Data Puzzle

Procedure:
1)   Curriculum developer identifies a small snippet of authentic data that embodies an important scientific concept, and develops data visualization(s) that foreground the patterns emerging from that concept.
2)   Students view static data visualizations on screen or paper, and answer guiding questions about the system represented by the data.
3)   Students experience a rewarding "Aha! moment" of recognition when they see the concept manifest in real world data.

Theory of Action:
   The dots, bars, squiggles, and blotches of color of a data visualization look nothing like the conceptual sketches and verbal descriptions by which students are typically introduced to scientific concepts. This type of activity allows students to see the connection between data and concept for clear-cut, unambiguous cases.

Example:

1) Students carry out a hands-on activity in which they use different implements—chopsticks, pin, sticky tape, fork straw, spoon, and so on—to pick up different foods as quickly as possible. Students make a table of the results and discuss the relationship between structural variations, adaptation, and survival.

2) Students compare data graphs on beak depth from Galapagos ground finches who did and did not survive a major drought. First, they answer straight forward decode and describe questions.
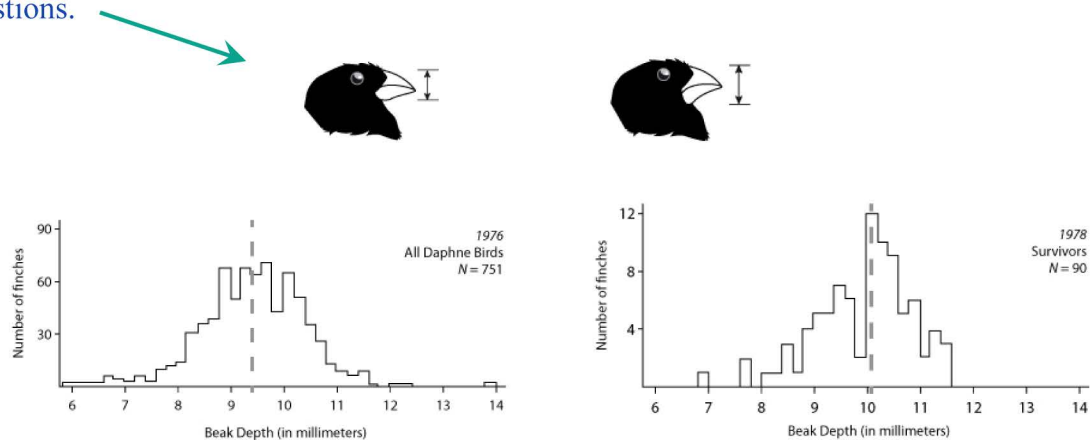
3) Finally, students discuss whether the process of natural selection can explain the change in beak depth and use the data to consider how new species could eventually evolve from the single species *G. fortis*.