grant

1. Educator Trainings

- 25 local teachers and 50 total x 2 iterations
- Lessons taught by UA faculty, students, and staff
- Integrate local environment and SRER curriculum/topics into classrooms
- Learn how to use SRER as a resource

2. SRER Teen Ambassadors

- 25 local students x 2 iterations
- Intensive science educational and leadership program
- Training in: desert ecology, local geology, natural history, leadership, history of SRER
- Application of the above topics into the scientific process
- Greater exposure to and appreciation for SRER (a resource located in their backyards)

"This project would fund the development of a hands-on educational science-based program for local educators, community members and youth"



Teen Ambassador Program: Day 1

Ecological Monitoring: performed vegetation and bird transects in a desert section of SRER



Archaeological Site Visit: gained insight on human-use history and made inferences about how humans have affected the ecology and visa-versa on SRER; discussed species of ecological importance including the pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*)



Teen Ambassador Program: Day 2

Vegetation Transects in a Riparian Area: analyzed differences in plant biodiversity in two contrasting biomes on SRER



Asking Good Scientific Questions and Hypothesis Development: students were encouraged to start forming questions and hypotheses about aspects of SRER that interested them

SRER Data Archives: Using past precipitation and temperature data from SRER students made inferences about trends in vegetation they observed on repeat image photography

Teen Ambassador Program: The Overnight Applying the Scientific Method

Finalized Scientific Questions/Hypotheses:

If nutrients are present in the river, *then* the same presence will exist at various distances away from the river *because* of the diffusion of nutrients across the soil.

If algae is present in the creek, *then* there will be direct correlations between dissolved O₂, temp., and algal percentage *because* these factors influence algae growth.

If a water in a pool is passive, *then* there will be decreased levels of invertebrate diversity *because* the removal of an environmental stress causes more competition between species.

Designed Experiments: groups presented their plans to eachother and experienced the benefits and frustrations that arise from peer review

Revised and Performed Experiments

Analyzed Data and Presented Results



Lessons Learned

Project impossible without **active & engaged partners** at SRER, SHS, & ITE
Excited and engaged students

Be flexible! Specifically with both the schedule and curriculum

Timing: need more time for experiment implementation

Future Work

Teacher trainings- Nov 2015 and Fall 2016

2nd round with students Spring 2016

SRER lessons/curriculum

Monitoring and survey mechanisms implemented

More engagement with researchers and on-going projects at SRER

Thank you!

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