W.E. Harris Workshop on Teaching of Organic Chemistry 2007

Session 1: *Laboratory Components*

♦ **1st & 3rd years of organic chemistry**

1. **Labs should be labs**
   - ***i.e.*** **wet labs, hands on, physical**
   - ***not*** **lectures, seminars, demonstrations**

2. **Essential techniques: "toolbox"**
   - **many different techniques**
   - **introduced in a stepwise fashion**
   - **chemistry that requires the technique**
   - ***not*** **technique driven**

1. **Problem Solving Labs**

Why? Strong students read & understand
Weak students read & do

a. Problem component
- **determine a starting material, product or investigate a mechanism**
- **procedure given**

b. Design an experiment
- **group develops their experimental strategy**
- **individually do the experiment**

c. Multi-tasking/Time management
- ***e.g.* 'while doing the reflux set up X'**
- **3rd year - group of experiments**

d. *"Why"* questions
- part of a prelab or report
- *e.g. Why* do you wash with brine?

2. Microscale *vs.* Macroscale

a. Microscale
- may cost to setup
- ↓ chemicals
- ↓ solvents
- ↓ odours

b. Mixture of both

c. 1st term: macroscale (~1g)
- students not ready for very small amounts

d. 2nd term: a mixture or all microscale

e. 3rd year - often synthetic, usually a mixture

3. Evaluation

   a. Lab reports
   b. Products
   c. Written lab exam
   d. Practical lab exam

4. Organization - Labs

   a. Single experiments
   b. Mini 2-3 week labs

5. Organization - Lab course
   a. separation of lab and lecture course
   b. set hours for the labs
   c. 9-10 labs per 13 week term
   d. 3rd year - projects, synthesis