

NSF RESPONSE TO COV REPORT

RESEARCH ON GENDER IN SCIENCE AND ENGINEERING

Human Resource Development
Education and Human Resources

Committee of Visitors of May 22 and 23, 2006

MERIT REVIEW PROCEDURES

No recommendations.

MERIT REVIEW CRITERIA

No recommendations.

SELECTION OF REVIEWERS

"However, the panel recommends that continued effort be made in recruiting reviewers from under-represented groups and states."

We will continue to seek new peer reviewers with expertise in gender studies and STEM education, from all states and especially from underrepresented groups.

PORTFOLIO OF AWARDS

"The new Extension Service program has funded two projects so far, for more money and longer timeframes than other program elements. It will be important to monitor these projects for effectiveness and alignment with GSE program needs. GSE should consider a reverse site visit at mid-term for these Extension Service projects"

We appreciate the suggestion and will work on a strategy for effectively monitoring the Extension Service projects, including some form of site visit/reverse site visit protocol.

"Since the balance has shifted to many more research grants and away from the demonstration grants, the "high risk" and innovative projects are now generally found in the research awards in the GSE portfolio. This approach should continue. Many of the awarded research projects are innovative and seek to solve new problems in this field. The panel suggests that GSE continue to fund cutting edge research projects."

We will continue to search out research projects that are cutting edge and that will also generate new and innovative gender strategies in STEM.

"The funded research projects tended to focus on one discipline, but across the GSE portfolio there was representation by many disciplines. GSE should think about the value of multi-disciplinary projects in meeting its goals. Given the shift in focus, perhaps a new definition of inter-disciplinary projects is necessary."

We will add new language to the upcoming solicitation which will encourage multi-disciplinary, inter-disciplinary, and collaborative research.

"GSE should strive to bring in new Principal Investigators in order to "prime the pump" and replenish an aging cohort of gender equity leaders."

GSE is already funding projects that are linking established gender equity research leaders with new investigators. We will continue to seek out young investigators. This year GSE has been added to the list of programs participating in the Faculty Early Career Development Program. This will hopefully attract new faculty working on gender research in STEM.

"There were 26 different states funded from 2003-2005, 9 in 2003, 12 states in 2004, and 15 in 2005. As expected two of the most populated states received multiple grants. The 2003 COV report noted that some states with high minority populations (Alabama, Oklahoma, Mississippi, and South Carolina) did not have grants. Except for South Carolina, this remained true for this report as well."

Geographic distribution continues to be a factor in making funding recommendations. The lack of awards from certain states is indicative of proposals received. We will prioritize outreach to underrepresented states, especially through EPSCoR.

"The current RFP is not going to increase the number of applicants from community colleges and other comprehensive institutions (non-PhD granting institutions). If increasing the number of applicants from diverse institutions is important, then there is a need for a program in the GSE portfolio that responds to the strengths, capabilities, and interests of these institutions while ensuring that individuals from these institutions have time to do this work and are rewarded for doing it. Partnering and teaming may be effective ways of working with these institutions. This ties into the idea of building up a new cohort of college students that is going into STEM areas."

The current portfolio of funding priorities does make it significantly more difficult for 2- and 4-year institutions to compete. Given current funding constraints, it is difficult for us to add special initiatives in the portfolio that will specifically target these types of institutions. However, we will encourage collaborations among researchers from many different types of institutions and will work on promoting Extension Service proposals that emphasize activities at these institutions.

"GSE should continue to strive to fund more projects with ethnic minority Principal Investigators."

We have had a number of minority PIs. The number funded is indicative of the numbers submitting proposals. As more minorities (and males) are interested in gender studies, we expect more proposals from a broader community. The focus on research and away from demonstration projects eliminates one of the biggest hurdles for academics pursuing opportunities in this area—that of focusing activities on teaching and education-related activities rather than research. However, this area of research continues to be perceived as high risk professionally because it is inter-disciplinary and intensively engaged in education. This has been a constraint on the numbers and types of researchers who choose to initiate projects. We will prioritize outreach to institutions and states with higher proportions of underrepresented researchers.

MANAGEMENT OF THE PROGRAM

"It is important at this point to implement a plan for evaluating the results of these projects, as well as organizing their results for dissemination. It is important that the results be available for other programs, within NSF (e.g., MSP, etc.)."

We will be opening discussions with evaluators on the most appropriate ways to establish performance metrics and evaluate the GSE program overall. We are continuing our dissemination efforts with a new edition of *New Formulas 2 for America's Workforce* as well as *New Tools for America's Workforce*, a catalog of products available from the PIs from the first 15 years of GSE funding. We will disseminate these widely both within and outside the Foundation.

"Since the funded projects have not diminished, the workload may be too much for one person. We suggest NSF consider supporting the program officer with a "rotator" position. This would allow bringing in people with special expertise, for example, a person who could assess the portfolio of research projects and "take stock" of that portfolio to inform GSE of future direction."

The 2007 EHR/HRD staffing plan includes a request for a rotator position for the GSE program.

RESULTS OF NSF INVESTMENTS

"It is particularly important that the program identify specific barriers and then target effective interventions. However, the program is limited in size and therefore must target its investments wisely. The research has pointed out that there are critical "transition zones" where students are lost from STEM. The panel recommends that GSE focus its efforts on these "transition zones.""

A focus on "transition zones" is already happening. We feel it is critical to encompass all levels of education in our selection of research, dissemination and extension service projects.

"However, we feel that to be effective GSE may need to target future efforts in pivotal areas such as policy and organizational culture. These may provide the greatest leverage for methods to change gender representation in STEM disciplines."

We will consider encouraging these types of proposals in our outreach efforts.

"The panel suggests that GSE consider whether the greatest leverage point for information dissemination and support would be policy makers, presidents, provosts, trustees, and other senior officials instead [of educators]."

Most of our research focuses on education and educational interventions that work. Getting the word out to educators has been a considerable challenge and the new Extension Service track is designed to tackle this hurdle. GSE treads a fine line in targeting policy makers and "senior officials" in that we don't want to appear as "activist." That being said, where we have educational research-based strategies that work for girls and/or boys, we will fund projects that translate those for a broader audience, including policy makers, educational leaders, and the media. We will continue our efforts at broader dissemination.

"...it is important that GSE remain agile, filling in gaps and finding new opportunities to improve gender representation and retention. However, for this agility to pay off, it must align with the target audiences. If GSE wants 2-year and 4-year institutions to participate in the programs, then the programs must align with areas where those 2-year and 4-year institutions have the skills, infrastructure and reward system to enable their success. For example, the fit between 2-year and comprehensive 4-year institutions and GSE research or extension service projects is unclear. Now that the demonstration projects have been phased out, there is little to attract these non-research institutions. It is not necessarily NSF's responsibility to design programs for everyone, however, careful thought must be given to the alignment of the audience and the program."

We agree that currently the GSE portfolio has limited opportunities for 2-year and 4-year institutions, although we do fund researchers conducting research on education in 2- and 4-year institutions. We welcome the suggestion that collaborations that include faculty at 2- and 4-year institutions be encouraged, and will include wording to this effect in the new solicitation.

OTHER TOPICS

"The issues addressed by GSE are very broad and pervasive so NSF should continue to try to improve the geographic distribution of awards."

We will work with the EPSCoR office and take advantage of other outreach opportunities to improve our geographical distribution of proposals/awards.

"GSE is now funding projects in research and Extension Service. So that NSF's investments are optimized we encourage GSE to identify a mechanism to ensure that what is learned from one program is linked to activities in the others. For example, new research may add value to extension service projects. Feedback gained from extension projects may lead to important new research questions. Ensuring this exchange of information and insight is particularly important for smaller programs so that the leverage of dollars is maximized."

This is an excellent suggestion and we will work on incorporating more interaction among the Extension Service PIs and the Research PIs at our annual PI meeting. We have found that our annual PI meeting has generated many spontaneous new collaborations among our PIs, so this venue is particularly important to encourage such cooperation. The new solicitation will also encourage Extension Service activities that include researchers throughout the process. The production of New Formulas 2 is also meant to highlight GSE Research and Extension Service projects and encourage contacts among researchers and practitioners.

"...new PI's ability to write competitive proposals appears to need assistance. There are certain programs/investigators that are consistently funded by NSF. These may be the programs with the greatest experience, with the best success record and with proposals demonstrating the greatest merit. It seems that there is an important role for these individuals and programs in bringing along new PI's. The COV suggests NSF think about engaging these well-established programs in mentoring of new PI's, to bring new talent into the field. This is particularly important for programs such as GSE, where the challenges of gender representation are widespread. GSE has improved the number of new PI's in this last cycle. GSE is to be commended for this. Perhaps a "mentoring" program of experienced PI's with new PIs would further improve this record."

We also really like this suggestion and will explore the feasibility of a "mentoring" project with organizations and individuals who might be interested in submitting a proposal to do this.

"...NSF should consider when and how to encourage partnerships among institutions. For example, partnerships between large research universities and HBCU's, Hispanic serving institutions, community colleges, etc., may further diversify the pool of PI's, as well as the diversity of proposals."

We will consult with individuals and organizations within and outside the Foundation on the best strategy to do this. Language in the new solicitation will reflect this priority.

"To break out of traditional assumptions, it will be important for GSE to maintain a strong "customer focus" and feedback loop, listening to women, particularly to under-represented groups (e.g., Latinas). Also, as the nature of faculty work changes, and faculty demand a more family-friendly climate, preferences may shift. NSF must stay in touch with its target audience, and modify the programs based on emerging trends among women."

The current portfolio of Research, Dissemination and Extension Services is moving toward a more "feedback loop" orientation. This will be emphasized more in the new solicitation, which will explicitly lay out the "feedback loop" strategy.

"The COV notes that a specific focus on gender issues within (or among) ethnic groups is not obvious. The COV believes that gender issues are different among different ethnic groups. For NSF's focus on gender issues to be representative of today's population, and to be useful in catalyzing change, ethnic differences should be considered."

The GSE program officer agrees completely with the COV. The next solicitation will include language that explicitly encourages submission of proposals that explore the interconnections between gender and race/ethnicity.

"The COV believes that GSE should consider concentrating its dollars on critical leverage points."

GSE already concentrates on important transition points throughout the K-16 level and will continue to do so. To the extent that transition points can be highlighted in the new solicitation, we will make every effort to encourage submission of proposals that explore these.

"GSE should look at the problem of gender representation holistically. NSF has done a good job of addressing gender issues at middle school level, for example. However, the graduate level (MS, PhD) is another major "transition zone" where women are lost from STEM disciplines. If there are no women in academic faculty positions or leadership positions in higher education institutions, we will continue to project the image that serious science isn't for women. Critical transition zones should be a priority focus for NSF and GSE. Transition zones may be broader than just gender issues. For example, what are the issues around faculty life (for males and females) that lead to people disengaging from the profession and the academy?"

We think it is important that the broad-spectrum of K-16 education (which includes elementary, secondary and baccalaureate-level post secondary education) continue to be our focus. GSE has made a few limited awards in the area of graduate education. Faculty issues are covered by the NSF ADVANCE program, and the transition from graduate school to the professoriate is currently addressed by the AGEP program.

"The COV discussed whether the dissemination projects are the best use of NSF dollars. One challenge is that the grants are relatively small, and for a maximum of only two years...It may be more effective for the extension service category to be modified, allowing for the creation of multi-year "dissemination" grants. The COV feels that simply creating awareness (i.e., dissemination) is not enough. Follow up is required, and repeated exposure. The ultimate goal is to stimulate change. Change requires more than awareness—and it requires time. The COV suggest GSE consider folding the dissemination grants into the extension service category, creating mega-grants (such as the National Academy of Engineering program) and smaller, multi-year grants."

We are currently considering how best to structure the *GSE* program to increase interest and participation in dissemination—what we see as a vital function of NSF and the *GSE* program. We will be considering various options that may combine and/or overlap Dissemination and Extension Services. One concern may be that folding Dissemination into Extension Services might dilute the original design and intent of the Extension Services experiment, taking it to the next level prematurely. Conversely, different levels of Extension Services may lead to more expertise in the kind of activities needed for effective Extension Services. As we draft the new *GSE* solicitation, we will work with various permutations of Extension Services and Dissemination to try to find the optimal fit for the program. The *GSE* program evaluation will also inform this issue.

"The COV believes that there are at least three critical leverage points for *GSE*.

- Target the right ages and transition points. Middle school has been a focus. The COV believes that both the transition into college and from the MS to PhD, are areas that need attention.
- Target the right people for dissemination. It appears that much of the focus is on "talking to people in the academy." While this is necessary, it is not sufficient. It will be critical for *GSE* programs to target senior leaders, e.g., policy makers, presidential associations, trustees and legislators.
- Policies such as family leave should be a focus, as well. The challenges of gender representation go beyond cognitive differences, and beyond awareness. Policies and organizational issues may present persistent barriers. *GSE* projects should look at these issues, as well, since they may have very broad impact."

Future solicitations will advise the field to pay attention to these areas.

"NSF and *GSE* should focus not just on bringing more girls and women into science, technology, math and engineering fields, but also on retaining them."

Many of our projects are examining retention issues explicitly. We will continue to encourage this focus in the solicitation and in our outreach activities.

"The COV suggests that *GSE* give thought to how to evaluate and promote the program. For *GSE*, it is not as simple as counting individuals who are touched by a program or the number of articles published. It may be necessary to engage an evaluator in the process. An option may be to consider the conversion of research into actionable items. Once an evaluation strategy is determined, it should be included in program solicitations so that applicants know the metrics that will be applied. The metrics should be applied consistently across awards."

We will be exploring evaluation with various stakeholders and will send out a request for proposals to assist us in designing a proactive evaluation strategy in the near future.

"At the current level of funding, the COV is concerned that the extension service category will dominate the other programs in a few years. GSE should closely monitor the effectiveness of the extension grants, because there are so few and they account for such a large proportion of the budget."

We will strive to maintain a balance in our portfolio between larger Extension Service grants and smaller research and dissemination efforts.

COV REVIEW PROCESS, FORMAT AND REPORT TEMPLATE

- "If you include charts and pie charts in black and white, we'll need a table or some other tool so reviewers can sort out the shades of grey. In black and white they seem illegible.
- Please number the pages! It is very difficult to find information in a 3-inch binder with no page numbers, especially when working together and trying to refer each other to specific material.
- Test the functionality of the laptops before review begins, such as: internet access, shared folder access on each machine, floppy drives, printer and that the panel knows which is the 'lead' computer."

In the future we will work on chart displays, page numbering and technology testing.

SUBMITTED BY Program Officer

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