

MEMORANDUM

DATE: December 18, 2008

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

FROM: Joan Ferrini-Mundy, Division Director
Division of Research on Learning in Formal and Informal Settings

SUBJECT: COV for ITEST
COI and Diversity Memo

The Committee of Visitors report for the ITEST Program was approved at the EHR Advisory Committee meeting held at NSF on Nov. 5-6, 2008. The COV consisted of 6 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
Organization Type:	
<input type="checkbox"/> University.....	0
<input type="checkbox"/> Four-year College.....	2
<input type="checkbox"/> Two-year College.....	0
<input type="checkbox"/> K-12 School or LEA.....	0
<input type="checkbox"/> Industry.....	1
<input type="checkbox"/> Federal Agency.....	0
<input type="checkbox"/> Public/Private Foundation.....	2
<input type="checkbox"/> Membership Associations.....	1
Location	
<input type="checkbox"/> East.....	.....2
<input type="checkbox"/> Midwest/North .....	.....1
<input type="checkbox"/> West.....	.....2
<input type="checkbox"/> South.....	.....1
Gender	
<input type="checkbox"/> Female.....	.....4
<input type="checkbox"/> Male.....	.....2
Persons with Disabilities.....	.....0
Race/Ethnicity	
<input type="checkbox"/> White.....	.....3
<input type="checkbox"/> Black.....	.....3
<input type="checkbox"/> Hispanic.....	.....0
<input type="checkbox"/> Asian/Pacific Islander.....	.....0
<input type="checkbox"/> Native American.....	.....0

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.')

CORE QUESTIONS and REPORT TEMPLATE
for
FY 2008 NSF COMMITTEE OF VISITOR (COV) REVIEWS

Guidance to NSF Staff: This document includes the FY 2008 set of Core Questions and the COV Report Template for use by NSF staff when preparing and conducting COVs during FY 2008. 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 <www.inside.nsf.gov/od/oia/cov>.

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 results 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.

Suggested sources of information for COVs to consider are provided for each item. As indicated, a resource for NSF staff preparing data for COVs is the Enterprise Information System (EIS) –Web COV module, which can be accessed by NSF staff only at <http://budg-eis-01/eisportal/default.aspx>. In addition, NSF staff preparing for the COV should consider other sources of information, as appropriate for the programs 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 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. 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. For past COV reports, please see <http://www.nsf.gov/od/oia/activities/cov/covs.jsp>.

**FY 2008 REPORT TEMPLATE FOR
NSF COMMITTEES OF VISITORS (COVs)**

The table below should be completed by program staff.

Date of COV: September 18-19, 2008
Program/Cluster/Section: ITEST/Lifelong Learning/DRL
Division: Division of Research on Learning in Formal and Informal Settings
Directorate: EHR
Number of actions reviewed: Awards: 35 (10 supplements) Declinations: 15 Other: 11
Total number of actions within Program/Cluster/Division during period under review: Awards: 90 Declinations: 474 Other:
Manner in which reviewed actions were selected: The proposals reviewed were randomly assigned to the COV members,

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 process.
Provide comments in the space below the question. Discuss areas of concern in the space provided.

<p>QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS</p>	<p>YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE¹</p>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments:</p> <p>The COV finds the review methods utilized to be appropriate. The panels seemed to be duly organized with appropriate expertise. In addition to the individual reviewers, the panel discussions (as reflected in the panel summaries) provided a collective assessment of the proposals. The number of reviewers participating in the review process was sufficient to achieve a fair and effective review. However, the average number of reviewers listed in the “ITEST Average Review and Score” ranged from 5.5 to 6.05; the number of reviewers provided by the random sample for the COV did not seem to be consistent with this range. Of the 35 awards randomly assigned to us, only one had six reviewers and the others were below six.</p> <p>Recommendation: The COV recommends that the Program provide the minimum and maximum number of reviewers used per proposal used during a given ITEST competition rather than a range for the average review and score.</p> <p>The criteria for determining the selection of projects for site visits were unclear to the COV. It is important to be consistent in the criteria used to select projects</p>	<p>YES</p>

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

<p>to be visited to ensure the appearance, as well as the reality, of consistency. For those sites visited, the <u>COV recommends</u> the use of a SITE VISIT template. The template could help ensure a common assessment and could include benchmarking of progress to milestones related to project management, financial adherence, and external oversight. Also, Program Officers should consider utilizing an <i>ad hoc</i> site visit team.</p> <p>While we recognize that the preliminary proposal phase has been eliminated, the <u>COV recommends</u> that the NSF re-instate optional preliminary proposals for first time applicants. This would provide them with an initial assessment of their ideas and guidance regarding resources/tools available, for example, via the Learning Resource Center, that might be used in preparing their full proposals.</p> <p>Recommendation: The COV recommends that the program provide the minimum and maximum number of reviewers used per proposal used during a given ITEST competition rather than a range for the average review and score.”</p>	
<p>2. Are both merit review criteria addressed</p> <ul style="list-style-type: none"> a) In individual reviews? b) In panel summaries? c) In Program Officer review analyses? <p>Comments:</p> <p>In all but one of the reviews in the e-jackets assigned to the ITEST COV, both merit review criteria were addressed. In one startling exception (#0605478) the reviewer wrote “unknown” for both criteria. In our view, the Program Officer should have insisted that the reviewer add substantive comments as feedback to the proposer on what was missing that prevented the reviewer from determining the Intellectual Merit and Broader Impacts of the proposed project.</p> <p>Under Broader Impacts specific to ITEST, <u>two areas</u> in the reviews that <u>could be strengthened</u> are an assessment of the ‘quality’ and relevance of the proposed dissemination strategies and of the evaluation plans.</p> <p>The COV recommends that program officers, in their instructions to reviewers, emphasize the importance of including comments on the appropriateness and adequacy of (1) the proposed evaluation plan for determining the impact/ effectiveness of the proposed project and (2) the proposed dissemination strategies for informing various audiences of their results/lessons learned.</p>	<p>YES</p>

<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments:</p> <p>Overall, the reviewers consistently provided detailed comments. They addressed both the goals of ITEST and the larger NSF goals in their reviews. One of the few exceptions was reviews for #0737528, a renewal application. While the proposal had strong ratings, the reviewers indicated the absence of significant information from the previous project to justify continued funding. Program Officers should <u>continue to stress</u> to the reviewers the importance of making sure their ratings match their comments.</p>	<p>YES</p>
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments:</p> <p>The COV felt that the panel summaries were sufficient to provide the rationale for the panel consensus.</p>	<p>YES</p>
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>(Note: Documentation in jacket usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.)</p> <p>Comments:</p> <p>The documentation in the jackets reviewed was sufficient to provide the rationale for the award/decline decision. The COV was particularly impressed by the detail provided through correspondence with the PI and other documentation.</p> <p>One suggestion related to the budget is to make sure that any revision requests clearly document the rationale for the revised budgets.</p>	<p>YES</p>
<p>6. Does the documentation to PI provide the rationale for the award/decline decision?</p> <p>(Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written or telephoned with diary note in jacket) of the basis for a declination.)</p>	<p>YES</p>

<p>Comments:</p> <p>The documentation to the PI was sufficient.</p>	
<p>7. Is the time to decision appropriate?</p> <p>Note: Time to Decision --NSF Annual Performance Goal: For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later. The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.</p> <p>Comments:</p> <p>The ITEST program should be congratulated on its dwell time achievement. Every jacket reviewed by the COV was within the guidelines of the six-month interval from closing date to award/declination notification.</p>	<p>YES</p>
<p>8. Additional comments on the quality and effectiveness of the program's use of merit review process:</p> <p>The program's use of the merit review process was very effective, as noted above. Nevertheless, the <u>COV</u> believe it necessary to <u>re-emphasize</u> the importance of the ITEST program officers reviewing with the panelists the concepts of Intellectual Merit and Broader Impacts and what the concepts encompass. This would help ensure reviews of high quality and would further enhance the effectiveness of feedback to the proposed PIs.</p>	

A.2 Questions concerning the selection of reviewers. Provide comments in the space below the question. Discuss areas of concern in the space provided.

<p>SELECTION OF REVIEWERS</p>	<p>YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE 2</p>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p>	<p>YES</p>

² If "Not Applicable" please explain why in the "Comments" section.

<p>Comments:</p> <p>The program staff should be congratulated on assembling the strong panels used to review the proposals. Based on the information available at the ITEST COV website, the reviewers seemed to have the disciplinary backgrounds needed to evaluate the proposals they were assigned.</p>	
<p>2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?</p> <p>Note: Demographic data is self reported, with only about 25% of reviewers reporting this information.</p> <p>Comments:</p> <p>The COV complements the project staff on the significant representation of women in STEM as reviewers. Overall, the regional balance was strong; however, we <u>strongly urge</u> the ITEST program officers to address the following issues to ensure a better balance of reviewers with respect to institutional type and participation of members of groups underrepresented in STEM:</p> <ul style="list-style-type: none"> • Include more reviewers from community colleges and minority-serving institutions. (Minority caucuses within professional and scientific societies and the American Association for Community Colleges may be good sources for identifying such reviewers.) • Make a special effort to include more reviewers with disabilities. • Include more teachers from the K-12 level. <p>The program should look at the ITEST Program as a way of encouraging broader participation. Broadening the discussion of proposals to include other perspectives could enrich the dialogue and input with respect to final decisions on individual proposals.</p> <p>The COV <u>recommends</u> that the Program staff consider having the Learning Resource Center or some other organization conduct outreach activities designed specifically to reach community colleges and minority-serving institutions to ensure that faculty at these institutions are fully aware of the ITEST Program and the various options for support within the Program. <u>A second recommendation</u> is that the Program considers utilizing an online tool (e.g., a webinar) for assisting faculty in developing a better understanding of the characteristics and strengths of competitive ITEST proposals. The intent is to provide faculty with the knowledge they need to prepare proposals that are competitive, based on the merit of the ideas involved and on their ability to carry out the proposed project.</p>	<p>NO</p>
<p>3. Did the program recognize and resolve conflicts of interest when appropriate?</p>	<p>YES</p>

<p>Comments:</p> <p>The program officers noted in the e-jackets reviewed that either no COI existed, among reviewers of specific proposals, or if one did exist, the reviewer did not participate in the review.</p>	
<p>4. Additional comments on reviewer selection:</p> <p>The COV recommends that the program staff continue to monitor selection of reviewers and include more descriptive information on reviewer identification, particularly in the area of institutional affiliation (e.g., MSI, HBCU, race and ethnicity data, or type of organization). When available, this information should be included in reports to serve as an indicator of the program’s progress in selecting a diverse group of reviewers.</p> <p>With respect to the review of preliminary proposals, the COV saw a variation in the pattern of reviewers (all external, two POs and an external, or 2 external and one PO.) Also, the Committee found an inconsistency in the quality of the reviews for these proposals. Consistency would eliminate the perception of potential bias and provide valuable information to first-time applicants. The general consensus of the COV was that the preliminary proposal is an important learning step in proposal preparation that is now lost to new applicants. As stated earlier, we encourage the program to consider outreach efforts to increase the participation of new applicants.</p>	

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.

RESULTING PORTFOLIO OF AWARDS	APPROPRIATE, NOT APPROPRIATE³, OR DATA NOT AVAILABLE
<p>1. Overall quality of the research and/or education projects supported by the program.</p> <p>Comments: The awards that the COV reviewed did not focus on research, which was likely due to the lack of program emphasis in this area. The COV recognizes that the emphasis on research may change with the inclusion of the studies category in the 2008 guidelines. The COV feels that while research is an important element of the program, the focus of the program should continue to be on the implementation of research-based effective practices. These practices will provide a rich knowledge base for future research. Most important is the value of these programs in helping to achieve the overall goal</p>	APPROPRIATE

³ If “Not Appropriate” please explain why in the “Comments” section.

<p>of increasing the number of U.S. individuals prepared to meet the needs of the 21st century science and technology workforce.</p>	
<p>2. Does the program portfolio promote the integration of research and education?</p> <p>Comments: The research focus did not appear to exist prior to 2008.</p>	<p>DATA NOT AVAILABLE</p>
<p>3. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: Based on the comments and the reviews, the COV felt that the panelists effectively considered the size and duration of the award to achieve the scope of the project.</p>	<p>APPROPRIATE</p>
<p>4. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Innovative/potentially transformative projects? <p>Comments: The COV wrestled with the terms “appropriate balance” and “transformative projects.” Areas of discussion included the following:</p> <ul style="list-style-type: none"> • Transformative for individuals • Transformative for communities • Transformative for the Nation <p>While a number of the projects seemed innovative and to hold promise for achieving the first two outcomes, the last area was more difficult to judge. The COV noted that the panelists understood the importance of development of the IT workforce pipeline; however, a longitudinal study would be needed to determine if in fact any transformation takes place across the country. There were no indicators given of how this might be measured within each project. The COV concluded that the program’s portfolio holds great promise for innovation and potential transformation.</p> <p>Recommendation: the COV recommends that a special longitudinal study be done on a representative sampling (e.g., urban, rural, and suburban) from among projects funded during the first year of ITEST program to seek evidence of impact, five years later.</p>	<p>APPROPRIATE</p>
<p>5. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Inter- and Multi- disciplinary projects? <p>Comments: In the COV’s opinion, a good distribution existed of inter- and multi- disciplinary projects ranging from mathematics to robotics, graphic design, life sciences, and physics. One unique proposal integrated IT with Native American culture through year-round culturally relevant IT-based research experiences. (#0737528).</p>	<p>APPROPRIATE</p>

<p>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?</p> <p>Comments: The COV felt the budget awards fit within the guidelines prescribed by the ITEST program for full proposals. The supplements varied but seemed appropriate to the need for the continuation of the projects. The COV did not find any multiple investigator awards.</p> <p>The program portfolio balance seemed appropriate to the ITEST goals.</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>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments: The program has achieved a good balance awards to new PIs and to previously funded PIs; however, the diversity of the new PIs, as could best be ascertained given the absence of demographic data on the PIs, did not appear to be sufficiently broad.</p>	<p>APPROPRIATE</p>
<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: The geographic reach of the program is impressive, having reached 37 states. We did note that a few states had more projects supported than others. Greater attention may needed to finding ways to increase the number of ITEST applications from states in which underrepresented minorities represent significant portions of the states' population. These groups represent a major portion of the pool from which the country's future S&T workforce must come.</p>	<p>APPROPRIATE</p>
<p>9. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Institutionnel types? <p>Comments: As noted earlier, the COV was concerned about the small number and percentage of minority-serving institutions (MSIs) and community colleges that received awards. In addition, while it is true that some of the states receiving ITEST awards have significant African American and/or Hispanic</p>	<p>NOT APPROPRIATE</p>

<p>populations, it was unclear how involved minority individuals/institutions in those states are in the leadership/implementation of the ITEST-funded projects.</p> <p>The COV did not get a clear understanding from the Program Officers of the challenges the Program faces regarding increasing the success rate of proposals submitted by MSIs or of increasing the submission and success rate of proposals from community colleges. Possible explanations might include:</p> <ul style="list-style-type: none"> • Lack of awareness of the funding opportunities inherent in ITEST • Lack of institutional support and mentoring of PIs for proposal development • Lack of confidence among potential new PIs in their ability to write successful proposals • Disproportionate benefit of current PIs to new PIs in terms of the knowledge of current PIs about the program’s development and targets <p>Recommendation: the COV recommends that a non-ITEST program officer be charged with the responsibility of following up (via a non-recorded telephone call) with the proposed principal investigators of all declined proposals from minority-serving institutions and from community colleges to ascertain the likelihood that these individuals would re-submit to itest and, if not, why they would not do so.</p> <p>The COV also recommends to NSF in general that a data collection method be constructed (survey or focus group) for use at national PI meetings for institutional and diversity programs to help determine whether community colleges and MSIs feel welcomed and encouraged to submit proposals to programs outside programs that target community colleges and MSIs. For example, do the community colleges that participate in ATE also feel welcomed, prepared, and supported to submit proposals in other programs such as ITEST? If so, what is learned from this exercise that can be used to encourage other such institutions to apply to non-targeted programs? If not, what are the obstacles for submission?</p>	
<p>10. Does the program portfolio have an appropriate balance:</p> <ul style="list-style-type: none"> • Across disciplines and sub disciplines of the activity? <p>Comments: Please refer to #5 above.</p>	<p>APPROPRIATE</p>
<p>11. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>Comments: The COV addressed this question in three ways:</p> <ul style="list-style-type: none"> • Institutions • Principal Investigators • Audiences reached 	<p>NOT APPROPRIATE</p>

<p>MSIs submitted 42 proposals to ITEST over the three-year period under review; of those 42, only 4 were funded. Also as noted earlier, only one community college received an ITEST award during the same period. Among PIs, 10 were Asian, 4 were African American, 2 were Hispanic and 54 were Caucasian. Data relevant to the audiences reached included the following: we 48% of the ITEST awards made during the three-year were focused on urban areas while 28% were focused on rural areas.</p> <p>Stronger outreach efforts are needed to improve the number and, apparently, the quality of proposals submitted by faculty at MSIs, given the abysmal success rate of proposals from MSIs during the three-year period under review. Of concern to the COV as well was the apparent small number of minority women submitting proposals to ITEST and receiving funding.</p> <p>Greater emphasis is needed on the importance of involving minority faculty, including minority women faculty, in the proposal review process so that they get a better understanding of what distinguishes successful ITEST proposals from those that do not get funded.</p>	
<p>12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: The ITEST program was developed from funding provided by Congress from H1B visas to encourage the development of a strong American scientific and technological workforce for the future. This priority to ensure US global competitiveness has been reiterated through numerous reports and legislative actions.</p> <p>Examples include the 2000 report of the Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology Development (established by Congress in 1998): <i>Land of Plenty: Diversity as America's Competitive Edge in Science, Engineering and Technology</i>. More recently, the National Academies created a Committee on Prospering in the Global Economy of the 21st Century: An Agenda for American Science and Technology. The Committee released a report in 2007 entitled, <i>Rising Above the Gathering Storm</i>. The report highlights the importance of developing a strong science and technology workforce to ensure America's competitiveness.</p> <p>Other reports amplified the message that increasing the pipeline of students well-prepared to enter the STEM workforce is critical to ensuring the country's position in the world. In response to this clear message, the NSF has developed a strong program through ITEST to help address this critical need.</p>	<p>APPROPRIATE</p>
<p>13. Additional comments on the quality of the projects or the balance of the portfolio:</p>	

The COV discussed with program officers the importance of the overall goal – moving students towards science and technology careers – as well as the need for evidence of progress toward achieving this larger goal. The COV strongly urges an external review of the ITEST Program by a non-ITEST grantee to help understand how well this larger goal is being achieved. The COV recommends that achieving this larger vision becomes a greater priority as the ITEST program makes plans for the future.

A.4 Management of the program under review. Please comment on:

1. Management of the program.

Comments:

The COV was surprised to learn that 13 different program officers have been involved in the review of, and decisions on, ITEST proposals with no specific program officer having overall responsibility for the Program. While three co-leads for the Program have been appointed, the COV strongly recommends that one program officer be given primary responsibility for the Program to help ensure continued movement toward achieving the overall vision for ITEST. While a diversity of perspectives is often a strength, having co-leads without an overall manager could make it more difficult to create consensus as well as to integrate lessons learned into the overall management of the Program.

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

Comments: The ITEST projects are responsive to emerging fields. Examples include #803533, Photonics Leaders; #0737675 The Science of Small Things, with a focus on nanotechnology; and #0737669 Plant IT Careers, Cases, and Collaborations with a focus on bioinformatics and biotechnology.

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

Comments: The three co-leads reported that a “likely meeting” is held during which Program Officers put forth for comment proposals they believe are likely to be funded. This could be considered internal prioritization. This meeting could provide the participating Program Officers with a sense of how the Program’s portfolio is developing, especially if the meeting includes a discussion of ITEST awards made in the preceding year or two. This would be an opportune time to look at types of institutions reached, diversity among current and potential Principal Investigators, and the audiences reached.

The new 2008 guidelines reflect a continuous planning process as can be seen in the shift in Program emphasis to strategies, scale-up, and studies.

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

Comments: One request by the previous COV was that reviewers be categorized as representing either informal or formal education. The table provided at the ITEST COV website on the composition of the review panels did not contain evidence that this had occurred.

The previous COV also noted that not enough proposals were awarded to EPSCOR states. This COV felt that the Program has an impressive record in terms of the number of states reached during the previous three years, having reached 37 of the 50 states. Given that almost half of the 50 states are EPSCoR eligible, at least half of the EPSCoR states must be included in the 37 states reached.

Finally, the previous COV felt that the distribution of PIs was not as diverse as desirable and this COV is equally concerned about this issue.

5. Additional comments on program management:

Program officers for ITEST did an excellent job moving proposals through the review process, communicating with the proposed PIs, and assembling strong review panels.

PART B. RESULTS OF NSF INVESTMENTS

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The COV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the COV review may 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.

To assist the COV, NSF staff will provide award "highlights" as well as information about the program and its award portfolio as it relates to the three outcome goals of Discovery, Learning, and Research Infrastructure. The COV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

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."

Comments: Few projects fostered discovery among the participants. One from NJ that did contribute to a global base of knowledge was a project where students analyzed the DNA of worms, then submitted their results to an international database of DNA sequences, thus contributing to the cache of knowledge about genomes. The original project was #04-22902 and it received a one-year extension under project #07-37574.

The COV points to the ITEST annual conferences as a place where greater emphasis on discovery is likely to occur. In addition, the ITEST Resource Center provides a systematic process for the collection and distribution of resources, knowledge, and guidance to facilitate and nurture discovery.

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:

By far, the majority of the proposals are in the Learning mode. Two excellent examples from the Bay Area Video Coalition introduce students to video, web creation, and programming and then place them in industry-based internships (#07-37623 and #04-22693). Another example is Fostering Interest in Information Technology (#07-37326). This project involves high school students and teachers and is based on four project-based design teams, each focusing on an IT-intensive STEM area to learn about, experience, and use IT in environmental science, web-based applications (games, databases), robotics, and bioinformatics.

While the Learning projects were useful and provided valuable experiences for the participants, the COV encourages the ITEST Program Officers to identify ways to encourage submission of more projects with outcome goals in Discovery and Research Infrastructure.

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

Comments: The COV realizes this is a new category, so projects with this outcome goal were limited. One example we found was the Highly Interactive Fund Internet Virtual Environments in Science (HIFIVES) project (#0525115) in which 75 teachers and guidance counselors were to develop web-based games to teach biotechnology, genomics, GIS, nanotechnology and robotics concepts. These games provide an important infrastructure for teaching these scientific concepts. Another example is Longwood (#0624565) through which 50 video games are to be developed and made available at the Project’s website.

The ITEST Resource Center also is a critical tool for advancing research. One COV member noted that the LRC is a data collection resource and that it has aggregated an impressive collection of resources developed by the various ITEST projects, including research and evaluation tools.

PART C. OTHER TOPICS

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

The COV identified the following as ways to improve the reach of the ITEST Program:

- Greater outreach to community colleges and minority-serving institutions
- Increased diversity among reviewers to include community college and K-12 faculty as well as more members of underrepresented minority groups, including minority women
- Greater attention to reaching states with significant African American and Hispanic populations

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.

An independent review is recommended of the effectiveness of the Learning Resource Center (LRC) as a major communication and dissemination strategy for ITEST. The annual LRC reports provide some insight into the activities being undertaken by the LRC; however, its overall impact is not clear. Therefore, the COV urges an independent evaluation of the effectiveness of the LRC.

No data are currently available on the sustainability of the ITEST projects that have been funded to date. Also, we do not know how well the results of these projects have been disseminated. Now that the ITEST Program has been in existence for five years, it will be important to undertake an independent review to better understand the issues that facilitate/inhibit sustainability and dissemination.

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

The COV urges the Foundation to fund an external evaluation of the ITEST program, now that the Program has been in place for five years. ITEST is at a stage of development that it could benefit from an external evaluation to help determine Program impact and to identify other possible strategies that could lead to greater Program impact.

The COV believes it important for the NSF to undertake efforts to help ensure increased understanding across all of its programs, not just in ITEST, of the importance of:

- (1) diversity among panelists;
- (2) understanding by panelists of what the Intellectual Merit and Broader Impacts criteria encompass; and
- (3) providing professional development opportunities for the staff, both permanent and rotating, that is focused on a candid and informed discussion of educational issues related to race, gender and disabilities.

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

Two proposals were inaccessible to the team - #0624528 and #0623808. The system indicated that conflicts of interest existed for COV members. Access was never obtained, although no conflict existed that any of the COV members could identify.

To avoid the problem of carrying over large numbers of proposals from one fiscal year to the next, the Program should establish a deadline date that is at least six months prior to the end of NSF's fiscal year. Doing so, also could lead to increased access to co-funding from EPSCoR.

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

The COV congratulates the NSF on its decision to allow COV access to e-jackets. This innovation greatly facilitated the review process and allowed COV members to easily maneuver electronically between multiple documents. With respect to the report template, we did find some redundancy. This is reflected in a couple of instances in this report where we referred the reader do a previous response. Also, it was not always clear what was meant by "appropriate balance." The COV suggests that the template explains what this term means.

SIGNATURE BLOCK:

For the ITEST COV
Shirley McBay
Chair