

Appendix A 3

Science Education Strategic Plan

Final Draft, January 2013

Science Education Strategic Plan

Final DRAFT – 2-25-13

....our present is your future....

Mission

As the premier science education program in the state, the University of Northern Iowa's Science Education Program knows preparing pre-service science teachers and providing professional development to teacher practitioners is critical in enhancing the science understanding of K-12 students. Science Education is committed to:

- the preparation of exemplary science teachers and professional support for teacher practitioners,
- continued leadership and service in science education in Iowa, throughout the Midwest region and nationally,
- scholarship in the areas of research, professional development, and curriculum development, and
- the overall promotion of Science, Technology, Engineering and Mathematics [STEM] education.

Goals

Goal I. To strengthen undergraduate science education

Objectives:

1. Evaluate undergraduate science teaching major and minor programs and courses.

Actions:

- Address methods course needs in the area of safety, pedagogy, and performance based assessment.
- Identify and build consensus on key components in methods courses, in particular field experiences, and consistency in the use of science teaching academic language.
- Incorporate engineering, and technology aspects of the Next Generation Science Standards (NGSS) into methods courses.
- Collaborate with colleagues in our respective departments to address discipline course content with respect to the requirements of the Iowa Core, NGSS and the Praxis II content tests.
- Consider the integration of the Current Technologies in Science Teaching course into existing methods courses such as Orientation to Science Teaching and Methods in Teaching Science.
- Increase our own use of educational technology in LAC and methods courses to prepare our students for a technology rich K-12 teaching environment.

2. Support and improve the Teacher Education program at UNI for secondary teaching majors.

Actions:

- Work cooperatively within the Teacher Education governance structure through committee involvement, secondary methods and advisors meetings, and the

Secondary Teacher Education Senate to increase the program responsiveness to the needs of secondary teaching majors.

- Through action research gather and analyze data from secondary science teaching majors to ascertain stakeholder needs with regard to the Teacher Education Professional Sequence.
- Based on stakeholder data, interactions with teachers, schools, other secondary methods instructors and Professional Sequence faculty, work to modify and enhance the Professional Sequence to meet the needs of secondary teaching majors.

3. Encourage and actively include undergraduate science teaching majors in undergraduate research.

Actions:

- Provide and monitor opportunities and resources for undergraduate science teaching majors to conduct research in science or science teaching.
- Encourage science education faculty to participate in summer undergraduate research programs and collaborate with secondary science teaching majors in research.

4. Develop and maintain a mentoring relationship with our students to support them through their program and into their future.

Actions:

- Increase the number of on-site observations made by methods instructors during field experience classroom teaching, enlisting colleagues when necessary to make visits.
- Seek support for release time or overload adjustment as well as transportation support for instructors doing on site field observations.
- Work through the Coordinator of Student Teaching and site Coordinators to establish a connection between methods courses and student teaching, obtaining feedback for our methods courses and our Student Outcomes Assessment plan.
- Encourage students to maintain ties with science education faculty after graduation.

Goal II. To strengthen graduate science education

Objectives:

1. Enhance the Masters of Arts [MA] in Science Education.

Actions:

- Review existing MA majors and emphases in relation to changes in state licensure and career ladder requirements, UNI course availability, and student needs in order to determine relevant program changes.
- Provide additional and appropriate content courses for completing the MA in Science Education by working with science departments to offer more summer or academic year courses that are available on-line and/or at days and times accessible to teachers.

2. Increase the level of rigor for graduate student education.

Actions:

- Establish program-wide, consistent expectations in required core courses to ensure programmatic rigor.
 - Reassess final non-thesis projects and establish expectations and quality standards.
 - Create formative and summative student assessments to be included in the Graduate Student Outcomes Assessment Plan.
 - Provide a yearly update for graduate advisors to ensure that graduate policies and procedures are understood and being followed.
3. Engage graduate students in relevant scholarship.
- Actions:*
- Work with graduate students to establish, by the midway point in their program, the best pathway (thesis or non-thesis) to engage in meaningful scholarship.
 - Provide graduate students with information about faculty research interest areas.
 - Actively promote the thesis option through advising and the Research Methods course.
 - Encourage faculty to actively seek out research partners/participants from among graduate students or graduate students' schools research projects.
4. Increase connections between faculty and graduate students and among graduate students.
- Actions:*
- Establish a regular on campus component for our distance education cohorts to facilitate graduate students' interactions with each other and science education faculty.
 - Improve advisor-advisee communication with regard to program requirements and strengthen mentoring done by graduate advisors.
5. Increase the level of graduate faculty interaction.
- Actions:*
- Promote collaboration among faculty through the establishment of dedicated time for graduate faculty discussions (i.e. graduate faculty meetings).
 - Explore topics and funding opportunities of common interest and create a "research agenda" for science education.

Goal III. Strengthen science education within the College of Humanities, Arts and Sciences and the College of Education

Objectives:

1. Address the "dual role issues" faced by membership in science content departments, education departments and science education.

Actions:

- The Science Education Chair will dialog with science education faculty to identify issues associated with multi-department assignments.
- Formally identify teaching, advising, and service loads based on home departmental loads and faculty status.

- Define teaching roles of science education faculty to include primary teaching responsibilities to help make decisions about teaching assignments.
 - The Science Education Chair will meet with Deans from the College of Humanities, Arts and Sciences and the College of Education as well as CHAS Department Heads to discuss equitable service and advising loads of science education faculty.
2. Increase human capital within Science Education faculty and support staff.
- Actions:*
- Increase secretarial support from 20 hrs. per week to 30 hrs. per week.
 - Assess the human capital need on an ongoing basis in order to staff to science education courses.
 - Reduce the use of adjuncts in LAC Inquiry courses by creating either 2 tenure-track lines and/or term instructors.
 - Work with the Deans of the College of Humanities, Arts and Sciences and the College of Education to create a mechanism to be able to hire faculty who are interdisciplinary in nature and do not fit discipline departments' hiring definitions.
 - Designate at least one science education faculty meeting annually between CHAS science education faculty and COE science education faculty to discuss specific issues of common interest.
3. Address classroom space needs for science education courses including LAC courses for elementary education majors.
- Actions:*
- Assess classroom needs for space and room configuration for teaching science education courses.
 - Engage the Dean of CHAS and appropriate Department Heads in a discussion to resolve classroom space needs.

Goal IV. Increase recruitment, professional development, and outreach efforts

Objectives:

1. Complete and then continually update marketing materials.
- Actions:*
- Complete the print brochures for undergraduate majors and the Basic Science Minor.
 - Create an informational Science Education Resource Center post card and continue the Fall and Spring newsletter.
 - Create a greater web presence including a Facebook page (with more than one administrator), post brochures and newsletters on the web, and add QR codes to marketing materials.
2. Increase interest in, and the number of, students in science teaching programs.
- Actions:*
- Continue to recruit for the Basic Science Minor in the three Inquiry into... courses and through the College of Education Advising Center.

- Resurrect the NSTA Student Chapter and facilitate it as a mechanism of both professional development for science teaching majors as well as to engage in outreach activities to K-12 students, thus becoming actively involved in recruitment.
 - Stress with the content departments the need to recruit more science teaching majors.
 - Explore with the Department of Residence the establishment of a “science teacher” learning community.
 - Contact UNI science teaching alumni to recruit science teaching majors (using posters, DVDs and majors brochures).
 - Create a cadre of secondary science teaching major to be involved each semester with Admissions’ “Panther Push” visits to home school districts.
 - Encourage faculty to take students with them on school and informal education visits.
 - Increase faculty involvement in on-campus recruiting via such avenues as Panther Peeks and UNI Up-Close days.
3. Broaden professional development and outreach for science teachers.
- Actions:*
- Work with UNI faculty, the UNI Foundation, Grants & Contracts, etc. to obtain extramural funding for teacher professional development, including Update Conferences.
 - Work with science departments to continue offering content Update Conferences.
 - Develop a coherent strategy for teacher professional development that includes model professional development workshops in our content areas and supports the Next Generation Science Standards.
 - Interface with the Northeast Iowa STEM Hub and the Governor’s STEM Council.
4. Establish and maintain communication with BA and MA alumni and donors.
- Actions:*
- Work with the UNI Alumni Association to maintain a current database of both Bachelors and MA in Science Education alumni.
 - Communicate once yearly with alumni with a newsletter and promotional materials.
 - Establish a Facebook page.
 - Work with the CHAS Foundation Director to increase existing and possibly add Endowed Scholarships for secondary science teaching majors.
 - Actively pursue fund raising for the Science Education Summer Graduate Tuition Scholarship by contacting MA alumni.
5. Increase the utilization of the Science Education Resource Center [SERC].
- Actions:*
- Introduce elementary and secondary education majors to the SERC through LAC content courses and their science teaching methods courses.
 - Expand the services provided to AEA 267 schools to include Kit Maintenance and Kit Sharing mechanisms.
 - Improve the SERC webpage.