



Assessment Example

Chemistry

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1. Plan

Assessment for:

- Chemistry B1A – 6 sections, 4 instructors in Fall 2017
- *SLO#3*: Use the atomic and kinetic theories of matter to explain macroscopic chemical and physical behavior.

Assessment Tool:

- 2 free response questions on Exam 1
- Instructors met and agreed on questions



1. Plan – Assessment Question I

Assessment Tool:

- ▶ Students had to identify the phases of water and oxygen based on images at the molecular level. They were then asked to rank the densities for each phase (solid, liquid and gas) and explain why water is an exception to the general trend.

Rubric:

- ▶ 6.5/8 (81%) – Exceeds Expectations
- ▶ 6/8 (75%) – Meets Expectations
- ▶ Below 6/8 (<75%) – Does Not Meet Expectations



1. Plan – Assessment Question II

Assessment Tool:

- Students were asked to "Explain how Dalton's Modern Atomic Theory accounts for the conservation of mass in a reaction".

Rubric:

- 5/6 (83%) – Exceeds Expectations
- 4.5/6 (75%) – Meets Expectations
- 4/6 or below (67%) – Does Not Meet Expectations

2. Assess (360 students)

SLO #3 - Phases Water Question			
	6.5/8 or higher	6	Grade <6
Section	Exceeds	Meets	Does not meet
1	25	20	4
2	20	1	4
3	16	8	3
4	16	10	1
5	17	6	4
6	22	2	2
Total	116	47	18
%	64.1	26.0	9.9

SLO #3 - Dalton and Law of Conservation of mass			
	5/6 or higher	4.5	4/6 or less
Section	Exceeds	Meets	Does not meet
1	14	12	21
2	4	5	16
3	5	0	22
4	5	0	22
5	8	0	19
6	6	2	18
Total	42	19	118
%	23.5	10.6	65.9

SLO #3 - Overall			
Section	Exceeds	Meets	Does not meet
1	39	32	25
2	24	6	20
3	21	8	25
4	21	10	23
5	25	6	23
6	28	4	20
Total	158	66	136
%	43.9	18.3	37.8



3. Reflect

- No significant difference observed between sections or instructors.
- Students did better than expected (64% exceeding) in the phases of water question.
- Students did very poorly on the Dalton's Atomic Theory question (66% not meeting), as previously observed.
- Bimodal distribution is often seen for this course and is reflected on the second question results.
- Difference in outcomes is attributed to difficulty of question and to communication skills. Developing the assessment tools was time intensive (faculty had to agree).
- Advantage is having a “normalized” comparison point between sections/instructor but it is time intensive.



4. Refine

- ▶ Questions with a high critical thinking component continue to be a challenge.
- ▶ Discussion type questions have since been added to practice problem sets and laboratory reports.
- ▶ Have not had much success encouraging students to use the writing center.
- ▶ Students have done better on second question as multiple choice.
- ▶ Will re-assess Question II this Spring, plan is to ask identical question early in semester and analogous question late in semester.



5. Parting Thoughts

- Are we actually assessing SLOs or course objectives?
 - Should SLOs be assessed with multiple tools to fully encompass the scope of each SLO?
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