

Session 5 – Minimum Content for Science - Elementary

Facilitator: Joanne Olson, ISU

Note Taker: Carrie Berg, Grand View

Location: Rasmussen – 220

NOTES:

What are the minimum courses that Elementary Education Majors should have?

- Handout: Iowa Core Curriculum for K-2, Grades 3-5
- The Iowa Core requires content knowledge in:
 1. Earth and Space Science
 2. Physical Science (Chemistry and Physics)
 3. Life Science (to include environmental/ecology)
- The group agreed that content instruction needs to include all three of the above areas.
- The group also agreed that the following should be included in the above courses:
 1. Lab is an integral component.
 2. Science as/through Inquiry: Students learn how to identify and generate questions that can be answered through scientific investigations, integrated into the above courses if possible. This is the fourth area in the Iowa Core that Elementary Education teachers are expected to teach.

What model would you choose for content courses in the Elementary Ed program?

- Handout: Models for Elementary Content Instruction. The handout described various models for content instruction currently in use, and provided examples from several campuses:
 1. LAS Menu Model: (elementary education students pick courses from a list of classes taught in LAS.)
 2. LAS Prescribed sequence: (elementary education students take a prescribed sequence of classes taught in LAS. Note that these are not courses designed for elementary education majors.)
 3. LAS elementary education only courses: (elementary education students take a prescribed sequence of courses designed for elementary education majors. E.g. "Life science for the elementary teacher")
 4. LAS + Science Education (Hybrid Model): (elementary education students pick courses from LAS, but then take a science education course. Such a course is a science content course taught by a science educator who uses inquiry-based teaching in a smaller class laboratory setting. Typical courses include "Science Capstone" or "Inquiry Science for Elementary Teachers")
 5. Science Education courses only: (elementary education students take a sequence of courses designed and taught by science education faculty that model inquiry-based teaching and teach science content for elementary education students only.)

Participants in both sessions preferred:

- 1. LAS + Science Education (Hybrid Model) -or-
- 2. Science Education courses only

However, different campuses have differing resources, political situations, and numbers of students to serve. We felt that campuses need to make the decision about how they will provide appropriate content preparation given existing science faculty (e.g. some know how to teach via inquiry, others don't), LAS budgets/facilities (some have space, grad. student lines, etc.), and science education faculty (some campuses have enough science educators to be available to run/coordinate such courses, others don't).

Developing Science Education courses *only* are difficult due to low numbers of students in smaller colleges, and budgetary/institutional constraints in large universities.

The group agreed that it is important to place more focus on the big concepts rather than memorization of many facts or using memorized formulas to compute answers. LAS courses are great in breadth (a mile wide!) and many (most?) elementary education students do not successfully learn the concepts, nor do they retain the information.

Elementary education students are underprepared in the physical sciences. Most did not take physics in high school, some took chemistry in high school, and most skip both courses in college. Physical science is expected by the Iowa Core and the NSES.

It is time to propose and implement a new model. We need science courses developed for elementary education /non-majors, more focused on large conceptual issues, and problem solving skills.