

Department of Chemistry CWSEI Progress & Plans

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Current CWSEI Projects

- First Year Laboratories
 - Committee struck in January of 2007
 - To discuss labs at all levels of the curriculum
- CHEM 233 – Organic Chemistry for the Biological Sciences
 - Several iterations of redesign (Skylight)
 - In-class guided inquiry activities
 - Formative assessment (online homework, problem sets, clickers)
 - C-LASS survey (learning attitudes)
 - Validation interviews with organic chemistry students



First Year Courses

- CHEM 111/113
 - Students without grade 12
 - 4 hours of lecture & 3 hours of lab per week
 - Enrollment of ~220/150
- CHEM 121/123
 - 3 hours of lecture per week
 - Alternate weekly 3 hours “wet” lab and 3 hours of “dry” lab
 - Carefully developed guided-inquiry labs
 - Enrollment of ~1700/1400
- CHEM 154
 - Engineering students
 - 3 hours lecture per week & 3 labs per term



Committee Members

Lab Committee	Evaluation Sub-Committee
Michael Blades	Brian Cliff
Guillaume Bussiere	Greg Dake
Ed Grant	Neil Dryden
GrenPatey	Derek Gates
Subramanian Iyer	AnkaLekhi
Mark Thachuk	Sophia Nussbaum
Dana Zendrowski	Laurel Schafer (chair)
	John Sherman
	Jackie Stewart
	Peter Wassell



Issues

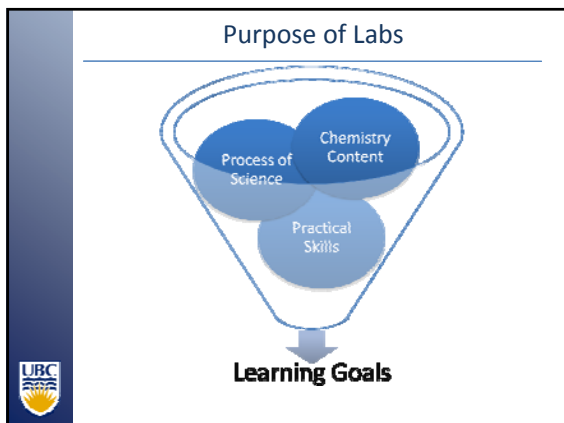
- Perception that students are not retaining lab skills from first year
 - UBC among the lowest in wet-lab hours of Canadian universities (chemistry)
- Guided inquiry vs. traditional
- Extent of practical skill development
 - Most students will not major in chemistry
- Extent to which labs reinforce lecture concepts



CWSEI Opportunity

- Focus on CHEM 123
 - Evaluation of guided-inquiry labs
 - Optimize wet vs. dry lab learning experiences
 - Potentially increase wet/dry lab hour ratio
- Add to the scant literature on labs
 - Lack of assessment tools
 - Lack of evidence that a lab experience enhances learning of concepts
 - Flawed design of many studies





- ### Challenges
- Defining learning outcomes
 - Broad range of students
 - Not logistically possible to sync up lab to lecture
 - Practical skills/chemistry content/scientific thinking
 - Cognitive/psychomotor/affective
 - Deciding on a pedagogical approach
 - TA inconsistencies

- ### Priority Learning Outcomes
- Perform common laboratory procedures correctly
 - Think critically
 - Recognize whether results and conclusions “make sense”
 - Interpret data and report data effectively
 - Present results in a clear and concise manner
 - Prepare in advance for laboratory work

- ### Evaluation Components
- Process
 - Is the lab course functioning as intended?
 - Outcomes
 - Are the desired outcomes being met?
 - Interactions between process and outcomes
 - What aspects of the course are responsible for the various outcomes?

- ### Preliminary Data
- Committee members visited labs and informally interviewed students
 - Pre/post course surveys
 - Post-dry lab/pre-wet lab surveys for several experiments
 - Student interviews
 - Perceptions of what the lab was about, what they think they were supposed to learn, reflection of wet lab experience

Goals & Timeline

2007/2008	Define learning goals for first year labs Conduct preliminary studies (surveys and interviews)
2008/2009	Plan evaluation strategy Establish baseline Refine labs/design new labs
2009/2010	Implement changes to labs Collect data Refine labs
2010/2011	Implement refined labs Collect data

Looking Ahead

- STLF starting in August
 - Jennifer Duis, PhD in Chemical Education
University of Northern Colorado
- TA training grant (VP Academic)

