Request for Clearance: National Science Foundation, Directorate of Education and Human Resources, Division of Research on Learning in Formal and Informal Settings

Data Collection for the Innovative Technology Experiences for Students and Teachers Program Evaluation (ITEST)

SUPPORTING STATEMENT A

Introduction

This request for Office of Management and Budget (OMB) clearance asks for a 3-year clearance for new data collection for the Innovative Technology Experiences for Students and Teachers (ITEST) Program Evaluation, which is administered by the National Science Foundation (NSF)'s Directorate for Education and Human Resources (EHR), Division of Research on Learning in Formal and Informal Settings (DRL).

NSF's ITEST program aims to strengthen the formal and informal learning experiences of K-12 students in order to cultivate their interests in and capacities for science, technology, engineering and mathematics (STEM) careers, with a special emphasis on technology. It also seeks to improve the leadership and knowledge of the community that conducts outreach for STEM learning. Since 2003, ITEST has funded nearly 200 projects to implement, study, and scale up effective strategies to motivate and equip young students to pursue STEM careers. Yet evidence about the program's overall impact is thin, and data are lacking on more and less effective project features—what works and what does not.

To address the lack of evaluative program data, NSF has contracted with SRI International and Inverness Research to perform an evaluation of the ITEST program. The evaluation will consist of two distinct components. The first component is a comprehensive review of the existing project files – referred to as eJackets – collected by NSF. The second component of the evaluation consists of case studies of 24 ITEST projects. The case studies will be based on face-to-face interviews with respondents at ITEST project sites or telephone interviews with off-site respondents. The two data sources – the portfolio review and case study – will then inform an integrated analysis in an effort to address the research questions.

This request for clearance is for the case study component of the study. This introduction provides details on elements not specifically included in this data collection request in order to provide context on the role of the case studies within the broader program evaluation. Specific details of the case study portion of the study are included in the body of Supporting Statements A and B.

Logic Model

The ITEST program invests in projects that vary widely by type (i.e., research, scale-up, and strategies), context (e.g., urban, rural), content focus (e.g., bioscience, engineering, computer

science), setting (e.g., informal, formal), and target population (e.g., teachers, students), among others. Despite these variations, all ITEST projects share a common goal: to expand the STEM workforce by increasing students' capacity for and interest in STEM studies. We begin this section with an overview of the theory of change that specifies how ITEST seeks to attain this goal. We then use the logic model to specify a set of overarching research questions. Note that the logic model represents the program and not the evaluation. Later in the document we specify the aspects of the logic model that the evaluation will be measuring.

Given the complex and multifaceted nature of ITEST, we have developed a logic model to aid in decisions about key aspects of the program that merit research and evaluation. The model is a systematic way to present the relationships among the resources available to create and deliver the program, the activities the program offers, and the anticipated changes or results. It identifies the ultimate outcomes the program seeks to achieve and the assumptions regarding how the program is hypothesized to contribute to those outcomes. The logic model also identifies intermediate outcomes.

Exhibit 1 portrays the logic underlying the ITEST program, beginning with the program's goal of increasing participation in the STEM workforce at the far right bottom of the graphic. Increasing workforce participation generally requires that students successfully attain STEM degrees. We use this term to refer to graduate and undergraduate degrees in a STEM discipline (whether through traditional or nontraditional pathways) (Malcolm et al., 2005) as well as to technical degrees requiring fewer than 4 years of postsecondary schooling. Successful attainment of such degrees generally requires students to leave secondary school with the dispositions and capacities for future STEM study.

Our review of the research points to six central dispositional constructs. Students must have an interest in STEM learning and STEM careers (Girod, 2005; Appleton et al., 2008). Students must possess a self-identity as science learners (Girod, 2005; Kozoll & Osborne, 2004) as well as a sense of self-efficacy (Pintrich & DeGroot, 1990; Thomas, Anderson, & Nashon, 2008; Kind, Jones, & Barmby, 2007). They must have a favorable disposition toward their future participation in science (Kind, Jones, & Barmby, 2007). They must be aware of the value of science in society (Kind, Jones, & Barmby, 2007; Davis-Kean, 2007; Messersmith et al., 2008). Finally, they must believe that they have knowledge of STEM careers (Hurtado et al., 2009).

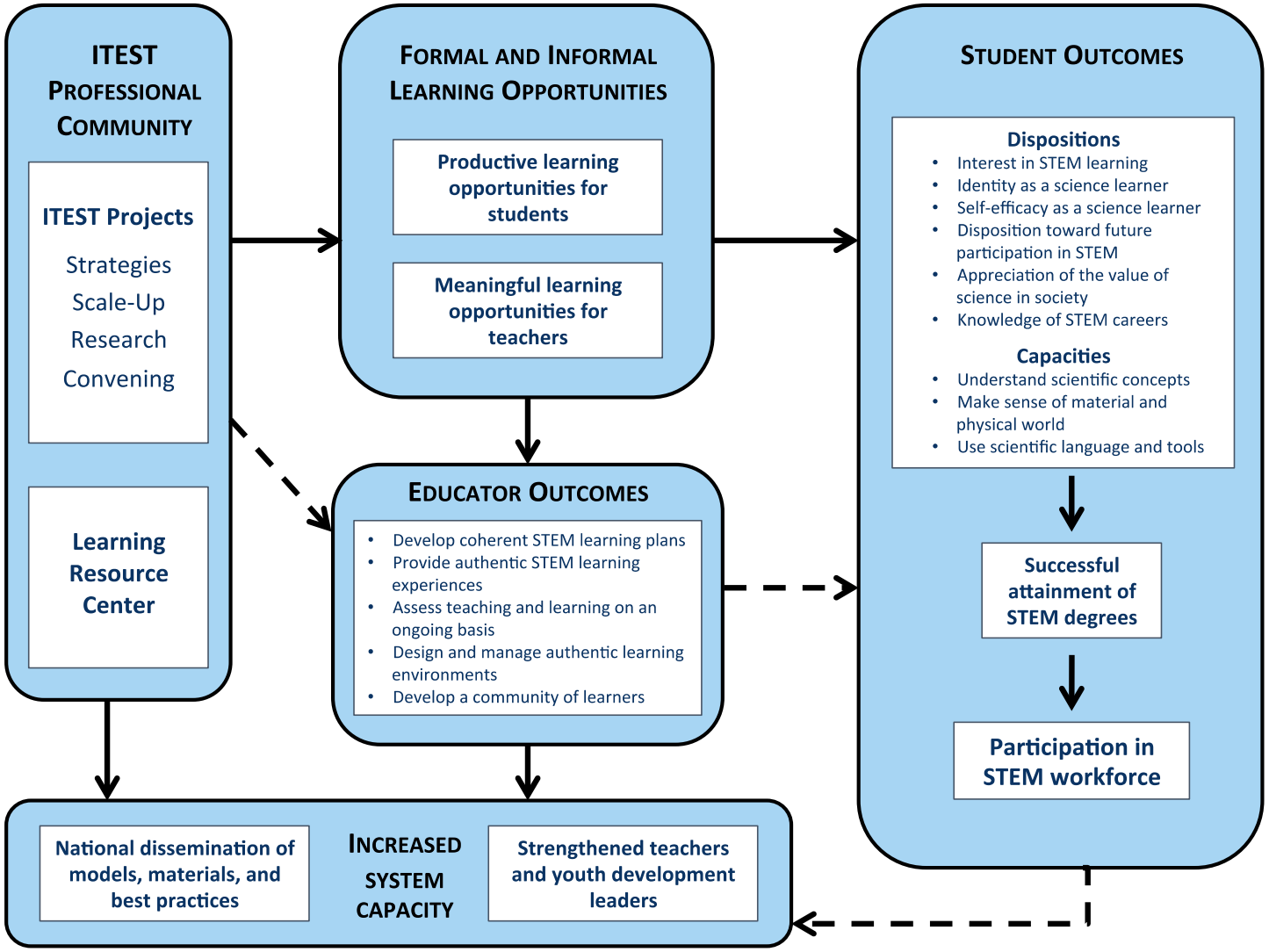
In terms of student capacities for STEM learning, we rely on the National Research Council consensus documents on learning in formal and informal settings (NRC, 2007; 2009). Learners practice and develop scientific capacities as they (1) "come to generate, understand, remember, and use concepts, explanations, arguments, models, and facts related to science;" (2) "manipulate, test, explore, predict, question, observe, and make sense of the natural and physical world"; and (3) "participate in scientific activities and learning practices with others, using scientific language and tools" (NRC, 2009, p. 4).

For students to develop these dispositions and capacities, they must have access to productive learning opportunities. Students must have opportunities to engage with and develop their fluencies with scientific concepts, explanations, arguments, and models (Chinn & Malhotra, 2001) as well as with scientific practices of reasoning, metacognition, data analysis, and mastery of the use of scientific language (Brown, Reveles, & Kelly, 2004). In our own work, we have defined productive experiences as those comprising "rigorous investigation informed by the scientific process that results in new content knowledge and knowledge of how to learn, relevant to students' lives, and providing the opportunity for inspiration that translates into motivation" (American Museum of Natural History, 2010, p. 11).

For teachers to create active, STEM-rich environments, they need opportunities to learn deeper science content and to participate in scientific inquiry themselves (Basista & Mathews, 2002). Many ITEST projects focus on creating just such productive learning opportunities for teachers. The overarching goals are to support teachers to have the capacity to develop coherent learning plans, to guide student learning through authentic experiences, to assess their teaching and student learning on an ongoing basis, to design and manage authentic learning environments, and to develop a community of learners in their classrooms (see NRC, 1996).

Most ITEST projects provide direct service—meaningful learning opportunities—for youth and their teachers. Scale-up projects implement models in a large-scale setting such as across a state, region, or the nation. Other projects involve improving the knowledge base on effective STEM experiences by conducting research or convening researchers and practitioners. Through its convenings, communication strategies, and the work of the Learning Resource Center (LRC), ITEST also seeks to build a professional community that shares lessons learned and works in concert to build the nation's STEM workforce. As the professional community develops and more teachers are trained, the capacity of the system as a whole will expand to foster better learning opportunities even in the absence of ITEST.

Exhibit 1. Logic Model for the ITEST Program Evaluation



Overview of the Evaluation

The model suggests three main research questions, as shown in Exhibit 2.

Exhibit 2. Research Questions

1. What are the projects' impacts? What are the achieved outcomes in key areas for students and teachers in ITEST projects? Do youth who participate in ITEST projects demonstrate greater interest in STEM activities and careers than nonparticipants? To what extent are project evaluations rigorous?
2. What project models are most effective in delivering desired student and teacher outcomes? What project characteristics contribute to these models' success?
3. How can we best characterize and describe ITEST projects? What do the projects do? Who do the projects serve? Where and when are ITEST project activities taking place?

We have designed a comprehensive, multimethod evaluation to address these research questions. The design incorporates a portfolio review and case studies of ITEST projects and outcomes. Exhibit 3 indicates the data sources that we will use to address each research question. OMB clearance is not required for the portfolio review since there is no original data collection, but a description of this method is included in this introduction given its critical role in addressing the research questions.

Exhibit 3. Research Questions and Data Sources

	Data Source						
	Portfolio Review			Case Studies			
Research Question	**Program description**	**Project descriptions**	**Project evaluations**	**Project background**	**Project strategies**	**Project administration**	**Project outcomes**
1. What are the projects' impacts?							
What are the achieved outcomes in key areas for students and teachers in ITEST projects?			X				X
Do youth who participate in ITEST projects demonstrate greater interest in STEM activities and careers than nonparticipants?			X				X
To what extent are project evaluations rigorous?	X		X				X
2. What project models are most effective in delivering desired student and teacher outcomes?							
What project characteristics contribute to these models' success?		X	X	X	X	X	X
3. How can we best characterize and describe ITEST projects?							
What do the projects do?	X	X		X	X		
Who do the projects serve?	X	X			X		X
Where and when are ITEST project activities taking place?	X	X		X	X		

Portfolio Review

To create a comprehensive description of the ITEST portfolio, we will use the logic model presented in Exhibit 1 as the framework for describing the ITEST projects and their evaluations. We will use this framework to describe what the ITEST projects do and in what content areas, who the projects serve, where and when the ITEST projects take place, and how they have changed over time. We also will characterize the intended and achieved outcomes in key areas for students and teachers and assess the level of rigor of the project evaluations. The review will include three components: (1) a description of the ITEST program that details program intent, changes over time, and offers a contextual lens through which to understand individual projects; (2) descriptions of ITEST projects that characterize important descriptive features of the projects and identify project "models;" and (3) a review of project evaluations that characterizes and assesses the quality of project evaluations. Our approach for each of the three components is described in detail below.

Program Description

The first component of the portfolio review is a description of the ITEST program as a whole, including its evolution over time. This description will be derived from a review of ITEST program solicitations, interviews with NSF ITEST program officers, and analyses of the LRC. A portion of this review has already been completed and has informed changes to the study design.

Examine ITEST solicitations. From 2003 through 2011, NSF has funded nine consecutive cohorts of ITEST projects. While the overall structure and purpose of the ITEST program has remained intact, the program solicitations have contained changes that impacted the types of projects funded, the populations served by ITEST projects, and the project evaluation requirements. Because the solicitations have changed over time, it is necessary to understand and describe these changes in order to provide a comprehensive picture of the ITEST program. To do so, we reviewed all ITEST program solicitations released between 2003 and 2009, and for each solicitation, we identified:

- Stated goals for awarded projects;
- Desired or required characteristics of ITEST projects (i.e., populations and activities that the solicitation recommends or requires);
- Requirements or recommendations for project evaluation methods.

We then compared and contrasted the program solicitations in order to describe changes in the ITEST program over time. As our program evaluation continues, we will review the more recent solicitations.

Interview program officers. In order to get a broad perspective on the ITEST program, we interviewed five ITEST program officers who have been involved with the program since its inception. In our interviews, we asked program officers to provide information about the background of the ITEST program, the changes they have perceived since the program began, and how they would characterize the ITEST projects. We also solicited their input with regard to perceived gaps in the ITEST portfolio, important outcomes from ITEST projects, and examples of good formative and summative evaluations. The program officers provided us with a wealth

of descriptive information, and we will use this information in our general description of the ITEST program, as well as our review of how the program and projects have changed over time.

Characterize the role of the Learning Resource Center (LRC). Funded by NSF in conjunction with the first cohort of ITEST projects, the LRC is charged with providing technical assistance and support to ITEST projects. As shown in the logic model, the LRC plays an important role in the ITEST community. In this role, the LRC disseminates information about ITEST projects, convenes annual meetings of ITEST principal investigators (PIs), and strives to build community among ITEST grantees. In order to describe the role of the LRC within the ITEST community, we will review the LRC website, examine external evaluations of the LRC (included in the NSF eJacket system), and interview LRC staff.

Analysis. Data will be analyzed in order to draw a general picture of the ITEST program, including NSF's intent and the program's evolution over time. As such, we will take a qualitative analytic approach that draws on the principles of content analysis (e.g. Holsti, 1969) to identify broad themes across the data and track changes over time. In particular, we will detail the evolution of program goals, desired or required project characteristics, and evaluation expectations. This approach will offer an important contextual background to guide direct data collection and to ascertain whether program intent was realized.

Project Descriptions

The second component of the portfolio review is a description of the entirety of projects funded through the ITEST program. This review will include all project types: strategies, scale-ups, and research projects. To describe the portfolio of projects, we will gather and review data from the Management Information System (MIS) maintained by the LRC and the NSF eJackets in order to describe project goals, activities, partnerships, populations served, and dissemination strategies. We will then use these data from the MIS and eJackets to identify project models. Throughout the portfolio analysis task, we will consider where we may add the most value to existing information collected and presented by the LRC given our access to the eJacket system.

Gather and review data from the MIS. Over the past 8 years, the LRC has collected a great deal of descriptive information on ITEST projects through its project profiles and annual questionnaire of project PIs (starting in 2009). The project profiles contain short descriptions of ITEST projects in all eight cohorts, which describe project goals and activities. They also contain basic descriptive data, which can be used to categorize ITEST projects across an array of dimensions such as project type (e.g., research, scale-up, strategies), populations served (e.g., students, teachers), urbanicity (e.g., urban, rural, suburban) and area of focus (e.g., engineering, computer science, geography). The annual survey of project PIs delves deeper into who participates in ITEST projects, how often they participate, and in what kind of activities they participate. The LRC maintains these data in its MIS. So as not to duplicate data collection efforts, we requested and received access to these data and have begun preliminary analyses to characterize and categorize ITEST projects.

Gather and review data from eJackets. NSF's eJackets are electronic file folders that contain project documents such as project proposals, annual and final reports (including evaluation reports), and proposal funding justifications. We have begun to review each project's

eJacket in order to supplement the descriptive data from the MIS, identify project partners and participating organizations, and identify dissemination strategies.

Analysis. The final step of the analysis will be model development, for which we will identify a set of common project models. This process involves identifying a set of project characteristics that "cluster" together. An example of a model might be urban-based projects involving partnerships between a school system and museums or other science-rich institutions to provide after-school experiences to K-12 students. The project models will be identified inductively from the data in the MIS and eJackets. Thus, the degree to which we will be able to create a set of unique models across settings and cohorts will depend on the empirical data.

Project Evaluations

The third component of the portfolio review is an analysis of the project evaluations. The goal of the evaluation review is to broadly characterize the types of evaluations conducted by ITEST project evaluators, assess the quality and rigor of these evaluations, and document the achieved outcomes in key areas for students and teachers. Data on project evaluations will be extracted from the eJacket system. For completed projects, we will review the project evaluations included in the final reports. For on-going projects, we will review the evaluation plans described in the proposals and the evaluation reports included in the annual reports.

Characterizing the Evaluations. While the ITEST solicitations require that ITEST project PIs conduct an evaluation of their ITEST project, there are few requirements that guide the type of evaluation to be conducted. As such, project evaluations employ disparate evaluation methodologies and serve a wide array of purposes. Given this diversity, we will begin our evaluation of each project evaluation by identifying the purpose of the evaluation (formative or summative) and characterizing the evaluation methodologies (e.g., experimental, quasi-experimental, one group pre/post, qualitative) employed in the project evaluations. Next, using the evaluation plans and evaluation reports, we will identify the outcomes of interest for students and/or teachers in each project evaluation. We will then categorize the outcomes and present a summary of the types of outcomes targeted by the evaluations, as well as the relative success of projects in achieving the outcomes across all ITEST projects. Finally, we will assess the quality and rigor of the ITEST project evaluations. We will draw on the criteria used by the NSF-funded Online Evaluation Resource Library (OERL), which defines quality criteria for sound project evaluation plans, instruments, reports based on best practices information from the Joint Committee on Standards for Educational Evaluation, and the American Evaluation Association's Guiding Principles for Evaluators. The following questions, based on the OERL, will guide our review of each ITEST project evaluation:[1]

1. Does the evaluation reflect an understanding of the project logic model, including elements such as the goals/objectives, short-term and long-term outcomes, activities, stakeholders, and context?
2. Does the evaluation make clear what questions are to be answered?

[1] Note that these criteria apply to projects that have served youth or educators, not research projects.

3. What is the evaluation design? Is the evaluation design in line with the goals of the evaluation?
4. What is the sampling frame for the evaluation? What types of data are collected? How are the data collected? When is the data collected?
5. What instruments are used to collect data? What is the quality of the data collection instruments?
6. How are the data analyzed? Are the analysis methods appropriate, given the research questions and purpose of the evaluation? Are the interpretations of the results supported by the data?
7. What conclusions and recommendations were reported? Were the recommendations and conclusions backed by the data?

We will summarize answers to these questions to provide a description of the level of quality and rigor of project evaluations across all ITEST projects.

Analysis. Similar to the analysis of the project descriptions, the first step of the evaluation analysis will focus on descriptive statistics. This step will provide a descriptive summary of the range of evaluation purposes, methodologies, and outcomes assessed. The second step of the analysis will apply the evaluative criteria discussed above to assess the rigor of each evaluation and the value of the information it offers for the individual project and for the program overall. This evaluative lens also will enable us to identify exemplary evaluation practices and key challenges that projects encounter in conducting rigorous evaluations.[2]

Case Studies

Over the course of the study, we will conduct case studies of 24 ITEST projects to understand how the projects function, what characteristics contribute to a model's success, and the impact of the projects on participants. We discuss in detail our approach to the 24 case studies in the body of the OMB package since they are the topic of this request for clearance.

Integrated Analysis

Once the portfolio review and case study analysis are completed, we will conduct an integrated analysis that looks across the multiple data sources. The integrated analysis will focus on three lines of inquiry critical to ITEST and to NSF's ongoing support of similar programs: 1) through what mechanisms, and under what circumstances, are the ITEST projects resulting in changes in formal and informal learning opportunities, teacher outcomes, and student dispositions and capabilities; 2) which project models are most effective in achieving desired goals; and 3) how can the ITEST program, and similar NSF-funded programs, be made more evaluable?

To understand through what mechanisms, and under what circumstances, ITEST projects result in positive outcomes, we will expand on findings from the portfolio review by drawing on the rich and highly contextualized case study data. Findings from the portfolio review will

[2] As discussed in the "Integrated Analysis" section below, these findings will be considered together with case study data to offer insight into NSF's ongoing efforts to make the programs it funds more evaluable.

provide program-level data on project components and outcomes. Case study data will provide details about the particular contexts in which the projects are operating and the learning experiences provided, and specifics on how project implementation evolves over time. By analyzing these data together, we will be able to identify the characteristics of successful projects across the ITEST portfolio.

To understand what project models are most effective in achieving project goals, we will use case study data to test and elaborate the project learning models that emerge from the portfolio review. Whereas the portfolio review will offer broad outlines of the STEM learning models employed across the ITEST program, case study data will enable us to refine these models in light of a nuanced understanding of on-the-ground practices. In order refine the learning models, we will use an inductive analytic strategy (Erickson, 1986). We will begin the task by analyzing data from the portfolio analysis to develop working theories of potential models. We will then test and refine these models with iterative passes through the more descriptive and explanatory case study data. Once we are satisfied that additional passes through the data will yield no new insights, we will apply a comparative lens across models to better understand which are most effective and which are most problematic in achieving desired goals.

To understand how the ITEST program, and similar NSF-funded programs, can be made more evaluable, we will scrutinize data about ITEST evaluation practices across the portfolio, using case study data to better understand the successes and challenges projects encounter in conducting rigorous evaluations. In this effort, we will seek to understand what kinds of information are most useful to individual projects and to NSF, as well as how that information may be best collected, analyzed, and communicated. Moreover, we will explore ways in which the needs of individual projects for timely and tailored information may be balanced with NSF's need for program-level information that is commensurable across projects.

Taken together, the components of the integrated analysis will help NSF tailor solicitations in ways that lead to projects with a higher likelihood of success, fund projects employing more promising models, and rigorously evaluate the effectiveness of funded projects. As such, this evaluation will help NSF to continue making investments likely to lead to desired outcomes.

A. Justification

A.1. Circumstances Requiring the Collection of Data

NSF's Innovative Technology Experiences for Students and Teachers (ITEST) program aims to strengthen the formal and informal learning experiences of K-12 students to cultivate their interests in and capacities for science, technology, engineering and mathematics (STEM) careers, with a special emphasis on technology. It also seeks to improve the leadership and knowledge of the community that conducts outreach for STEM learning. Since 2003, ITEST has funded nearly 150 projects to implement, study, and scale up effective strategies to motivate and equip young students to pursue STEM careers. Yet evidence about the program's overall impact is thin, and data are lacking on more and less effective project features—what works and what does not.

To address the lack of evaluative program data, NSF has contracted with SRI International and Inverness Research to perform an evaluation of the ITEST program. The evaluation will

consist of two distinct segments as described in the introduction. The first segment is a comprehensive review of the entire portfolio of ITEST projects that does not require original data collection. The review will be conducted using existing electronic files, known as eJackets, maintained by NSF. The second segment of the evaluation consists of case studies of 24 ITEST projects based on three-day site visits.

A.2. Purposes and Uses of the Data

The overall purpose of the data collection is program evaluation. The data obtained from the data collections will be used to document the effectiveness and outcomes of the ITEST program and to assess achievement of program goals. Documenting the short and long-term impacts of the ITEST program will inform future program policy decisions and contribute to the wider NSF discussion on the future of science, technology, engineering, and mathematics (STEM) education.

Specifically, the evaluation of the ITEST program is designed to answer the research questions shown in Exhibit 2 above. The findings from the integrated analysis also will help NSF tailor solicitations in ways that lead to projects with a higher likelihood of success, fund projects employing more promising models, and rigorously evaluate the effectiveness of funded projects. As such, this evaluation will help NSF to continue making investments likely to lead to desired outcomes.

A.3. Use of Information Technology to Reduce Burden

This collection will involve face-to-face and telephone interviews during site visits to institutions with ITEST projects. While speaking with individual respondents in person is preferred, telephone interviews will be scheduled if telephone interviews would reduce burden on the respondent.

A.4. Efforts to Identify Duplication

The eJacket system at NSF and the management information system (MIS) database at the ITEST Learning Resource Center (LRC) contain data on all ITEST-funded projects. All previously collected data has been gathered and catalogued by the research team as part of the portfolio review task, and as a result, the case studies will only collect data in areas where it has not been previously collected. Site visitors will be trained on the existing data sources and will tailor protocols to ensure maximum efficiency while on site.

A.5. Efforts to Minimize Burden on Small Businesses or Other Entities

It is unlikely that this program evaluation will have an impact on small business. Site visits will include speaking with ITEST grantee partners, who may represent large companies, small businesses, K-12 school districts, higher education institutions, government offices, non-profits, informal institutions, and professional membership organizations. Partners will be asked questions about their ITEST project, how it is being implemented, and the extent to which various organizations and stakeholders have been involved and been affected by the project. If the program ultimately succeeds in increasing youth interest in STEM careers, many small businesses may benefit in the longer term.

A.6. Consequences of Not Collecting the Information

If the information is not collected, NSF will not be able to document the effectiveness and outcomes of the ITEST program. Moreover, it will not be able to assess the degree to which the program is meeting its goals. This lack of information may hamper program management and monitoring capabilities. In addition, NSF will be unable to comply fully with the Congressional mandate that NSF evaluate its science, technology, engineering, and mathematics (STEM) education programs.

A.7. Special Circumstances Justifying Inconsistencies with Guidelines in 5 CFR 1320.6

The data collection will comply with 5 CFR 1320.6.

A.8. Consultation Outside the Agency

One notice has been published to solicit comments from the public. The notice was published in the Federal Register on January 24, 2011 (Volume 76, Number 15, pages 4137–38). A copy of the text of the notice is included in Appendix B. No substantive public comments were received in response to the notice.

The evaluation design was developed in consultation with NSF staff in the Directorate for Education and Human Resources (EHR) and the Division of Research on Learning (DRL) through which the evaluation of the ITEST program is funded, LRC staff, and a panel of consultative experts selected for their experience and content knowledge on evaluation design and STEM. The panel of consultative experts is shown in Exhibit 4.

Exhibit 4: Panel of Consultative Experts

Name	Affiliation
Dr. Melvin Mark	Department Head, Department of Psychology, Pennsylvania State University
Mr. Jason Lee	Executive Director, Detroit Area Pre-College Engineering Partnership
Dr. Nichole Pinkard	Visiting Associate Professor of Interactive Media, School of Computing, DePaul University
Dr. Karen Peterman	Independent evaluation consultant; former external evaluator of multiple ITEST projects
Dr. Gerald Knezek	Professor of Learning Technologies and Director of the Institute for the Integration of Technology into Teaching & Learning, University of North Texas

A.9. Payments or Gifts to Respondents

No payment or gifts will be provided to participants in any data collection activities.

A.10. Assurance of Confidentiality

Interviewees will be advised that any information on specific individuals will be maintained in accordance with the Privacy Act of 1974. The data that are collected will be available to only NSF officials and staff and to the evaluation contractor. The data will be processed according to Federal and State privacy statutes. Detailed procedures for making information available to

various categories of users are specified in the Education and Training System of Records (63 Fed. Reg. 264, 272 January 5, 1998). That system limits access to personally identifiable information to authorized users. The data will be used in accordance with criteria established by NSF for monitoring research and education grants and in response to Public Law 99-383 and 42 USC 1885c. The information requested may be disclosed to qualified researchers and contractors in order to coordinate programs and to a Federal agency, court or party in a court, or Federal administrative proceeding, if the government is a party.

Participants in the case studies will be assured that the information they provide will not be released in any form that identifies them as individuals except as may be required by law. Evaluation findings about the ITEST projects will be reported in aggregate form in all reports. The contractor, SRI International, has extensive experience in collecting information and maintaining the confidentiality, security, and integrity of data.

The following standards and procedures will safeguard the privacy of interviewees and the security of the data that are collected, processed, stored, and reported.

- Project team members will be educated about the Privacy Act of 1974, the need to ensure study participants about confidentiality of their responses, and ways data and other sensitive materials are to be handled. They will be cautioned not to discuss interview results with others outside the evaluation. Within the evaluation team, discussions will be restricted to the essential needs of a particular set of case studies.

- All individuals will be informed that their participation in the ITEST evaluation study is voluntary and that, if they are willing to participate, their privacy will be assured, except as may be required by law. Participants will also be informed of the purposes of the data collection and the potential uses of the data collected.

- Prospective interviewees will be given a Consent Form (Appendices C and D) that includes the same assurance of confidentiality, as well as the purposes of the study, potential risks and discomforts, and benefits of participation.

- Personal information (names, addresses, phone numbers, email addresses) will be collected solely for the purpose of identifying and contacting study participants, and will not be distributed outside the evaluation team, except as required by law.

- All recordings of interviews, interview notes, and other project-related documents will be stored on secure servers that are accessible only to authorized staff members. Access to response databases, as well as to other electronic and hard-copy materials used to record collected data, will be limited to Patrick Shields (PI) and only those researchers who are granted access by the PI.

- All interview results recorded on paper containing identifiable data will be shredded as soon as the need for the hard copies no longer exists.

- All basic computer files will be duplicated on backup servers to allow files to be restored in the event of unrecoverable loss of the original data. These backup files will be stored under secure conditions in an area separate from the location of the original data.

- Reports to NSF will include participants' responses only in aggregate form. Responses will not be associated with any specific institution or individual. No information that could be used to identify individuals or their institution will be revealed to anyone outside the study team, except as may be required by law. The primary analysis for case studies will be a cross-case analysis; individual projects will be described only to support cross-case themes or as exemplars.

A.11. Questions of a Sensitive Nature

There are no questions of a sensitive nature in the data collection. All respondents will be informed that providing the requested information is voluntary. Respondents may choose not to provide information that they feel is privileged.

A.12 Estimates of Response Burden

In this clearance request, the evaluation study relies on interviews with ITEST Principal Investigators and Co-PIs, project staff, project partners, and evaluators, and focus groups with teachers, students, and parents. The interview and focus group protocols used in this data collection appear in Appendix A. This section provides estimates for the response burden of the case studies.

We are seeking OMB approval for **seven** different types of interview protocols contained in Appendix A.[3] For all respondent groups, except for the Principal Investigator (PI), burden consists of the time spent being interviewed at their sites. Interviews are expected to last no longer than one hour. Principal Investigators will spend an additional 3 hours, in addition to the interview time, working with their staff on: compiling lists of faculty, staff, students, and partners to be interviewed; helping to arrange interviews; gathering documents; and meeting with the site visitors. Respondents will not incur any equipment, postage, or travel costs. Exhibit 5 provides the estimated burden by each respondent type.

[3] There are eight types of respondents but the PI and Co-PIs share a protocol; thus, there are only seven protocols.

Exhibit 5: Burden Hours by Respondent Type

Respondent Type	Respondents per Site*	Total Respondents*	Burden Hours Per Respondent	Total Burden Hours
Principal Investigators	1	24	4 (includes 3 hours preparation time)	96
Co-PIs	2	48	1	48
Project Staff	2	48	1	48
Evaluators	1	24	1	24
Project Partners	3	72	1	72
Parents	5	120	1	120
Teachers	12	288	1	288
Students	12	288	1	288
TOTAL, All Interviewees	**38**	**912**		**984**

*The number of respondents is an estimate of the maximum burden amount, not an absolute value.

For the entire duration of this data collection activity, the total number of respondents is estimated to be 912, with a total burden of 984 hours. This burden estimate represents a maximum possible amount. The actual burden is likely to be somewhat smaller, depending on the types of projects visited.

The table below gives the overall cost, based on labor burden, for all respondents and also the cost for each type of respondent. The total cost for all interviews is estimated to be $22,178.64. The cost for each type of respondent is calculated by multiplying the total annual burden hours by their average hourly rate. Exhibit 6 displays the calculation by respondent type.

Exhibit 6: Cost to Respondents for Burden Hours, by Respondent Type

Respondent Type	Number of Respondents	Burden Hours Per Respondent	Total Burden Hours	Average Hourly Rate[4]	Estimated Total Costs
Principal Investigators	24	4	96	$36.09	$3,464.64
Co-PIs	48	1	48	$36.09	$1,732.32
Project Staff	48	1	48	$36.09	$1,732.32
Evaluators	24	1	24	$36.09	$866.16
Project Partners	72	1	72	$36.09	$2,598.48
Teachers	288	1	288	$24.09	$6,937.92
Students	288	1	288	$7.25	$2,088.00
Parents	120	1	120	$22.99	$2,758.80
TOTAL, All Interviewees	**912**		**984**		**$22,178.64**

A.13 Estimate of Annualized Capital and Maintenance Costs to Respondents

There are no respondent costs associated with these data collections beyond those included in the estimates presented in Section A.12.

A.14 Estimates of Annualized Costs to the Federal Government

The estimated total cost to the Federal government of all data collection, analysis, and reporting activities associated with the ITEST program evaluation is $2,113,534. The average annual cost to the Federal government is estimated at $704,511. This estimate includes costs

[4] The estimated hourly rate for PIs, Co-PIs, evaluators, project partners, and project staff is based on national median salaries for associate professors in computer and information sciences, education, engineering, engineering technologies, and mathematics and statistics. The average median salary of these five job titles combined is $75,062. Divided by the 2,080 hours in a standard work year, this calculates to an average hourly rate of $36.09. The source of this information is the 2010/2011 National Faculty Salary Survey, conducted by the College and University Professional Association for Human Resources (CUPA-HR), www.higheredjobs.com/salary. The rate for teachers is based on national median salaries for the job titles of elementary school, middle school, and high school teacher. The source of this information is the Department of Labor Educational Services 2010–2011 Edition earning as of May 2008, which can be found at http://stats.bls.gov/oco/cg/cgs034.htm#earnings. The rate for parents is based on average hourly earnings in June 2011 for all employees as reported by the U.S. Bureau of Labor and Statistics. The source of this information can be found at http://stats.bls.gov/bls/newsrels.htm#OCWC. The hourly rate for students is based on minimum wage information effective July 24, 2011, obtained from the U.S. Department of Labor at http://www.dol.gov/dol/topic/wages/minimumwage.htm.

already invoiced, plus budgeted future costs that will be charged to the government for the portfolio review, data collection, analysis, and reporting.

The ITEST contract period covers three years, from FY 2010 to FY 2013. The portfolio analysis task will be conducted in 2011, 2012, and 2013. The case studies will be conducted in 2012 and 2013. The final report will be delivered in September 2013.

A.15 Changes in Burden

There are no changes in burden as this is the initial request for clearance.

A.16 Schedule and Plans for Data Collection and Reports

The evaluation of the ITEST program is being conducted over the course of three fiscal years, FY 2010 through FY 2013. Work on this evaluation began in late 2010 with a review of existing ITEST project reports and project evaluations and development of a logic model and evaluation plan, in consultation with ITEST program officers and other NSF EHR and DRL staff. The portfolio review began in the summer 2011 and will continue through the summer 2013. The 24 case studies will begin immediately following OMB clearance, and end during the summer of 2013 at the latest. Analysis will be ongoing from the beginning of data collection through September 2013, when the final report will be completed.

Exhibit 7: Schedule of ITEST Data Collections and Reports

Task	Year 1				Year 2				Year 3			
	2010	2011			2011	2012			2012	2013		
	F	W	Sp	S	F	W	Sp	S	F	W	Sp	S
Analyze portfolio				●	●	●	●				●	●
Conduct case studies**								●	●	●	●	
Final Report												●

* **F** = October, November, December; **W** = January, February, March; **Sp** = April, May, June; **S** = July, August, September

** Pending OMB approval

A.17 Approval to Not Display Expiration Date

Not applicable.

A.18 Exceptions to Item 19 of OMB Form 83-I

No exceptions apply.