


Give an example of a step-up transformer.

An exercise machine



Give a reason why people would want to live near power lines.

You get your electricity faster.

More science from Richard Benson

Describe the shape and structure of the Milky Way.

It's kind of like a long, bumpy rectangle. It's completely covered in milk chocolate, but inside there are two delicious layers: chocolate nougat and curamel.

Thursday – 30 June 2011
Today's schedule

8:30 – 9:30 am	Introductory session – multiple inputs to the brain... Cotton balls – example lesson illustrating questioning
9:30 – 11:30 am	Completing "extension #3" include a break, whiteboards before lunch
11:30 – noon	Lunch
Noon – 1:00 pm	Kent's notebook – conclusion
1:00 – 2:40 pm	Beginning/Continuing "extension #3"
2:40 – 2:50 pm	A couple of whiteboards?
2:50 - 3:00 pm	Concluding session – no homework tonight!

Another SIP OF SCIENCE
Satisfying, Intentional Problem- Solving

Hypothesis:
GOOD QUESTIONS
can lead to
EFFECTIVE SCIENTIFIC INQUIRY
And
Science learning/understanding

Natural connections to your literacy/reading and social science (and math!) curriculum

“How to read an object”
– scientifically.....

WHO OWNS THE QUESTIONS in EFFICACIOUS LEARNING?

the learners ask the questions
Can learners problem-solve around
Big Idea Questions?

An example **“reading an object”** lesson

WHAT DO YOU KNOW ABOUT GROWING COTTON?

Step 1: Concrete Observation

Use your notebook sheet to record observations about the cotton boll.

Remember to use **drawings & words**

Keep it **“RAW”**
Representing **A**nd **W**ondering

Come up with 2 or 3 questions you have as a result of this investigation.

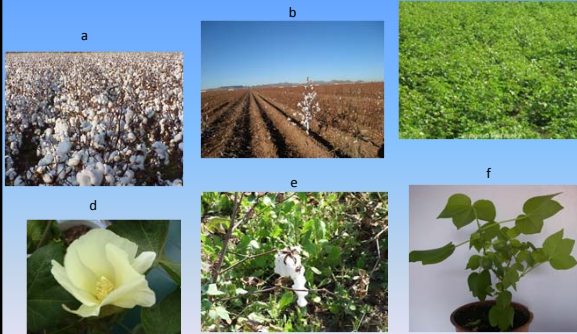
WHAT DO YOU KNOW ABOUT GROWING COTTON?

Step 2: Pictorial Understanding

1. Put the following pictures in order showing the stages of growth of cotton.

2. Make notes in your notebook about things you have learned from the pictures about growing cotton.

3. Come up with new questions you have now that you have seen the pictures.



Put these pictures (a,b,c,d,e,f) in order --- showing the stages of growth of cotton.

1. You just put the pictures in order showing the stages of growth of cotton.
2. Make notes in your notebook about things you have learned from the pictures about growing cotton.
3. Discuss with your neighbor and come up with new questions you have now that you have seen the pictures.

Growing Cotton

further learning from the web, etc..

- Cotton plant is a [shrub](#), belonging to the genus *Gossypium* of the family Malvaceae. It grows up to the height of about 10 feet and has three to five lobed leaves. Cotton fibers of different colors such as white, brown and green are found in the nature. However, cotton plants of white-colored fibers are mostly grown, so as to avoid the mixing of genetic components. In fact, growing colored cotton plants is banned in many areas.

Commercially, cotton plants are grown for their fibers that are present around the seeds in a structure, commonly referred to as a boll. Two types of fibers are extracted from the cotton plant - the long fiber and the short fiber. Ginning method is used to extract the cotton fibers for the commercial use. The long fibers, also called staples, are removed in the first round of [ginning](#); whereas the short fibers or linters are extracted in the second ginning process.

Growing Cotton

- The newly developed flower bud is often called a square. This is the stage when the cotton plants are highly susceptible to thrips and boll weevils. The plants should be examined carefully; you can use proper pesticides (if necessary) in order to control any disease attacks. Within three weeks, the square develops into a pinkish or yellowish bloom that withers after two days. As the petals fall away, you can notice the tiny ball in the center of the receptacle.

In the fall, the cotton bolls mature and turn brown. The fibers inside the boll continue to expand, which then split the boll apart. In this stage, you can notice the fluffy cotton fibers bursting out of the boll, which indicates that the bolls are ready for harvesting. Harvesting of the ripe cotton bolls is done either by hand (small plantation) or by picker or stripper machine.

Discuss with your neighbor

a further (scientific) investigation you might be interested in doing about cotton.

Write it down in your notebook

Discuss with your neighbor

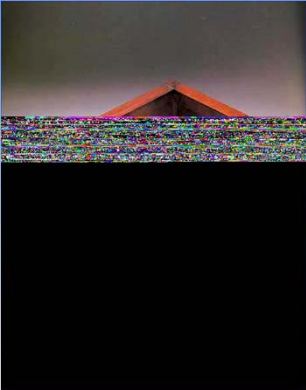
a further (scientific) investigation you might be interested in doing about cotton.

HAND IT IN on the sheet of paper provided

What kind of **Learning Path** does the process we just did reflect?

All learning
Begins with **Concrete**
Moves to the **Pictorial**
And then to the **Symbolic**
It is all **INVESTIGATIVE**
(by the **LEARNER**)

As understanding deepens and develops, we continue to move back and forth between the three levels.



Model of Eli Whitney's cotton gin

How Eli Whitney's Gin worked

The hand crank moved the cotton to the sawtooth wheels, which pulled the fiber through wire slots, separating it from the seeds that fell into the bottom of the gin. Brushes moved the cotton and cleaned it off the sawteeth. There had been gins before Whitney's, but, unlike his, none could handle the short staple cotton that many of the southern states raised most easily. Whitney's offered major labor savings over the costs of separating the seeds from the cotton fiber by hand. Indeed, his device has been credited with turning cotton production into a prosperous business and with fastening slavery upon the South.

Example connections:

How did Eli Whitney's invention change the economy, the social structures, the history of the United States?

What objects can be "reading objects"?

Examples: rocks -> earth and physical science concepts
fruit/plants (mangos) -> life science concepts
