Vermont's Ed-Tech Program: Interim Evaluation Report

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Introduction

The Enhancing Education Through Technology (Ed-Tech) program is a funding source authorized under Title II, Part D, of the No Child Left Behind Act (NCLB, 2002). Ed-Tech is administered by the U.S. Department of Education through its Office of School Support and Technology Programs. According to a review conducted by the State Educational Technology Directors Association (SETDA; 2010), funding available under the Ed-Tech program support NCLB goals in the following ways:

- By closing the achievement gap by providing access to smart computing devices, digital content, and open education resources for all students via 21st century learning environments that enhance teaching and learning with technology integration
- By supporting the development of highly qualified teachers with online courses, communities of practice, instructional technology coaches, and virtual communication to ensure flexibility and access
- By using data for school improvement and individualizing instruction for all students

Under these broad parameters, each state education agency (SEA) has the latitude to set its own priorities. Each SEA receives its allotment of Ed-Tech funding on the basis of their share of Title I, Part A, funding (i.e., NCLB funding for economically disadvantaged students). Program guidelines stipulate that at least 50 percent, and up to 100 percent, of the available funds must be allocated to local education agencies (LEAs) through a competitive grant process.

In Vermont, half the Ed-Tech funds are allocated by formula, which means that districts receive funding on the basis of their proportional share of Title I funding. The other half of Ed-Tech funds are allocated through competitive grants. These grant programs are designed to support the specific goals of the Vermont Ed-Tech program, which are to

- Lead to changes in classroom practice as teachers participate in professional development to learn how to integrate technology into their classroom instruction.
- Increase the ability of principals and other school leaders to support and evaluate teacher practices in technology integration through the professional development program provided as part of specific programs.
- Expand student access to flexible learning environments.
- Increase students' mastery of the 21st century skills required for success in meeting the Vermont grade-level expectations for each subject area or discipline through providing electronic learning resources for students that is supported by the teacher and school leaders' professional development programs.
- Be sustainable and expandable beyond the grant years and beyond the grant participants as a result of the professional learning networks that are created during the grant program.

To address these goals, Vermont's Ed-Tech program launched five grant-funded programs:

- **Content-based grants** were awarded to 53 grantees within 39 schools with the goal of providing modest financial assistance to schools with high poverty and the greatest need for technology support, including schools identified for improvement under NCLB. Through the grant, schools developed programs to integrate technology and equipment into schools based on specific content areas, such as reading, English/language arts, science, and health. Grant awards ranged from $2,000 to $10,000 per site. Under the grant, the nature of the technology may vary by individual site and may include equipment, hardware, software, books, materials, or other technology maintenance supplies needed to fulfill the goal of the grant. Examples from specific sites are software, such as Adobe Photoshop and Rosetta Stone; equipment such as digital cameras, heart rate monitors, and interactive whiteboards; and accessories such as equipment carts and hardware protection plans.
- The **Impacting Tobacco Prevention With Technology** (ITPT) program combines Ed-Tech funds with State of Vermont Tobacco Use Prevention Program funds in order to enhance existing tobacco-use prevention education by integrating technology into health curricula and teaching methodologies. In addition, the ITPT program assists schools in developing collaborative instruction across subject areas (such as health, science, language arts) and provides individual schools with the technology to facilitate active and kinesthetic instruction for tobacco prevention efforts. Grants were awarded to four grantees in the amount of $12,500, and one lead grantee in the amount of $37,500, for a total of five grants awarded. Through the grants, ITPT sites were able to purchase SMART Boards and supporting equipment, such as projectors, software, computers, cameras, and SMART Response Systems for teaching the tobacco prevention curriculum.
- The **Vermont Virtual Learning Cooperative** (VTVLC) provides K–12 programs and courses in a wide variety of subject areas by partnering with schools across the state to offer online classes to students around the state. Schools receive seats for their students in other courses being offered through the cooperative in exchange for providing a teacher to teach an online course in the cooperative. In addition, VTVLC offers professional development for teachers, guidance counselors, and administrators on topics that involve online education and learning. Seven career and technical education regions were selected to participate in Phase 1 of the VTVLC program, representing more than 30 high schools and middle schools. Each region will supply two Phase 1 teachers, who will in turn serve as mentors or lead teachers for an additional 12 teachers per region in Phase 2. This will result in a total of 98 teachers supported by the grant (14 in Phase 1 and 84 in Phase 2). Through the Ed-Tech grant, this project utilizes Web 2.0 technology to create a distance-learning portal and support program that will lead to a statewide system of infrastructure and professional preparation for the teachers, guidance, and administrative personnel of Vermont.
- The **Learning Network of Vermont** (LNV) is a videoconferencing network, currently operating in 104 elementary, middle, and high schools in Vermont with the goal of promoting flexible learning environments for students. Grant funds allowed LNV to

create a website of resources and information, develop an online scheduling and meeting control system, and offer a minigrant program to participating sites offering cameras.

- The **eLearning Project** is based on six demonstration sites that will serve as a model for other schools in making the transition to 21st century learning in Vermont, as well as community engagement with 21st century schools. The purpose of the program is to assist teachers and school leaders, through research-based professional development, to become more proficient in effective student-centered, technology-rich teaching and learning. Through the eLearning Project, participants also have access to an interactive network of resources that supports their ongoing work, with the ultimate goal of establishing a statewide communication network to support educators in their work. Technology was not distributed at the school level as part of this grant program, except that each site received a FlipCam for use in documenting and reflecting upon their work throughout the year.

Funding in support of these programs were first disbursed in January 2010. Thus, this interim evaluation reflects the experiences of grantees during the second half of the 2009–10 school year.

Vermont Ed-Tech Program—Evaluation Overview

The evaluation of the Vermont Ed-Tech program is intended to provide formative and summative feedback to the Vermont Department of Education (VTDOE). The evaluation is focused on the five competitive grant programs reviewed above. The first phase of the evaluation was a discovery phase, which included the following information-gathering efforts:

- A kickoff meeting in Montpelier, Vermont, attended by the evaluation team, the director of the Ed-Tech program, and managers of the individual grant programs
- Development of program profiles based on reviews of grant documents
- Follow-up interviews with grant directors to resolve ambiguities present in the profiles

On the basis of the discovery phase, the following five evaluation questions (and subquestions) were specified:

1. To what extent and with what fidelity are the grantees of the five Ed-Tech-funded competitive programs making progress toward their stated objectives? What has facilitated or hindered progress?
   - 1a. To what extent have grant funds been spent so far, and on what?
   - 1b. What trainings and other program activities are being offered?
   - 1c. What technology resources have been, and will be, purchased, distributed, and supported?
2. How effectively do schools support the implementation of project goals?
   - 2a. What is the extent of teacher (and other staff) participation in program activities?

2b. What are opinions of these participants of the quality and effectiveness of professional development?

2c. To what extent are teachers provided opportunities to collaborate on implementing program objectives for technology integration?

2d. To what extent do administrators support, advocate, and encourage technology integration?

2e. To what extent, and from what sources, do teachers receive technology support?

3. Do the Ed-Tech-funded competitive grant programs promote technology integration in support of student-centered learning?

   3a. As a result of the program, to what extent did teachers gain knowledge and skill in inspiring student creativity, developing digital-age learning experiences and assessments, and working with digital-age technology?

   3b. What impact did the program have on the quantity and quality of technology-integrated learning opportunities for students?

4. What are learning outcomes of the program in terms of student engagement and motivation and mastery of Vermont grade-level expectations?

5. To what extent are changes in teaching and learning adopted and sustained, as indicated by continued and expanded use of such practices by teachers and school leaders who took part in the program and plans for sustaining funding (if necessary) once grant ends?

Purpose and Organization of Report

The purpose of this interim report is to provide formative feedback about the stage of implementation of each program, including detail on expenditures of funds to date. The report addresses all five evaluation questions to the extent appropriate to the early stages of these programs.

Data Collection

To this end, we administered surveys to two types of participants:

- **Grant managers—**individuals who manage the grant awarded through a competitive process to a specific school or district site.
- **Teachers**—the intended participants in and targets of the grant.

Two programs, ITPT and content-based grants, were singled out for closer examination through interviews. These programs tended to be at a more advanced stage of implementation than the other programs. In particular, the ITPT program was nearly complete by the end of the 2009–10 school year. Findings from the surveys and interviews are presented together to answer the five evaluation questions.

Survey Data Collection

Survey design and validation. Surveys of teachers and grant managers were designed to address the evaluation questions that each respondent type was able to address. For example, only the grant manager survey included items about the use of grant funds, and only the teacher survey included items eliciting ratings of the quality of professional development. The surveys were designed to address the constructs that are the subject of the evaluation questions. A construct is a core idea, often measured by a series of survey items. Examples of constructs are "quality of professional development" and "change in teacher knowledge and skill." Three of these constructs were developed from the International Society for Technology in Education's (ISTE) *National Educational Technology Standards for Teachers* (NETS-T). These three constructs aligned with Question 3a, which refers to the impact of participation on teacher knowledge and skill. Three standards from the ISTE NETS-T aligned well with this question:

- **Digital-age work**—the teacher's ability to use digital tools for a variety of tasks, such as communication, collaboration, and constructing classroom materials
- **Design and develop digital-age learning experiences and assessments**—the ability to "design, develop, and evaluate authentic learning experiences and assessment incorporating contemporary tools and resources to maximize content learning in context"
- **Facilitate and inspire student learning and creativity**—The ability to "use knowledge of subject matter, teaching and learning, and technology to facilitate experiences that advance student learning, creativity, and innovation in both face-to-face and virtual environments"

Individual items under each of these constructs were developed from elaborations of the standards provided by ISTE (2008). We conducted a psychometric evaluation of these constructs to determine whether its items could be combined into a single scale score. One scale, "designing and developing digital-age learning experiences and assessments," could reliably be reported as a single scale score (rather than item by item). The individual items composing this scale are as follows:

- Design learning experiences that incorporate digital tools and resources.
- Enable students to pursue their individual curiosities through technology.
- Allow students to make choices for their learning.
- Customize learning activities to address students' diverse ability levels.
- Collect various kinds of evidence of student learning.
- Design assessments that are appropriate for project-based learning.
- Use student assessments to inform future lessons.

Respondents. Sixty-seven of 87 grant managers responded to the survey (77 percent response rate). The majority of grant manager respondents (54 percent) indicated that they worked with content-based grants, and none of the respondents reported being a grant manager for the Learning Network of Vermont (this reflects a transition in the leadership of this program that occurred at the time of the survey). Nine survey respondents did not indicate the grant program with which they were affiliated; therefore, their responses are not included in the tables where the responses are disaggregated by program type.

Ninety-seven of 206 teachers responded to the survey (47 percent response rate). The majority of teacher respondents (60 percent) indicated that he or she works with content-based grants. One teacher respondent indicated that he or she works with more than one grant program, the eLearning program and a content-based grant; therefore, some tables may total more than 100 percent when disaggregated by program type.

Table 1. Grant Manager Survey Respondents

Vermont Ed-Tech Grant Program	Invitations	Responses	Response Rate	Percentage of Respondents
Content-based grants	52	36	69.2%	53.7%
eLearning Network	16	10	62.5%	14.9%
Impacting Tobacco Prevention With Technology	7	7	100.0%	10.4%
Learning Network of Vermont	1	0	0.0%	0.0%
Vermont Virtual Learning Cooperative	11	5	45.5%	7.5%
Did not indicate Ed-Tech grant program	—	9	—	13.4%
Total	**87**	**67**	**77.0%**	**100.0%**

Table 2. Teacher Survey Respondents

Vermont Ed-Tech Grant Program	Invitations	Responses	Response Rate	Percentage of Respondents
Content-based grants	124	58	46.8%	59.8%
eLearning Network	25	12	48.0%	12.4%
Impacting Tobacco Prevention With Technology	10	5	50.0%	5.2%
Learning Network of Vermont	31	11	35.5%	11.3%
Vermont Virtual Learning Cooperative	16	11	68.8%	11.3%
Total	**206**	**97**	**47.1%**	**100.0%**

Interview Data Collection

Semistructured interviews were conducted with 10 teachers or grant managers from seven content-based grants and three ITPT grants. The majority of interviews were with individuals who served as both teachers and grant managers. The distribution of respondents by type and program is described in Table 3. The content-based grant participants were selected purposively to maximize representation of a variety of content areas and school levels. The interview protocols were designed to align with the evaluation questions. In the case of two grant programs, multiple grant participants participated in the interview. Although most interviews were conducted over the phone, two were conducted in person. All interviews were recorded and transcribed.

Table 3. Number of Interviews Conducted With a Teacher or Grant Manager, by Program

Program	Teacher Only	Grant Manager Only	Combined Teacher and Grant Manager
Content-based grants	1	1	5
ITPT	0	2	1

Question 1: To what extent and with what fidelity are the grantees making progress toward their objectives?

This section summarizes findings aligned to the overall evaluation question, as well as the following subquestions:

1a. To what extent have grant funds been spent so far, and on what?

1b. What trainings and other program activities are being offered?

1c. What technology resources have been, and will be, purchased, distributed, and supported?

This section opens with a summary of responses to general questions about progress toward program implementation and fidelity to the original plans. Grant managers described their overall progress with implementation in both surveys and interviews. The grant manager survey asked respondents to select the stage of program implementation that best describes their grant project; these different descriptions and response frequencies are summarized in Table 4. Two thirds of grant managers selected either "program installation" (14 percent) or "early implementation" (51 percent), indicating that most grants are in the early stages.

Table 4. Frequency of Program Stages, as Indicated by Grant Managers

Program Stage	*Overall* *N* = 57	Content-Based *n* = 35	eLearning *n* = 10	ITPT *n* = 7	VLC *n* = 5
Program Installation—Structural supports, strategies, policies, and procedures are put in place.	*14.0%*	11.4%	30.0%	0.0%	20.0%
Early Implementation—Expectations for the program are high, but new skills and appropriate support systems are still fragile and developing.	*50.9%*	54.3%	50.0%	42.9%	40.0%
Full Implementation—Program is fully operational.	*14.0%*	11.4%	20.0%	14.3%	20.0%
Modification—Program is undergoing refinement based on feedback or assessment.	*7.0%*	11.4%	0.0%	0.0%	0.0%
Sustainability—Focus is on the long-term survival and continued effectiveness of the program.	*5.3%*	0.0%	0.0%	28.6%	20.0%
Other, please specify.	*8.8%*	11.4%	0.0%	14.3%	0.0%

During interviews, nine grant managers of ITPT and content-based grant programs elaborated on their progress with implementation. One third said that teachers have received both equipment and professional development but have yet to implement this technology with students. Two thirds, including some content-based teachers and all ITPT grantees, have received professional

development and equipment and are using them with students. Some teachers noted that they are "piloting" use of the technology with a few students, and others use technology in the classroom daily with all students.

Grant manager were also asked to describe changes or modifications to their program during the interviews. The nine grant managers interviewed reported no changes (two respondents) or minimal (seven respondents) changes or modifications to the program from what they originally proposed. Four of the nine commented that their timeline for completing work was slightly behind their original timeline. They reported, however, that the fidelity of grant operations and activities has not been affected. The delayed timeline was most often due to a delay in acquiring the technology. Others commented simply that their grant program was "moving slower than they hoped" because of the time it takes for self-styled "digital immigrants" to learn, implement, and teach new skills in their classroom.

Two coordinators noted a slight modification to the equipment that they purchased with grant funds, which freed up funds for the purchase of other equipment or for teachers to receive additional professional development. For example, one grant manager chose to purchase a less expensive handheld case to synchronize students' iPod Touch systems, rather than purchasing a more expensive Power Sync cart. She was able to buy five additional iPod Touch systems with the money saved. Two coordinators reported a change in a grant teacher or grant partner who would help a teacher with technology integration, but program fidelity is not affected because "*all of [this work] is still happening, but not necessarily the person originally identified."*

In summary, about two thirds of respondents to the grant manager survey indicated that the project is in the early stages of implementation. As clarified by interviews with grant managers of two of these five grant programs, this tended to mean that teachers have received professional development and equipment and are starting to use technology in the classroom. Most grant managers interviewed reported only minor changes or modifications to the program.

1a. To what extent have grant funds been spent so far, and on what?

The grant manager survey asked respondents to report the proportion of their grant funds expended to date, and what percentage of the funds allocated to professional development has been spent so far. Two thirds of grant managers indicated that they have spent between 61 and 100 percent of the funds (see Table 5). There was some variation across the Vermont Ed-Tech programs. All grant managers for the ITPT programs reported having spent either 61-80 percent of their grant to date (43 percent) or 81–100 percent of their grant funds (57 percent), and no grant manager respondents for the VTVLC program indicated that they had spent more than 80 percent of their grant funds. Thus, the VTVLC program is at an earlier stage in applying its expenditures.

Table 5. Frequency of Proportion of Grant Funds Expended to Date by Program, as Reported by Grant Managers

Proportion of Funds Expended	*Overall* *N = 53*	Content-Based *n* = 35	eLearning *n* = 7	ITPT *n* = 7	VLC *n* = 4
0–20%	*9.4%*	5.7%	28.6%	0.0%	25.0%
21–40%	*9.4%*	5.7%	28.6%	0.0%	25.0%
41–60%	*15.1%*	17.1%	14.3%	0.0%	25.0%
61–80%	*37.7%*	45.7%	0.0%	42.9%	25.0%
81–100%	*28.3%*	25.7%	28.6%	57.1%	0.0%

Most grant managers indicated that they are in the early stages of spending their professional development dollars. As Table 6 shows, in all programs except ITPT, a majority of respondents indicated that fewer than 40 percent of funds dedicated to professional development has been spent.

Table 6. Percentage of Funds Allocated to Professional Development Expended to Date, as Indicated by Grant Managers

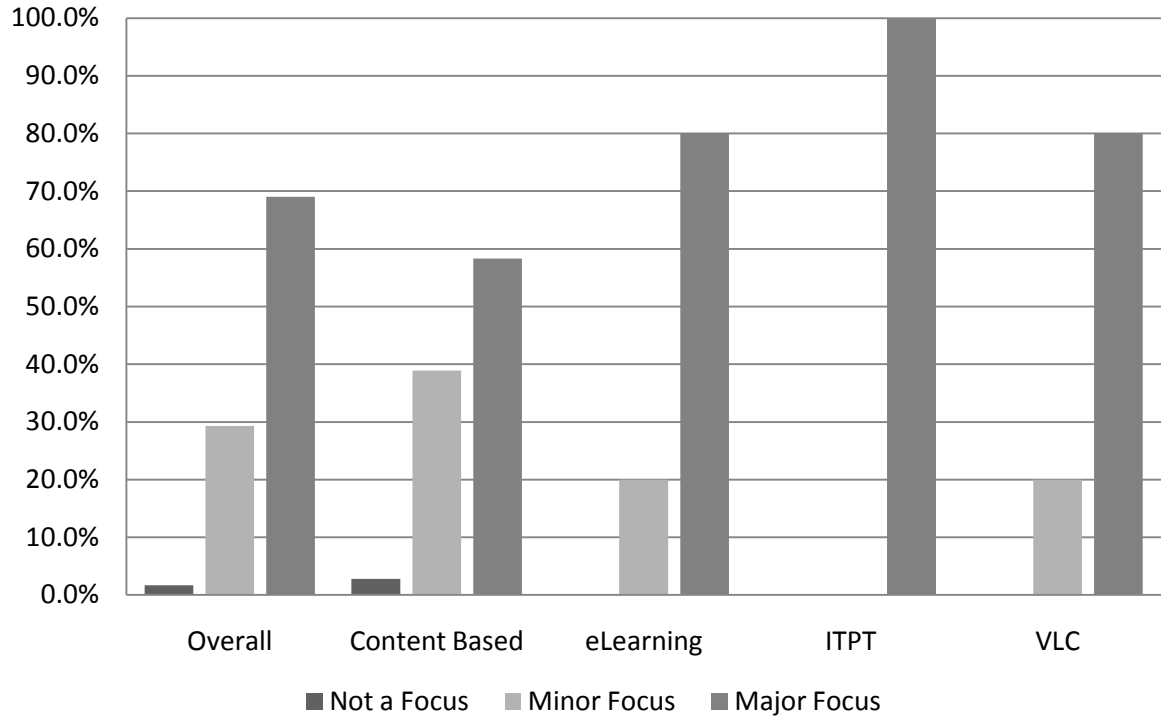
Professional Development Funds Expended	*Overall* *N* = 54	Content-Based *n* = 36	eLearning *n* = 6	ITPT *n* = 7	VLC *n* = 5
0–20%	*50.9%*	58.3%	33.3%	14.3%	75.0%
21–40%	*7.5%*	8.3%	16.7%	0.0%	0.0%
41–60%	*9.4%*	11.1%	16.7%	0.0%	0.0%
61–80%	*9.4%*	8.3%	0.0%	14.3%	25.0%
81–100%	*22.6%*	13.9%	33.3%	71.4%	0.0%

In summary, although grant managers typically report having spent more than half of grant funds, they also typically report having spent only a small portion of the funds allocated to professional development. Taking this finding at face value, this finding suggests that grant managers are spending on professional development more gradually than on other allocations of grant funds

1b. What trainings and other program activities are being offered?

When asked about areas of focus for their grant program during the past school year, the majority of grant manager survey respondents for each Ed-Tech grant program indicated that professional development activities have been a major focus of their school's Ed-Tech grant program to date (Figure 1). With the exception of ITPT respondents, the strong majority of grant managers also reported that professional development would continue to be major program focus during the summer recess.

Figure 1. Grant Manager Ranking of Professional Development as an Area of Focus for the 2009–10 School Year



Grant managers indicated which of a variety of professional development formats had been offered as part of their Ed-Tech-funded program. Across all programs, grant manager survey respondents reported that in-school training sessions were the most common type of professional development opportunities made possible by the program to date. As Table 7 shows, the types of professional development events offered vary by Ed-Tech grant program. For example, the majority of grant managers for the VLC program (60 percent) indicated that on-demand, online, or Web-delivered professional development events were offered, although no eLearning grant managers reported that this type of training was made available to participants in their program and only a small percentage of managers of ITPT and content-based grants reported offering this training.

Table 7. Frequency of Professional Development Formats Offered to Date, as Indicated by Grant Managers

Professional Development Formats	*Overall* *N* = 67	Content-Based *n* = 36	eLearning *n* = 10	ITPT *n* = 7	VLC *n* = 5
Institute	*31.3%*	19.4%	90.0%	57.1%	20.0%
On-site session with a consultant	*32.8%*	22.2%	80.0%	71.4%	20.0%
In-school training	*43.3%*	47.2%	50.0%	71.4%	40.0%

Professional Development Formats	*Overall* *N* = 67	Content-Based *n* = 36	eLearning *n* = 10	ITPT *n* = 7	VLC *n* = 5
Workshop	*31.3%*	27.8%	40.0%	71.4%	40.0%
Off-site conference	*13.4%*	11.1%	10.0%	28.6%	40.0%
Network of teachers to discuss implementation	*10.4%*	2.8%	10.0%	42.9%	40.0%
Online or Web-delivered professional development	*10.4%*	8.3%	0.0%	14.3%	60.0%
One-on-one or group training with tech. coordinators or aides	*25.4%*	22.2%	30.0%	85.7%	0.0%

Note: The Overall N includes nine respondents who did not indicate their grant affiliation.

Consistent with the grant manager survey responses, across all programs, respondents to the teacher survey indicated that the most commonly attended professional development events were in-school trainings (47 percent) and on-site work with a consultant (35 percent) (see Table 8).

Table 8. Frequency of Professional Development Opportunities Attended to Date, as Indicated by Teachers

Professional Development Event	*Overall* *N* = 97	Content-Based *n* = 58	eLearning *n* = 12	ITPT *n* = 5	LNV *n* = 11	VLC *n* = 11
Attended an institute	*22.7%*	13.8%	91.7%	20.0%	9.1%	18.2%
Worked on-site with a consultant	*35.1%*	34.5%	100.0%	0.0%	9.1%	18.2%
Attended an in-school training	*47.4%*	58.6%	75.0%	20.0%	27.3%	0.0%
Attended a workshop	*32.0%*	17.2%	25.0%	80.0%	63.6%	54.5%
Attended off-site conferences provided by professional associations or organizations	*13.4%*	15.5%	8.3%	20.0%	18.2%	9.1%
On-demand, online, or Web-delivered professional development	*17.5%*	10.3%	0.0%	0.0%	27.3%	72.7%
One-on-one or group training with technology coordinators or aides	*20.6%*	15.5%	33.3%	40.0%	18.2%	27.3%
Other	*19.6%*	20.7%	0.0%	0.0%	9.1%	36.4%

The interviews provided further detail about the content, purpose and format of the professional development sessions. The main purpose of these sessions was to learn how to use operate new devises or software and how to incorporate new technology into classroom instruction.

Consultants. Seven respondents elaborated on working on-site with a consultant. These consultants included the following types of individuals: an external consultant (i.e., an expert not employed by the school or supervisory union), the supervisory union technology integration specialist, technology support staff, and curriculum development staff (including those with the VTDOE). Outside consultants were from the manufacturer of specific technology, including Smart Technology and Tool Factory, who trained teachers on how to best use their equipment. One grantee worked with the VTDOE's physical education (PE) consultant and the school principal to integrate heart-rate monitors into PE instruction. For the ITPT grant program, the lead grantee acted as a mentor and consultant to secondary ITPT grantee schools by facilitating on-site planning meetings before the start of the school year and conducting a walk-through to determine the best location to install the Smart Technology.

In-school trainings. Five interviewees reported attending in-school trainings facilitated by mentor teachers from their school. These sessions ranged from individual, one-on-one training or training that was targeted to a group of teachers interested in learning about the grant and use of technology in instruction to a schoolwide training on more general topics such as how to use a Smart Board. An ITPT grantee said that her school district paid for substitute teachers so that grant teachers could attend an in-school training led by experienced teachers and technology integration specialists from their school.

Self-study. Seven teachers initiated their own self-study, with books, self-guided tutorial software, equipment manuals, and Internet resources to garner ideas for in-class activities. An interviewee explained, "*We continue to build on last year's curriculum and develop Smart Board lessons that are applicable to the lessons."* Four teachers enrolled in online courses taught by district level technology specialists or private companies (e.g., SmartTech.com) to be completed during the summer months.

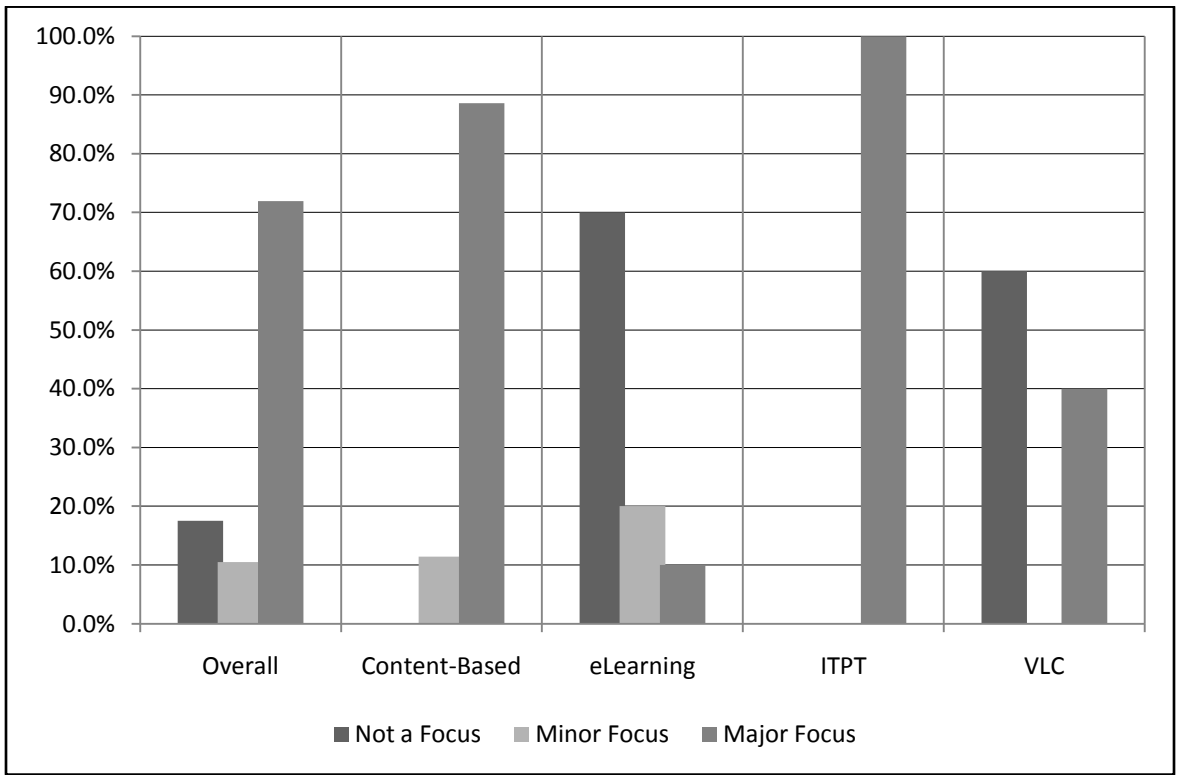
Institutes. The three ITPT grantees interviewed also attended the three-day training provided by this grant program with sessions spread over several weeks. Teachers from an ITPT grant school noted that after this three-day training, they visited a mentor teacher at her school and observed her using the Smart Board.

Conferences. Respondents described several training sessions planned for the coming year. Four respondents plan to attend off-site conferences provided by professional associations or organizations, such as the fall Vermont Fest conference. Three respondents each plan to engage in additional on-site training with consultants, on-site training with in-house specialists, or online courses for graduate credit.

1c. What technology resources have been, and will be, purchased, distributed, and supported?

There was some variation in the types of technology resources that have been purchased across the Vermont ETT programs. When asked about areas of program focus during the 2009–10 school year, a strong majority of grant managers of content-based grant programs (89 percent) and all ITPT grant managers indicated that the purchase of equipment and software has been a major focus of their program to date. In contrast, as Figure 2 shows, grant manager respondents for the eLearning and VLC program reported that the purchase of equipment or software was most commonly not a current focus of their program.

Figure 2. Grant Manager Ranking of Purchase of Equipment or Software as an Area of Focus for the 2009–10 School Year



Interviewees from the content-based and ITPT programs described a variety of equipment purchased with grant funds. These included hand-held electronic devices (e.g., iPods, video recorders), interactive whiteboards, computers, curricular software (e.g., Rosetta Stone), and accessories (e.g., tables or carts). Summaries of these types of equipment are as follows:

- **Portable electronic devices.** All 10 respondents indicated purchasing this type of equipment, including iPods or iTouch, Kindles, digital cameras, video recorders, LCD projectors, document cameras, and student response systems (clickers). The video recorders are typically used by students as a platform for completing a project. Teachers also use this equipment to record students during class work, assignments, or presentations so they may review the footage later as an assessment tool.

- **Accessories**. Most interviewees also purchased accessories for this equipment, such as cases, carts, extra cables, and batteries.
- **Computers.** Six interviewees noted that their program purchased computers, such as laptops designated to grant teachers or netbooks/mini laptops that groups of students or an entire grade could use both in school and at home. A world language teacher said that her students have "been using the laptops to type letters, really basic letters, to pen pals." A high school student club involved in an ITPT program uses the laptops to develop and deliver tobacco prevention presentations to younger students in elementary and middle school.
- **Interactive whiteboards.** All three ITPT grant interviewees and one content-based grant teacher acquired interactive whiteboards for use in their classroom. The use of Smart Boards to deliver health and tobacco prevention curriculum was the cornerstone of the ITPT program.
- **Software.** Six content-based grantees commented that their program revolved around purchasing and using a specific software program to facilitate student learning. For example, world language teachers purchased language software such as Rosetta Stone, literacy teachers purchased digital editing software, and a health teacher purchased software and equipment that converts text to MP3 audio format to facilitate student comprehension of information in textbooks.

Summary

In summary, the majority of the Ed-Tech grant programs are currently in the early stages of implementation. The grant managers surveyed commonly reported that they consider themselves to be in the early stages of implementing their grant. Across all programs, two thirds of grant managers reported they have expended between 61 and 100 percent of the funds to date, but at the same time, a majority of grant managers report that less than 40 percent of funds dedicated to professional development have been spent. Regarding program fidelity, grant managers report minor modifications to the original plans for expenditures of funds on professional development and equipment. The most commonly attended professional development events were in-school trainings. Most grant managers surveyed (except for those with the eLearning program) indicated that the purchase of new equipment was a major focus of their grant. Among the 10 interviewees, all reported having received hand-held devices as part of their grant.

Question 2: How effectively do schools support the implementation of project goals?

A critical question for implementation is whether, and to what extent, schools support project implementation. This question is particularly critical given the highly targeted nature of several of these grants, which involve (at least initially) only a handful of teachers per school. Effective support is indicated by high-quality professional development, administrative support for the program, and structures and opportunities for teachers to support one another with efforts to integrate technology into instruction. The following subquestions address this larger evaluation question:

2a. What is the extent of teacher (and other staff) participation in program activities?

2b. What are the opinions of these participants of the quality and effectiveness of professional development?

2c. To what extent are teachers provided opportunities to collaborate on implementing program objectives in terms of technology integration?

2d. To what extent do administrators support, advocate, and encourage technology integration?

2e. To what extent, and from what sources, do teachers receive technology support?

2a. What is the extent of teacher (and other staff) participation in program activities?

Both grant managers and teachers responded to survey questions on the extent of teacher and staff participation in Ed-Tech grant program activities; these responses are summarized in Tables 9, 10, and 11. Grant manager survey responses indicated that across all programs, participation in professional development events is typically limited to 10 or fewer participants; the majority of managers of content-based grants (53 percent) reported participation in the range of one to five.

Table 9. Frequency of Total Number of Professional Development Participants to Date, as Indicated by Grant Managers

Attendees	*Overall* *N* = 54	Content-Based *n* = 34	eLearning *n* = 9	ITPT *n*= 6	VLC *n*= 5
Zero	*11.1%*	17.6%	0.0%	0.0%	0.0%
1 to 5	*48.1%*	52.9%	33.3%	33.3%	60.0%
6 to 10	*24.1%*	20.6%	33.3%	33.3%	20.0%
11 to 15	*5.6%*	5.9%	11.1%	0.0%	0.0%
16 to 20	*1.9%*	2.9%	0.0%	0.0%	0.0%
More than 20	*9.3%*	0.0%	22.2%	33.3%	20.0%

The extent to which teachers and other program staff participated in professional development activities can be measured by the number of hours spent attending professional development events offered to date. According to both grant managers and teachers, the number of hours spent attending professional development events varied by grant program. As Table 13 shows, the majority of grant managers for content-based grant programs (64 percent) reported that participants in their program have attended between 1 and 10 hours of professional development, and almost 20 percent of content-based grant managers reported that teachers have not attended any professional development. By contrast, the majority of grant managers from other programs indicate that participants have been provided at least 11–20 hours (or considerably more, in the case of the eLearning program).

Table 10. Frequency of Total Estimated Hours of Professional Development Attended per Participant to Date, as Indicated by Grant Managers

Hours	*Overall* *N* = 58	Content-Based *n* = 36	eLearning *n* = 10	ITPT *n* = 7	VLC *n* = 5
None	*12.1%*	19.4%	0.0%	0.0%	0.0%
1–10 hours	*36.2%*	63.9%	40.0%	0.0%	40.0%
11–20 hours	*13.8%*	11.1%	0.0%	0.0%	40.0%
21–30 hours	*5.2%*	5.6%	10.0%	57.2%	0.0%
31 hours or more	*5.2%*	0.0%	50.0%	42.9%	20.0%

Teachers responded similarly to the survey question regarding number of hours spent attending professional development events, with the vast majority of LNV teacher respondents (91 percent) and content-based grant respondents (47 percent) indicating that they had received between one and 10 hours of professional development to date. All respondents for all other programs reported that they spent at least 11 hours or more participating in professional development events during the 2009–10 school year.

Table 11. Frequency of Total Estimated Hours of Professional Development Attended to Date, as Indicated by Teachers

Hours	*Overall* *N* = 97	Content-Based *n* = 58	eLearning *n* = 12	ITPT *n* = 5	LNV *n* = 11	VLC *n* = 11
None	*4.1%*	6.9%	0.0%	0.0%	0.0%	0.0%
1–10 hours	*39.2%*	46.6%	0.0%	0.0%	90.9%	0.0%
11–20 hours	*12.4%*	15.5%	0.0%	0.0%	9.1%	18.2%
21–30 hours	*16.5%*	10.3%	8.3%	100.0%	0.0%	36.4%
31–40 hours	*9.3%*	6.9%	33.3%	0.0%	0.0%	9.1%
41 hours or more	*18.6%*	13.8%	58.3%	0.0%	0.0%	36.4%

Note: The teacher survey included one more response option than the grant manager survey, with the maximum value being "41 hours or more" rather than "31 hours or more."

In summary, the content-based grants tend to be smaller scale in both number of participants and amount of professional development offered. The extent to which participants in the content-based grant programs have attended professional development events in comparison to the other grant programs highlights the fact that many of these grant programs are in the early stages of implementation and many teachers of content-based grant programs will not receive professional development until the summer.

2b. What are the opinions of participants of the quality and effectiveness of professional development?

Through the teacher survey, respondents were asked to rate their agreement on statements related to the quality and effectiveness of the professional development they attended. Their agreement with these statements and the response frequencies are summarized in Table 12.

In general, teachers responding to the survey were in agreement that they received high-quality professional development, particularly in the area of the professional development providing resources and tools that are useful in the classroom. Though teachers across programs indicated that their professional development experiences to date have been positive, the strength of agreement was somewhat lower for two items: "Included enough time to think carefully about…new practices" (item c) and "focused on content students need to know" (item f). In addition, between 8 and 17 percent of teacher respondents indicated that for each question, it was not applicable or they were either unsure (perhaps because they had not yet received professional development).

Table 12. Teacher Agreement With Statements on Professional Development Experiences Provided This Year

Overall, my professional development experiences this year (in relation to Ed-Tech grant) have	*N*	Strongly Agree	Agree	Disagree	Strongly Disagree	N/A
a. Involved active or hands-on learning by participants.	96	46.9%	38.5%	3.1%	2.1%	9.4%
b. Presented information in a clear and comprehensible manner.	96	41.7%	44.8%	1.0%	1.0%	11.5%
c. Included enough time to think carefully about, try, and evaluate new practices, resources, or strategies.	95	31.6%	42.1%	12.6%	2.1%	11.6%
d. Included time for my questions and concerns to be addressed.	96	45.8%	40.6%	3.1%	2.1%	8.3%
e. Included opportunities to work in collaborative groups.	96	36.5%	37.5%	8.3%	3.1%	14.6%
f. Focused on content students need to know.	96	30.2%	37.5%	12.5%	3.1%	16.7%
g. Provided resources and tools I can use in the classroom.	96	55.2%	30.2%	1.0%	2.1%	11.5%

h. Addressed the needs of the students in my classroom.	96	35.4%	41.7%	5.2%	2.1%	15.6%
i. Helped me to understand my role and responsibilities in implementing this program at my school.	95	37.9%	47.4%	3.2%	1.1%	10.5%

These generally positive ratings are further clarified by responses to interview questions about the quality and effectiveness of the professional development. Most teachers and coordinators interviewed spoke favorably about the quality and effectiveness of professional development opportunities. The primary reasons that respondents found professional development helpful were as follows:

1. Teachers learned how to use and became more comfortable with technology.
2. It provided an opportunity for teachers to learn their skills through hands-on training and practice with others.
3. The training was very specific and tailored to teachers' subject area or curriculum.
4. The training involved peer learning.

Each of these reasons will be described in more detail.

Promoted comfort with technology. Seven respondents commented that through the professional development they learned to use the equipment. For some, the training has helped to overcome "techno-phobia," self-doubt, or anxiety about integrating technology into their classroom. A content-based grant teacher, who acknowledged being new to using technology, remarked that the three-day training she did helped to clarify what resources to use. She said,

> *"I couldn't imagine doing [this program] without it. There's just so much [information] out there. A lot of it I would've never heard of otherwise. A lot of it I'd heard about but I didn't really understand what it does. So it was a good chance to have some clarification around what the options are."*

Hands-on training. Seven teachers, including all ITPT grantees, attributed the high quality and effectiveness of their training to the hands-on learning that took place. An ITPT teacher commented that her trainers showed attendees how to set up a Smart Board in a classroom and then teachers were given time to experiment with the equipment. The lead grantee for the ITPT grant program commented that the ITPT three-day training was more effective because grantee schools were required to have Smart Boards installed prior to the training so that teachers could experiment with them beforehand and practice their skills after.

Highly tailored. Six respondents appreciated that their training was specific to their curriculum, content area, or their staff needs. For example, the ITPT training was aligned with the Know Your Body curriculum. A content-based coordinator explained that her training was effective because their consultant was "*somebody who's local…and it's tailored to our staff specifically*." Another found her on-site training effective because the material covered was specific to their grant program. She noted that

> *Sometimes it's been frustrating for teachers to get technology training that is so broad that you're not quite sure how to apply it to your subject…but these have been small groups so we've been able to literally work on, okay, how will I use this in this lesson plan, instead of just how to turn [the equipment] on.*

Peer learning. Four teachers found that peer learning and collaborating with other teachers of varying experience levels was a helpful strategy. Experienced or mentor teachers worked with and trained less experienced teachers on how to integrate technology into the classroom. Because of peer-to-peer learning, a few teachers decided to conduct a site visit at their mentor teacher's school and observe this teacher in action. One teacher explained,

> *We were so impressed with [our mentor teacher] and that whole particular training that the third time we went for our final training we actually left a day early and spent a good part of the afternoon in her classroom.… That was a very valuable and enlightening experience.*

Areas for improvement. Three of the 10 respondents provided suggestions on ways that professional development was less effective or should be improved. Two teachers noted that they did not receive sufficient training on how to integrate the technology into lessons. One content-based grant teacher of a nonacademic subject commented that she did not receive any formal professional development for integrating technology into her curriculum. Rather, she received informal feedback from her principal and a VTDOE consultant on strategies for incorporating the technology into her class for meaningful use by students. Also, a teacher from the ITPT program recommended additional training sessions on practicing and developing specific lesson plans.

Another content-based grant coordinator found that technologically presented conferences were less helpful forms of professional development for learning skills to implement in the classroom. She explained, "*The details kind of got left unsaid. It's not as hands-on, some of the workshops, as I'd like them to be. It's hard to walk away with those skills when you sort of sit and listen to a presentation.*"

In summary, participants expressed broad satisfaction with the quality of professional development. Professional development was seen as being most effective when it was highly focused not just on learning how to use the technology but on integrating it into lessons.

2c. To what extent are teachers provided opportunities to collaborate on implementing program objectives for technology integration?

Teacher collaboration is an important tenet of the Ed-Tech grant program and is a critical element in supporting the work of teachers. Through the survey, teachers were asked to report the frequency with which they had opportunities to work with and learn from their colleagues this year as part of their Ed-Tech grant program. These findings are summarized in Table 13. Teachers reported participation in three types of collaborative activities fairly frequently: working with other teachers on how to use new technology, working on instructional strategies with other teachers, and developing materials and activities. Between 60 and 75 percent of teachers indicated they had engaged in those activities either 3–5 times or 6 or more times this

year. Teachers engaged in other collaborative activities relatively infrequently. These activities included observing another teacher's classroom (either to offer feedback or get ideas for their own instruction) and reviewing assessment data to make instructional decisions. In several of these items, participants in the eLearning program indicated collaboration more frequently than colleagues participating in other Ed-Tech grant programs (see Table A-1).

Table 13. Frequency of Opportunities to Learn From Colleagues, as Indicated by Teachers

As a part of the Ed-Tech grant program your school participated in this year, how often have you	*N*	Never	Once or Twice	3–5 Times	6 or More Times
Worked with other teachers on how to use new technology.	95	8.4%	16.8%	36.8%	37.9%
Worked on instructional strategies with other teachers.	95	13.7%	21.1%	40.0%	25.3%
Worked with other teachers to develop materials or activities for particular classes.	93	17.2%	22.6%	32.3%	28.0%
Reviewed student assessment data with other teachers to make instructional decisions.	95	33.7%	31.6%	24.2%	10.5%
Observed another teacher's classroom to get ideas for your own instruction.	95	52.6%	18.9%	20.0%	8.4%
Observed another teacher's classroom to offer feedback.	95	55.8%	24.2%	12.6%	7.4%

Grant managers were also asked to indicate the extent to which the Ed-Tech grant program at their school has focused on teacher collaboration in this 2009–10 school year, and how much it is anticipated to focus on collaboration during summer 2010. Their responses are summarized in Table 14. A strong majority of respondents for each grant program, with the exception of content-based grants, indicated that teacher collaboration was a "major focus" during the 2009–10 school year. Responses from the managers of content-based grants suggest that teacher collaboration will be a stronger area of focus during the summer 2010 recess.

Table 14. Level of Grant Focus on Teacher Collaboration During School Year and Summer

		Overall	Content-Based	eLearning	ITPT	VLC
2009 – 2010 School Year	*N*	*58*	36	10	7	5
	Not a focus	*13.8%*	19.4%	10.0%	0.0%	0.0%
	Minor focus	*31.0%*	44.4%	0.0%	14.3%	20.0%
	Major focus	*55.2%*	36.1%	90.0%	85.7%	80.0%
Summer 2010	*N*		30	5	9	3
	Not a focus	*25.5%*	30.0%	0.0%	40.0%	33.3%
	Minor focus	*31.9%*	23.3%	77.8%	0.0%	33.3%
	Major focus	*42.6%*	46.7%	22.2%	60.0%	33.3%

During interviews, most respondents stated they worked with at least one other teacher within their program, technology support staff, and a school leader to integrate technology into the classroom. There were two modes of this collaboration:

- **Unplanned technical assistance.** Eight of the 10 interviewees said they collaborated with other teachers to learn from each other on how to use the technology and troubleshoot any issues that arose while using it in their classroom. A grant coordinator explained that teachers of the same subject area *"Support each other naturally from collaborations… [during] training days where they meet together…and they talk about their Smart Boards and how they use them and how they use their document cameras and share ideas."* This support includes both designated planning times and questions asked on the fly.
- **Planned collaboration.** Five respondents reported participating in scheduled opportunities to collaborate with other teachers. These occurred during designated preparation time, department meetings, and inservice training days. This collaboration time helped teachers to develop materials and activities and review instructional strategies for the grant program. In talking about the importance of shared planning time during school hours, the principal of a small school in a rural part of the state commented, "*One of the huge advantages of being a tiny building is we all sit down and have lunch together…[giving us] shared planning time."* During these shared planning opportunities, teachers have prepared lesson plans, discussed student progress, and reflected on their progress toward meeting grant goals.

Less common opportunities for teacher learning include observations of experienced teachers (reported by two teachers) and online forums for posting shared documents (a resource noted by one ITPT grant manager).

In summary, it is possible to integrate the interview and survey findings. The types of collaboration that are most frequent (e.g., figuring out new technology, working on instructional strategies, and developing materials), are all of the sort that can be accomplished in either planned or unplanned settings. The types that are uncommon, however, such as classroom observations and data analysis, would seem to require planned or scheduled opportunities to collaborate, and they appear from the interviews to be less prevalent.

2d. To what extent do administrators support, advocate, and encourage technology integration?

Teachers were asked to rate their level of agreement with statements related to administrative support for technology integration. The response frequencies to these items are summarized in Table 15. Overall, the majority of teacher respondents either agreed or strongly agreed that they received the different types of administrative support. There were some differences, however, among items. More than 80 percent of teachers agreed that the administration has provided opportunities to attend workshops and professional development events related to technology. On the other hand, 40 percent of teachers disagreed that administrators set clear expectations of how teachers will use technology (among content-based participants, this number was 73 percent).

Table 15. Teacher Agreement With Statements on Administrative Support

The administration at my school has provided	*N*	Strongly Agree	Agree	Disagree	Strongly Disagree	N/A
Opportunities to attend workshops and professional development events related to technology	95	42.6%	44.7%	5.3%	4.3%	3.2%
Opportunities for relevant one-on-one or group training with technology coordinator or aides	97	32.3%	50.0%	10.4%	5.2%	2.1%
Release time for department or grade-level planning related to the Ed-Tech grant program	96	23.2%	37.9%	15.8%	12.6%	10.5%
Time to experiment with new hardware and software before it is expected to be implemented	97	22.9%	45.8%	16.7%	10.4%	4.2%
Adequate software resources for integrating technology into the curriculum	97	18.8%	64.6%	9.4%	3.1%	4.2%
General encouragement of student-centered technology integration	97	39.6%	46.9%	8.3%	3.1%	2.1%
Clear expectations of how teachers will use technology	96	12.6%	45.3%	31.6%	8.4%	2.1%

Our interviews revealed the range and variety of administrative support. Eight respondents provided direct answers to this topic. Among these eight, we identified three levels to which school administrators support Ed-Tech grants: low, moderate, and high.

Low support. Two respondents described a low level of administrative support. Their school principal was aware of the program but he or she was not involved in supporting it in any discernible way.

Moderate support. A moderate level of administrative support, described by three respondents, was indicated by additional efforts such as the following on the part of school administrators or leaders to facilitate implementation:[1]

- **Technical resources and support.** Within three schools, principals purchased equipment and authorized its installation in critical locations. They also provided ad hoc technical support for teachers and hired or paid for additional technology support staff to assist teachers.

[1] The frequency with which each of these supports is noted includes respondents in the moderate and high categories.

- **Use of school time.** The school leaders from six schools provided teachers with time to plan and share with each other. Most school leaders have allowed teachers to use their scheduled planning time and department or team meetings to work on this program.
- **Promotion of program.** Principals at schools showing moderate (and high) levels of support promote the program in several ways: encouraging teachers to participate; publicizing it to the School Board and to the larger community; and allocating teacher stipends in grant budgets. In addition, a school district paid for substitute teachers so that grant teachers could attend a full-day training for the ITPT program.
- **Encouragement to try new practices.** Five interviewees mentioned that their school administrators have encouraged them to try new practices in support of technology integration.

High support. Of the three respondents that were categorized as describing high levels of support, two were grantees of the ITPT program and one was from a content-based program. One hallmark of high administrative support is the direct involvement of a school leader in the program and in encouraging new practices. For example, one school principal was also the grant coordinator; she reported taking steps to "*create some opportunities here at the school that would augment [other] training [received]*." These included hiring a local technology specialist to support the teachers, searching the Internet for resources and materials teachers could use, and coordinating a schoolwide training with the supervisory union technology director on use of Smart Boards and other technology integration in the classroom. Another hallmark of high support is structural changes to support new practices. For example, a principal from another ITPT grant-funded school designated new classroom space to health teachers so that the Smart Board could be installed in a location readily accessible by teachers. This was critical because three respondents said that scheduling shared space was a barrier to carrying out this program.

In summary, most teachers reported that their school leaders provide a moderate level of support that includes professional learning opportunities, technical support, and general promotion of the program. A minority of school leaders provide additional support such as structural changes to support new practices or clear expectations for technology integration.

2e. To what extent, and from what sources, do teachers receive technology support?

On the survey, teachers were asked how easy it is to get help with technology issues (developing lesson plans or addressing problems with devices, software, or the network). Their responses are summarized in Table 16. Although at least two thirds of teachers reported that it was fairly easy or very easy to get help with these things, a worrisome number of teachers—in some cases up to one third—indicated that help was difficult to obtain.

Table 16. Teacher Ratings of Ease of Access to Technology Support

Please rate how easy it is to get help with the following technology issues:	*N*	Very Easy	Fairly Easy	Fairly Difficult	Very Difficult
Developing technology-related lesson plans.	96	13.7%	66.3%	17.9%	2.1%
Addressing a problem with technology (both hardware and software).	96	16.8%	49.5%	26.3%	7.4%
Addressing a problem with the Internet or network.	97	16.7%	49.0%	24.0%	10.4%

Teacher survey respondents were also asked who they contact when they require assistance integrating technology into a lesson. Respondents indicated that, in general, teachers most commonly contact a school technology coordinator when they need assistance integrating technology into a lesson (see Table 17). Although most teacher respondents indicated that they did not contact a school administrator for help, more than half the teachers for the eLearning and just under half the teachers in the ITPT program reported that they do contact an administrator when they need help integrating technology into a lesson.

Table 17. Frequency of Technology Assistance Providers Contacted for Integrating Technology Into a Lesson, as Indicated by Teachers

Technology Assistance Provider	*Overall* *N* = 97	Content-Based *n* = 58	ITPT *n* = 5	VLC *n* = 11	eLearning *n* = 12	LNV *n* = 11
A school administrator	*18.8%*	8.6%	40.0%	18.2%	58.3%	18.2%
A veteran teacher in the school	*24.0%*	25.9%	0.0%	18.2%	41.7%	9.1%
A school technology coordinator	*68.8%*	74.1%	80.0%	54.5%	58.3%	54.5%
Someone from another school or organization	*25.0%*	24.1%	0.0%	18.2%	50.0%	27.3%

Materials and resources. The ITPT grant respondents received materials and resources to utilize a new health curriculum for tobacco prevention, Know Your Body. These teachers received teacher's manuals, lesson plans, activities, and assessment tools as part of the three-day ITPT training. These and other materials are also available on demand at Global Classroom. Content-based grant teachers have mainly acquired new technology to incorporate into their current curriculum.

Summary

This chapter presented numerous findings about the degree to which schools support program implementation. A brief summary of these findings follows:

Professional development. Participants expressed broad satisfaction with the quality of professional development. Professional development was seen as being most effective when it

was highly focused not just on learning how to use the technology but on integrating it into lessons. Regarding the level of involvement, 10 or fewer teachers are involved in the program at each school. The content-based grants tend to be smaller-scale in both number of participants and amount of professional development offered.

Teacher collaboration. Teachers frequently collaborate on figuring out new technology, working on instructional strategies, and developing materials. This collaboration occurs in both planned and unplanned settings. The types of collaboration that are uncommon, such as classroom observations and data analysis, are the types that can be accomplished only in a planned setting (and they appear to be less common).

Administrative support. Most teachers reported that their school leaders provide a moderate level of support that includes professional learning opportunities, technical support, and general promotion of the program. A minority of school leaders provide additional support such as structural changes to support new practices or clear expectations for technology integration.

Technology support. In general, teachers report it is easy to get technical support for technology integration, and that they usually contact their school technology coordinator. This suggests that it is the technology coordinator, and not a curriculum expert or school leader, who is most involved with assisting with technology integration. The exceptions to this rule are with the eLearning program, in which teachers typically do contact their school administrators.

Question 3. Do the Ed-Tech grant programs promote technology integration in support of student-centered learning?

This question addresses the impact of the program on teachers' instructional practices and, in turn, on the learning experiences that are available to students. To address this question, we examined the perceived impact of the program on teacher knowledge and skill related to using educational technology, as well as the actual change in instructional practice. We used three standards from the ISTE NETS-T to conceptualize teacher knowledge and skill, as expressed in the first of the two subquestions:

> 3a. As a result of the program, to what extent did teachers gain knowledge and skill at inspiring student creativity, developing digital-age learning experiences and assessments, and working with digital-age technology?
>
> 3b. What impact did the program have on the quantity and quality of technology-integrated learning opportunities for students?

3a. To what extent did teachers gain knowledge and skill in inspiring student creativity, developing digital-age learning experiences and assessments, and working with digital-age technology?

As described in the methods section, the survey included a series of items to address each component of teacher knowledge and skill addressed in this question. In addition, the survey included a question asking teachers to rate their level of confidence in using classroom technology. The survey first asked teachers to rate their current level of confidence, and then to rate their former level of confidence (i.e., prior to participating in the program).[2] As Table 18 shows, about 60 percent of teachers described their pre-Ed-Tech confidence with educational technology as "moderately confident" (37 percent) or "extremely confident." When rating their current level of confidence, this increased to about 85 percent of respondents indicating they were "moderately confident" (44 percent) or "extremely confident" (42 percent).

Table 18. Teacher Ratings of Level of Confidence in Using Classroom Technology Before and After Ed-Tech Grant Program Participation (*N* = 94)

Level of Confidence Using Classroom Technology	Pre-Ed-Tech	Post-Ed-Tech
Not at all confident	11.7%	0.0%
Somewhat confident	26.6%	14.9%
Moderately confident	37.2%	43.6%
Extremely confident	24.5%	41.5%

[2] This was done to reduce the implicit bias of wanting to show an improvement over prior levels.

Designing and Developing Digital-age Learning Experiences and Assessments

Teachers rated the extent to which participation in their Ed-Tech program has prepared them to design and develop digital-age learning experiences and assessments. Their responses to the seven survey items addressing this construct were then combined into a single scale score (see the Methods section for a list of the items). Teachers were categorized according to their typical response to these seven items. As summarized in Table 19, about 80 percent of teachers overall rated their participation in their grant program as having prepared them to a moderate (50 percent) or "very much" (30 percent) extent to design and develop digital-age learning experiences and assessments. Participants in the content-based grant programs responded more positively than respondents in the other programs about the impact of the program on this aspect of their teaching practice, with about 90 percent rating the extent of preparation as moderate (58 percent) or very much (31 percent).

Table 19. Teacher Ratings of Extent to Which Participation in an Ed-Tech Program Has Prepared Them to Design and Develop Digital-Age Learning Experiences and Assessments

	N	Not at All	Minimally	Moderately	Very Much So
ITPT	5	0.0%	40.0%	20.0%	40.0%
VLC	11	9.1%	27.3%	45.5%	18.2%
eLearning	12	0.0%	33.3%	41.7%	25.0%
Content-based	55	3.6%	7.3%	58.2%	30.9%
LNV	11	18.2%	18.2%	36.4%	27.3%
Total	**94**	**5.3%**	**15.8%**	**49.5%**	**29.5%**

Inspiring Student Creativity

The Teacher survey presented four items asking teachers to rate the extent to which participation in their Ed-Tech grant program prepared them to inspire student creativity (Table 20). Across these four items, about 60 to 75 percent of teachers rated this level of preparation as moderately or very much so. Teachers rated the extent of preparation most highly for providing opportunities for students to work on extended projects, with 72 percent reporting "very much so" (43 percent) or "moderately" (29 percent). Two program-specific findings, not summarized in the table, are of note:

- Half of the respondents for the eLearning program perceived minimal preparation for *"provide opportunities for students to explore real-world problems using digital tools and resources"*.
- Most respondents from the LNV program rated their preparation to *"provide opportunities for students to collaborate in virtual environments*" as "moderately" (27 percent) or "very much so" (55 percent).

Table 20. Teacher Ratings of Extent to Which Participation in an Ed-Tech Program Has Prepared Them to Inspire Student Creativity

To what extent has your participation in your Ed-Tech program prepared you to	*N*	Not at All	Minimally	Moderately	Very Much So
Provide opportunities for students to work on extended projects (a week or more in duration).	93	6.5%	21.5%	29.0%	43.0%
Provide opportunities for students to explore real-world problems using digital tools and resources.	95	1.1%	27.4%	35.8%	35.8%
Use technology to promote innovative thinking and inventiveness.	95	1.1%	10.5%	57.9%	30.5%
Provide opportunities for students to collaborate in virtual environments.	94	10.6%	30.9%	31.9%	26.6%

Digital-Age Work

As Table 21 shows, responses to the teacher survey also indicated that the majority of teachers agreed that their Ed-Tech grant program prepared them to at least a moderate degree for digital-age work. Specifically, in the areas of (1) creating materials, (2) communicating using a variety of digital-age media and formats, and (3) using peripherals, 70 percent or more of respondents indicated that they were either "moderately" or "very much" prepared from their participation in their Ed-Tech grant program. Teachers reported the least impact on preparation in collaborating online with peers, with the exception of the VLC and LNV programs, where more than 80 percent in each program reported that they were either "very much" or "moderately" prepared to collaborate online with peers from their participation in the Ed-Tech grant program.

Table 21. Teacher Ratings of Extent to Which Participation in an Ed-Tech Program Has Prepared Them for Digital-Age Work

To what extent has your participation in your Ed-Tech program prepared you to	*N*	Not at All	Minimally	Moderately	Very Much So
Create materials for use in classroom activities (e.g. pictures, video clips, posters).	90	5.6%	20.0%	38.9%	35.6%
Communicate effectively using a variety of digital-age media and formats.	95	6.3%	21.1%	41.1%	31.6%
Use peripherals such as scanners, digital cameras, and LCD projectors.	95	11.6%	18.9%	23.2%	46.3%
Deal appropriately with technology problems that occur during everyday use.	95	9.5%	23.2%	47.4%	20.0%
Collaborate online with peers.	95	15.8%	32.6%	31.6%	20.0%

Through interviews, teachers spoke more directly about the perceived impacts of the Ed-Tech grant program on their teaching. Six teachers reported having gained skills and knowledge to integrate technology in ways that provide learning opportunities that are more hands-on, active and kinesthetic, and authentic and relevant. One teacher has learned to "*use a lot more current information, new text or whatever, that's readily available.…So it makes more for authentic learning for the kids."*

Summary

In summary, teachers reported the following impact on their knowledge and skills:

- Teachers appeared to be most strongly prepared to design and develop digital-age learning experiences and assessments, with teachers in content-based grants particularly strong.
- In regard to inspiring student creativity, teachers have become most prepared to provide opportunities for students to work on extended projects and to explore real-world problems; participants in the eLearning program reported being less prepared to provide the latter. Overall, participants are somewhat less prepared to provide opportunities for collaboration.
- In regard to digital-age work, teachers report becoming more prepared to create materials, communicate using digital tools, and use peripherals. Relatively few teachers report strong preparation for online collaboration.
- Teachers perceive that their confidence in using classroom technology is greater now than it was before participating in their Ed-Tech grant program.

3b. What impact did the program have on the quantity and quality of technology-integrated learning opportunities for students?

Data from surveys and interviews address this evaluation question in two ways. First, teachers reported the degree to which they were able to incorporate what they learned from Ed-Tech-funded professional development into their classroom practice. This set of findings directly addresses the evaluation question, albeit with the limitations of teacher self-report (i.e., the difficulty of objectively rating change in practice). Teachers also described their current technology integration practices. This set of findings provides baseline data that may be tracked over time to infer the impact of the program from changes in reported instructional practices.

Self-Reported Impact of Professional Development on Teacher Practice

Through the Ed-Tech grant programs, teachers have had the opportunity to attend professional development events with the goal of gaining knowledge and skills that will transfer to the classroom. Most teachers (83 percent) surveyed reported that they have been able to incorporate what they learned from their professional development experiences into their classroom activities either *moderately* (41 percent) or *very much* (42 percent). Respondents from the content-based grants reported the greatest extent of incorporation into practice, with 34 percent indicating *moderately* and 53 percent indicating *very much so*. These findings are summarized in Table 22.

Table 22. Teacher Rating of the Extent to Which Professional Development Experiences Are Incorporated Into Classroom Activities

	Overall *N* = 91	Content-Based *n* = 53	ITPT *n* = 5	VLC *n* = 11	eLearning *n* = 12	LNV *n* = 10
Not at all	*5.5%*	3.8%	0.0%	0.0%	0.0%	20.0%
Minimally	*12.1%*	9.4%	20.0%	18.2%	16.7%	10.0%
Moderately	*40.7%*	34.0%	40.0%	54.5%	50.0%	50.0%
Very much so	*41.8%*	52.8%	40.0%	27.3%	33.3%	20.0%

Teachers rated the extent to which they integrated technology into student lessons both before and after their participation in the Ed-Tech grant program. These ratings, summarized in Table 23, indicate an overall increase in the perceived level of technology integration. Whereas 58 percent of teachers selected *moderately* (37 percent) or *very much so* (22 percent) to describe their pre-Ed-Tech level of technology integration, 90 percent selected *moderately* (52 percent) or *very much so* (39 percent) to describe their current level of technology integration.

Table 23. Teacher Ranking of Extent of Technology Integration Before and After Ed-Tech Grant Program Participation, *N=93*

Rating	Pre-Ed-Tech *n* = 93	Post-Ed-Tech *n* = 95
Not at all	5.4%	0.0%
Minimally	36.6%	9.5%
Moderately	36.6%	51.6%
Very much so	21.5%	38.9%

Information from teacher interviews supports the survey findings. All teachers have increased the quantity and quality of technology-integrated learning opportunities for students, ranging from some to a great extent.

Exposure to new technology and experiences. Nine of 10 respondents described the impact of the program as expanding student exposures to technology and learning experiences. A content-based grant coordinator and school principal commented that because of the rural location of her school, before this grant program "*our kids [were] not having that same exposure [to technology]"* as students living in more urbanized communities with access to greater resources. ITPT grant teachers said that they use their interactive white boards to create a "virtual learning environment," where students use interactive or virtual programs available through the Internet to "visit" museums and other countries and learn about other cultures in ways not previously available.

Personalized learning. Five teachers have learned ways to deliver information in a new way to support different learning styles and provide individualized attention to learning needs. One

school is supplementing traditional reading assignments with an audio format. According to the grant manager, this has improved the learning experiences for "reluctant readers." In another school, world language teachers are using the Rosetta Stone program, in which the program progresses in difficulty as students demonstrate mastery of skills. This learning experience allows students to move at a faster or slower pace rather than an average pace set by the overall class performance. One teacher simply stated, "*Different students have different learning styles. And this technology addresses all of those learning styles. There's something for everybody*."

Personalized assessment. Technology integration has enabled teachers to assess student progress in ways other than a traditional test. Seven respondents reported using additional assessment tools as a result of this program. Examples of additional assessment tools that teachers use include interactive white board programs, in which students touch the screen to indicate their response, and student response systems that allow teachers to take an anonymous poll of the class. Even if traditional assessments are still used, a teacher noted that additional assessment options provided by technology "*fill in the some of the gaps that students have with traditional assessments."*

Six teachers found that informal assessment and student observation occur more frequently and immediately with interactive learning. One teacher explained how he uses the interactive white board to informally assess his students' understanding of a mathematics lesson. Two or three of his students work at the interactive white board, trying to solve a mathematics equation in front of the class. An audience of their peers participates by coaching the students at the board to solve the equation. During this interactive process, the teacher observes and assesses which students are correctly solving the equation and which ones are not. He explained, *"Because the learning is happening out in front of everybody [using the Smart Board], the teacher can watch the learning and can make the assessment as the kids are participating."* These teachers report that by using informal assessment during classroom instructions, they can better gauge students' comprehension levels and respond better to students' learning needs, such as revisiting a lesson, going further into depth on a topic, or moving on to a new topic.

Current Teacher Practices Involving Technology Integration

The teacher survey asked teachers to report how frequently students used technology for different instructional purposes. The most frequent use of educational technology according to the survey was for "additional practice or skill reinforcement;" 42 percent of teachers indicated that they use it either weekly (22 percent) or daily/almost daily (20 percent) (Table 24). Other typical purposes are online research, writing a paper, and making a presentation, which at least half the teachers use at least monthly. Most teachers rarely if ever ask students to use technology for sorting/categorizing information or for analyzing data.

Table 24. Teacher-Rated Frequency of Student Use of Technology for Different Purposes

Purpose for Assigning Technology	*N*	Not at All	2–3 Times per Semester	Monthly	Weekly	Daily/ Almost Daily	Technology Not Available
Additional practice or skill reinforcement	96	21.9%	18.8%	17.7%	19.8%	21.9%	0.0%
Making a presentation	93	23.7%	25.8%	31.2%	14.0%	4.3%	1.1%
Online research	95	24.2%	8.4%	25.3%	23.2%	17.9%	1.1%
Writing a paper	96	33.3%	12.5%	15.6%	19.8%	17.7%	1.0%
Online communication	96	41.7%	10.4%	16.7%	19.8%	10.4%	1.0%
Sorting/categorizing information	95	45.3%	20.0%	20.0%	10.5%	3.2%	1.1%
Analyzing Data	96	46.9%	17.7%	15.6%	17.7%	1.0%	1.0%
Other	43	53.5%	0.0%	4.7%	14.0%	11.6%	16.3%

Teachers were also asked to report the frequency in which they assigned students to use specific forms of technology in the classroom; these responses are summarized in Table 25. Teachers assigned students to use the following forms of technology relatively frequently: word processor, presentation software, and movie and audio editing or production software. Between 57 and 76 percent of teachers indicated they had assigned such activities at least 2–3 times during the past semester. Teachers assigned students to use the following forms of technology relatively infrequently: spreadsheet, content- and writing-specific tools, Web publishing activities, visualization software, and integrated learning programs. At least three quarters had never assigned their students to use those types of technology.

Table 25. Frequency of Forms of Technology Assigned to Students During the Past Semester, as Indicated by Teachers

Form of Technology Assigned	*N*	Not at All	2–3 Times per Semester	Monthly	Weekly	Daily/ Almost Daily	Technology Not Available
Word processor	95	24.2%	15.8%	12.6%	30.5%	16.8%	0.0%
Presentation software	94	38.3%	23.4%	26.6%	6.4%	5.3%	0.0%
Movie and audio editing/production	95	42.1%	29.5%	15.8%	8.4%	3.2%	1.1%
Other	67	52.2%	6.0%	9.0%	6.0%	17.9%	9.0%
Social network tools	94	54.3%	14.9%	11.7%	8.5%	7.4%	3.2%
Image editing/painting tools	95	58.9%	17.9%	10.5%	4.2%	6.3%	2.1%

Form of Technology Assigned	*N*	Not at All	2–3 Times per Semester	Monthly	Weekly	Daily/ Almost Daily	Technology Not Available
Geographic information systems	95	61.1%	26.3%	6.3%	4.2%	2.1%	0.0%
Spreadsheet	95	71.6%	15.8%	8.4%	3.2%	1.1%	0.0%
Concept mapping	95	73.7%	11.6%	11.6%	3.2%	0.0%	0.0%
Video conferencing	95	73.7%	20.0%	4.2%	0.0%	1.1%	1.1%
Content-specific tools	94	75.5%	7.4%	3.2%	5.3%	4.3%	4.3%
Writing tools	94	77.7%	12.8%	4.3%	1.1%	1.1%	3.2%
Web publishing	95	78.9%	7.4%	5.3%	3.2%	3.2%	2.1%
Visualization	95	86.3%	6.3%	1.1%	0.0%	1.1%	5.3%
Integrated learning	94	91.5%	3.2%	0.0%	0.0%	0.0%	5.3%

Summary

Participants in the Ed-Tech grant programs reported and described the impact of their program on teaching and learning. These findings can be summarized as follows:

- Most teachers surveyed reported that they have been incorporating what they learned from their professional development experiences into their classroom activities; the greatest level of incorporation was reported by content-based grant teachers.
- Teachers rate their current level of use of educational technology as much higher than what they recall their level of use was prior to their Ed-Tech grants. The interviews indicated that teachers are using technology from their grant programs to provide personalized instruction and more frequent and more personalized assessments.
- Teachers most frequently use educational technology for additional practice or skill reinforcement. Other common purposes are online research, presentations, and paper writing. Corresponding to these purposes, teachers frequently assign students to use the following applications: word processor, presentation software, and movie and audio editing or production software.
- Most teachers rarely if ever ask students to use technology for sorting/categorizing information or for analyzing data. Corresponding to these uncommon purposes, teachers seldom assign students to use spreadsheets or concept mapping software.

Question 4. What are learning outcomes of the program in terms of student engagement and motivation and mastery of Vermont grade-level expectations?

In this section, we highlight findings from the teacher surveys and interviews that indicate participant perceptions of the impact of the program on student learning.

4a. Student Motivation and Engagement

Through the survey, teachers were asked to rate the extent to which their participation in their school's Ed-Tech grant program has improved student motivation engagement. Across programs, most teachers reported a moderate to high impact. About three quarters rated the impact on active engagement in lessons as *moderate* (35 percent) or *very much* (38 percent), and about 85 percent described the impact on student enthusiasm as *moderate* (42 percent) or *very much* (43 percent).[3] These findings are summarized in Table 26.

Table 26. Teacher Ratings of the Impact of Ed-Tech Grant Programs on Student Engagement and Motivation

To what extent do you think your participation in your school's EETT grant program has improved the following for your students?	Not at All	Minimally	Moderately	Very Much So
Active engagement in lessons (n = 94)	7.4%	19.1%	35.1%	38.3%
Enthusiasm about learning (n = 93)	5.4%	9.7%	41.9%	43.0%

In interviews with teachers and grant managers, respondents discussed several learning outcomes of the program, including increases in student engagement and motivation. All 10 respondents observed an increase in student engagement and motivation because of technology integration, and specifically increases in hands-on and kinesthetic learning. An ELA teacher and two ITPT participants commented that their students are more engaged in all aspects of class. A mathematics teacher who is part of an ITPT grant exclaimed that *"Smart Board programs…have increased student engagement tenfold from any other resource I've ever had!"* An ELA teacher described her students' response to new learning experiences, stating

> *"Students who usually say that they are allergic to paper are much more interested in doing research and composing through script writing and video production…and they're getting the same skills as they would have had I forced them to write in a traditional way."*

A grant manager of the ITPT program summarized the impact of technology integration and use of active and kinesthetic learning. She comments, *"We have anecdotal evidence that the students are retaining the information better, [and are] certainly more attentive. The teachers found the difference to be night and day."* An additional illustration of this impact was offered by a health

[3] Although not displayed in the table, respondents from the content-based program had somewhat higher ratings of impact than those from other programs.

instructor who used software designed for the interactive whiteboard to demonstrate the physiology of Olympic athletes. She said that "the kids were totally fascinated [by learning about] what [the athletes] do to train and how their health is affected."

4b. Impact on Student Skills and Mastery of Grade-Level Expectations

Respondents to the teacher survey rated the extent to which their participation in the Ed-Tech program improved student learning outcomes, including conceptual understanding, collaboration, and safe and ethical use of digital information. These findings are summarized in Table 27. The strongest learning outcome was for "understanding of concepts." Across all programs, 71 percent selected *moderately* (46 percent) or *very much so* (26 percent).[4]

Table 27. Teacher Ratings of the Impact of Ed-Tech Grant Programs on Student Engagement and Motivation

To what extent has your participation in the Ed-Tech program improved your students'	Not at All	Minimally	Moderately	Very Much So
Understanding of concepts	8.5%	20.2%	45.7%	25.5%
Ability to work collaboratively	9.6%	23.4%	41.5%	25.5%
Safe and ethical use of digital information	13.8%	30.9%	39.4%	16.0%

Note: $N = 94$ for all items.

Interviews shed light on the reasons for better understanding of concepts. Two teachers drew a connection between increases in student engagement and improved learning. One teacher explained that because her students are more engaged with the material, they are learning the information faster and she can *"include other types of learning in the same period of time of teaching."* Another teacher noted that because students are using technology, *"they are more interested and pay closer attention.…their comprehension is higher."* A second reason, noted by one teacher, was more efficiency in instruction. This teacher described the time savings benefit of using Smart technology that can save and reload notes written on the board. He explained,

> *"I can draw [an] image on the Smart Board and just save it. And the next morning when I want to go back to that unit, I don't have to redraw anything. I just find what I drew the day before and bring it right back up and it's ready to be used and modified."*

Interviewees also described improvement in academic and technological skills:

Academic skills. Eight of 10 interviewees discussed the skills that students have gained because of the new learning experiences made available to them. These improved skills include the following: reading, writing, critical thinking, mathematics problem solving, world language skills, and physical fitness. For example, a world language teacher credited her students'

[4] Teachers from Content-based program reported even more positive outcomes: 82 percent selected *Moderately* (50 percent) or *Very much so* (32 percent).

improved speaking skills to their use of the Rosetta Stone software. She stated that prior to this program, Students

> *certainly had not had an interactive experience in this way with the foreign language where they listen and speak in order to learn the vocabulary and practice their accents to use or to be able to hear a natural speaker speak it on the software.*

Technology skills. In addition to academic skills, five teachers noted that students have improved their technical skills and comfort level in working with new technology because they use it regularly. Students have learned proper etiquette to handle equipment and procedures to keep equipment safe and clean. Parents of students who take home school-owned laptops are required to participate in a school-based training on handling and using the laptop. Parents must also sign a waiver, taking responsibility for their student's use of the laptop.

Seven teachers also acknowledged that without this grant support, students would not have as much access to this type of digital-age technology in school or at home. A grant coordinator explained, *"We live in a very rural part of the state. Most of our families live in high poverty areas… [and] have no Internet connection or a dial-up connection."* Under tight school budgets, a school principal felt that without the support of grant funding he would not have been able to justify use of school budget money to pay for Smart Boards in every classroom.

Summary

In summary, teacher and grant managers perceived that the Ed-Tech grant program has enhanced student engagement and motivation. Interviews seem to demonstrate that this is due to opportunities for active learning, such as interactive programs. In response to both the surveys and interviews, teachers indicated that they perceived that the Ed-Tech grant program has enhanced understanding of concepts and improved academic skills.

Question 5. To what extent are changes in teaching and learning adopted and sustained?

In addition to the impacts and outcomes of participation in the Ed-Tech grant programs, an important question of implementation is the ability of school staff and leadership to sustain the effects of the Ed-Tech grant program at their school in future school years. This is an important question because of the short-term nature of many of the grants. Grant managers were asked through both the surveys and interviews to speak about the sustainability of their program and their plans to continue and expand the use of Ed-Tech grant program practices, as well as plans to maintain or procure funding for the program in the future.

5a. Ongoing and Expanded Use of Ed-Tech Grant Program Practices by Teachers and School Leaders

When asked about plans to include additional staff members in their Ed-Tech grant program, the majority of grant manager survey respondents indicated that six or fewer additional staff members are expected to participate in the Ed-Tech grant program at their school in the next year. As Table 28 shows, expectations for more staff member involvement varies across grant programs. Considering the smallness of many of the schools, particularly the schools receiving content-based grants, the variation is not surprising.

Table 28. Frequency of Additional Staff Members Expected to Participate in Ed-Tech Grant Programs for the 2010–11 School Year, as Indicated by Grant Managers

Additional Staff Members	*Overall* *N* = 55	Content-Based *n* = 36	eLearning *n* = 8	ITPT *n* = 6	VLC *n* = 5
None	*23.6%*	30.6%	12.5%	0.0%	20.0%
1 to 3	*47.3%*	55.6%	12.5%	50.0%	40.0%
4 to 6	*14.5%*	11.1%	25.0%	16.7%	20.0%
7 to 9	*0.0%*	0.0%	0.0%	0.0%	0.0%
10 or more	*9.1%*	2.8%	37.5%	0.0%	20.0%
Unsure	*5.5%*	0.0%	12.5%	33.3%	0.0%

Interviewees were asked to describe their school's plans for sustaining and expanding their Ed-Tech grant program. There are three approaches for expanding the program:

- **Across schools and grades.** Six of nine interviewees specifically mentioned expanding the program to include teachers in other grades within the school or teachers in other schools within the district. For example, in one ITPT grant school, additional funds have been obtained to purchase interactive white boards and digital cameras/recorders for all the health and guidance departments in the school district.
- **Additional technology integration opportunities.** Four interviewees reported that the skills and knowledge they gained from their Ed-Tech program have motivated them to seek out additional opportunities to work with and understand technology. For example,

an ITPT health teacher decided to incorporate heart-rate monitors into her PE and health classes. Her students worked with an online fitness program to log their daily activity levels, with the goal of achieving 60 minutes of exercise a day. Other teachers learned to use more media sources, such as Kids' CNN health and PBS, to enhance students' digital-age learning experiences.

- **From pilot test to regular use.** As reported previously, six teachers from the content-based program piloted technology integration with a subset of students. All these teachers plan to expand use to all students within a grade level or beyond to teachers and students across grade levels.

5b. Plans for Sustaining Funding

Because of the costs of the software and equipment, the ability of schools to maintain the current program at their school also depends upon their ability to sustain funding. As Table 29 shows, more than four fifths of grant manager respondents indicated that they expect that their grant will be fully expended by February 2011.

Table 29. Frequency of Month and Year Grant Funds Are Projected to Be Fully Expended, as Indicated by Grant Managers

Month	Year	Percentage of Respondents *N* = 53	Cumulative Percentage
June–August	2010	28.6%	28.6%
September–November	2010	20.4%	49.0%
December–February	2010–2011	34.7%	83.7%
March–May	2011	6.1%	91.8%
June–August	2011	6.1%	98.0%
September and later	2011	2.0%	100.0%

In addition to being asked when they expect their grant to be fully expended, grant managers were asked through the survey whether they expect local funding to be available for their Ed-Tech grant program. As Table 30 shows, the majority of respondents (55 percent) indicated that they are unsure whether they will be able to access local funding for their program once funding from the Ed-Tech grant is finished.

Table 30. Frequency of Grant Managers Indicating the Availability of Local Funding After Completion of the Ed-Tech Grant Program

	Overall *N* = 56	Content-Based *n* = 36	eLearning *n* = 9	ITPT *n* = 7	VLC *n* = 4
Yes	*37.5%*	41.7%	11.1%	57.1%	25.0%
No	*7.1%*	2.8%	33.3%	0.0%	0.0%
Unsure	*55.4%*	55.6%	55.6%	42.9%	75.0%

Through interviews, five grant managers spoke of their plans to sustain their program with available local funds. The following examples illustrate these plans:

- A grant coordinator who is also a principal from an ITPT grant school described plans for securing additional funds to purchase five interactive white boards and accessories for every classroom in this K–5 school. He revised the school's three- to five-year technology plan to include maintenance of the interactive white boards within the school budget. He also explained that a portion of professional development money for teachers (approximately $1,000 to $1,400 per teacher) will be designated for technology integration. He noted, "*I've planned three to five years out to maintain what we're currently doing…and I think we've made huge strides…in making sure there's a board in every classroom."*
- Another grant coordinator who is also a principal commented that she has designated school funds for the next school year to pay for a technology integration specialist at least one day a week in the building to *"help us with [technology integration]…. I want people to be using [this technology] as often as possible."*
- In addition, three grant managers working with content-based grants mentioned that school or department budget funds have been made available to update and maintain current equipment during the next year.

There were two other approaches to sustainability. One teacher hoped to apply for additional grant funds to procure more equipment. By contrast, three teachers described their plans for sustaining the work started by the grant in terms of the additional professional development in which they planned to participate.

Summary

Overall, responses to the surveys and interviews indicate that it is too early to determine the extent to which most Ed-Tech grant programs will be sustained or expanded. The majority of grant managers across programs reported in the survey that six or fewer additional staff members are expected to participate in the Ed-Tech grant program at their school in the next year, and interviews with grant managers yielded similar findings. Although most grant managers expect their funds to be fully expended by December 2010, at the time of the survey, the majority reported that they are uncertain of their ability to acquire local funds to sustain their program once the Ed-Tech grant funding runs out. Anecdotal evidence from interviews suggests that schools will look to outside funding sources, such as additional grants, as well as access available school or department budget funds to continue the programs as their individual schools.

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Appendix A

Table A-1. Frequency of Opportunities to Learn From Colleagues, as Indicated by Teachers, by Program

	Frequency	*Overall*	ITPT	VLC	eLearning	Content-Based	LNV
Worked with other teachers on how to use new technology.	Never	*8.4%*	0.0%	9.1%	8.3%	7.1%	18.2%
	Once or twice	*16.8%*	20.0%	36.4%	25.0%	10.7%	18.2%
	3–5 times	*36.8%*	60.0%	36.4%	25.0%	42.9%	18.2%
	6 or more times	*37.9%*	20.0%	18.2%	41.7%	39.3%	45.5%
Worked on instructional strategies with other teachers.	Never	*13.7%*	20.0%	9.1%	0.0%	10.7%	36.4%
	Once or twice	*21.1%*	20.0%	18.2%	50.0%	21.4%	0.0%
	3–5 times	*40.0%*	20.0%	45.5%	33.3%	41.1%	45.5%
	6 or more times	*25.3%*	40.0%	27.3%	16.7%	26.8%	18.2%
Worked with other teachers to develop materials or activities for particular classes.	Never	*17.2%*	0.0%	45.5%	8.3%	9.3%	36.4%
	Once or twice	*22.6%*	60.0%	9.1%	41.7%	24.1%	0.0%
	3–5 times	*32.3%*	40.0%	27.3%	16.7%	37.0%	27.3%
	6 or more times	*28.0%*	0.0%	18.2%	33.3%	29.6%	36.4%
Reviewed student assessment data with other teachers to make instructional decisions.	Never	*33.7%*	80.0%	45.5%	25.0%	26.8%	45.5%
	Once or twice	*31.6%*	20.0%	27.3%	41.7%	32.1%	27.3%
	3–5 times	*24.2%*	0.0%	9.1%	25.0%	28.6%	27.3%
	6 or more times	*10.5%*	0.0%	18.2%	8.3%	12.5%	0.0%
Observed another teacher's classroom to get ideas for your own instruction.	Never	*52.6%*	60.0%	72.7%	33.3%	53.6%	45.5%
	Once or twice	*18.9%*	0.0%	9.1%	33.3%	21.4%	18.2%
	3–5 times	*20.0%*	20.0%	9.1%	25.0%	16.1%	36.4%
	6 or more times	*8.4%*	20.0%	9.1%	8.3%	8.9%	0.0%
Observed another teacher's classroom to offer feedback.	Never	*55.8%*	40.0%	81.8%	58.3%	53.6%	54.5%
	Once or twice	*24.2%*	20.0%	18.2%	25.0%	28.6%	9.1%
	3–5 times	*12.6%*	20.0%	0.0%	16.7%	7.1%	36.4%
	6 or more times	*7.4%*	20.0%	0.0%	0.0%	10.7%	0.0%