Broadfield Science Narrative Report
The University of Montana
Professional Education Unit
Secondary and K-12

Number and Name of Standard: ARM 10.58.522 Science
Individual(s) Completing Report: Fletcher Brown

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Purpose: The information below are responses to the improvements sections of the Narrative Summary Report: Science Standard ARM 10.58.522 Science

1. The University President’s Task Force on Science Education Reform spent considerable time on the issue of credit requirements for broadfield science. Of concern was the unbalanced credit requirement between biology and the other sciences. With the potential adoption of the Next Generation Science Standards, this requirement may need to be readdressed. There is still much work to be done in this regard.

   There has been ongoing conversations as well in the Teacher Education programs and campus-wide regarding how to reconstruct the broadfield major requirements. Pending the task force recommendations the University is ready to make changes to this major focusing in on Next Generation Standards. Look forward to the changes to come.

2. Science inquiry is frequently mentioned in the standards and is integrated in the methods courses and others, but could perhaps be strengthened. With the Framework for K-12 Science Education and Next Generation Science Standards release, the need to teach inquiry will not diminish. It’s important that the integration of inquiry as an integral component of science instruction and learning not get lost in the new emphasis on the three dimensions from the Framework. Recommend a strong inquiry component (Standard 2(a)i, 2(a)iv, 4 (b), 5 (b)).

   Inquiry is the central theme to the science methods course and field experiences with students exploring, experiencing, developing lessons and teaching inquiry-based learning-cycle lessons in the classroom. Strengthening this component of the program is always a focus in secondary science education reform efforts on campus. In the past NSF grant efforts like STEP and STEM along with new grants such as the NSF NOYES fellowships have aimed at changing the culture of teaching and learning to model inquiry and best practices. There will always be a delay in transforming new standards like the Next Generation Science Standards into the University College of Arts and Sciences content course sequences setting but is a tradition and focus of the University at large.
3. For Standard 2 (c): *apply instructional strategies which model learning environments with extended time, appropriate space, and resources with equipment and technology found in the contemporary secondary classroom.* Are there other courses that also meet this standard, such as technology or instructional strategies?

Additional courses where students learning technology are EDU 370 Integrating Technology into Education and selected science content courses based on their major where they learn specific technologies related to teaching and learning in that disciplinary area. See content course requirements in each major for these courses.

4. For Standard 2 (e): *demonstrate knowledge of formative and summative assessment techniques which model a variety of authentic and equitable assessment strategies that ensure the continuous intellectual, social, and personal development of the learner in all aspects of science.* Would encourage more direct instruction on formative assessment in order to fully meet this standard. The Ed Psych/Measurements course does not fully address the current research on formative assessment practices.

Formative assessment is primarily addressed in two courses, Ed Psych and Measurement and Secondary in Science Methods where they practice and incorporate summative and formative assessments as part of their scope and sequence of lessons and course work for teaching in the 5-12 school setting. Additional formative assessments are modeled in their C&I certification course sequence EDU 221, 345, 481, etc.