Engaging youth in Citizen Science: Resources and Possibilities

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Extension Educators in Youth Development

LEARNING MORE ABOUT US

21ST CENTURY SKILLS

Critical Thinking

Creativity

Communication

PRACTICES OF SCIENCE & ENGINEERING

1. Asking questions or defining problems.
2. Developing and using models.
3. Planning and carrying out investigations.
4. Analyzing and interpreting data.
5. Using math and computational thinking.
6. Constructing explanations or designing solutions.
7. Engaging in argument from evidence.
8. Obtaining, evaluating and communicating information.

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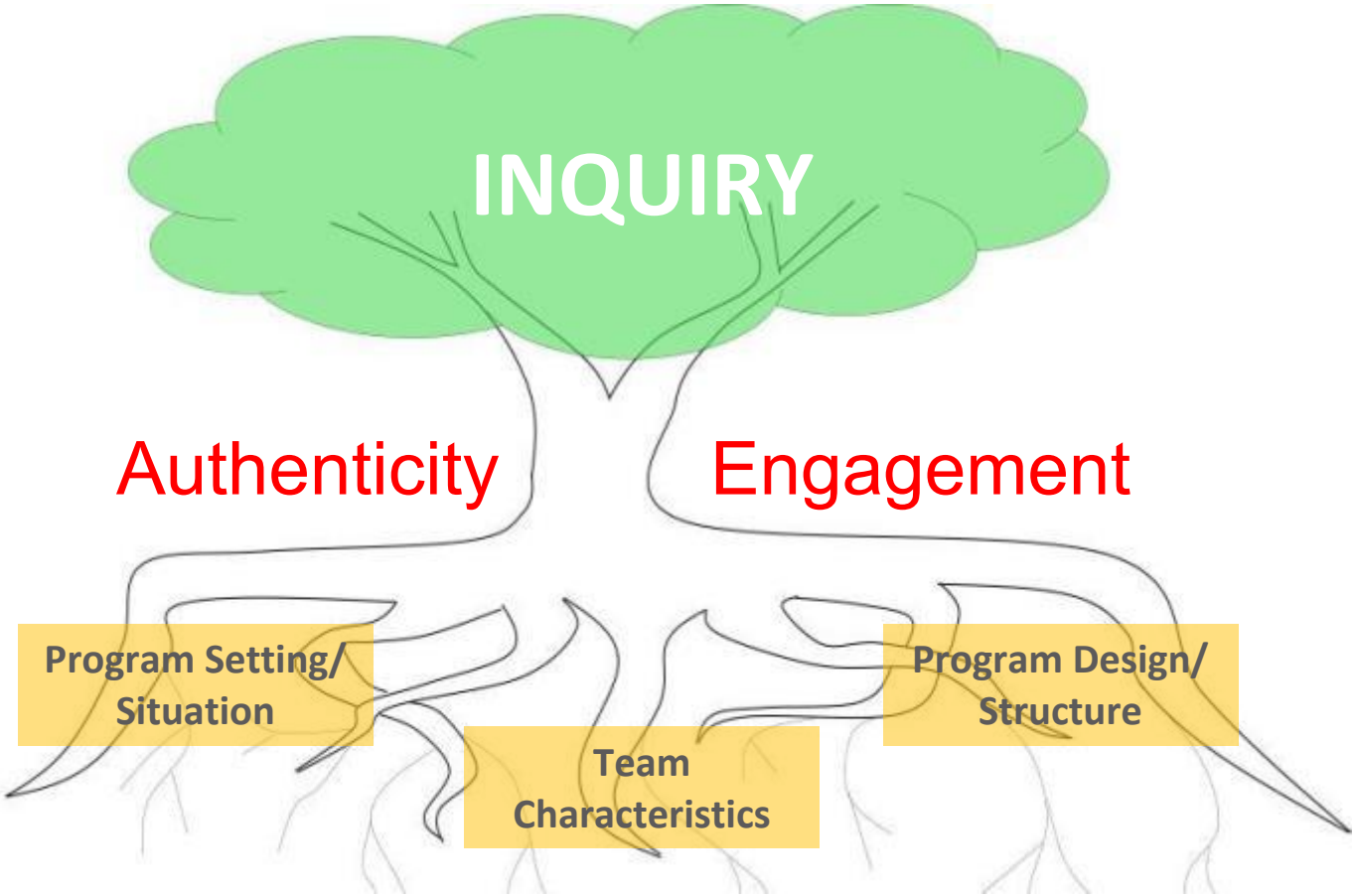
D2D: Citizen Science





LESSONS LEARNED



Leader Skills

- Science content
  - Technical skills (ie. species ID)
  - General science knowledge
- Youth development
  - Community connections (“access” to youth)
  - Fostering safe, comfortable, informal learning environment

CITIZEN SCIENCE – THE BASICS

- Instructions/methods youth friendly and build skills
- Explicit educational goals
- Enrichment activities
- Simple mechanisms to enter data
- Over 13 y.o. to enter data online

SKILLS TO SUPPORT STEM

- Sparking Interest
- Connecting to prior knowledge and experience
- Embracing active learning
- Providing youth control

SKILLS (CONTINUED)

- Ask purposeful questions
- Effectively managing group dynamics
- Encouraging collaboration
- Making authentic assessment of learning
- Reflecting and processing experiences

from: CLICK 2 SCIENCE pd, online STEM Professional Development for Out-of-School Providers

OBSERVATION

DRAWING OUT THE WONDER

EFFECTIVE QUESTIONING

- Use questions wisely.
- Prompt further investigation.
- Keep questions open.

EXPLORATION

Dan

CITIZEN SCIENCE AS A SPRINGBOARD

- "Democratizing" science education
  - *"At the nexus of science education and participatory democracy is a commitment to educating students to make more informed choices, think critically, and believe they can make a difference."*
    - Mueller, M. P. , Tippins, D. , Bryan, L. A. (2012). The Future of Citizen Science. *Democracy and Education*, 20 (1), Article 2.
- Time spent
- Authentic science
- Relationship to place
- Sharing experience/knowledge

SOCIAL ACTION

DISCUSSION/REFLECTION

nuttakit

GROUP MANAGEMENT

- Effective strategies, include:
  - Be prepared & over plan
  - Establish clear expectations & guidelines
  - Offer various youth roles and responsibilities

TEAMWORK

- Assign roles
  - Research Coordinator
  - Recorder
  - Equipment Manager
  - Reporter
  - Ambassador

Thank you.

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Evgeni Dinev

Steve Bowles…

"something that happens between the youth worker, the young people, and the sun, the moon and the campfire."

~ Siurala

Dan

AGES 5-7

Physical Growth	Growth in Thinking	Social Growth	Emotional Growth
Busy mastering physical skills and learning how to use their bodies	More interested in process than the product	Learning to be best friends	Not yet confident with themselves
Small and large motor skills are not yet polished	Finishing the project is less interesting than working on it	Works well in small groups or pairs	Seeks adult approval
Attention Span is short	Thinking is concrete; difficulty with abstract	Peer opinion is becoming important; adult approval is important	Enjoying playing games; however not yet ready to accept losing

AGES 8-11

Physical Growth	Growth in Thinking	Social Growth	Emotional Growth
Youth are very active; they like hands-on involvement	Beginning to think logically and symbolically	Beginning to identify with peers; still look to adults for guidance	Have a strong need to feel accepted and worthwhile
Unable to stay confined or sit still for long periods	Still think better in terms of concrete items	Satisfaction from completing projects comes from pleasing an adult	Successes, no matter how small, should be emphasized
Hand-eye coordination and focus is becoming better	There is no middle ground; things are either right or wrong, fun or boring	Prefers working with peers of the same gender	Strong need to "belong"

AGES 11-13

Physical Growth	Growth in Thinking	Social Growth	Emotional Growth
Growth spurs occur; creates a problem with clumsiness	Enjoy playing with ideas	Enjoy participating in activities away from home	Mood swings
Girls maturing faster than boys	Move from concrete to abstract thinking	Opinions of peers gaining more importance	Beginning to test values
Self conscious	Enjoy finding solutions on their own	Developing mature friendship skills	Performance should be compared to past accomplishments

AGES 14-18

Physical Growth	Growth in Thinking	Social Growth	Emotional Growth
While some youth are experiencing growth, most of the awkwardness has been overcome	Peers play significant roles	Relationship skills are usually well developed	Independence and identity are important
Most know their own talents and abilities	Mastering abstract thinking	Recognition is important	Learning to cooperate
	Goals are based upon feelings of personal needs and priorities		Development of personal values