

**Staff Response
To the Committee of Visitors (COV) Report**

Graduate Teaching Fellows in K-12 Education (GK-12) Program

COV Meeting of August 14 & 15, 2008

COV overall comments:

GK-12 program did extremely well in supporting and promoting the integration of research and evaluation, and the awardees “demonstrate transformative and high quality outcomes.”

The program develops new ways to interest young students in STEM disciplines, and increases the likelihood of cultivating “a solid core of domestic scientists and engineers who will transform their disciplines, the country and the world”.

GK-12 also better prepares fellows as work-class scholars by providing opportunities for international collaborations and learning from international contacts.

**PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAM’S PROCESSES
AND MANAGEMENT**

A 1.1 COV Recommendation:

The points for panel facilitators that were apparently given to NSF staffers who worked with the panels are very helpful. COV suggests including those items in the solicitation since an examination of the solicitation did not clearly identify them. Communicate these items to panelists in the review guidelines. It is a good idea to give everyone a sense of the “big picture” goals.

COV recommends reporting on AIR's outcomes.

Response:

The solicitation will be revised to further clarify program goals. The points for panel facilitators will also be provided to all panelists prior to the panel meeting.

Regarding monitoring of awards, the program has contracted Abt Associates to conduct an overall evaluation of the program. This evaluation will be completed in 2009 and will address program goals and outcomes. This evaluation will be more inclusive than the prior report by AIR.

A 1.2 COV Recommendation:

Declinations need more guidance and specifics related to merit enabling PIs to make changes for future submissions.

Response:

The panelists that reviewed proposals for the 2008 competition were given specific directions regarding the write up of declinations so that the comments would be useful to PIs for future submissions.

A 1.3 & 1.4 COV Recommendation:

- COV strongly encourage reviewers who give proposals low scores to provide documentation in the text of the review that justifies the low score...Present the information in a constructive way so that potential PIs can improve their proposal and resubmit with a greater likelihood of success in the future.
- COV suggests that reviewers use their reviews as a way to mentor prospective PIs, particularly those PIs with little prior grant-writing experience.
- Review panels should also be asked to provide useful feedback on low-scoring proposals to help guide PIs who may consider resubmitting.

Response:

We agree with this recommendation and already briefed the reviewers of the 2008 competition to provide more extensive and substantive comments regarding declinations.

For the 2008 competition, as the program started receiving online reviews prior to the panel, program staff asked reviewers to provided useful feedback to PIs of those proposals with low scores and unlikely to be recommended for awards.

A 1.5 COV Recommendation:

NSF should consider including in Fastlane instructions for reviewers examples of good and bad review language for the same proposal. A good evaluation, especially for a declination, provides both positive and negative feedback. Feedback is especially important for first time PI submissions that are declined.

Response:

The program will continue to encourage reviewers to provide thorough reviews especially for those proposals that are first time submissions. The program will

explore additional venues (e.g. conference calls, webinars) to implement this recommendation.

A 1.6 COV Recommendation:

The context statements are adequate but need more information. For example, information regarding the type of institution making the submission, characteristics of the PI(s), focus of the proposal (primary, secondary or middle grades), and geographic location (urban vs. rural, state) could help potential PIs who were not funded understand decisions that were made.

Response:

We agree with this recommendation and already started implementing it by including additional information in the context statement for the 2008 competition so that PIs get a wider picture of the overall GK-12 portfolio.

A 1.8 COV Recommendation:

Having four reviewers look at each proposal is a good idea. Five would be even better but there are one-time/money limitations to consider. The COV further recommends the use of sub-panels with some disciplinary expertise.

Response:

Most proposals are reviewed by 4 people. The panel will continue to utilize sub-panels to address the disciplinary differences among proposals and to match proposals with reviewers' expertise.

A 2.1 COV Recommendation:

COV suggests briefly discussing COIs (what they are, how to handle them) in the instructions to the reviewers' information.

Response:

Reviewers receive written instructions on COIs prior to the panel and are asked to identify those proposals with which reviewers have COIs or potential COIs so that those proposals are assigned to somebody else. In addition, the GK-12 program director goes over COIs during the panel briefing before panelists discuss proposals in their respective sub-panels.

A 2.2 COV Recommendation

- It is recommended that efforts should be made to increase the representation of Hispanics, especially Mexican-Americans [as reviewers].

- It is good to have included external evaluations with timelines for objective evaluations. It would be helpful if GK-12 would provide a template for the evaluation.

Response:

The program makes constant efforts to be inclusive and to have a diverse panel. Following the COV recommendation above, in the 2008 competition, 23% of the reviewers were Hispanics.

The external evaluators for GK-12 are working together in conjunction with GK-12 program staff to develop common instruments to be utilized by the projects. During the GK-12 annual meeting, the program provides opportunities for evaluators to discuss evaluation issues such as the possibility of hosting a secure website to post instruments developed and vetted by external evaluators.

A 3.1 COV Recommendation:

- Provide COV with a complete list of articles appeared and where presentations were made.
- COV is concerned about the accessibility of project-related publications and conference presentations to the K-12 portion of the GK-12 community. An analysis of where research has been published that will reach K-12 teachers and faculty most effectively is needed. Also do an analysis of how the Web site advertises to K-12 teachers and those who prepare them.
- COV suggests tracking institutionalization or implementation of similar programs at new sites. This feature would be a good measure of accomplishment.
- To generate interest, encourage the PIs to promote their achievements.
- Require CoPI from the School of Education at the Coll/University when possible. Also require that the Fellows provide some level of in-service training for K-12 teachers.
- Data collection and reporting should include as much information as possible (quantitative/qualitative) on the effect of the Fellows on improvement of science education K-12, e.g., improvement in graduation rates/promotions for those classes with Fellows.

Response

The GK-12 program staff provided the COV with a comprehensive list of publications and their source. Future COV materials will include a listing of presentations.

PIs, Graduate Fellows and Teachers have made presentations on GK-12 at teachers' meetings such as the National Science Teacher Association (NSTA) annual meeting.

We encourage the projects to widely disseminate their results through different media. At the GK-12 annual meeting we usually recognize a project that has demonstrated exceptional dissemination efforts by presenting it with a "GK-12 Media Award".

Faculty members from schools of education already serve as PIs on several projects although this is not a requirement. We encourage participation of faculty members from the school of education although we prefer not to make this a requirement.

With respect to the COV recommendation to require that Fellows provide in-service training for K-12 teachers, we believe that Fellows could provide opportunities for teachers to do research with them but we do not think that Fellows are prepared to provide in-service training for teachers. This would be beyond Fellows' responsibilities. Because GK-12 Fellows are content experts in the classrooms, they enrich the entire learning community and link their expertise with the active curriculum in a way that meets the program goals more rigorously than providing isolated workshops and training to teachers.

Data related to Fellows effect on science education in the schools are usually collected by the individual projects and included in the external evaluator's reports.

A 3.3 COV Recommendation:

The awards are appropriate in size but the program should provide some additional information on the reasons for dropping the Track 2 programs.

Response:

Dropping the Track 2 program was a decision made by the NSF-wide GK-12 committee. Those projects that ended up with Track 2 funding received a total of 8 years of support. The committee decided that a program that provided up to \$600,000 per year for 5 years was enough money and time to develop a good project. It would be up to the institution to sustain the project beyond 5 years.

A 3.4 COV Recommendation:

COV encourages program staff to reach out to the "SBE" community directly as PIs and as collaborators on GK-12 projects.

Response:

We agree with the COV recommendation to increase the participation of the SBE community in GK-12. We are working with the GK-12 committee representative from the SBE directorate to further reach out and seek participation from this community.

A 3.6 COV Recommendation:

- COV recommends providing EIS data for number of CO-PIs and disciplines of CO-PIs.
- Administer these types of projects with a team of investigators, not a single investigator. Encourage incorporation of multiple PIs, including representatives from education colleges.

Response:

Biographic information of Co-PIs is already included in the proposals and available on e-jacket. We can certainly provide this information to the COV at their request.

GK-12 projects in general involve a team of investigators. Having projects with a single PI are the exception rather than the rule.

A 3.7 COV Recommendation:

To increase the number of new PIs, the program has to be more proactive during the review process. The individual panel reviews and the panel summary need to provide better guidance to address the weaknesses. Additionally, the panel reviews could provide encouragement toward resubmission.

Response:

We agree with this recommendation and has already been addressed above (see A1.3 & 1.4)

A 3.8 COV Recommendation:

An increase in the future in number of awards to rural or mid-continent areas would be good. The GK-12 program might have to develop incentives for universities to work with rural schools. Partnering with past NSF program participants such as the Rural Systemic Initiatives and TCUP would provide investigators with effective ways of including rural schools. Also, increase funding to provide for travel and personnel to those programs working with rural schools. Take into consideration the unique challenges of distance and travel in large rural areas.

Response:

We agree with this recommendation. In the 2008 competition we received several proposals that included rural schools. We provided the necessary funding for Fellows' travel to these sites and took into account the time devoted to visit remote schools.

A 3.9 COV Recommendation:

COV suggests encouraging regional partnerships to incorporate master's or 4-year institutions and make this a priority for funding consideration. Since smaller institutions may have a more local-oriented, community-service mission, it would be good to determine how to get these types of schools more involved in the GK-12 effort.

Response:

We encourage projects to hold regional meetings. During these meetings, participating projects discuss ways of collaborating and also potential for partnering with other institutions in the region.

Because GK-12 only funds graduate students, partnering with 4-year institutions would go beyond the program goals.

A 3.10 COV Recommendation:

[In light of the overrepresentation of awards in Biology], increase the number of awards in support of education in the other sciences and mathematics fields. Accomplish this increase through outreach to the other STEM communities by NSF representatives from the appropriate Directorates.

Response

This is an excellent recommendation and we agree with the COV to work with the GK-12 committee members to broaden the STEM fields participating in GK-12 through outreach efforts.

A 3.12 COV Recommendation:

Dissemination and adequate follow up with fellows are key to determining if the fellows and institutions continue their outreach after participating fellows secure employment in academic or non-academic sectors. It is important that the NSF collect this information as part of its 10-year program evaluation.

One recommendation for data analysis is to look at average % of STUDENTS receiving free or reduced price lunches rather than the % of schools participating

in the program. Schools can be considered as participants in the program if even 1% of their students participate. In such a case, the school as a whole would not be accurately characterized as serving a low-income student population.

Response

Tracking the Fellows after they have participated in the program is one of the components of the evaluation currently being conducted by Abt Associates. We agree with the COV that having data on the students participating in the program would be more accurate than having data on the schools. However, collecting this type of data would require additional funding and resources not currently available to projects.

A 4.1 COV Recommendation:

- The COV recommends assigning at least one more permanent program officer to this project.
- The program staff does not appear to be visiting the sites frequently enough. The COV suggests that these visits would help the PO to disseminate information about successful strategies to newly funded PIs and would allow the PO to help the PIs identify potential problems before the project has existed for a long time.

Response:

We fully agree with this recommendation. The program has added a new program officer who has come to NSF as a rotator.

We also agree with the COV regarding site visits. With the addition of another program officer and two Einstein Fellows, more frequent site visits can be accomplished. For example, in the last few months, GK-12 staff has already visited 9 sites and have participated in a regional meeting.

A 4.2 COV Recommendation:

The availability of supplements for international activities is critical. Adding international activities may be a good fit for some projects but not all. Having an international component should never be a criterion for receiving initial funding from the program.

Response:

We agree with the COV that international activities are a good fit for some projects but not for all. The international component is an opportunity and has never been a criterion or a requirement for initial funding for the program.

A 4.3 COV Recommendation:

- The COV recommends that POs consider how GK-12 aligns with the NSF overall strategic plan. This information will be helpful to the program in justifying requests for new or additional funding or staff.
- Require project to disseminate curricula and research activities on the GK-12 website. Have links on the GK-12 site to conference presentations.
- The COV recommends dissemination with the action plan as a potential topic for the annual GK-12 meeting.
- Consider developing a best practice publication that might be done in conjunction with an organization such as the National Science Teachers Association.

Response:

These are excellent suggestions and program staff will consider these recommendations as we plan future activities.

Lists of presentations and publications have now been added to the GK12 website; as well, links to project websites are provided on the GK12 website. By following these links, others may find lessons and activities developed by each project.

PART C. OTHER TOPICS

A 1.2 COV Recommendation

The COV team examined the Abt outline for the 10-year program evaluation. The approach is comprehensive in that it includes outcomes for fellows, K-12 teachers and students and institutions. In general the metrics are logical and the data sources appear to provide comparative information for both graduate students and K-12 students. One of the research questions seeks to gain an “Understanding of the responsibilities of STEM professionals for outreach and social awareness.” In addition to asking attitudinal questions, the survey should also ask about continued participation in K-12 and public science education after completing the degree. Although the evaluation determines how the program affected the K-12 participants and test scores, it should consider identifying changes in a school district’s overall approach to math/science education as a result of the grant.

Response:

Because the Abt Evaluation is nearly completed, it would not be possible to include additional questions to the survey at this time. However, we would consider this suggestion in the future.

C1.3 COV Recommendation

NSF's desire to promote internationalization is commendable, but this aspect of the program is difficult to implement because of the complexities related to international collaborations that require coordination with other units on campus such as study abroad (to assist with visas and insurance), identification of appropriate partners, and clear goals for the international dimension. The workshop on international is a good step to make this aspect of the program more appealing to a larger percentage of the awardees, but give more attention in the RFP to details related to internationalization that might encourage more proposal writers to include this feature.

Response:

We are exploring additional mechanisms to encourage international collaboration. For example, we're organizing a session at the annual meeting with GK-12 participants that have already been involved in international collaborations so that they can share their experiences with the rest of the community. We are also working with NSF's Office of International Science and Engineering (OISE) regarding other venues to increase international participation of our grantees.

C1.5 COV Recommendation

- The COV template was helpful, but it could be more user-friendly. The comments from staff were useful, but having the comments within the template became confusing when it was time to write our comments.

- It would be helpful to indicate exactly what additional information will be available on site and if possible to provide that to reviewers at their request prior to arrival. The Webinar was instructive, but the COV recommends providing the CD immediately after the Webinar. With the considerable volume of data the COV has to digest, making the CD available would give reviewers more preparation time prior to arrival.

Response:

These are excellent suggestions to take into account for the next COV.