**Chapter 4 Developing Inquiry Skills**

**-teachers should believe that learning science must be an active process**

**-it should be something students do and not something that is done to them**

**-the goal of a science program should be problem solving and developing the inquiry skills necessary for competing effectively in the global marketplace**

**-educators must prepare a diverse workforce capable of scientific research, investigation, and informed decision making**

**Using the Learning Cycle**

**1.exploration phase**

**-student centered, the teacher plays role of a facilitator, observing, questioning, and assisting students as needed**

**-the students interact with materials and each other during this phase**

**-teacher models and students observe**

**2.concepts introduction phase**

**-the teacher centered phase is characterized by naming things and events-the teacher’s function is to gather information for students that pertains to their explorations in the first phase**

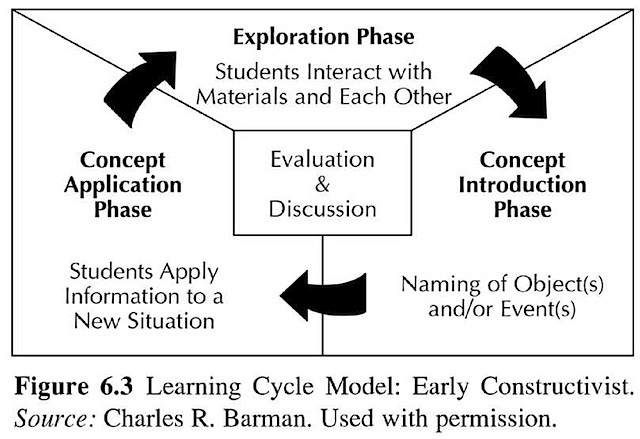
**-the teacher works with students to develop vocabulary and to introduce pertinent information**

**-teacher can assist students in naming the objects and concepts**

**3.concpet application phase**

**-this activity-oriented phase is student centered and allows students to apply freshly learned information to new situations**

**-the teacher presents a new problem to solve and allows more time for the students to apply what they have learned**



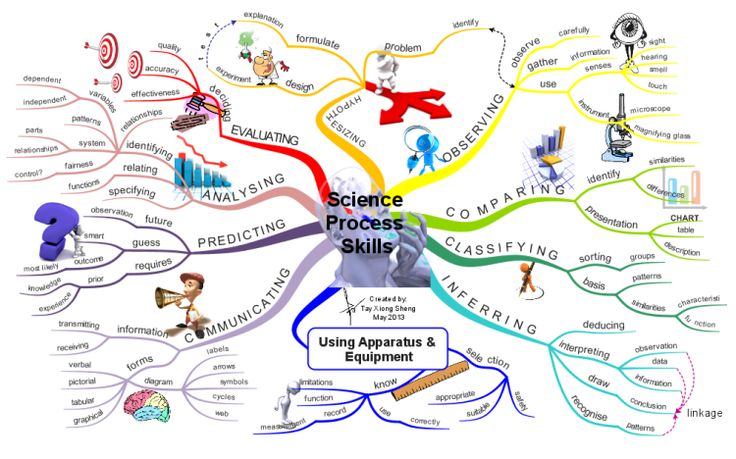
**Learning cycle and textbook**

**-start with related explorations designed to invite students to want to explore more**

**-do an experiment out of the book**

**-use the textbook to develop the related activity and language**

**Scientific skills**



**1.observation**

**-taking in of sense perceptions**

**-we can help students use all their senses when they observe similarities, differences, and changes in objects or events**

**2.classifying**

**-they can select and group real objects by some common property**

**-it imposes order on collections of objects or events through characteristics such as color, shape, and size**

**-dichotomous classification divides objects or events into tow groupings**

**3.measuring**

**-used to compare things**

**-at first-they may just find out who is taller by comparing each other…or compare weights by holding things…measuring tools come later**

**4.communicating**

**-putting information or data obtained from our observations into some form that another person can understand**

**5.inferring**

**-interpret or explain things**

**-several like observations may also lead us to the predictions**

**-primary students may struggle**

**6.predicting**

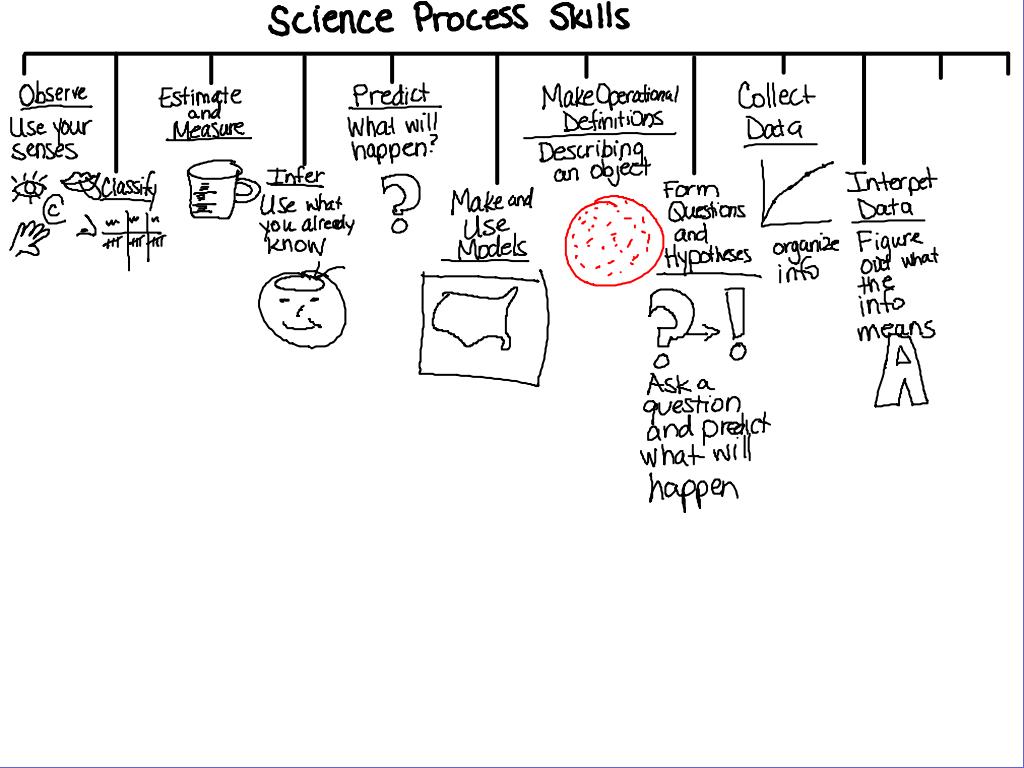
**-forecast a future observation based on inferences form the available data**

**-more data equals more confidence**

**7.experiementing**

**-big deal for inquiry teaching**

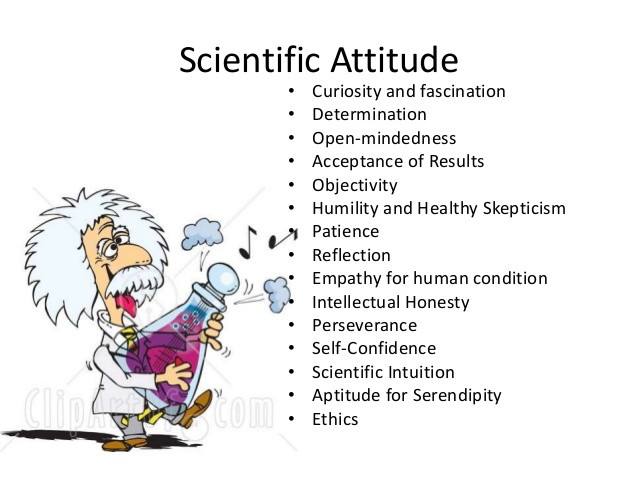
**-to kids it may mean doing something to see what happens**



**Scientific attitudes**

**-the experimentation and other skills of inquiry are not fully developed if they are completed in a negative framework**

**-science includes developing attitudes**



**1.curiosity**

**-teachers who maintain or spark students’ curiosity apply science to everyday life**

**-open ended questions are great to use**

**2.inventiveness**

**-solve problems in creative or novel ways**

**3.critical thinking**

**-evaluate or judge whether something is adequate, correct, useful, or desirable**

**4.peristence**

**-to do our best often takes persistence**

**-kids often want instant results**

**-the short attention spans and need for physical activity can result in impatience**

**5.uncertainity**

**-great to be able to understand or accept uncertainty**

**-help students understand that evidence is not always complete so predictions may not be precise**