Student Learning Outcomes

Measuring Student Learning
Measurement

“When you can measure what you are speaking about, and express it in numbers, you know something about it.”
-Lord Kelvin

“If you can’t measure it, you can’t improve it.”
-Peter Drucker
Outcomes

- Tasks that students should be able to do upon completion of the course.
  - Think about SWBATs: Students will be able to ...

- Bloom’s Action Verbs
  - Identify the different types of chemical compounds
  - Predict the formula of chemical compounds
  - Describe the difference between an acid and a base
Introductory Chemistry (CHM-200)

- Use the periodic table of elements to determine basic chemical and physical properties of the elements.
- Compare experimental results in the laboratory to chemical concepts learned in lecture.
- Demonstrate facility in the laboratory by safely performing experimental protocol.
- Solve basic level problems using measurements, formulae, and/or dimensional analysis to solve word problems related to chemical concepts.
- Communicate understanding of chemical vocabulary and chemical names.
Measuring SLOs in my classes

- Solve basic level problems using measurements, formulae, and/or dimensional analysis to solve word problems related to chemical concepts.
- I cannot measure the above objective with one single problem
  - Break into sub-objectives
  - Create assessments that measure each sub-objective
Sub-Objectives (SOs)

Focus on dimensional analysis: What tasks should my students be able to accomplish if they meet the SLO at the end of the semester?

Students will be able to...

- **SO #1** Identify conversion factors from equalities.
- **SO #2** Create conversion factors from written statements or equalities.
- **SO #3** Use conversion factors to calculate single-step unit conversions.
- **SO #4** Use conversion factors to calculate multi-step unit conversions.
- **SO #5** Apply conversion factors to solve word problems.
Actionable Research

- Measuring SLOs gives me data that I can use to improve student learning

Outcome

Designed to meet

Activity

Informs

Evidence

Measured by

Assessment

Provides
Measuring the Sub-Objectives

- Class A: “Normal” Instruction
- Class B: Focus on group activities and assessments

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<tr>
<th>Sub-Objective</th>
<th>Class A (Avg. Score)</th>
<th>Class B (Avg. Score)</th>
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