

Key Differences: Cookbook Versus Inquiry Labs

From *Levels of Inquiry* by Carl Wenning

Cookbook Labs:	Inquiry Labs:
are driven with step-by-step instructions requiring minimum intellectual involvement thereby promoting robotic, rule-conforming behaviors.	are driven by questions requiring ongoing intellectual engagement requiring higher-order thinking skills making for independent thought and action.
focus student activities on verifying information previously communicated in class thereby moving from abstract toward concrete.	Focus student activities on observation to discover new concepts, principles, or empirical relationships thereby moving from concrete toward abstract.
assume student will learn the nature of the scientific process by “experience” or implicitly; students execute imposed experimental designs; tell which variables to hold constant, which to vary, which are independent, and which dependent.	promote student understanding of the nature of the scientific process; have students create their own controlled experimental designs; students independently identify, distinguish, and control pertinent independent and dependent variables.
rarely allow students to confront and deal with error, uncertainty, and misconceptions.	allows for students to learn from their mistakes and missteps.
fail to promote the development of conceptual understanding of propositional and procedural knowledge.	promote the development of conceptual understanding of propositional and procedural knowledge.

Table 3. *Some major differences between traditional cookbook and authentic inquiry-oriented lab activities.*