

MEMORANDUM

DATE:

TO: Bernice Anderson, Senior Advisor on Evaluation
 Directorate for Education and Human Resources

FROM:

SUBJECT: COV for ISE (+ ITEST)
 COI and Diversity Memo

The Committee of Visitors report for the ISE Program was approved at the EHR Advisory Committee meeting held at NSF in November 2005. The COV consisted of 9 members selected for their expertise related to the goals of the program. They provided a balance with respect to the type of institutions supported through the program, gender, and representation from underrepresented groups. The following table shows the main features of the COV's diversity.

Category of COV Membership	No. of COV Members in Category
Member of EHR Advisory Committee.....	.....1.....
Institution Type:	
<input type="checkbox"/> University.....	.....3
<input type="checkbox"/> Four-year College.....	.....
<input type="checkbox"/> Two-year College.....	.....
<input type="checkbox"/> K-12 School or LEA.....	.....
<input type="checkbox"/> Industry.....	... 1
<input type="checkbox"/> Federal Agency.....	.....
<input type="checkbox"/> Museums	3
<input type="checkbox"/> Media Organizations	2
Location	
<input type="checkbox"/> East.....	..... 5
<input type="checkbox"/> Midwest/North .....	.....
<input type="checkbox"/> West.....	.....
<input type="checkbox"/> South.....	..... 4
Gender	
<input type="checkbox"/> Female.....	.....6
<input type="checkbox"/> Male.....	.....3
Race/Ethnicity	
<input type="checkbox"/> White.....	.....6
<input type="checkbox"/> Black.....	.....3
<input type="checkbox"/> Hispanic.....	.....
<input type="checkbox"/> Asian.....	.....
<input type="checkbox"/> Pacific Islander.....	.....

The COV was briefed on Conflict of Interest issues and each COV member completed a COI form. COV members had no conflicts with any of the proposals or files. (or, if they did, use 'Proposals and files were not available to COV members in those cases where the member had a COI and members were not allowed to participate in discussions of actions with which they had conflicts.')

INFORMAL SCIENCE EDUCATION (ISE) REPORT FINAL VERSION

CORE QUESTIONS and REPORT TEMPLATE for FY 2005 NSF COMMITTEE OF VISITOR (COV) REVIEWS

Guidance to NSF Staff: This document includes the FY 2005 set of Core Questions and the COV Report Template for use by NSF staff when preparing and conducting COVs during FY 2005. Specific guidance for NSF staff describing the COV review process is described in Subchapter 300-Committee of Visitors Reviews (NSF Manual 1, Section VIII) that can be obtained at <http://www.inside.nsf.gov/od/gpra/>.

NSF relies on the judgment of external experts to maintain high standards of program management, to provide advice for continuous improvement of NSF performance, and to ensure openness to the research and education community served by the Foundation. Committee of Visitor (COV) reviews provide NSF with external expert judgments in two areas: (1) assessments of the quality and integrity of program operations and program-level technical and managerial matters pertaining to proposal decisions and (2) comments on how the outputs and outcomes generated by awardees have contributed to the attainment of NSF's mission and strategic outcome goals.

Many of the Core Questions are derived from NSF performance goals and apply to the portfolio of activities represented in the program(s) under review. The program(s) under review may include several subactivities as well as NSF-wide activities. The directorate or division may instruct the COV to provide answers addressing a cluster or group of programs – a portfolio of activities integrated as a whole – or to provide answers specific to the subactivities of the program, with the latter requiring more time but providing more detailed information.

The Division or Directorate may choose to add questions relevant to the activities under review. NSF staff should work with the COV members in advance of the meeting to provide them with the report template, organized background materials, and to identify questions/goals that apply to the program(s) under review.

Guidance to the COV: The COV report should provide a balanced assessment of NSF's performance in two primary areas: (A) the integrity and efficiency of the **processes** related to proposal review; and (B) the quality of the **results** of NSF's investments in the form of outputs and outcomes that appear over time. The COV also explores the relationships between award decisions and program/NSF-wide goals in order to determine the likelihood that the portfolio will lead to the desired results in the future. Discussions leading to answers for Part A of the Core Questions will require study of confidential material such as declined proposals and reviewer comments. *COV reports should not contain confidential material or specific information about declined proposals.* Discussions leading to answers for Part B of the Core Questions will involve study of non-confidential material such as results of NSF-funded projects. It is important to recognize that the reports generated by COVs are used in assessing agency progress in order to meet government-wide performance reporting requirements, and are made available to the public. Since material from COV reports is used in NSF performance reports, the COV report may be subject to an audit.

We encourage COV members to provide comments to NSF on how to improve in all areas, as well as suggestions for the COV process, format, and questions.

**FY 2005 REPORT TEMPLATE FOR
NSF COMMITTEES OF VISITORS (COVs)**

Date of COV:	April 4-6, 2005
Program:	Informal Science Education (ISE)
Division:	Elementary, Secondary, and Informal Education (ESIE)
Directorate:	Education and Human Resources (EHR)
Number of actions reviewed by COV¹:	93; Awards: 45, Declinations: 46, Other: 2
Total number of actions within ISE Program during period reviewed by COV²:	685; Awards: 217, Declinations: 451, Other: 17; does not include 851 Preproposal actions
Manner in which reviewed actions selected:	Random sample of approx. 13% of total

Executive Summary

The COV, in its two-and-a-half-day meeting, divided itself into four subgroups to consider various kinds of proposals that come under the ISE program. These included media (Stephen Burns and Jennifer Lawson), exhibits (Gwen Crider and Tom Krakauer), Youth and Community (Nancy Peter and Roger Mitchell), and Scholarship (Harry Shipman). The fourth area emerged when we reviewed jackets and found a few proposals which dealt primarily with evaluation and synthesis of the work that various professionals do in the informal education area. Where the conclusions of these four groups are basically in agreement, we provide only one response to the questions in this COV form. In a few cases we identify particular concerns of a sub-group and identify it.

This report is rather long for a variety of reasons. We regret our inability to make it shorter; we are aware that there is a small amount of repetition. Our most important recommendations are:

- The NSF should continue to develop the scholarship of the informal science education field, encouraging practitioners to share insights.
- The NSF should make every effort to increase the number of different PI's, while maintaining high quality of accepted proposals.
- We specifically recommend that the NSF call one or more meetings of Principal Investigators, but not restrict attendance to PI's. Rather, they should encourage potential PI's to attend.
- The NSF needs to come up with an appropriate term for, and a better definition of, "high risk" or "bold" research (see A.4.3 and, to a lesser extent, the term "multidisciplinary research under A.4.4)
- The NSF staff does an excellent job in handling a significant increase in the number of proposals, but more staff need to be assigned to this area.

Our recommendation that the NSF continue its efforts to foster scholarship in the field by using a meeting of program PI's as the basis for a more wide-ranging meeting to further encourage ISE scholarship, applies to all three major programmatic areas (media, exhibits, and youth/community). We leave it to the judgment of the NSF staff as to whether it makes more sense to have one meeting covering all three areas, or three separate meetings.

¹ To be provided by NSF staff.

² To be provided by NSF staff.

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

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

A.1 Questions about the quality and effectiveness of the program's use of merit review procedures. Provide comments in the space below the question. Discuss areas of concern in the space provided.

<p>QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCEDURES</p>	<p>YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE³</p>
<p>1. Is the review mechanism appropriate? (panels, ad hoc reviews, site visits) Comments:</p> <p>The review mechanisms are extremely well suited to the tasks as demonstrated by the resulting high quality portfolio of funded projects; the detailed comments and guidance provided to the PI through the review process and the concurrence around funding decisions. Ad hoc reviews are a good supplement to the panel review system in providing an independent review. We found no evidence of site visits in the Sub sample of jackets which we reviewed. .</p> <p>There is an appropriate balance between scientists with content expertise and experienced practitioners within the informal science education field. We recognize that a commitment to include a number of new reviewers in the process, with which we concur (see below), is occasionally going to fail in its goal of selecting helpful reviewers, and so folks who are not helpful to the process will be included in the panels.</p> <p>The media subgroup noted that one important skill which is sometimes but not always missing from the media panels is that of production management. A person with this background could provide quick analysis of the budgets submitted for the programs or series. Are they too high, are they padded? The PO's often have this budgetary skill. The COV recognizes that there are three financial reviews, one being the PO's own evaluation of financial requests, ultimately cutting some budgets to make other grants possible.</p>	<p>Yes</p>

³ If "Not Applicable" please explain why in the "Comments" section.

<p>2. Is the review process efficient and effective? Comments:</p> <p>Aligning the proper mix of panelists and experts, determining the geographic gender and race of the applicants, and detailing the adherence to guidelines and submission processes, takes time, as does evaluating the intellectual merit and reach of the potential programs. Given that, the 6-month NSF turnaround is impressive. While reviewing the jackets, one sees examples of great follow through on the part of the program officers, even to the detail of the helpful e-mail trails, suggesting how to follow and get around software glitches in the FastLane electronic submission process.</p> <p>The process to safeguard the scientific integrity is further strengthened by the content evaluation experts on the projects. There are occasional reviews which are less helpful – either because the reviewer simply gushed unrestrained praise, or because the reviewer focused on that individual’s ideas on what should be done rather than evaluating the actual proposal. On balance, the process works well because of the caliber of the POs.</p> <p>The review process is efficient. We did notice one instance where six weeks elapsed between the completion of panel review and the onset of negotiations with the PI regarding issues that needed to be addressed before a final award decision was made. We question whether this is too long, though it is certainly possible that part of the delay occurred because the program officers had to meet internally to include the overall distribution of project types and portfolio considerations in the review process. .</p>	<p>Yes</p>
<p>3. Are reviews consistent with priorities and criteria stated in the program’s solicitations, announcements, and guidelines? Comments:</p> <p>Overall, reviewers adhere to the stated priorities and criteria. It was noted that, in later years, there was greater consistency in this regard.</p>	<p>Yes</p>
<p>4. Do the individual reviews (either mail or panel) provide sufficient information for the principal investigator(s) to understand the basis for the reviewer’s recommendation? Comments:</p> <p>The individual reviews were, at most times, very comprehensive and written in such a way as to provide helpful comments to assist PIs. In some cases, reviewers are minimally responsive to the criteria, which is not helpful to the PO or the PI.</p>	<p>Yes</p>

<p>5. Do the panel summaries provide sufficient information for the principal investigator(s) to understand the basis for the panel recommendation?</p> <p>Comments:</p> <p>Because of their experience, the panelists are often well positioned to deliver sound judgment about the intellectual merit and broader impacts of the proposals. In fact, reviewers seem quite detailed about compliance with criteria and submission processes.</p> <p>In media, a few panelists concentrate on concrete ideas for improvement of the editorial content of the productions so that the media projects might successfully deliver on ISE goals. However, panelists' suggestions are part of the PO's negotiation with the principal investigators. The PI's can greatly benefit from the reviews and the negotiations, queries and suggestions from the POs during the rigorous post-panel process before awards are made.</p>	<p>Yes</p>
<p>6. Is the documentation for recommendations complete, and does the program officer provide sufficient information and justification for her/his recommendation?</p> <p>Comments:</p> <p>Generally, the documentation is present. There were instances where correspondence between the PO and PI (specifically regarding panel questions, budget negotiations, etc.) was not present, organized chronologically, and/ or easy to follow. However, the attention to detail shown by the back and forth communication between PO and PI is impressive. On balance, the POs own extensive justifications for the award, the summary of the panel's suggestions for a way to improve the projects, and the panel's original comments present a full picture to justify the PO's recommendation.</p>	<p>Yes</p>
<p>7. Is the time to decision appropriate?</p> <p>Comments:</p> <p>It is not always easy to determine relevant dates. Routing slips reduce the problem and we are confident that e-jackets will eliminate ambiguities altogether. In particular, the routing slip or its electronic counterpart should have the date of submission right on the same page rather than requiring a separate hunt for the original budget page. There were a few isolated examples of excessive dwell time – extending beyond the 6-month goal. It is possible that delays may have been due to an iterative process between PO and PI and the need to respond to questions raised by grants administration. One proposal was a CRPA that took almost a year to process, but the PI was made aware of the delay.</p> <p>This program has comfortably exceeded the NSF's program goal of having 70 % of the decisions completed within six months.</p>	<p>Yes</p>

8. Discuss any issues identified by the COV concerning the quality and effectiveness of the program’s use of merit review procedures.

Comments:

The merit review process as orchestrated by the POs seems strictly and appropriately (if not impressively) implemented to meet all ISE goals. A panelist handbook which details goals and guidelines is distributed; conflicts of interest are diligently prevented; and appropriately diverse and competent reviewers are gathered. After the panels, Program Officers seek ad hoc advice from experts, they continue on-going negotiations with PIs, and defend projects in the common PO meeting where limited funds must be disbursed by merit, innovation and geographic dispersion. Financial evaluations occur three times as a project makes it way from Program Officer to Section Head to Division Director and finally to DGA.

It is recommended that this program be allocated more POs and support staff. The COV is concerned that the lack of staff to do all the above might lessen the quality of the analysis as POs’ attentions are diluted by increasing workloads. In addition to the condensed merit review process listed above, and long before the panels are convened, POs are barraged with e-mails. Phone calls from prospective submitters even before preliminary proposals are submitted that starts the process. Contact with potential submitters and tracking of project deliverables adds to the massive workload.

The Youth/Community Panel did note that the paper jackets were not always easy for us to navigate. This subgroup sensed a lack of clarity regarding time-line, routing, panelist recruitment selection and training. They also could not always tell what went into the complete review process, in particular whether site visits or ad hoc reviews were used for a particular proposal. .

A.2 Questions concerning the implementation of the NSF Merit Review Criteria (intellectual merit and broader impacts) by reviewers and program officers.

Provide comments in the space below the question. Discuss issues or concerns in the space provided.

IMPLEMENTATION OF NSF MERIT REVIEW CRITERIA	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE ⁴
<p>1. Have the individual reviews (either mail or panel) addressed both merit review criteria?</p> <p>Comments:</p> <p>The overall quality of the reviews is strong, and specifically in almost every case they do address both merit review criteria. They are sufficiently detailed to provide subsequent reviewers with useful information and to provide those</p>	<p>Yes</p>

⁴ In “Not Applicable” please explain why in the “Comments” section.

<p><i>Section A.2.1, continued</i></p> <p>PIs whose projects are declined with guidance for reconsideration and revision. While there is certainly variance in volume and quality of the reviews, they generally tend to address both intellectual merit and broader impacts.</p> <p>In those few situations where there is an imbalance in review criteria, there seems to be less attention paid to broader impacts. The response to concerns raised by the 2002 COV has led to increasingly focused attention by panels on both intellectual merit and broader impact. However (see below), the panel summaries and review analyses always address both criteria.</p> <p>Diversity is not always specifically addressed (see comments in A4.2 below).</p> <p>One additional comment. Reviewers receive <u>two</u> similar but separate sets of questions/bullet points, within the categories "Intellectual Merit" and "Broader Impacts," with which to organize their reviews. One is from the FastLane website and one is from the Panelist Handbook (pages 6-7). To further complicate things, applicants receive a similar but different set of questions to answer within each section of the solicitation (page 17 of the 2004 ISE solicitation). This contributes to the lack of consistency among panelist reviews, in terms of both format and content.</p>	
<p>2. Have the panel summaries addressed both merit review criteria? Comments: Clearly, explicitly, and thoroughly in most cases.</p>	<p>Yes</p>
<p>3. Have the <i>review analyses</i> (Form 7s) addressed both merit review criteria? Comments: For all projects reviewed, the Form 7s were carefully crafted and usually closed with a summary of both merit review criteria.</p>	<p>Yes</p>
<p>4. Discuss any issues the COV has identified with respect to implementation of NSF's merit review criteria. Comments: The exhibits sub-panel noted that, in the whole review process, the issue of diversity was sometimes not addressed at all. We note that some individual projects in other areas are praiseworthy. For example one project used both Spanish and English in its dissemination materials. But there were some other cases where the issue of diversity was not present in the jacket.</p>	

A.3 Questions concerning the selection of reviewers. Provide comments in the space below the question. Discuss areas of concern in the space provided.

SELECTION OF REVIEWERS	YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE ⁵
<p>1. Did the program make use of an adequate number of reviewers? Comments:</p> <p>Yes. In fact, additional panelists would probably hinder the group review process.</p>	Yes
<p>2. Did the program make use of reviewers having appropriate expertise and/or qualifications? Comments:</p> <p>Panels represented a good mix of content and operational/programmatic expertise to ensure a fair and balanced review. Staff guidance and leadership is critical to the success in recruiting strong panels; however, it is not always possible to count on this so the process needs to be better institutionalized.</p> <p>As to whether the reviewers really act like experts in their fields, the COV believes that, in general, they do. We found isolated instances where the reviews were written unprofessionally, or where the reviews were too short and limited to brief, unsupported statements of general or muted praise. Such reviews are not helpful to the NSF’s internal review process and are also not helpful to the principal investigator. We have reviewed this issue with NSF staff and find that the NSF has an informal yet effective procedure for identifying such underperforming reviewers and not asking them back.</p> <p>A grid of the makeup of these panels, which we requested from the NSF staff, shows the careful attention to gender, racial, and geographical inclusiveness. We found this grid to be much more helpful to our process than the materials in the jackets themselves, where it was quite hard to determine reviewer characteristics of a particular proposal.</p>	Yes

⁵ If “Not Applicable” please explain why in the “Comments” section.

<p>3. Did the program make appropriate use of reviewers to reflect balance among characteristics such as geography, type of institution, and underrepresented groups?</p> <p>Comments:</p> <p>It is apparent that the NSF ISE Program Officers are very careful in meeting the desired characteristics of geographic, institutional, gender, and ethnic diversity. Numerical goals help underscore the importance of and commitment to reaching this objective. Grids of the makeup of the reviewer panels show their success at reaching these goals. Sometimes this is solely a function of availability of reviewers at the time the panels convene. But, they are successful most of the time.</p> <p>Tab folder number 7 in the COV notebooks contains the geographic data of the distribution of projects. This is extremely important to point out at the start of the COV process. It would be helpful to have a similar map or table containing the distribution of reviewers. This is important because a reviewer's first look at the jackets would lead to a conclusion that most reviewers are from a small number of states, as are most of the principal investigators. Further analysis seems to show that this first look may be an oversimplification, but we are still concerned, particularly with respect to media projects, that the geographical balance is not as diverse as would be desirable.</p> <p>The Form 7s in the jackets have gender and location references, but not ethnic ones. Pride, privacy, and pressure of time may prevent many reviewers from responding to such questions on forms about race. Perhaps the POs can report the makeup of panel's as a part of their duties and include it in the jackets. Otherwise, the COV members are spending too much time being detectives, and perhaps drawing the wrong conclusions. Because this seems an important criteria to ISE, it should be documented in an accessible manner to be presented to NSF government evaluators. When viewing the Final Panel Makeup grids it is clear that the NSF PO's are successful at assembling ethnically diverse reviewers.</p> <p>Where the information was available, the COV finds that the review panels were appropriately balanced. We find that the panel grids used by NSF staff enable them to attend appropriately to issues of balance mentioned in this question as well as to the issue of having appropriate staff expertise to address specific questions as they come up.</p> <p>However, the projects themselves still show a greater concentration in a few states than would be desirable. There has been a noticeable improvement in geographic balance between 2002 and 2005. The Foundation's strong encouragement of inclusion of smaller institutions as collaborators, while it won't show up on lists of PI institutions, should help expand the scope of the informal science education community, and may eventually lead to a more geographically diverse base of practitioners. We do note in this connection that media projects almost always reach national audiences.</p>	<p>Yes</p>
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<p><i>Section A3.3 continued</i></p> <p>We discussed this issue at some length with the NSF staff. NSF staff would be willing to travel across the country to regional meetings for the purposes of seeking the broadest possible participation in the process. However, we recognize the limitations of the government travel policy, which effectively restrict this kind of travel to the point of virtual extinction. One natural way to bring people and institutions into the NSF process is to select them as reviewers. The NSF staff do go to national meetings, make presentations on “how to seek money from the NSF,” and use that process to recruit reviewers and proposers. We encourage NSF staff to increase their use of networking. Some members of the COV are helping in this process by trying to identify potential reviewers in states which, so far, have not been the locations of PI institutions in the ISE program</p>	
<p>4. Did the program recognize and resolve conflicts of interest when appropriate? Comments: The PO’s are diligent about raising this question and solving any issues.</p>	<p>Yes</p>
<p>5. Discuss any issues the COV has identified relevant to selection of reviewers. Comments:</p> <p>Wisely, there is an ISE system which ensures that experienced POs successfully mentor new POs, handing down knowledge and techniques of panel solicitations.</p> <p>We suggest an increase in the travel budgets of the ISE POs to enable them to seek new panelists at science and media conferences. The travel budgets for POs are currently inadequate, barely allowing one trip with conference fees per year. Given the millions of dollars that NSF awards, the POs do not have the travel funds to safeguard NSF’s investments and find the leading edge of new science.</p> <p>As discussed with NSF staff, the entire selection process (such as how is the panel assembled, when is a Division Head’s sign-off required, etc.) should be documented (or at least described), and that documentation/description available for review by the COV panelists.</p>	

A.4 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.

<p align="center">RESULTING PORTFOLIO OF AWARDS</p>	<p align="center">APPROPRIATE, NOT APPROPRIATE⁶, OR DATA NOT AVAILABLE</p>
<p>1. Overall quality of the research and/or education projects supported by the program. Comments: Based on the ratings of the reviewers, the research and education projects are of high quality. Overall, the quality of the projects supported is excellent. On funded projects, PIs are held to high standard for the involvement of researchers as advisors on projects in order to assure scientific accuracy of exhibits.</p>	<p align="center">Appropriate</p>
<p>2. Are awards appropriate in size and duration for the scope of the projects? Comments: Based on the ratings of the reviewers, the research and education projects are of appropriate size and duration. In many cases the projects were completed before summative evaluations were completed. While evaluation is clearly an important factor in proposal reviews, the results of evaluation were generally not available for review (in jackets or through a link to informalscience.org). Given that many exhibit projects are national in scope, an adequate investment in evaluation would benefit the field to a far greater extent than summative evaluation. However, compilation of summative reports into a published research document would help advance the field.</p>	<p align="center">Appropriate</p>

⁶ If “Not Appropriate” please explain why in the “Comments” section.

<p>3. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • High risk projects? <p>Comments:</p> <p>The COV was not provided with a formal or working definition of "high risk" through which to answer this question. Thus, after considerable discussion, we decided not to respond. While we did find a definition in the 2001 ISE Program Solicitation (page 17), it is not clear that this definition is still applicable. The panel had a lengthy discussion regarding the definitions of "high risk," "multidisciplinary," and "innovative." Do we have a common definition? Are these three priorities adequately conveyed and clear to applicants? Should these definitions be left to the individual interpretations of panel reviewers, COV panelists, and applicants? Has enough attention been give to this matter since the last COV panel?</p> <p>We note that the term "high risk" has specifically negative associations in the positive youth development, after-school, social service, human service, children's policy, and other related fields. We doubt that these negative associations are meant within the NSF's definition of "high risk."</p>	<p>Data Not Available</p>
<p>4. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Multidisciplinary projects? <p>Comments:</p> <p>Our team defined multidisciplinary as convening different science disciplines (such as biology and engineering), or different groups of professionals (such as scientists and teachers). Using this definition, we found ample examples of multidisciplinary proposals in our jackets.</p>	<p>Appropriate</p>

<p>5. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> Innovative projects? <p>Comments:</p> <p>Again, our group was not provided with a working definition of “innovative.” Using the 2001 ISE Program Solicitation on page 17 as an example, we found mixed results depending on the portfolio which we analyzed.</p> <p>The exhibits subgroup found a number of examples of innovative projects, such as a consortium of small institutions which joined together to serve rural communities and where a large museum teamed with a local institution to serve a low-income community.</p> <p>The youth/community subgroup found few examples of truly innovative proposals in their jackets. We lack guidance as to what is an “appropriate balance” in this area.</p> <p>Since the only appropriate options for an answer are “yes” and “no,” we are answering “yes,” but note that there are qualifications surrounding this yes, either as to what “innovative” means, what an “appropriate balance” is, or both.</p>	<p>Appropriate</p>
<p>6. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> Funding for centers, groups and awards to individuals? <p>Comments:</p> <p>This question requires some translation if it is to apply to the rather varied portfolio of activities which are funded by ISE. For example, major exhibit and media projects are hardly ever mounted by individuals; production teams are required. Would a balanced program of grants to youth and community groups actually include a significant number of individuals? (We think not.)</p> <p>With those caveats, we do note that in exhibits, there is a good balance among the types of institutions funded, with collaborations and individual institutions receiving funding. In media this is harder to determine; most of the production seems concentrated in the larger places but they have gone to considerable effort to involve collaborators. In the youth/community program, grants are mostly to community groups, and we do not understand the intent of this question. The ISE portfolio does contain a few awards and a few declines of research grants to individuals.</p>	<p>Appropriate</p>

<p>7. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> Awards to new investigators? <p>Comments:</p> <p>In exhibits and media, there is evidence of some effort to encourage and support new investigators; TEAMS – a collaboration of small institutions from rural communities is one example we noted</p> <p>Although NSF indicated that funded proposals are ultimately selected based on many criteria and an interest in balance (including among new and familiar PI's), no evidence of this balance was seen in the jackets at the level of analysis that we performed, particularly in the youth/community area. Review panels are not expected to recommend proposals based on these criteria, and we support this approach of the review panels.</p>	<p>Appropriate (in regards to media, exhibits, and research)</p> <p>Data Not Available (in regards to youth/community)</p>
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<p>8. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Geographical distribution of Principal Investigators? <p>Comments:</p> <p>Because of considerable differences between the populations of project performers between the four different subject areas (research, youth/community, exhibits, and media) we are providing some different textual analyses. But on balance, the COV would like to see a broader distribution of projects, especially in exhibits and media, with respect to the principal investigators.</p> <p>In youth/community and research, the COV found no evidence of a geographical imbalance. The small number of grants in the area of research and scholarship (less than 10) makes the question almost meaningless.</p> <p>In exhibits: There were numerous states not directly represented in the portfolio of grant awards when listed by PI location. However, traveling exhibits and some collaborations with multiple strategic partners, lead to the inclusion of institutions within the unrepresented states and thus produce benefits reached beyond the geographic location of the PI. However, if the use of collaborations and partners is to be viewed as a way of addressing the geographic imbalance, appropriate data has to be collected and given to the next COV in order to demonstrate that the benefits of this NSF program are truly widespread.</p> <p>In media: Unquestionably, the program jackets and list of active and former media awards show careful selection of top quality science projects and producers. But, searching the randomly selected list of media awards and project jackets of 2003 to 2005, 8 of 12 awards are given to big name producers, four of them to two individual groups. Of the proposals that were declined in this random sample, during the same period, 4 of 7 rejected proposals were by lesser-known producers. However, it should be said that even the powerhouse producers received three declines. One might conclude that the big producers receive a large number of awards or that they at least have the means to submit more proposals for consideration. A similar story is suggested while looking at the maps of geographic dispersion of all ISE awards for 2003 through 2005.</p> <p>This pattern of awards is in many ways appropriate because it matches ISE goals for innovation and reaching a broader audience for science and emerging areas of interest in science. The collaborative effort by PO's to team up old performers and new performers has promise for the future of management of the program as these newly trained groups win awards with greater frequency. The question is -- is it essential to meet the goals of diversity and fairness of the NSF if it means reducing the amount of science programming that has impact? We believe that the push has to be for high quality, high impact programming which also incorporates the NSF goals for diversity and fairness.</p>	<p>Appropriate</p>
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<p><i>A.4.8 continued</i></p> <p>Again, it is important to note that many of the ISE projects have a more national impact than can be reflected in the geographic distribution of PIs. Media projects have national audiences, and many exhibit projects end up traveling to a number of states and so reach audiences that extend beyond the home state.</p>	
<p>9. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Institutional types? <p>Comments:</p> <p>See above answers to # A.4.6, #A.4.7, and #A. 4.8</p>	<p>Appropriate</p>
<p>10. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Projects that integrate research and education? <p>Comments:</p> <p>By definition, some of the components of ISE (media and exhibits) integrate research and education by presenting cutting-edge science to the general public. One can also ask whether researchers are part of the project (which they often are) as well as the project’s evaluation component. There are collaborative operations which strengthen the field.</p> <p>In youth/community, we found multiple examples of proposals that include scientific research, such as the Lunar and Planetary Institute’s “Explore Fun with Science.” (http://www.lpi.usra.edu/education/explore/; ESI- 0125693, “Forging Partnerships with Libraries: Explore!” and “Fun with Science, Lunar and Planetary Institute,” Universities Space Research Association, PI Johnson)</p> <p>We also found examples of projects that include educational research.</p>	<p>Appropriate</p>
<p>11. Does the program portfolio have an appropriate balance:</p> <ul style="list-style-type: none"> • Across disciplines and sub-disciplines of the activity and of emerging opportunities? <p>Comments:</p> <p>For the purposes of our review, we believe this question is asking about “multidisciplinary research” and thus treated this question as functionally identical to question A4.4.</p>	<p>Appropriate</p>

<p>12. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>Comments:</p> <p>Many successful efforts are made to reach broad audiences and a variety of communities through funded activities. More and more proposals appear to authentically address and serve underrepresented audiences. Those that provide only lip service are usually flagged during the review panel process.</p> <p>The COV noted a concern regarding an apparent lack of diversity among project PI's, particularly with respect to the larger projects. Since we lacked the time to do a detailed analysis of this issue, we will content ourselves with noting a concern.</p>	<p>Appropriate</p>
<p>13. Is the program relevant to national priorities, agency mission, relevant fields and other customer needs? Include citations of relevant external reports.</p> <p>Comments:</p> <p>The ISE program, considered as a whole, clearly seeks to address national priorities with regards to science literacy as delineated in the NSF FY03 – 08) strategic plan with regards to people, ideas, tools and organizational excellence (Strategic plan, p. 10). The Community and Youth programs in particular seem to be authentically concerned with and geared toward emerging issues such as serving underrepresented audiences, supporting innovative projects, reaching out to geographically underserved communities, linking research with education, nurturing new PIs and agencies, and so forth.</p> <p>.</p>	<p>Appropriate</p>
<p>14. Discuss any concerns relevant to the quality of the projects or the balance of the portfolio.</p> <p>Comments:</p> <p>Based on a strong Merit Review process, the projects are uniformly high quality and balanced. Quality seems to be maintained through close oversight by competent staff. More attention to defining and consistently referencing the terms "high risk," "multidisciplinary," and "innovative" is recommended.</p>	

A.5 Management of the program under review. Please comment on:

1. Management of the program.

Comments:

The program is well managed. Much of the justification is provided in our answers to the above questions. We wish in particular to single out:

- Inclusion of the research on learning in their projects
- Tracking results of their investments
- Articulation of best practices (particularly for exhibits)
- Superb work by the program officers.
- Maintenance of a quality process in light of increasing staff workload.
- Sensitivity by the staff to issues of fairness.
- An overall process which is efficient, fair, and productive.

We note some areas which could be improved:

- More documentation of reviewer selection and orientation process would be helpful.
- Time between application submission and selection, while meeting the NSF goal, could be further decreased.
- Jackets could be better organized.
- It would be easier to determine appropriate balances if terms were better defined and related data was more accessible.

There is ample evidence in the project jackets of top-notch responsive Program Officers whose hallmarks are thoroughness and strict adherence to ISE criteria of merit and goals of diversity and outreach. The proposal and award process seem to be working despite the small staff and increasing workload. However, looking at a few non-scientific samples one could conclude that some of their stated goals are harder to achieve than others. We note concern, particularly in the media area, with respect to the distribution of PIs, particularly with respect to geography and diversity of PIs. This is a major challenge because in some areas, particularly in respect to geography, capacity needs to be built up.

With the near doubling of proposals from '02-'05, the COV has concerns that the timeline might slip, the outreach might be hampered, and the quality of service may be difficult to maintain because of miniscule travel budgets and lack of support staff. The program might be less successful in the future. It will take money to redress the shortfall in geographic and multi-cultural PIs. In short, the dedicated POs will have to go out searching or further their efforts to foster collaborative efforts between new PIs and established ones.

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

Comments:

The ISE program as a whole has been particularly responsive in a number of areas. We cite especially their pushing the field in evaluation and disability access for websites, continued efforts to merge research and education into all of the ISE activities, increased attention to underserved audiences, and a high number of projects from emerging sciences and areas of special interest such as math. The ITEST initiative, while the subject of a separate COV, is a particular example of a way that the NSF has seized an opportunity for growth and fostered its development.

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

Comments:

In many areas, there has been clear articulation of priorities and process. ISE staff develops new practices and tools, encourages the use of new materials and methods, funds projects which test new theories and knowledge, and researches key issues, practices and policies and evaluation of practices to gain insights and identify questions. The process seems comprehensive and well sequenced and results in the intended outcomes. For example, the 47 current active Media awards show great variety of topics, so management of the portfolio of diverse science interest appears sound.

4. Additional concerns relevant to the management of the program.

Comments:

None that have not been mentioned above.

PART B. RESULTS: OUTPUTS AND OUTCOMES OF NSF INVESTMENTS

NSF investments produce results that appear over time. The answers to the first three (People, Ideas and Tools) questions in this section are to be based on the COV's study of award results, which are direct and indirect accomplishments of projects supported by the program. These projects may be currently active or closed out during the previous three fiscal years. The COV review may also include consideration of significant impacts and advances that have developed since the previous COV review and are demonstrably linked to NSF investments, regardless of when the investments were made. Incremental progress made on results reported in prior fiscal years may also be considered.

The following questions are developed using the NSF outcome goals in the NSF Strategic Plan. The COV should look carefully at and comment on (1) noteworthy achievements of the year based on NSF awards; (2) the ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcomes; and (3) expectations for future performance based on the current set of awards. NSF asks the COV to provide comments on the degree to which past investments in research and education have contributed to NSF's progress towards its annual strategic outcome goals and to its mission:

- To promote the progress of science.
- To advance national health, prosperity, and welfare.
- To secure the national defense.
- And for other purposes.

Excellence in managing NSF underpins all of the agency's activities. For the response to the Outcome Goal for Organizational Excellence, the COV should comment, where appropriate, on NSF providing an agile, innovative organization. Critical indicators in this area include (1) operation of a credible, efficient merit review system; (2) utilizing and sustaining broad access to new and emerging technologies for business application; (3) developing a diverse, capable, motivated staff that operates with efficiency and integrity; and (4) developing and using performance assessment tools and measures to provide an environment of continuous improvement in NSF's intellectual investments as well as its management effectiveness.

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

B.1 OUTCOME GOAL for PEOPLE: Developing “a diverse, competitive and globally engaged workforce of scientists, engineers, technologists and well-prepared citizens.”

The ISE program’s history in meeting this goal is to be commended. While there is still room for improvement in reaching underrepresented audiences, progress continues to be made in this regard. The portfolio of funded projects incorporates widely diverse approaches to STEM learning and content. Efforts to widely disseminate project results across the fields represented in the ISE community, which we comment on elsewhere in this document, have made great strides in building a community of scholarship in this area. Best practices are shared, so that NSF-funded efforts are multiplied and broadly impact a number of communities.

In this report we briefly discuss a few examples from exhibits and from youth/community. We provide a more extensive discussion of examples from media. We have done this because we see part of our job as providing suggestions for “nuggets” of exemplary activities as part of the NSF management process. However, achievement in the area of people is not limited to nugget-worthy headline events and we emphasize our finding that all three program areas in ISE contribute crucially to NSF’s support of the “people” goal.

In the exhibits area, we highlight a few projects: One NSF goal is to bring the excitement of research to broader audiences through outreach. ESI-0337389, “Presenting Current Science and Research: A New Model for Exhibit Making,” Science Museum of Minnesota, is an excellent example of this kind of activity. Some other funded projects use topics of clear public interest to deliver strong science content. Criminal investigations like those on the wildly popular television show CSI are the focus of ESI-0307373, “Planning Grant: Forensic Science Traveling Exhibit,” Fort Worth Museum of Science and History (PI Walter). Star Wars, which has an extraordinarily committed and still numerous audience, motivates ESI-0307875, “Traveling Exhibition on Technology, Imagination and the Future using the Fantasy Technologies of Star Wars Movies as Examples,” Museum of Science, Boston (PI Bell).

In the youth/community area, “Birds in the Hood” (Cornell University, PI Bonney, ESI-0125633), specifically includes the program objective of increased awareness of/ access to STEM careers in the materials that are made available to us. Other projects focus on developing well-prepared citizens and may well have the effect of increasing career awareness. ESI-0406173 (“Project Butterfly WINGS: Winning Investigative Network for Great Science,” University of Florida, PI Dunckel) has the potential to create a network of young people, working with scientists who will be more aware of issues relating to biodiversity and the environment. Another noteworthy project is ESI-0229723, “Bringing CoCoRaHS to the Central Great Plains,” Colorado State University, PI Cifelli in which participants will gain experience in data collection and analysis while working with scientists and contributing to a national research study.

The next generation of scientists, engineers and technologists may be sitting in front of TV sets right now watching one of several NSF-funded TV series. One could say the efforts of the NSF Program Officers may be responsible for creating our future workforce.

Specifically, ISE funds “ZOOM,” the activity rich, innovative series for 8-11- year-olds (ESI-0337323, “Zoom – Season Seven,” WGBH Educational Foundation, PI Taylor). This series promotes basic math and science knowledge and is produced by WGBH. ISE also funds another WGBH series, “PEEP,” for preschoolers (ESI-0104700, “Peep and the Big Wide World,” WGBH Educational Foundation, PI Taylor). “PEEP” appears commercial free in the TLC Early Learning block and on Discovery Kids. “DRAGONFLY TV” for 9 to 12 year-olds NSF FY2005 CBE QUESTIONS FOR COVS practice their own scientific inquiry (ESI 03-37350, “Dragonfly TV- Season 4,” Twin Cities Public Television, PI Hudson).

Section B, continued:

Do these programs work? How does one measure success? These programs are much acclaimed in the scientific/education communities. For instance, 95% of “DRAGONFLY TV” viewers understood the scientific investigations and 80% wanted to try projects on their own. Classroom and after-school activity programs use the accompanying activity kits and websites.

Do these programs reach many people? The ratings show that “ZOOM’s” daytime play delivers about 92,000 kids, 2 to11. Their early fringe delivery is 230,000 kids on average. PBS does not have set schedules across all markets, so “ZOOM” airs outside the above times, but in general on any given day “ZOOM” has 356,000 viewers. “PEEP,” airing on TLC, draws 103,000 kids. It airs twice on Discovery Kids, pulling in about 17,000 each time. “DRAGONFLY TV” weekend daytime draws in around 107,000 2 to11-year-olds. Weekday plays get another 108,000 children. Based on these numbers, on any one day of the week, as many as 700,000 future scientists may be watching NSF funded kids science shows.

B.2 OUTCOME GOAL for IDEAS: Enabling “discovery across the frontier of science and engineering, connected to learning, innovation, and service to society.”

Comments:

In more recent years, there is clear evidence that ISE has attempted to encourage innovation and discovery. There remains, however, great opportunity to further strengthen results in the area of ideas. For example, including evaluation requirements in funded projects has contributed to a better understanding of what makes projects effective. Results could be further enhanced by encouraging the inclusion of a research component on learning in awarded projects as a way to build better understanding about how people learn and thereby strengthening service to society.

Although most of the projects list impact on people as their primary goal(s), two projects referenced above also generate scientific data and research as project outcomes. "Birds in the Hood" contributes to the "ultimate scientific goal for Urban Bird Studies of understanding population, community, and landscape level effects of cities on birds at a scale that would be impossible to examine without large numbers of volunteers. "Project Butterfly Wings" collects scientific data on butterflies and their environments/habitats.

An important emerging area of ideas is the development of scholarship in the area of informal science education and its evaluation. ISE has supported the work of John Falk and his colleagues in this area (ESI- 0125545, PIs John H. Falk and David Bibas, Institute for Learning Innovation). Falk and his colleagues are one of several groups and individuals who are beginning to address two closely related issues: (i) Do people learn from visits to science centers? (ii) Fostering the growth of a community of scholarship lead to better sharing of knowledge among science regarding how people, including diverse people with different amounts of prior knowledge, react to the material in science centers, Falk and his team used standard educational research techniques of phone interviews, face-to-face interviews, and tracking people as they visited centers.

The findings defy being summarized fairly in a few sentences. Briefly, the finding is that science museums and centers do have an impact, but the strongest impacts are on people who use science centers as one of many sources of knowledge coming from subsequent reinforcing experiences. Thus, evaluating the full impact of this kind of informal science learning requires a study model that includes interviews several months after the visit. Four articles and two books, which will be significant contributions to the literature on informal science education, have emerged from this grant.

B.3 OUTCOME GOAL for TOOLS: Providing “broadly accessible, state-of-the-art S&E facilities, tools and other infrastructure that enable discovery, learning and innovation.”

Comments:

For the purposes of this COV report, we regard “tools” as being websites, exhibit ideas, and the use of new scientific tools in a new way that promotes informal science education. Some examples of these ideas are:

The NSF-funded web site www.informalscience.org is an excellent example of providing tools that enable discovery, learning and innovation. Making results of NSF-funded projects easily accessible assists in the sharing of best practices related to informal learning. In addition, individual projects also create new tools that support achievement of this goal. Of note in this regard is ESI-0229063 (“Sea Floor Science,” Ocean Institute, PI Helling) that resulted in the development of innovative solutions that enable public areas to serve as both teaching stations and effective exhibits. The project is a good example to how NSF funding has been used to support the development of new tools that make learning and discovery more accessible to more people in a more affordable way.

One project from the Woods Hole Oceanographic Institution created a new way of using underwater research tools in informal learning. “The Virtual Stowaway” project (ESI-0331438, “Virtual Stowaway on an Oceanographic Cruise,” Woods Hole Oceanographic Institution, PI Madin) uses innovative virtual reality panoramas of the research vessel labs and submersible with hot links as portal to layered levels of learning about ocean jellyfish and ocean exploration in general. The next iteration of this might be live telepresence of such expeditions

B.4 OUTCOME GOAL for ORGANIZATIONAL EXCELLENCE: Providing “an agile, innovative organization that fulfills its mission through leadership in state-of-the-art business practices.”

Comments:

ISE is clearly committed to organizational excellence. However, the ability to be agile and innovative will continue to be hampered by a lack of adequate staffing. To allow ISE to fully meet its potential in this regard, additional staff should be added to the program. The staff should be given more opportunities to travel. Outreach to underserved audiences and identification/review/assessment of new and innovative projects will also be best served through additional staff resources.

PART C. OTHER TOPICS

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

Comment:

Our most important issue: ISE Scholarship. The previous ISE COV made a number of suggestions concerning the development of the ISE community into a community of scholarship. Part of the need for this development is the demand for accountability in all levels of our society – we need to be able to demonstrate that the activities supported by ISE and ITEST lead to improved science literacy. In addition, exhibit developers, media creators, and leaders of community programs can benefit by being informed by the successful and not-so successful programs conducted by other institutions. The existence of this scholarly community can also inform ISE practitioners about relevant research in science, science education, cognitive science, child development, and other fields which are relevant to ISE. The previous COV discussed this topic fairly extensively (see pp. 11, 13, 14, 16, 17, and 20-22).

The COV discussed this issue quite extensively and we have one overall recommendation, which is followed by several specific suggestions on implementation:

The COV recommends that ISE continue its efforts to foster the development of the field of informal science education.

A lot has happened in the three years since the last COV report. Conferences have been held, books from those conferences have been written and published, journal articles have appeared, special issues of journals have collected articles together, and at least one web page (informal.science.org) which links to many, many resources has appeared. Institutions are collaborating with each other in ways that has never happened before. There is a considerable NSF imprint on much of what has happened.

But we still have a long way to go. Traditions of doing projects in isolation from one's colleagues/competitors do not simply disappear when words like "collaboration" appear in an NSF request for proposals. The gap between theory and practice, often seen as a gap between researchers and developers, inhibits communication between two groups that simply should be talking to each other. ISE needs to keep the pressure on.

ISE should continue to encourage the submittal and funding of research projects. Just because only a few appeared in the 2002-2005 COV time frame doesn't mean that we should stop asking for them. The efforts which the NSF did fund are very productive.

The "PI Meeting" which we have discussed briefly in some earlier sections could be an excellent way to foster the development of a more scholarly, sharing tradition in this field. While we believe that the NSF staff is in the best position to flesh out the details of this meeting, our vision is a meeting which includes but is not limited to NSF PI's, which might include a few invited speakers in key areas, and which prospective PI's would be strongly encouraged to attend.

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:

Balance across programs: Is the balance between the various areas of the ISE program appropriate? We were not asked to address this question, and we only addressed it to the extent of extracting the following data as best we could from the notebooks we had and asking a question. The ISE portfolio can be characterized in the following way:

Activity	Number of grants	Dollar amount
Exhibit	37 %	43 %
Media (FRTV)	36 %	31 %
Community	20 %	15 %
Other (mostly research)	7 %	11 %

The previous COV asked for an expansion of youth/community, which happened.

Is this balance appropriate? If a future COV or some other body within the NSF were to address this question, the question would need to be asked up front so that the COV could spend some time on it.

Assessment of outcomes: We are asked in the COV instructions (page 20 of the original template, part B) to provide answers “based on the COV’s study of award results, which are direct and indirect accomplishments of projects supported by the program.” Because we study a sample of grants made within the past three years, our ability to study grant final reports is limited to only one-third of the projects. Furthermore, sometimes results are not always that clearly defined when the funding runs out. We would suggest that the question be either formally rephrased, or that some acknowledgment be made to the COV at the beginning of its activities. Some pre-digesting of data, or collection of data, by a group like WESTAT can help the Committee in its evaluative task, as long as the Committee set aside enough time in its schedule to look at such reports thoughtfully. We failed to recognize the importance of the Westat report early enough in our meeting.

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

Comment:

As noted above, some definition of what is meant by “high risk” (or whatever term is used to describe this kind of activity) and some clarification of other terms like “multidisciplinary” would help ISE run its program as well as help our report.

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

Comment:

The COV put together the following table, which lists the concerns mentioned in the previous COV report (2001) and our assessment of how ISE responded to these issues.

Concern in 2001 COV Report	ISE Response
PO transmits reviewers concern to PI, p. 5	Done, as per our reviews.
Clarify information in the jackets	There has been a lot of progress in helping out the COV process with better jackets etc. There are a few things that still need to be done.
2 nd PO to review SGER proposals, p. 6	The one sample we looked at used 5 reviewers.
Improve dwell time p. 6; NSF response p. 2	While data are hard to interpret sometimes, the 6-month goal seems to be met in almost all cases.
Reviewers address broader impact, p. 7; NSF response, pp 1-2	Seems OK based on panel reports. There are still occasional reviewers who are less responsive than they should be, but if your goal is to bring in many new reviewers, some less than optimal reviews are inevitable.
Expand time to allow summative data to impact the field, p. 10	See ESIE annual report, p. 9; proposals to analyze these data are not really forthcoming.
Limited attention on how people learn, p. 11	This has been done (see our report), though there are still opportunities to do more.
High risk pp 11-12; panel danced around what high risk was; NSF response p. 4.	We danced around this issue and ultimately decided to stop dancing, not addressing the issue without further guidance from higher management levels within NSF.
Note enough high risk proposals, implicit in pp. 11-12.	If we can't decide what a high risk proposal is, we can't even begin to assess whether there are enough of them.
ISE field lacks a progress model, p. 19; NSF response, p. 3.	The ISE field still is debating this issue.
NSF should restate template questions, p. 19.	NSF did so, apparently, in part B, but it is still a problem for us.
Three days for COV meeting, p. 19.	Done.
Jackets unclear, p. 20.	Jackets are still unclear sometimes.
Are we gathering summative evaluations from PIs? pp. 20-21.	Yes, in one proposal; how about the others? The 2002 COV report (p. 53) describes why this apparently simple task is not as easy as it might seem. Since the last COV there has been a lot of growth in this area. The WESTAT report is a great summary of what's been available.
Has NSF helped develop the field of ISE scholarship? P 21-22; NSF response, p. 3.	We've come a long way, but we still have a long way to go. ITEST's establishment of a disciplinary center was a big help.
ISE program needs a more clearly articulated vision (also mentioned in 1998 COV report), p. 21.	RFP's for individual solicitations show visions for that particular area.

Concern, <i>continued</i>	Response, <i>continued</i>
Build capacity for Research and Evaluation, pp. 21-22	See 2004 ESIE annual report page 9; response to this in terms of actual proposals is still quite small, but should continue to be encouraged.
ISE should couple to burgeoning after-school programs, p. 23	It was 20 % of participants in 2002. It is still 20 % of participants, but ASCEND and ITEST represent a significant additional investment.
Support research on Web use (i.e., discover how people use the web to help science learning and understanding), p. 24	NSF did support Rob Semper's work on this topic in 1999. Solicitation is revised to support more proposals like this (ESIE 2004 report, p. 9).
Add more staff, p. 26; NSF response, p. 1	Still needed.
Increased proposal load see 2004 ESIE Annual Report, p. 9	End-to-end system needed, staff still work extremely well and extremely hard.
Expand to smaller, less-populated parts of the US	Geographical distribution has improved (2002 ESIE Annual Report, p. 53), but in some areas needs to become still better.
Hard to determine reviewer expertise NSF response, p. 2	This still seems to be an issue. Upcoming Committee within ISE (?) or EHR (?) and e-jackets may deal with this.

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

Comment:

Much of this has been embedded within our report (see questions A1.8, A3.2, A3.3, and A3.5). The most critical issue is coming up with a definition of high risk. Less critical but still helpful would be improving the information within the proposal jackets, or summarizing them, with the COV template in mind. In this way, Committee members would not spend as much time being detectives who, being less well-informed than NSF PO's who work with these jackets every day, may come to the wrong conclusions. The development of electronic jackets will help put the same information that we need in the same place. For example, in order to calculate dwell time, we spent considerable time rooting through the jackets in order to determine the location of the two key dates: proposal receipt and PI notification of the decision.

Seen through a different lens, we note that a great deal of work goes on behind the scenes, but the COV does not see it and may not become aware of its existence unless we ask the right questions. For example, knowing that the PO's have a grid of reviewer characteristics provides us with much cleaner guidance on the issue of reviewer diversity than rooting around through the paper jackets trying to find information that is often simply not there (reviewer ethnicity).

We will say the same thing that other EHR COVs have said: the template is designed as a “one size fits all” within the NSF and in some cases the questions have to be seriously reinterpreted in order to make sense within the COV process.

SIGNATURE BLOCK:

For the ISE COV
Harry L. Shipman
Chair