The Great Diaper Dilemma

The environmental impact of disposable diapers is often hotly debated. Students will conduct research via the World Wide Web as well as an experiment to reach their own conclusions regarding diapers and the environment. This lesson should lead to more environmental awareness and discussion.

HYPOTHESIS:
How many ways do disposable diapers seriously impact the environment?

Primary Learning Outcome:
Students will learn what disposable diapers are made of, how they are manufactured, and the environmental concerns surrounding their use.

- *How many disposable diapers does one child require?*
- *What percentage of landfills is taken up by disposable diapers?*
- *How does a disposable diaper work?*
- *What environmental concerns are there surrounding the manufacture of disposable diapers?*
- *How long does it take for one diaper to decompose?*

Assessed QCC:
Standard: Describes the impact of cultural revolutions on the environment.
5.1 Describes the factors that initiated environmental movements.
5.2 Analyzes the nature and impact of environmental pollution.
5.3 Predicts short and long term impact of pollution on the environment.
Standard: Identifies types of wastes, their generation, disposal, and management problems.
19.1 Differentiates between biodegradable and non-biodegradable wastes and their disposal methods.

Non-Assessed QCC:
Standard: Uses science process skills in laboratory or field investigations, including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.
1.1 Designs and conducts a scientific experiment that identifies the problem, distinguishes manipulated, responding and controlled variables, collects, analyzes and communicates data, and makes valid inferences and conclusions.
1.2 Evaluates procedures, data and conclusions to determine the scientific validity of research.
Standard: Uses traditional reference materials to explore background and historical information regarding a scientific concept.
2.1 Uses current technologies such as CD-ROM, Internet and on-line data search to explore current research related to a science concept.

Total Duration:
1.5 hours background (use this time to introduce the lesson and to allow students internet access)
1 hour lab time (diaper dissection and discussion of research findings, set up decomposition experiment)
Several days (to observe how long it takes for diapers to decompose)

Materials and Equipment:
- Several clean disposable diapers
- Plastic cups of water

Technology Connection:
- Computers with internet access

Procedures:
Step One
Students should be divided into small groups and given research assignments. One group should be responsible for finding the components of a disposable diaper, one group should find out information regarding how biodegradable they are (how many are used per baby per year, how long they exist in landfills, how many tons are generated per year, etc.), one group should research the manufacture of disposable diapers (are there environmental concerns here?), one group should research cloth diapers (what they are made of, issues concerning farming of cotton), and one group should research the environmental impact of cloth diapers (how much water is used to wash them, is chlorine bleach an issue).
Step Two
Pour the cup of water into the diaper. Take the diaper apart and note the components. How do the components change with the addition of water? Take several wet, intact diapers outside and leave them, noting the day and time. Observe over time and note changes.

Estimated Time:
.5 hour

Assessment:
Students should participate in a discussion about the issues surrounding diapers and the environment. The instructor should guide the discussion using the issues posed in the aforementioned "Step One". Students could be instructed to write a position paper regarding their views about disposable diapers, using information from their research whenever possible.

Extension:
A classroom debate could be staged, with one half of the class for the use of disposables and one half against. Each group would be asked a question by the instructor (see 'Step One') and would be given a minute or so to formulate a response. Answers should be based upon specific research (John Smith states in 1989 that…) and points awarded to the team that answers first.

Students could also be required to build a better diaper, taking into consideration aspects such as convenience, cost of manufacture, and the environmental issues discussed previously.