

*In Preparation for NAS Workshop on Discipline-Based Education Research Positions*  
**Summary of Email Responses from Biologist Educators**  
**November 28, 2005**  
**CONFIDENTIAL**

**Question 1: *What are your responsibilities for teaching, research, and service? (e.g., teaching loads, courses, coaching/mentoring roles, types of research, liaison roles with education department)?***

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Technically, my position is 50% instruction, 50% extension (aka outreach), but my responsibilities are as follows:

- Teaching
  - one undergrad senior capstone course (3 credit hours every spring)
  - team-teaching a graduate seminar on pedagogy (3 credit hours every spring, of which I am responsible for about 1/3)
- Research
  - establishing and maintaining a scholarly research program in science education, evidenced by peer-reviewed publications, invited seminars, presentations at local and national meetings, and acquisition of grant funding
- Extension/Outreach/Service
  - directing the outreach efforts of the biotechnology center, including setting the outreach vision for the center, coordinating a biotechnology education conference every other year, editing a twice-yearly biotech education newsletter
  - local and national service, as evidenced by participation in departmental, university, and national committees (my current commitments are (off the top of my head): dissertation committees, departmental graduate committee, departmental seminar committee, university outreach commission, university science, technology, engineering, and math K-12 outreach group, grant review panels, journal editorial board, ad-hoc reviews of manuscripts)

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At my institution there is no tenure, but a similar system of revolving contracts. At the six year point there is a review on research, teaching and service. Because we are a small liberal arts college within a larger university, our student to faculty ratio is about 15:1, so teaching and advising are big part of the responsibility. The teaching load is 5 courses per year. That said, I would say that teaching is equal to the research in terms of review. Education research is something new at our institution so the administration is making it up as they go along. For me, curricular development in the way of online books, posters, and presentations has counted for a lot, but I also built a new academic program from the ground up, so I think they gave me some leeway in this regard. I am expected to publish data driven articles in peer reviewed journals as well. External funding is not expected, but I find that odd.

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\*\* Teaching load is same as other research faculty, relatively light. I am expected to teach about 8-10 credits per year which translates to 1 big course and 1 little course per fall and spring semester (each big course = 3-4 credits).

\*\* Coaching/mentoring in the lab is also about the same as other research faculty, although there have been some whispers that whereas other faculty get departmental support for two graduate students, I would get support for only 1. So far, I do not have a full-time PhD student to test

those whispers. So, overall, I'm expected to mentor undergraduates, master's students, PhD students, and post-docs in the lab. The students can register for 1 credit lab meeting each semester and variable numbers of research credits with faculty members, including us. This enables our department to get teaching credit for the usual mentoring that goes on in the lab/during lab meetings, etc.

\*\* Liaison with education is not expected or required, but I have done it anyway. I've hooked up with (someone in education) and a student of hers. She's been helpful in guiding our exploration of science education research and initial forays into the field.

\*\* I have two areas of potential research: laboratory / bench science AND/OR science education research. The difference from other faculty is in my flexibility. Research in either of these areas counts toward my professional development. For other non-education focused faculty, any research they do on science education counts in their evaluation under "instruction" not "professional development - i.e. research". I helped to define this option in the tenure and promotions manual for our department.

\*\* I have the same expectations under service as anyone else. I've exceeded those expectations because coordinating education programs puts me on service committees.

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My position as an Assistant Professor of Biology is similar to anyone else hired in the department. I just happen to have been hired in the area of concentration of biology education.

**TEACHING:** Just like everyone else in the department, I have a workload of 12 course units each semester and like most faculty, this means that I teach ~2 courses and have a grant that provides release time for the remainder of my units. When I was hired, it was clear that I was expected to teach an upper division, non-majors course targeted towards future elementary school teachers, though this is not a methods course, but a content course using innovative (for the university setting) pedagogy. Also, I am building a set of courses in science education for scientists and undergraduate majors, just as other faculty who come with specialties build curricular areas. Some of the graduate coursework in science education is affiliated with my directorship of a grant-funded partnership program, which integrates a science education partnership and pedagogical training experiences into the graduate careers of about 10 students per year.

**RESEARCH:** Just like everyone else in the department, I am expected to be a productive researcher, raising grant funds to support my work, publishing peer-reviewed publications, and mentoring graduate and undergraduate research projects. My laboratory engages undergraduates, graduate students, and K-12 teachers in research studies on two main lines of inquiry. First, researchers in my lab are interested in systematically understanding the role of partnerships between scientists and teachers in influencing K-12 science education and promoting articulation between the K-12 and the college/university branches of the US educational system. Second, we are interested in understanding how novices - including young children, non-science majors, and elementary school teachers - think about biological concepts and living things. Since there is currently no degree within the department that would make sense for any graduate student working with me to get, I need to build a degree before I'm likely to get full-time graduate students. I have been successful in engaging undergraduates in research and having joint graduate students with other faculty across the College of Science and Engineering. These graduate students are primarily conducting bench research for their Master's thesis, but are also

doing a chapter of their thesis with me on a science education research project related to their scientific interests.

SERVICE: This, too, is supposed to be like everyone else. That said, it has become increasingly clear in my first four semesters that as the only person hired as a “science educator” in the College of Science and Engineering – meaning one who was hired into a science education research position, in contrast to many senior faculty who have taken on science education interests after shutting down their research labs – I get assigned EVERYTHING THAT HAS ANY WHIFF OF BEING RELATED TO SCIENCE EDUCATION. And I have thus far received no release time to compensate me for this extensive committee work.

What is unique about my work in the department, not so much my position per se, is that my teaching, research, and service are all quite intertwined and overlapping. This is best exemplified by my Directorship of a partnership grant with the overarching goal to institutionalize science education partnerships in our College of Science. I am developing and teaching courses towards this goal. I’m engaged in research, both assessment and partnership research, in the context of this grant, and it is a form of service since it is accomplished in collaboration with the local public schools.

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**Question 2: *In what ways (if any) do your responsibilities differ from your non-education focused colleagues? What positions have you held and do you currently hold in your department?***

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From my perspective, little differs regarding my teaching and research responsibilities and expectations. The biggest difference is with respect to my extension/outreach/service commitments - my efforts are more program-based, in that it is my responsibility to set the vision and ensure implementation of several established programs (e.g., biotech education conference). This allows for a little less flexibility than my colleagues have (a conference is a conference is a conference, and I am expected to make sure that conference happens). Few of my departmental colleagues have these kinds of program commitments, so they might be able to dedicate more time to serving on department or university committees, review panels, etc.

Program implementation can be a huge time sink. Luckily, my colleagues realize this so my extension/outreach/service expectations were reduced when I started in the tenure-track position. This allows for more time for teaching and research.

My department is also quite good about balancing commitments for its faculty - senior faculty whose research programs are winding down take on more teaching and committee work, and younger faculty are relieved of extra teaching or committee responsibility so they have time to spend on establishing high quality research programs.

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In the Science Technology and Society Program, the expectations are similar, but in the larger context the humanities faculty do not need to seek external funding, do not need to publish in peer reviewed journals, and rather they can publish lay literature in the way of novels, memoir, non-fiction, musical scores etc.

I was Director of the STS program for four years and this was a big job, given no secretarial support and no graduate students to help with research or organizing information. Currently I am co-director and manage the teaching lab on campus. While Director I received a course off for the administrative post.

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\*\* As mentioned above, responsibilities do not differ much, except in where to categorize any science education research (and grants) I might garner.

*What positions have you held and do you currently hold in your department?*

\*\* Assistant Professor. I have been a member of the Curriculum Committee. I have held committee chair positions for our NSF-funded Center initiative. Also, one of my colleagues who is also a biologist educator coordinated the statewide Science Olympiad, seemingly because faculty members here thought at first that the biologist educators would do everything related to science education for the department. What has now been established is that I will conduct own research in science education, meaning coordinating and implementing, and evaluating programs in answer to science education research questions.

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I think this is answered in the first question. My responsibilities are comparable to other tenure-track faculty in my department. I hold no special position in my department, other than being PI

on grants just like everyone else. I do not have any formal titles, though I DO INFORMALLY get labeled as the person who knows about... NSF Broader Impacts, how to work with schools, assessment strategies, active learning techniques, innovative approaches to biology teaching, etc. So, I'm INFORMALLY called upon a great deal to help out with everything from structuring a faculty meeting into a more active, small group session to consulting with other faculty on the broader impacts pieces of their grants.

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**Question 3: *In what ways (if any) do your current position and your career prospects differ from your non-education focused colleagues? (e.g., title and rank, paths to tenure, resource issues, joint appointments with other departments).***

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I think my title and rank are pretty similar to science faculty in my department with similar experience.

My path to tenure is similar, although my colleagues will probably rely more heavily on external expertise in evaluating my dossier than they do for other junior faculty whose research focus is science.

Regarding resources, I did not receive start up monies per se, but I took a circuitous route into my position (I was already here prior to becoming tenure track) and the outreach program was already established, so I'm not sure that start-up was appropriate.

I do have access to other resources: 2 years of funding for a doctoral student (all junior faculty are getting this as of last year), an outreach endowment (approx \$12,000 per year that I can spend at my discretion), the biotech center endowment (spent at the discretion of the center director, I make a request and he decides whether it is worthwhile - he has not yet rejected a request), the center van (including all related expenses - the value of free transportation cannot be underestimated!), returned overhead or indirect costs (this is available to all faculty with extramural funding, and the % returned changes from year to year).

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I definitely feel that the tenure path for me would be murky at any institution. At my institution I set the precedent but again my position was quite unique, and certainly others in other institutions have had to pioneer with a lot less certainty. I was impressed by Cal Sate Fullerton's Memorandum of Understanding and mentorship program for faculty in the biological sciences. The MOU was quite clear in terms of expectations no matter if you were in education research or a bench scientist. We don't have an education department so there is no opportunity there, but I am able (and encouraged) to teach in other divisions which is very important to me (graduate students in international affairs, and art students at Parsons Art and Design).

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\*\* Given that I have just started, this question remains to be answered. So far, there seem to be NO differences in my prospects. I had my third year review in spring 2005 and it went very well. I was ranked very good to excellent in all three categories (professional development, instruction, and service). I was categorized overall as "on track". Another Biologist Educator in my department will go up for this pre-tenure review in spring 2006. I don't expect it will be different for her.

\*\* ON the issue of resources, I've had to fight for equal rights to funds like travel support from the department. However, it's hard to tell if that's because I was hired through a grant-funded Center OR if that's because I was hired as a Science Educator.

\*\* On joint appointments, it's an option but not requirement. I've had several conversations about joint appt in psychology because my research fits well in their department, but haven't

moved further on it because of increased committee meetings, etc. It remains possible after tenure.

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I am 100% time, tenure-track faculty in the biology department. I was warned against joint appointments between two departments by many colleagues, and I'm glad that I have only one set of department requirements to reckon with. I came to this university from a non-tenure track, academic position at another university where I was primarily focused on outreach and partnership programs and was unable to pursue my interests in evaluation, assessment, and research. So far, my tenure process has been similar to others. I'm in the middle of my second year review, and all the feedback has been positive. Most convey that there amazed that I'm making this position work as well as it seems to be working. My main concern is publishing enough; the same concern as most of my junior faculty colleagues.

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**Question 4: To what extent and how does your department (or school or university) support your position and your research? (e.g., financial support, cultural support, etc.?)**

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The fact that my department and university enthusiastically transitioned my position from non-tenure-track to tenure-track speaks volumes regarding their support!!

In general, I think that my university, my college, and my department are VERY supportive - my salary is very competitive, access to resources listed above, general collegial engagement and respect - it's hard to articulate because it is a general spirit that my work is valued.

I think it helps tremendously that I have a strong science background and have been successful in acquiring grant funds. My biggest challenge is garnering the same respect and collegiality from science educators with a background and training in education rather than science.

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Financially, not at all. My college does not even understand the significance of obtaining external funding to conduct education research. Somehow they feel that it is something "they all do" so why can't I just do it on the side, What is the money for? That said, we have small internal grants that I have used to develop various curricular projects and have succeeded in getting these each year. In the way of the development office, there is no attention given in this area. We only recently had someone appointed to university faculty development and another person for institutional research, who was removed after a three years because our provost felt that there were enough people on campus who were experienced with assessment to do the job as needed. Not good. Culturally at the college, my colleagues are extremely supportive of my work, the administration does not completely understand it, but they do what they can to support it.

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\*\* Support seems good so far by most people. I've heard whispers of lack of support by some faculty in our very own division, which is unsettling to say the least. That lack of support (if true) takes the form of discouraging graduate students from working with me because I won't have time to advise graduate students effectively while conducting science education research as well. Although this may be true in the long run (I'm not sure), I need to be given the opportunity to find out independently without other faculty members pre-judging my abilities in either area.

\*\* Interestingly, another division of my department has put forth goals of hiring two science educators in parallel positions to mine. This would indicate overall favorable views of my positions and accomplishments.

\*\* With regard to financial support, I've written and received multiple internal "seed" or "venture" grants from the university and local organizations.

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In terms of resources, I received comparable start-up funds to other bench researchers in my department, which at my institution was ~\$100,000. I have applied for several internal grants, receiving some and not others. There is some concern that my lines of inquiry and research methods are so foreign that they aren't seen as "biology department research." As an example, two of my undergrad students recently applied for a departmental award of monies to support student research. They were discouraged because the faculty in charge wasn't sure if the funds would be used as incentives for surveys as opposed to the usual pipette tip request. Also, since I have students from departments beyond biology in my lab (e.g. geoscience, liberal studies, child

and adolescent development), the department didn't want to support the research, even though it was biology research, because it was being conducted by non-biology majors.

Culturally, my department was split on whether hiring this position was appropriate for a biology department. That said, once I was hired—a real, live person—even the nay-sayers of the *position* have been supportive of my individual efforts as a new faculty member. I certainly wish I had more mentoring, but nobody here knows what this should look like, so I'm largely on my own to craft what it means to develop a biology education curricular and research wing of the department.

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