"In the Murky Middle: Assessing Critical Thinking and Integrative Learning Across the General Education/Major Divide"

Dr. Jane Detweiler, Associate Dean, College of Liberal Arts

Dr. Russell Stone, Director of Assessment & Accreditation

University of Nevada, Reno

Bridging the General Education/Major Divide: Goals

- Visualize curriculum as comprised of SLOs, not merely courses
- Find 3 courses in the curriculum that reflect general education and program learning outcomes
- Find evidence in these courses of development of critical thinking (via SLOs and courses)
- Implement standardized assessment tools that build on each other
- Measure 'value-added' by tracking individual student performance, feedback, and assessment data across the 3 courses

Some Recommended Guidelines

- Target required courses when planning assessments
- Consider when majors enter your curriculum (before or after your introductory courses) and when they take required courses
- Share assessment tools with students
- Share assessment data with department

A Curriculum of "ELABORATION" and "DEEPENING OF ENGAGEMENT" (STEM)

UNR Case Study: How do Biochemistry majors demonstrate critical thinking across 3 levels of courses?	
Aligned Course SLOs	**Role of Critical Thinking**
Introductory: Students will be able to recognize ethical arguments related to science.	Distinguishing ethical dilemmas from facts, critically analyzing texts, responding to others' opinions and perspectives
Mid-curricular: (1) Students will be able to apply their cumulative theoretical and practical knowledge related to biochemistry and molecular biology to address a real world research question. (2) Students will be able to design a research project that includes a testable hypothesis and appropriate experimental objectives.	Ability to adapt research project based on feedback from supervisor and ability to work independently
Senior: Students will be able to articulate the significance of and the rationale for their specific independent research project in written and oral form to peer and lay audiences.	Ability to present research methods, conclusions, and potential applications to different audiences

Introducing Students to Real-World Applications

- Gas solubility: effect of climate change on oxygen amounts in lakes
- Electrochemistry: assembling a battery, technology of fuel cells
- Aqueous equilibria: how our blood acts as a buffer
- Solids and modern materials: technology of nano materials and polymers
- Osmotic pressure: water purification systems
- Catalysis: technology of catalytic converters
- Nuclear chemistry: operation of nuclear power plant vs coal, technology of radiodating