

**FY 2011 REPORT TEMPLATE FOR  
NSF COMMITTEES OF VISITORS (COVs)**

The table below should be completed by program staff.

<b>Date of COV: September 12 and 13, 2011</b>
<b>Program/Cluster/Section: Innovative Technology Experiences for Students and Teachers (ITEST)</b>
<b>Division: DRL</b>
<b>Directorate: EHR</b>
<b>Number of actions reviewed:</b>  <b>Awards: 30</b>  <b>Declinations: 30</b>  <b>Other:</b>
<b>Total number of actions within Program/Cluster/Division during period under review:</b>  <b>Awards: 71</b>  <b>Declinations: 759</b>  <b>Other:</b>
<b>Manner in which reviewed actions were selected:</b>  <b>For actions between 2008-2011, a random number generator was used to randomly select 6 groups at five each for awards and 5 each for declines. This gave a total of 30 awards and 30 declines for review.</b>

## 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.

**I. Questions about the quality and effectiveness of the program's use of merit review process.** Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments:</p> <p>The COV, in its sampling, did not notice any site visits in the eJacket, but the ITEST program does conduct reverse site visits as part of project monitoring.</p> <ul style="list-style-type: none"> <li>o This COV would be interested in reviewing the protocol and outcomes from these reverse site visits and such documentation should be provided for future COV panels.</li> </ul> <p>The ITEST program does have appropriate review panels.</p>	YES
<p>2. Are both merit review criteria addressed</p> <p>a) In individual reviews?</p> <p>b) In panel summaries?</p> <p>c) In Program Officer review analyses?</p> <p>Comments:</p> <p>Program Officer analyses were particularly helpful in addressing merit review criteria.</p>	YES

<p>The COV feels that the ITEST program staff should provide the panelists with examples of what it means to be “potentially transformative” within the context of the ITEST program.</p>	
<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments:</p> <p>In a large majority of cases, comments were substantive and helpful; although, one panelist reported that some reviewer comments were not consistently substantive.</p> <p>It is helpful to the Principal Investigator to have these substantive comments, and the COV notes the importance of the reviewers providing detailed comments and analyses.</p>	<p><b>YES</b></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>In most cases, the COV feels the review process is well-managed by the Program Officers. However, in instances of triage (when no panel summary is provided and no panel discussion held), a review by the Program Officer with respect to individual panel reviews should be checked for factual errors, inconsistencies, and to ensure the rationale for a decline is clear to the Principal Investigator.</p> <ul style="list-style-type: none"> <li>o <u>COV Recommendation</u>: The Program Officer should review the written reviews (especially triaged proposals) in order to provide substantive comments to the Principal Investigator.</li> </ul>	<p><b>YES</b></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>In the sample of jackets reviewed, extensive documentation was included.</p> <p>The COV commends the program staff for the thoroughness of the documentation.</p>	<p><b>YES</b></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 as PO comments (or telephoned with diary note in jacket) of the basis for a declination.)</p> <p>Comments:</p> <p style="padding-left: 40px;">The COV saw evidence of strong correspondence between the Program Office and the Principal Investigator. The COV commends the ITEST program staff for this effort.</p>	<p><b>YES</b></p>
<p>7. Additional comments on the quality and effectiveness of the program's use of merit review process:</p>	

**II. Questions concerning program structure and emphasis.** Please address the following questions about program structure and emphasis and provide comments or concerns in the space below the question.

PROGRAM STRUCTURE AND EMPHASIS	YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Is ITEST investing at a sufficient level and in ways to strengthen field in the future, with respect to all categories of projects, especially those that contribute to educational infrastructure building and professional development (e.g., centers, networks, web-based tools)?</p> <p>Comments:</p> <p>ITEST is funded at a sufficient level; however the COV has some comments regarding ways to strengthen the field and the overall portfolio of awards.</p> <p><u>COV Recommendation:</u> The COV strongly recommends that the program staff consider a number of different funding mechanisms for collecting evidence to support scale-up studies.</p> <ul style="list-style-type: none"> <li>○ Examples of possible funding mechanisms include: <ul style="list-style-type: none"> <li>▪ 4 stages of ITEST: strategy, efficacy, research, scale-up</li> <li>▪ Front-end of scale-up grants</li> <li>▪ Tail-end to existing strategy grants (5-year timeframe)</li> </ul> </li> <li>○ (See question two, below, for rationale.)</li> </ul> <p><u>COV Recommendation:</u> ITEST should investigate ways to support longitudinal and retrospective studies that will incorporate adequate evaluation metrics for understanding the strengths and areas for improvement across ITEST projects. The outcomes from such studies should be used to provide direction for future ITEST projects.</p>	<p><b>YES</b></p>
<p>2. Does the organizational structure of panels and program tracks allow sufficient flexibility to foster the innovation and creativity of the field and various subsets or might this structure unintentionally limit project designs? Consider the following in your response:</p> <ol style="list-style-type: none"> <li>a. The organizational structure of the ITEST solicitation for the period under review (e.g. program tracks including Strategies, Research, Scale-Up, Conferences, and Workshops).</li> <li>b. The organizational structure of the panels and awards for the period under review.</li> </ol>	<p><b>YES</b></p>

<p>Comments:</p> <p>The ITEST program structure does unintentionally limit project designs in some ways. The COV feels that there needs to be an additional element between the “strategies” and “scale-up” categories that would allow projects to gather sufficient data to help them to make a case for scale-up funding.</p> <p>The COV notes that more information regarding workshops/conferences would be helpful in evaluating the program’s use of these strategies.</p>	
<p>Additional comments on program structure:</p>	

**III. Questions concerning the management of the program under review.** Please comment on the following:

MANAGEMENT OF THE PROGRAM UNDER REVIEW

1. Management of the program.

Comments:

The COV feels that the ITEST program has an outstanding management structure with excellent communication among ITEST staff and the NSF as a whole.

There is a clear commitment by the ITEST management staff to achieve programmatic goals.

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

Comments:

The program itself is designed to select and accommodate emerging research and education opportunities, but the solicitation is not currently drawing large numbers of these proposals.

The ITEST program takes positive risks in terms of supporting emerging research and education opportunities.

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

Comments:

There is clearly a tremendous amount of effort on the part of the program staff in developing the program announcement and resulting portfolio, and the COV commends the ITEST program for this practice.

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

Comments:

The COV feels it would be useful to have the breakdown of demographic background information regarding the panel members in order to fully address this question.

The 2011 COV commends the ITEST program for being attentive, proactive, and responsive to every major aspect of the 2008 COV report.

**IV. Questions about Portfolio.** Please answer the following about the portfolio of awards made by the program/s under review.

<p style="text-align: center;"><b>RESULTING PORTFOLIO OF AWARDS</b></p>	<p style="text-align: center;"><b>APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE</b></p>
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub disciplines of the activity?</p> <p>Comments:</p> <p>The COV feels there was an appropriate balance of awards when the program was initially conceived, but as the ITEST program has shifted, it is important to continue to monitor the inclusion of additional STEM categories.</p> <p>There is a fairly good spread of awards across the physical sciences. However, the portfolio is slightly heavy in computer science (39% of awards) and engineering (26% of awards) – 65% of total awards – with less emphasis on emerging areas of science. For example, only 3% of awards are in the category of mathematics.</p> <ul style="list-style-type: none"> <li>○ STEM is broader than these categories and it is important to continue to pay attention to additional categories. <ul style="list-style-type: none"> <li>▪ The program should continue to broaden (and possibly accelerate the pace) of defining “emerging and converging technologies” and their role within ITEST.</li> <li>▪ The COV recognizes that mathematics is a gateway/foundational discipline and encourages mathematics as it relates to the workplace.</li> <li>▪ Recognizing that ITEST is uniquely positioned to engage the business community, the COV encourages studies in entrepreneurship as it applies to the career objectives of these proposals.</li> </ul> </li> </ul> <p><u>COV Recommendation:</u> The COV recommends that the ITEST program shape the program announcement to encourage submissions across a broader array of fields in a fashion commensurate with the discussion above.</p>	<p style="text-align: center;"><b>APPROPRIATE</b></p>
<p>2. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments:</p> <p>The size and duration (within the three-year grant timeline) is appropriate;</p>	<p style="text-align: center;"><b>APPROPRIATE</b></p>

<p>however it may be difficult for some projects to realize their full scope and documented outcomes within the three-year timeline.</p> <p>Some projects are limited by this funding timeline, which may limit the COV's understanding of the program's impact on the STEM workforce.</p> <p><u>COV Recommendation:</u> It may be beneficial to establish a longer grant timeline (four- or five-year funding cycles) for certain types of ITEST categories (e.g., strategy, research, and any other future category of awards where this may be appropriate).</p> <p><u>COV Recommendation:</u> The COV recommends that the NSF explore methods for encouraging the development and validation of more rigorous research and evaluation metrics.</p> <p>Often organizations are facing challenges of reaching long-range goals (e.g., workforce development) with short-range tools (e.g., three-year funding cycle, lack of mechanisms for tracking student outcomes).</p>	
<p>3. Does the program portfolio include awards for projects that are innovative or potentially transformative?</p> <p>Comments:</p> <p>The program's portfolio does include innovative and/or potentially transformative concepts and awards. However, it is difficult to discern what constitutes a "transformative" and "innovative" project.</p> <ul style="list-style-type: none"> <li>○ It may be helpful to offer a more clearly defined understanding of the terms "innovative" and "transformative" as well as provide examples of the intended impact at various levels (e.g., for students, for institutions, in research and practice models).</li> <li>○ For example, one award was considered innovative because students constructed sensors and as a result "opened and explored the black box." Another award incorporated children building underwater robots and also broadcasted their activities on the internet which demonstrated technologies that extended the reach of the program on multiple levels (e.g. other classrooms and extending other funded project work plans).</li> </ul> <p><u>COV Recommendation:</u> Whenever possible, panel reviews should gather potentially transformative "highlights" to share with the wider ITEST community.</p>	<b>APPROPRIATE</b>
<p>4. Does the program portfolio include inter- and multi- disciplinary projects?</p> <p>Comments:</p>	<b>APPROPRIATE</b>

<p>Yes, the program does include inter- and multi-disciplinary projects.</p>	
<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators?</p> <p>Comments:</p> <p>The geographic distribution of Principal Investigators appears to be appropriate; however, there is room for improvement to increase outreach to geographically underrepresented areas.</p> <p>Additionally, there appeared to be geographic clusters of Principal Investigators.</p> <p>There was an appropriate distribution of Principal Investigators between urban, suburban, and rural areas.</p>	<p><b>APPROPRIATE</b></p>
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions?</p> <p>Comments:</p> <p>Awards seem to be primarily granted to four-year universities.</p> <ul style="list-style-type: none"> <li>o <u>COV Recommendation</u>: Given the goals of the ITEST program, the COV wishes to encourage increasing the distribution of primary awardee institutions to include community colleges, school districts, informal science institutions, and community organizations.</li> </ul> <p>The COV encourages broader engagement and continued development of partnerships as well as synergistic opportunities that include community colleges as a key partner.</p> <p>The COV commends the ITEST program in their broad range of partnerships across different types of institutions, with kudos for high rate of engagement with the private sector.</p>	<p><b>NOT APPROPRIATE</b></p>
<p>7. Does the program portfolio have an appropriate balance of awards to new investigators?</p> <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments:</p> <p>The COV commends the high number of new awardees in the ITEST</p>	<p><b>APPROPRIATE</b></p>

<p>program.</p>	
<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Comments:</p> <p>This is a relatively new requirement, and ITEST has done an appropriate job of integrating research and education.</p> <p>The COV encourages the ITEST program to continue funding strategy projects that have robust evaluation designs.</p> <p><u>COV Recommendation:</u> Additionally, ITEST might consider a category within this new research element to encourage efficacy studies that allow strategy projects to explore/investigate the possibilities for scale-up.</p> <ul style="list-style-type: none"> <li>○ As previously mentioned, this could result in four stages of ITEST projects: strategy, efficacy, research, scale-up.</li> <li>○ (Please view the similar COV Recommendation under Section Two, Question One.)</li> </ul> <p>ITEST-funded programs should be encouraged to integrate elements of data-collection that are appropriate to their practices and might be shared as a product of their efforts.</p> <p>In addition, the COV wishes to encourage efforts to establish collaborations between researchers and strategy-type projects in order to support evidence-based evaluation and research designs.</p>	<p><b>APPROPRIATE</b></p>
<p>9. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>Comments:</p> <p>The COV notes that – among target audiences – there is great participation of URMs and fairly good participation of women.</p> <p>The ITEST program did a good job of funding awards that served low-income populations.</p> <p>The COV expresses concerns with the relatively low participation of URM Principal Investigators. The COV recognizes the strong level of female Principal Investigators. The COV notes that while there was reasonable representation of Principal Investigators of African American (10%) and Asian (9%) descent, there are no Principal Investigators of Hispanic heritage (0%). While this may be indicative of the diminishing number of submissions from URMs, this situation deserves continued attention.</p>	<p><b>APPROPRIATE</b></p>

<p><u>COV Recommendation:</u> The COV encourages continued emphasis on the recruitment and support of Principal Investigators from diverse demographic backgrounds with an emphasis on Hispanic Serving Institutions.</p>	
<p>10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments:</p> <p>The COV notes the following reports as strong sources for documenting the relevancy of ITEST in national priorities and constituent needs:</p> <ul style="list-style-type: none"> <li>○ National Research Council Reports: Rising Above the Gathering Storm 2005; Rising Above the Gathering Storm Revisited 2010 - <a href="http://www.uic.edu/index.html/Chancellor/risingabove.pdf">http://www.uic.edu/index.html/Chancellor/risingabove.pdf</a></li> <li>○ National Research Council Report: “A Framework for K-12 Science Education”</li> <li>○ President’s Committee of Advisors on Science and Technology 2010 K-12 STEM Education Report - <a href="http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-stemed-report.pdf">http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-stemed-report.pdf</a></li> </ul> <p>There is also encouragement from the business community in this effort.</p> <ul style="list-style-type: none"> <li>○ “The Case for Being Bold: A New Agenda for Business in Improving STEM Education,” Institute for a Competitive Workforce, U.S. Chamber of Commerce. <a href="http://icw.uschamber.com/publications">http://icw.uschamber.com/publications</a></li> </ul>	<p><b>APPROPRIATE</b></p>
<p>11. Additional comments on the quality of the projects or the balance of the portfolio:</p> <p><u>COV Recommendation:</u> There is a need for longitudinal and retrospective data that will help provide an understanding of the impact of ITEST on STEM career fields.</p> <p><u>COV Recommendation:</u> Utilize common career categories to document the impact of ITEST on career pathways. For example, PISA career awareness and expectations survey items.</p>	

## OTHER TOPICS

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

Some of the areas for improvement listed in previous questions include:

- Developing longitudinal and retrospective studies to measure project and ITEST program outcomes/impacts,
- Transitioning to four-/five-year grants for some awards, and
- Creating a new effectiveness and efficacy studies category within the types of awards granted (e.g., strategy, scale-up).

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.

There is no process that restricts ITEST funding to the middle/high school level, yet there are very few projects funded at the elementary level (grades K-5). The COV suggests that the ITEST program consider investigating the reasons behind the small number of projects at the elementary levels.

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

N/A

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

The next COV might benefit from having a more ITEST-specific COV template that takes into account ITEST-specific issues.

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

There was a large amount of information for the COV to process, and the COV feels it may be useful to provide an organizing/filtering tool that would help the members to prioritize the information.

Additionally, it might be helpful to coalesce/combine the smaller documents into a large binder with a table of contents.

## SIGNATURE BLOCK:

---

For the ITEST COV  
Dr. Eric Jolly  
Chair

Dr. Judy Brown  
ITEST Co-Chair