

FY 2009 NSF COMMITTEE OF VISITOR (COV) REVIEW OF THE REESE PROGRAM
February 18, 2010

Research and Evaluation on Education in Science and Engineering Program
Response to COV Report October 29, 2009

On October 22-23, 2009, a Committee of Visitors was convened to review the Research and Evaluation on Education in Science and Engineering Program from FY 2007 –2009. The program directors thank the COV members for their thorough review of the program and recommendations. This response addresses the recommendations included in the COV report. Responses are organized in accordance with the order provided by the FY 2009 Report Template for NSF Committees of Visitors.

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

A.1 QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS:

1. Are the review methods (for example, panel, ad hoc, site visits) appropriate? **YES**

No Recommendation.

2. Are both merit review criteria addressed? **YES**

Comment/Recommendation: It appears that some proposals did not have panel summaries because panel reviews were low or the reviews were ad hoc.

RESPONSE: The COV report is correct. Reviews that are conducted through ad hoc reviewers do not have panel summaries. In addition, the REESE program triages proposals in the panels. Proposals with no reviews higher than Good and with one or more reviews below Good are only discussed if any panel member wants to have the discussion. As a result, proposals with low reviews that are not discussed have no panel summaries.

3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals? **YES**

Recommendation: The COV recommends providing guidelines to new panelists along with sharing examples of exemplary reviews.

RESPONSE: The REESE program has updated the Reviewer Guide and the slides for the Panel Orientation to provide more detailed and specific guidelines, both about expanding the discussion of research methods and to provide greater guidance in writing informative reviews and panel summaries. The program will also provide better support via webcasts to provide more substantive information on reviews. The program will also encourage Program Officers to support such discussion during the review process. Though the NSF cannot share examples of exemplary reviews as suggested by COV (because these materials are considered confidential and proprietary in nature), the program will create exemplary mock reviews or provide other guidance to address this issue.

4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)? YES

Recommendation: Panel summaries could do a better job of more consistently explaining panel decisions in light of divergent reviews.

RESPONSE: The new Reviewer Guide specifically explains the importance of discussion of divergent reviews in the panel summary. The program will also encourage Program Officers to support such discussion during the review process.

5. Does the documentation in the jacket provide the rationale for the award/decline decision? YES

Comment/Recommendation: The POs seemed to exert great effort to give each proposal a thorough reading and analysis.

RESPONSE: None required.

6. Does the documentation to PI provide the rationale for the award/decline decision? YES

Recommendation: Perhaps NSF would benefit from gathering information about resubmitted proposals.

RESPONSE: The Program Officers do their best to take note of resubmissions, and have tried to get some prior reviewers to review resubmitted proposals again. Currently, resubmissions are not tracked in the FastLane system, so they must be matched using proposal information on the PI, institution, and topic. The program will consider a more systematic process.

7. Is the time to decision appropriate? NO

Recommendation: The COV recommends that NSF take measures to further reduce the dwell time.

RESPONSE: The program recognizes the importance of this issue, and will continue to make efforts to further improve the dwell time, though negotiations in the award process take time. Additionally, there are instances where proposals are held in hope of co-funding options either with other agencies or other NSF programs.

8. Additional comments on the quality and effectiveness of the program's use of merit review process:

Recommendation: We recommend that reviewers be advised specifically to attend to the quality of research methods as one component of intellectual merit and in balance with the quality of the questions asked and the theoretical frameworks used.

RESPONSE: The REESE program has updated its Reviewer Guide, and has incorporated into reviewer orientation and the program solicitation, more specific information on methods (design, hypotheses, and frameworks) and the importance of strong reviews in regard to the research methods.

A.2 Questions concerning the selection of reviewers.

SELECTION OF REVIEWERS: YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE¹

1. Did the program make use of reviewers having appropriate expertise and/or qualifications? YES

Comment/Recommendation: it is difficult to determine whether the panels include reviewers with specific expertise (e.g., about teaching and learning issues with students from non-dominant communities, or specific knowledge of cultural influences on teaching and learning).

RESPONSE: Certain demographic data is collected by the system, but there is self-selection in reporting. The Program Officers make a concerted effort to invite panelists with specific expertise and match the expertise of the reviewers to the proposals. The program will continue to sharpen these efforts.

2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups? YES

No Recommendation.

3. Did the program recognize and resolve conflicts of interest when appropriate? YES

No Recommendation.

4. Additional comments on reviewer selection:

Recommendations: We suggest that perhaps a database similar to those that associations like AERA and NARST have would be useful and would allow individuals to choose appropriate theoretical and methodological expertise.

RESPONSE: Federal policy does not allow the NSF to keep some reviewer information in a database, because this information would be considered to introduce bias in the process. But the Division Director reviews information about reviewers and panel assignments on all panels, including information on reviewer expertise through an examination of their CVs.

A.3 Questions concerning the resulting portfolio of awards under review. Provide comments in the space below the question. Discuss areas of concern in the space provided.

1. Overall quality of the research and/or education projects supported by the program. APPROPRIATE

No Recommendation.

2. Does the program portfolio promote the integration of research and education? APPROPRIATE

No Recommendations.

3. Are awards appropriate in size and duration for the scope of the projects? APPROPRIATE

¹ If “Not Applicable” please explain why in the “Comments” section.

No Recommendation.

4. Does the program portfolio have an appropriate balance of innovative/potentially transformative projects? **APPROPRIATE**

Comment/Recommendation: We did not find that proposals lacked innovation. On the contrary, the reviews show an appreciation for the scientific advances offered by all the funded proposals.

RESPONSE: No response needed.

5. Does the program portfolio have an appropriate balance of: Inter- and Multi- disciplinary projects? **APPROPRIATE**

Recommendation: The COV suggests improving the portfolio analysis system by standardizing REESE and DR-K12.

RESPONSE: The standardization of REESE and DR K-12 portfolio analysis system is under discussion between the programs and the DRL leadership.

6. Does the program portfolio have an appropriate balance considering, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the program? **APPROPRIATE**

No Recommendations.

7. Does the program portfolio have an appropriate balance of awards to new investigators? **DATA NOT AVAILABLE**

Recommendations: Although prior funded PIs may have more experience and thus may produce higher quality proposals, we suggest that REESE develop a means to achieve a better balance and work out a plan to improve the new PI capacity.

RESPONSE: The REESE program recognizes that it may be harder for new PIs to be funded. More experienced and senior PIs tend to write stronger proposals. The CAREER program specifically supports young faculty scholars, and REESE has long provided support for CAREER education research projects. The Program Officers are also engaged in outreach programs to encourage new proposers and provide support for proposal writing (e.g., proposal writing workshops and contacts at AERA/NARST/NCTM).

8. Does the program portfolio have an appropriate balance of geographical distribution of principal Investigators? **APPROPRIATE**

No Recommendation.

9. Does the program portfolio have an appropriate balance of institutional types? **APPROPRIATE**

No Recommendations.

10. Does the program portfolio have an appropriate balance across disciplines and sub disciplines of the activity? **APPROPRIATE**

Recommendation: We recommend giving more explicit attention to soliciting proposals and tracking areas of focus along such multi-disciplinary lines.

RESPONSE: The REESE program appreciates the COV members' attention to multi-disciplinary work in REESE. The approach will include: 1. Coordination with ARC (the Resource Network for the REESE program) to enhance the portfolio analysis process to understand and track these issues; 2. Although multi-disciplinarity is mentioned in the REESE solicitation, the Program Officers will review the language of the solicitation to support more interdisciplinary and multidisciplinary research; 3. The REESE Program Officers have posted a new solicitation that supports capacity building for multi-disciplinary research and scholarship as a new strand of REESE: Fostering Interdisciplinary Research on Education (FIRE). The Program Officers further plan to engage the REESE PI community to understand the issues of interdisciplinary and multidisciplinary research at the upcoming REESE PI meeting.

11. Does the program portfolio have appropriate participation of underrepresented groups? **APPROPRIATE**

Comments/Recommendations:

- **The committee recommends that the program proactively find ways to increase the number and quality of submitted proposals with minority involvement to raise these percentages.**

RESPONSE: The REESE Program Officers are engaged in outreach to increase the number and competitiveness of proposals through outreach programs, including contacts with PIs and institutions that have not submitted, or that were declined. The Program Officers also plan to do more outreach to historically black colleges and universities (HBCUs) and other minority-serving institutions (MSIs) to increase the diversity of the PI pool.

- **The COV also recommends that the program consider minority involvement beyond the PI and co-PI status, and examine whether the trends are different when consideration is given to senior personnel and graduate students.**

RESPONSE: Unfortunately, it is difficult to track these figures. Senior personnel and graduate students do not report minority status in the proposal process. In fact, PIs only report voluntarily, so even that data is not always complete.

12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports. **APPROPRIATE**

Comment/Recommendation: We examined broad areas of focus identified in the portfolio analysis document and noted that the programs are aligned with attempts to investigate and improve STEM learning, but the portfolio analysis does not enable us to evaluate the significance of these projects' contributions.

RESPONSE: The portfolio analysis that was available was preliminary. The COV members' comments will be helpful in future analyses. As projects mature, there will be more evidence about their findings, publications, and other outcomes. In addition, DRL anticipates awarding a contract to evaluate the development and impact of the REESE program in FY 2010.

13. Additional comments on the quality of the projects or the balance of the portfolio:

Recommendation: In order to maintain continuous assessment of the portfolio balance, we suggest that the program consider compiling summary data that capture whether underrepresented groups are studied and how; whether graduate students and postdocs who are involved are members of underrepresented groups; and whether teachers who are project participants are members of underrepresented groups.

RESPONSE: The REESE program agrees that the involvement of underrepresented groups is important. There is some limitation to what information the program can request from projects in the proposal process. However, the Program Officers will explore options through the ARC structured abstract to include items regarding participation of underrepresented groups in various capacities on funded projects.

A.4 Management of the program under review.

1. Management of the program.

Recommendation: Regarding reviewer statistics, we note that while there is a good gender balance, the percentage of minority reviewers was somewhat lower in 2008 and 2009 than in the prior years of 2006 and 2007. However, the large percentage of “unknowns” in this data makes accurate judgments about representation difficult. We recommend that reviewers and panelists be reminded and encouraged to provide this information to facilitate accurate data collection.

RESPONSE: The Program Officers will continue to encourage REESE reviewers to submit their demographic information when preparing for the panel. However, reporting demographic information is voluntary, and many individuals choose not to respond.

Recommendation: The REESE program met its dwell time goals in all years except for the 07 solicitation, when 29% of proposals had dwell times longer than 6 months (higher than the 25% target). Given that there are only a few external factors that could prolong the dwell times (such as, perhaps, delay in getting IRB permissions), we recommend that the program bring dwell times to below 25% consistently.

RESPONSE: The REESE Program Officers will continue efforts to reduce dwell times.

2. Responsiveness of the program to emerging research and education opportunities.

Recommendations: We note that [the REESE Program] restricted submissions under the “emerging topics” to four subcategories – neural basis of learning, cognitive processes underlying teaching and learning, measurements, modeling and methods, and cyberlearning and teaching. The first of these morphed from neural basis of math learning to neural basis of STEM learning, whereas the others remained the same during 08-10. If a proposer identifies a new emerging opportunity that does not fit in these four subcategories, it is not clear whether he or she will be able to submit that proposal to REESE as an emerging topic. We could not tell what process, if any, identified these emerging topics and how the research community conveyed feedback. Though the committee feels that these four subcategories are well articulated and address critical emerging research and education opportunities, we recommend establishing a process for identifying future emerging topics if it is not already in place.

RESPONSE: The REESE program is considering a variety of ways to reexamine the "emerging topics." For example, the program recently co-funded a workshop with the DR K-12 program on the "learning resources of the future." REESE will continue these efforts to have timely revisions to the emerging topics that reflect issues of significance to the respective fields. Discussions of these issues at PI meetings and with panelists in the "debriefing" sessions provide other opportunities to examine these "emerging topics."

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comment/Recommendation: The REESE proposal solicitations from 2006 to 2009 reveal refinement from year to year to make the program priorities explicit in the solicitations. For example, we noted the expansion and clarification in later years of the categories, "synthesis" and "empirical research" that originally appeared in the 2006 solicitation. Program solicitations in these later years have specifically identified target areas of focus, including cognitive processes underlying STEM, neural basis of STEM, and cyberlearning and teaching; and have added another dimension to categorize the proposed research as "pathways," "knowledge diffusion," "empirical research," and "large empirical research." The program portfolio reveals evidence in 2008 and 2009 awards for proposals in these identified focus areas.

RESPONSE: No response needed.

4. Responsiveness of program to previous COV comments and recommendations.

No previous COVs.

5. Additional comments on program management:

No additional comments.

PART B. RESULTS OF NSF INVESTMENTS

B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.

B.1 OUTCOME GOAL for Discovery: *"Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."*

No additional comments/recommendations.

B.2 OUTCOME GOAL for Learning: *"Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens."*

Comments/Recommendations:

From the proposals reviewed, we note a gap between what the proposals aim to accomplish and specifics about how the work will cultivate a world-class broadly inclusive STEM workforce and scientific literacy. In the cases we reviewed, we noted superficial attention to the application or implication for using or influencing practice; in even fewer cases, these

applications or implications were embedded and elaborated in the larger discussion of the work itself.

In regard to methods and research design we conclude that causal studies are the most frequently funded projects. We note that there is an under-representation of funded descriptive studies by comparison. Such studies would be of value in that they can respond to questions not addressed in other funded projects, as well as provide insightful information and documentation about what the treatment actually was, what the processes entailed, and relevant contextual information.

RESPONSE: The REESE Program Officers appreciate the committee's recognition of the importance of addressing broader issues of the STEM workforce and scientific literacy. During the PI meeting, Program Officers will offer a session on how to connect research to broad policy outcomes. They will also ask the REESE resource network, ARC, to provide support to PIs that would help projects focus on the implications for instruction and workforce development. Additionally, the program may consider changes in the structured abstract form so that it helps identify impacts of projects.

The Program acknowledges that some proposals may not address broader impacts in sufficient detail and depth. This may be in part because REESE funds fundamental research which, in some cases, may have only very distal impact on public scientific literacy and the STEM workforce. That is not the primary focus of the program, but many proposals include such discussions.

The Program Officers recognize that there appeared to be a preponderance of causal studies, based on the portfolio analysis conducted by ARC (the REESE resource network). Note that the portfolio analysis results from the PI survey indicate that causal studies are most common, but these are self reported data and other types of research are often included in projects' overall efforts—which often are primarily quasi-experimental, correlational, and descriptive studies. From the Program Officers' knowledge of the portfolio, it appears that descriptive studies are not under-represented. For example, the recent ARC portfolio analysis revealed that REESE-funded projects used multiple methods: 53% of responding projects had a descriptive component (with a range of 43% to 75% over the REESE funding years) and, in some years, as high as 57% of funded projects in a year used descriptive methods exclusively (ARC Report, 2009; Table 3.4, page 13).

B.3 OUTCOME GOAL for Research Infrastructure: “Build the nation’s research capability through critical investments in advanced instrumentation, facilities, cyber infrastructure and experimental tools.”

Recommendation: We suggest that REESE program officers may want to consider whether this proportion (that ~4% of awarded projects relate to cyberinfrastructure) is adequate, and whether it tracks the proportion of submitted cyberinfrastructure related proposals.

RESPONSE: The REESE program will explore opportunities to attract greater number of strong proposals that support cyberinfrastructure. As the program and its projects mature, the Program Officers will attempt to track the outcomes of current projects, so that future COVs could determine whether these investments have come to fruition. Additionally, REESE has recently posted a solicitation for proposals to support interdisciplinary activities between STEM disciplines, social scientists, and research methodologists, Fostering Interdisciplinary Research on Education (FIRE), which the Program Officers hope will enhance researchers' capabilities through interdisciplinary study.

PART C. OTHER TOPICS

C.1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

Recommendations:

- **The COV recommends providing more direction to investigators and reviewers while recognizing the importance of maintaining an appropriate balance between the theoretical contribution, the contribution to educational practice, and the methodological rigor of the research.**

RESPONSE: Some of the REESE program's efforts to improve the rigor of the research methods include: conducting webcasts for proposers and reviewers with stronger focus on methods; updated reviewer guide to highlight the need for rigorous methods; REESE resource network (ARC) creating workshops on methods for PIs. The Program Officers are also exploring ways to offer resources to the broader community, such as through conducting proposal writing workshops at upcoming (2010) meetings of AERA, NARST, and other professional meetings.

- **The COV notes a low rate of minority PI participation and recommends exploring options to increase it.**

RESPONSE: REESE Program Officers are developing an outreach program to increase the number and competitiveness of PIs of minority status. The REESE Program have invited all current PIs from the HBCU-UP program to the REESE PI meeting, and will host a booth or a presentation at the HRD JAM. REESE POs will also support efforts, currently in discussion, for DRL-wide outreach that would include all programs.

- **We further suggest that program solicitation give greater attention to the possibility for broader impacts on policy. The current statement of broader impacts includes no mention of policy.**

RESPONSE: The Program Officers will explore ways to adapt the solicitation to emphasize the influence of projects on practice, policy, and broader social implications, and will address these topics in program webcasts for proposers and reviewers.

C.2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.

Comment/Recommendation: We found the quality of the Program Officer review to be high with respect to synthesis, analysis and communication.

RESPONSE: No response needed.

C.3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

Comment/Recommendation: Based on past experience, some COV members questioned the value of PI meetings while others found some value in these meetings (e.g., networking, broader knowledge of NSF initiatives, etc). All agreed, however, that these meetings would

benefit from better design to increase their value, especially in these tight budget times when travel money is limited.

RESPONSE: The REESE program has recognized that there is a need for revision of meeting design for PI meetings. With the assistance of ARC, the REESE program brought in an advisory group of current REESE PIs to help craft the format and focus of the PI meeting. We will also be adapting the meeting schedule to: once every 2 years, hold a PI meeting for all projects; in alternating years, host thematic PI meetings based on topics highlighted by the portfolio and by current issues in the field. This change is likely to provide more focused forum for exchange of ideas and better interaction between PIs and NSF staff.

C.4. Please provide comments on any other issues the COV feels are relevant.

Comment/Recommendation: The COV was not asked to comment on the portfolio distribution between elementary, secondary, and undergraduate. Moreover, we would like to know what the common themes are, if any, across grade level and across content level.

RESPONSE: The REESE program will ask ARC to use its results from portfolio analyses to address this issue. Program Officers will also explore options for funding of synthesis projects that could address such topics.

C.5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

Comments/Recommendations:

- The COV process is good but could benefit from a more directive and detailed overview of the process in advance of the start of the meeting. While we appreciated the Webinar, we did not have an expectation of how the meeting would flow and did not review some of the material, such as the template, that was critical to the process. Some members did not understand the roles, scope and nature of their work before the meeting and were surprised to find they would be responding to questions and writing responses throughout the two-day session. The agenda was not available early in the process and did not match the actual sequence of the work that took place during the session. A briefing that includes the Chair, writer, panelists and NSF would be helpful a week or two before the COV begins to share information about the format of the meeting, the types of recommendations that would be helpful to the REESE staff, the scope and nature of the work and the deadline for completing the report. In addition, not everyone understood the benefit and high priority given to the closeout briefing with NSF.

RESPONSE: COV members received copies of the meeting agenda in the initial invitational emails (approximately 3 months before the COV meeting), as well as at the time of the webinar (approximately one month before the COV meeting). During the webinar, which was attended by most of the COV members, the Program Officers also reviewed the elements of the COV report template and stated the expectation that the report be in a final draft state by the end of the COV meeting. Program Officers further used the webinar to describe the data sources available to COV members to complete each section, and demonstrated how to log into the NSF system to access the data. These data sources were available to COV members immediately after the webinar, and Program Officers followed up with COV members by email and phone to ensure the materials were accessible.

The REESE Program Officers are not certain if it is possible to require COV members to perform any tasks prior to the meeting. They will explore this issue with the COV Officer of the Directorate for Education and Human Resources.

In addition to written materials provided electronically and via webinar, the Program Officers will also consider an additional conference call to help lay out the expectations and the tasks to be performed.

- **The meeting room for REESE participants could have been better equipped with office supplies that participants needed during the course of their work. It also might be a good idea when working with two COV groups to have refreshments available in both rooms to minimize disruption, even though we acknowledge that all participants were invited to partake of the refreshments in the conference room occupied by the DR K-12 group.**

RESPONSE: The REESE program will coordinate with its program specialists to provide supplies and refreshments to the COV. There were some difficulties in conducting a bundled COV—adjacent rooms of equal size; providing equivalent materials; refreshments, etc.

- **One member would have preferred a mid-grain size evaluation versus evaluation of the portfolio as a whole. The reviewer thought that by identifying, for example, 3 or 4 pressing problems for mathematics education, the COV could then look across the portfolio to evaluate the extent to which the portfolio of related projects are making progress on these pressing issues. This reviewer felt that NSF could make it a requirement to write preliminary reviews in advance of the meeting.**

RESPONSE: One of the areas of discussion across DRL is the design and conduct of evaluation that stretches across programs, based on important issues in research and development for STEM teaching and learning.

ADDITIONAL QUESTIONS

NOTE: The following questions (C.6 – C.11) were provided by the REESE and DR K-12 Program Officers and reviewed and approved by Dr. Joan Ferrini-Mundy, DRL Division Director, and Dr. Wanda Ward, EHR Acting Assistant Director. After the joint discussion of the REESE and DR K-12 COV members, the Chair elected to respond to this section via narrative. Here are the questions the COV members addressed, followed by the comments/recommendations and responses from their collective response.

- C.6. How do (or should) the REESE and DR K-12 programs complement each other?
- C.7. How do (or should) the REESE and DR K-12 programs accommodate emerging concepts in research and/or development?
- C.8. How do (or should) the REESE and DR K-12 programs attract or promote potentially transformative research?
- C.9. How do (or should) the REESE and DR K-12 programs support cyber-infrastructure for learning, and what are the potential risks in this area?
- C.10. How do (or should) the REESE and DR K-12 programs engage a broad spectrum of researchers and developers?
- C.11. How well do the program solicitations and funding decisions reflect important issues in the field?

Comments/Recommendations:

- **To ensure more effective joint consideration of DR K-12 and REESE in the future, the COV recommends that program management look for opportunities to standardize (where possible) and improve on the portfolio analysis process for both DR K-12 and REESE.**

RESPONSE: The resource networks for the respective DRL programs (e.g., ARC for REESE, etc.) have begun cooperating through an EAGER award that would address this issue: how to standardize, where appropriate, but recognize and maintain distinctions where it best suits the Division's and the Programs' needs. The respective Program Officers will continue their efforts to look for opportunities to standardize (where possible) and improve on the portfolio analysis process for both DR K-12 and REESE.

- **In terms of the complementariness between the programs, the subcommittees found that there are real ambiguities in the field about the distinctions between DR K-12 and REESE. The extremes are clear – basic versus applied – however the overlap between the programs seems substantial enough to justify giving serious thought to options that will improve understanding and/or mitigate confusion in the field. Accordingly, the subcommittees highly recommend that the NSF think about three potential options: sharpening the distinctions between the programs, consolidating the programs into one, or looking at some combination of the two.**

RESPONSE: DRL Program Officers will engage in conversations across programs to explore ways that the two programs can either sharpen its distinctions or identify joint efforts.

- **We also recommend that program staff for both DR K-12 and REESE seek to further leverage future COVs as an additional source of ideas about emerging concepts. Given the in-depth review of the portfolio by the COV team members, big ideas, such as thematic research on cognition and minorities, are just as likely to come from a COV as from other external sources.**

RESPONSE: The REESE and DR K-12 programs will continue to use Program Officers' (including rotators) knowledge, PI meetings, panel debriefings, and experts from professional societies to help identify areas for emerging research. The Program Officers also welcome the COV members' suggestions and will incorporate this into future work. Program Officers will coordinate with the resource networks to craft future structured abstracts and portfolio analyses carefully to improve the Division's ability to measure projects' use of cyberlearning, the PIs' home institution and departmental background, etc.