Video Activity Sheet: A'o (Reciprocal Teaching & Learning)

This 18 minute video showcases the way Hawaiians on all islands learn and teach intergenerationally, using traditional ways to understand modern science, then using both to work together to protect our islands and people.

Before watching this video, scan all of these Hawaiian words (highlight or underline 5 that are new or interesting):

1. a'o (teaching/learning) 14. kahuna (learned master)
2. 'ike (see); 'ike moe 15. 'āina (land)
   (dream/vision); 'ike papa 16. ha (breath)
   lua (2nd sight/intuition) 17. kalo (taro);
3. ea (independence, rule) 18. poi (pounded taro)
4. i'ini (your desire, drive) 19. pono (right, appropriate)
5. kupuna (elder) 20. opio (youngster)
6. hō'io (large fern) 21. mauka (towards the mountains)
7. Kāne, Lono, Kanaloa, Laka, Hi'iaka (Hawaiian gods) 22. lo'i (wet taro patch)
   23. pu'uone (berm/hill of sand)
8. malama (care) 24. loko (pond)
9. hana (work) 25. ahupua'a (watershed)
10. kamali'i (children) 26. kuleana (responsibility)
11. 'opihi (limpet/mollusk) 27. mahalo (thanks)
12. 'upena (net)
13. ali'i (royalty)

While watching the video, consider what the speakers say about the following (just listen, or jot down brief notes if it helps you remember):

- How Hawaiians observe things
- Who we can learn from
- What kupuna (respected elders) teach us
- Why we go on field trips
- The importance of experience
After watching the video, discuss what you heard, learned and wonder about. Then after discussion …

➢ Write a reflection about what you gained from today’s lesson.

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BONUS OPTIONS:
Explore this Web site for surprising science beliefs:

➢ http://undsci.berkeley.edu/teaching/misconceptions.php

Discuss &/or research these scientific concepts:
1. atomism - The ancient theory which states simple, minute, indivisible, and indestructible particles are the basic components of the entire universe.
2. quantum theory - A theory in physics, based on the principle that matter and energy have the properties of both particles and waves, which helps explain a wide range of phenomena and new principles in science
3. balance of ecology - The science of the relationships between organisms and their environments.
Teacher’s Notes for: A‘o (Reciprocal Teaching & Learning)  
Video Activity Sheet (Unit 1)

To begin, you may want to read the 1st paragraph aloud, then go over the vocabulary as a class. You might introduce the bonus science concepts on pg. 2 at this point also.

As you watch the video (see green DVD included in curriculum) you may want to stop at 1 or 2 points to allow students to reflect &/or write on their handouts or in notebooks (see the “While watching” segment on pgs 1-2). Ask volunteers to share their responses when you stop, or wait until after the video is done. Discussion points taken from the video are in red below to assist you.

- How Hawaiians observe things (dreams, intuition)
- Who we can learn from (elders, each other, ourselves)
- What kupuna (respected elders) teach us (take only what you need; respect elders & nature; malama pono i ka 'aina ...care righteously)
- Why we go on field trips (to see things differently; observe & learn)
- Importance of experience (“ma ka hana ka ike” through experience is knowledge gained; do things by hand/hands on; explore our kuleana/responsibilities; find our i'ini or path/passion)

Discussion with pairs can occur before whole group (see page 2 “After watching”). Ask students what they liked/didn’t like about the video. Ask if the opinions presented could benefit non-Hawaiians also, and how (wisdom benefits everyone). You may also want them to research the bonus topics before having them write their reflection. The Berkeley Web site (see Bonus Options) gives numerous interesting topics for students to explore individually as they begin their science course - see full list below.
Website Exploration: (from: http://undsci.berkeley.edu/teaching/misconceptions.php)

Misinterpretations of the scientific process
1. Science is a collection of facts.
2. Science is complete.
3. There is a single Scientific Method that all scientists follow.
4. The process of science is purely analytic and does not involve creativity.
5. When scientists analyze a problem, they must use either inductive or deductive reasoning.
6. Experiments are a necessary part of the scientific process. Without an experiment, a study is not rigorous or scientific.
7. "Hard" sciences are more rigorous and scientific than "soft" sciences.
8. Scientific ideas are absolute and unchanging.
9. Because scientific ideas are tentative and subject to change, they can't be trusted.
10. Scientists' observations directly tell them how things work (i.e., knowledge is "read off" nature, not built).
11. Science proves ideas.
12. Science can only disprove ideas.
13. If evidence supports a hypothesis, it is upgraded to a theory. If the theory then garners even more support, it may be upgraded to a law.
14. Scientific ideas are judged democratically based on popularity.
15. The job of a scientist is to find support for his or her hypotheses.
16. Scientists are judged on the basis of how many correct hypotheses they propose (i.e., good scientists are the ones who are "right" most often).
17. Investigations that don't reach a firm conclusion are useless and unpublishable.
18. Scientists are completely objective in their evaluation of scientific ideas and evidence.
19. Science is pure. Scientists work without considering the applications of their ideas.

Misunderstandings of the limits of science
20. Science contradicts the existence of God.
21. Science and technology can solve all our problems.

Misleading stereotypes of scientists
22. Science is a solitary pursuit.
23. Science is done by "old, white men."
24. Scientists are atheists.

Vocabulary mix-ups

Roadblocks to learning science
35. Science is boring.
36. Science isn't important in my life.
37. I am not good at science.