George Mason University  
College of Education and Human Development  
Graduate School of Education  

Science Education Leadership and Policy  
EDCI 894  
Fall 2010 – Spring 2011

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Office Hours:  
1 hour after class or by appointment

First Saturday of the month  
10:00 AM - 3:00 PM  
A412 Robinson Hall

3-credit course for doctoral students in science education

Online Syllabus and Resources:  http://courses.gmu.edu/

Course Description

Focuses on leadership and policy issues at local, state, and national levels that affect science education. Emphasizes understanding decision-making structure and process; current issues; and trends. Students participate in leadership and policy events.

Professional Memberships

- National Science Teachers Association (NSTA)
- National Association for Research in Science Teaching (NARST)
- Association for Science Teacher Education (ASTE)
- Virginia Association of Science Teachers (VAST)
- American Education Research Association (AERA)
- your content area society

Goals

The science education doctoral students will:

- Participate in professional science education organizations and conferences;
- Evaluate science education policies and trends at the national, state, and local levels;
- Work collaboratively with peers to investigate science and science teaching reform;
- Read, write, and discuss leadership and policy literature in science education reform;
- Practice leadership skills;
- Prepare for Ph.D. career opportunities in science education
Relationship to Program Goals and Professional Organizations

EDCI 894 Science Education Leadership and Policy is part of the four-year sequence of courses for doctoral students in science education leadership. The course builds on students’ knowledge from their previous courses and their own teaching to inform their practice as teachers and leaders. The course focuses on leadership and policy issues that affect science education at the local, state, and national levels as outlined by National Council for Accreditation of Teacher Education (NCATE), the National Board of Professional Teaching Standards (NBPTS), Interstate New Teacher Assessment and Support Consortium (INTASC), National Science Teachers Association (NSTA), National Association for Research in Science Teaching (NARST), and Association for Science Teacher Education (ASTE). EDUC 894 introduces students to leadership and policy issues and implementation that they will need to become effective leaders and to complete their doctoral studies.

Nature of Course Delivery

Seminars are interactive sessions with all participants actively participating in cooperative or collaborative group activities. Advanced preparation for each seminar through reading, writing, and reflecting contributes to the success of the session and shows respect for your classmates. The sessions are an opportunity to share your knowledge and learn from others.

2010-2011 Themes - Science Education Leadership and Policy Issues and Trends

- National Leadership and Policy
  - Current Issues and Trends
  - Professional Conferences and Organizations
- State Implementation of National Policies and Trends
  - Science Teacher Professional Development in Virginia
  - Science Education Leaders Professional Development
- Local Implementation of National and State Policies
  - Virginia Initiative for Science Teaching and Achievement

Reading Materials

After joining the science/education organizations that we are studying, you will receive their publications. During this course we will follow the policies and trends in national and state science education reform. Each month you will skim all publications and selectively read policy related articles.

- National Science Teachers Association (NSTA)
  - NSTA Legislative Listserv, to sign up go to - http://www.nsta.org
  - NSTA Legislative Affairs http://www.nsta.org/legaffairs
- National Council for Accreditation of Teacher Education (NCATE) http://www.ncate.org
- National Board of Professional Teaching Standards (NBPTS) http://www.nbpts.org/
- Interstate New Teacher Assessment and Support Consortium (INTASC)
  http://www.ccsso.org/projects/Interstate_New_Teacher_Assessment_and_Support_Consortium/
• National and VA politics online, as sent to you by the instructor and others
• New Conceptual Framework for Science Education Standards (no longer online, instead see the Blackboard website)
• Virginia Initiative for Science Teaching and Achievement (VISTA)

Postponement of Class

When inclement weather or other unforeseen events causes the class to be cancelled or the university to close, the class session will be postponed one week. However, please verify.

CEHD Syllabus Statements of Expectations

The College of Education and Human Development (CEHD) expects that all students abide by the following:

Dispositions. Students are expected to exhibit professional behavior and dispositions. See http://gse.gmu.edu/facultystaff/res/profdisp.htm for a listing of these dispositions.

Honor Code. Students must follow the guidelines of the University Honor Code. See http://catalog.gmu.edu/content.php?catoid=5&navoid=410#Honor for the full honor code.


Disabilities. Students with disabilities who seek accommodations in a course must be registered with the Mason Disability Resource Center (DRC) and inform the instructor, in writing, at the beginning of the semester. See www.gmu.edu/student/drc or call 703-993-2474 for DRC.

Grading

Since this is a graduate level course, professional quality work is expected on all assignments and in class. Attendance at all classes for the entire class is a course expectation. All assignments must be completed to receive a passing grade in this course. Assessments will be based half on fulfilling the specified criteria for the project and half on the quality of work. All assignments are due at the beginning of class on the day they are due. Assignments that are late will automatically receive a ten percent grade reduction (one full letter grade lower). In the event a class is missed the student will develop with the approval of the instructor an additional assignment that relates to the work being missed.

Assignments

30% Professional Development Planning – Elementary or Secondary Teachers
25% Professional Development Planning – Science Coordinators
20% Attend a State Policy Meeting
25% National Conferences and Presentation
ASSIGNMENTS

Collaboration on assignments is encouraged and in most cases part of the assignment. All written assignments are to be word-processed. On the cover page include your name/team members’ names, date, course title, and project title.

Impacting Virginia Professional Development for Science Teachers and Leaders

You have a chance to impact science teaching and learning in Virginia through helping to plan science teacher professional development for the VISTA project. This will enhance consistency and integrity of science teaching and learning across training sites.

The Virginia Initiative for Science Teaching and Achievement (VISTA) is a partnership among 47 school districts, six universities, and the Virginia Department of Education to build an infrastructure to provide sustained, intensive science teacher professional development to increase student performance. The goal of VISTA is to improve science teaching and student learning throughout Virginia especially in high-need (high-poverty, high minority) schools.

- Upper elementary (grades 4-6) teachers experience scientific, problem-based learning and student-centered inquiry as they work in teams to conduct inquiry-based science for children.
- Uncertified or provisionally licensed secondary (grades 6-12) science teachers are provided just-in-time coaching and “big picture” research-based teaching coursework for two years.
- VISTA builds state infrastructure for leadership and support needed to extend quality inquiry-based science teaching to limited English proficient students, rural students, and students with disabilities.

VISTA Objectives

- Increase student learning in science including students with special needs and limited English proficiency
- Enhance quality of elementary science teaching by including inquiry-based teaching
- Enhance the quality of teaching by new, underprepared secondary science teachers, including having students conduct inquiry-based laboratory activities
- Increase the number of certified middle school and high school science teachers
- Increase access for rural teachers to professional development
- Build the state infrastructure to support effective science teaching and learning
- Conduct research to determine what makes the most significant difference in helping teachers to help students learn

1. Plan and create with your team the first week of VISTA elementary teacher training or the first week of secondary teacher training. This includes the schedule and activities/resources needed to run the training throughout Virginia. Be sure to make clear:
   - What do you want the teachers to know?
   - How are you going teach this to teachers?
   - How will you know that the teachers really understand?
This assignment is for fall and you will work in two teams, one for elementary and one for secondary, with the other team critiquing your work. You will turn in a paper and CD copy of your plans with all activities ready to use for training.

2. Plan and create the first week of VISTA science coordinator training. This includes the schedule and activities/resources needed to run the training for Virginia. This assignment is for spring and you will work in two teams, one for new science coordinators and one for veteran science coordinators, with the other team critiquing your work. You will turn in a paper and CD copy of your plans and all activities ready to use.

Attend a State Leadership and Policy Meeting

Attend an education leadership and policy meeting. Plan to assist/volunteer in some way that will help to further science education. Write a two-page report listing (1) what meeting you attended and where and when it was held, (2) issues that were discussed and decisions that were made, (3) policy implications for each decision and/or issue, (4) your reaction to or evaluation of the issue(s), meeting, and process, and (5) how you assisted with or furthered science education. Possible meetings are:

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSELA</td>
<td>Nov 18</td>
<td>Hampton Roads</td>
</tr>
<tr>
<td>VMSC</td>
<td>Oct 12</td>
<td>TBD</td>
</tr>
<tr>
<td>VMSC</td>
<td>Feb</td>
<td>TBD</td>
</tr>
<tr>
<td>VMSC</td>
<td>May</td>
<td>TBD</td>
</tr>
</tbody>
</table>

Or propose a state level meeting to attend.

National Conferences and Presentations

As part of the requirements for this course, you will attend two national level conferences or make at least one presentation at a national level conference. Conferences are to have direct applicability to science education and be at the national level. Since many national organizations rotate their conferences through the Washington, DC area, consider including these when they are in the area. You are expected to make presentations at conferences. For each conference you attend, you will write up a one-page summary that includes the name, date, and location of the conference; your reaction to it; and how you have become an active participant/volunteer in science education reform. When less than a majority of class members are at a conference, you (with any one else who attended the conference) will be expected to make a 15-minute informal presentation at the next class session to report on the conference.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Topics</th>
<th>Projects Due*</th>
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<tbody>
<tr>
<td>Sept 4</td>
<td>seminar</td>
<td>How is the new conceptual framework for national science education standards different from the old standards? What characteristics are found in award winning grants? Syllabus review and planning/teams New National Science Education Standards VISTA Grant</td>
<td>● Scan National Frameworks</td>
</tr>
<tr>
<td>Oct 2</td>
<td>seminar</td>
<td>What are the components of, and resultant policy implications for, effective professional development targeting elementary and secondary teachers and administrators? Wendy Frazier</td>
<td>● Read National Frameworks ● Your list of key professional development planning ideas ● Read about speaker</td>
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<tr>
<td>Nov 6</td>
<td>seminar</td>
<td>What are the major science policy issues in early education and higher education? Mark Ginsberg</td>
<td>● Read 2010 SOL ● Read about speaker/Achieve ● (Elementary and secondary PD Plan)</td>
</tr>
<tr>
<td>Nov 18</td>
<td>VSELA</td>
<td>Virginia Science Education Leadership Convention Hampton Roads</td>
<td>● Attend</td>
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</table>
| Nov 18-20 | VAST | Virginia Science Teacher Convention Hampton Roads  
What are the major policy and leadership issues in science education in Virginia? Paula Klonowski  
What are the major policy issues for science education leadership in Virginia? Eric Rhoades | ● Attend ● Read about speakers |
<p>| Dec 4  | seminar| How is the next generation of national science education standards being developed? John Kraman, Achieve | ● Elementary and secondary PD Plan ● Read about speaker |
| Jan 1  | holiday| no class                                                               |                                                   |</p>
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<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 19-22</td>
<td>ASTE</td>
<td>National Convention Minneapolis</td>
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<tr>
<td>Feb 5</td>
<td>seminar</td>
<td>What are the major legal issues, cases, or laws in science education?</td>
<td>Eileen Gallagher</td>
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<tr>
<td>Mar 10-13</td>
<td>NSTA</td>
<td>National Convention San Francisco</td>
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<tr>
<td>Mar 5</td>
<td>seminar</td>
<td>What approaches have been shown to increase success for underrepresented minorities?</td>
<td>Celeste Pea and Julio Lopez-Ferrao, NSF</td>
</tr>
<tr>
<td>Apr 2</td>
<td>seminar</td>
<td>What are the major science education leadership and policy issues at the National Board of Professional Teaching Standards and in education?</td>
<td>Gary Galluzzo</td>
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<tr>
<td>Apr 3-6</td>
<td>NARST</td>
<td>National Convention Orlando</td>
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<td>Apr 8-12</td>
<td>AERA</td>
<td>National Convention New Orleans</td>
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<tr>
<td>May 7</td>
<td>seminar</td>
<td>What are the major policy issues for special education?</td>
<td>Mike Behrmann and/or Penny Early</td>
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<tr>
<td></td>
<td></td>
<td>What are the major policy issues in science education?</td>
<td>Penny Early In the future, how will you further your knowledge about cutting edge reform?</td>
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