



**Massachusetts Title II-D Technology Enhancement
Competitive Grants (Fund Code 170B)
Year End Summary Report for 2004-2005**

Prepared for the Massachusetts Department of Education

October 2005



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Introduction

Purpose, eligibility and awards

Funded through Title II-D of the No Child Left Behind Act, the Massachusetts Department of Education's Technology Enhancement Competitive grant program (fund code 170¹) supports school districts in the development of two-year sustainable projects that use technology to:

- Improve student academic achievement;
- Assist every student in becoming technologically literate;
- Provide high quality professional development that uses research-based instructional strategies to integrate technology effectively into instruction;
- Provide for assessment, data gathering, and analysis to inform and enhance teaching; and
- Provide specialized or rigorous courses through online distance learning.

Eligibility is limited to "high-need local educational agencies" or partnerships including one or more high-need districts. (See appendix for the FY 2005 Title II-D high need criteria and a list of high need districts.) The Department received 69 proposals for new projects to begin in the 2004-05 school year. Total requests exceeded \$6.7 million. Of the proposals received, 19 were funded to support 39 districts, including 24 classified as high-need. Total awards were in excess of \$2 million with individual awards ranging from \$99,840 to \$118,300.

Table 1 provides an overview of the awards. Brief descriptions of each grant can be found at

<http://www.doe.mass.edu/edtech/grants/fy05/fc170b.html>

Recipient	Amount	Recipient	Amount
Amherst-Pelham Regional School District	\$100,000	Mohawk Trail Regional School District	\$100,000
Barnstable Horace Mann Charter School	\$100,000	Narragansett Regional School District	\$99,967
Boston Public Schools	\$118,217	New Bedford Global Horace Mann Charter	\$99,954
Clarksburg Public Schools	\$100,000	North Central Charter Essential School	\$99,840
Fall River Public Schools	\$118,300	Northampton Public Schools	\$112,231
Framingham Public Schools	\$114,446	Pittsfield Public Schools	\$112,226
Gateway Regional School District	\$100,000	Springfield Public Schools	\$111,561
Gloucester Public Schools	\$106,860	Westfield Public Schools	\$107,643
Harwich Public Schools	\$109,447	Winchendon Public Schools	\$111,337
Lower Pioneer Valley Educational Collaborative	\$100,000		

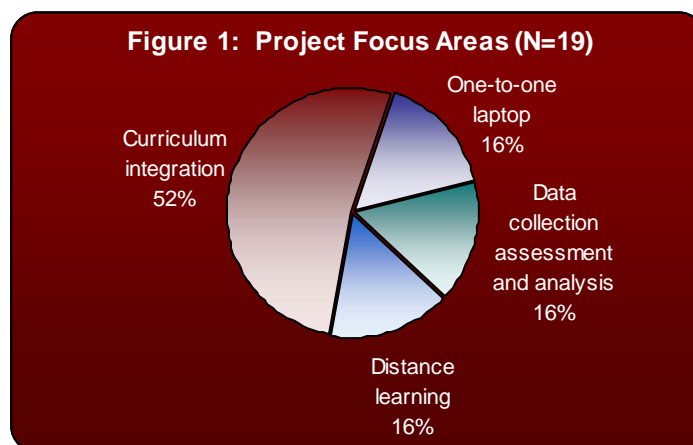
¹ In their first year, projects are funded under Fund Code 170B. Continuation grants for projects' second year are funded under Fund Code 170A. A copy of the FY 2005 RFP for Fund Code 170B can be found at <http://finance1.doe.mass.edu/Grants/grants05/rfp/170B.html>

Project focus areas

Each grant addressed one of the following four focus areas.

- *Curriculum integration*: Developing and implementing effective technology-integrated courses and curricula that align with the Massachusetts Curriculum Frameworks. These content-specific courses and curricula must be designed to help students reach challenging academic standards and become technologically literate.
- *One-to-one laptop*: Curriculum integration projects may include a one-to-one ratio of wireless laptop computers to students for the teaching and learning of English language arts or mathematics in the 7th and/or 8th grade.
- *Data collection, assessment and analysis*: Using appropriate technology for assessment, data gathering, and analysis to inform and enhance teaching and school improvement.
- *Online distance learning*: Using appropriate online distance learning technologies for the delivery of specialized or rigorous courses and curricula for students and teachers, particularly in areas that would not otherwise have access to such courses or curricula due to geographical distances or insufficient resources.

Figure 1 shows the distribution of focus areas among the awarded grants. By far the most prevalent focus area was curriculum integration which was addressed by 10 of the 19 funded projects (52%). The one-to-one laptop, data collection, assessment and analysis, and online distance learning focus areas were each addressed by three projects (16%).

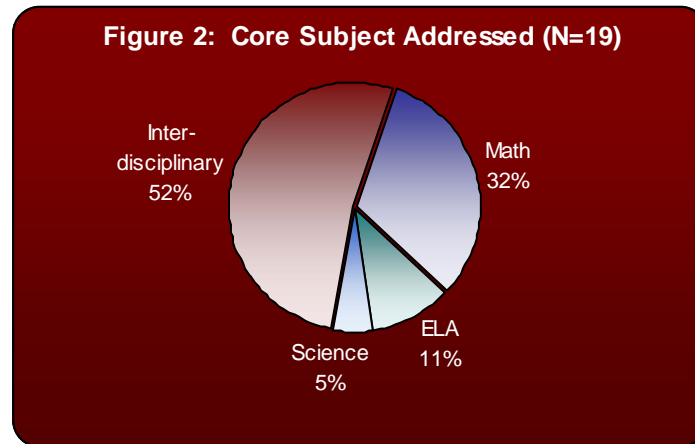


Core subject areas and grade-levels

Grantees were also asked to identify the core subject area(s) that would be addressed by their projects. Figure 2 shows the distribution of subject areas among the awarded grants. Ten of the projects (53%) were interdisciplinary in nature with six addressing all subject areas, three focused on both English language arts and mathematics, and one science, technology, engineering and math. Six of the projects (32%) addressed mathematics, two (11%) English language arts, and one (5%) science. Looking at the core subject areas addressed by project focus area reveals that:

- Interdisciplinary and math projects each accounted for 36% of the curriculum integration grants followed by 18% English language arts. The one project addressing science was a curriculum integration project.

- All of the assessment, data collection and analysis projects and online distance learning projects were interdisciplinary in nature.
- Two of the three one-to-one laptop projects were focused exclusively on mathematics and the third focused on both English language arts and mathematics



There is a wide variation in the grade-levels impacted by each project. Table 2 shows the number and percentage of projects impacting each of the following grade-level categories: elementary (PreK-5), middle (6-8), and high school (9-12). These groupings are consistent with those generally used by the US Department of Education for reporting related to No Child Left Behind. The reader should note that many projects impacted students at multiple grade-levels, thus the percentages shown sum to more than 100 percent.

Table 2: Grade-levels Impacted		(N=19)
Grade-level	Number of projects	Percentage of projects
Elementary School (PreK-5)	8	42%
Middle School (6-8)	12	63%
High School (9-12)	6	32%

Looking at the grade-levels impacted by project focus area reveals that:

- Nearly three-quarters of the curriculum integration projects addressed middle school grades, more than half impacted elementary and about one-quarter impacted high school students.
- Two of the three one-to-one laptop projects impacted all grade-levels. The third was aimed at middle school students.
- Two of the three assessment, data collection and analysis projects addressed all grade-levels. The third was focused on 5th and 6th grades.
- The online distance learning projects impacted middle and high school students (grades 8-9 and 9-12).

About this report

The remainder of this report summarizes data gathered through year-end reports submitted by each 170B grantee using a newly developed online survey component of the Department's Massachusetts Online Network for Education (MassONE)². The reporting template was available from August 1 through September 26, 2005. Reported expenditures are based on grantee estimates as the project was coming to an end. At the time not all of the project accounting had been completed. As such, dollar figures in this report are generally rounded so as not to indicate inappropriate levels of accuracy.

At the time this report was written, 18 of the 19 grantees had submitted their year-end reports³. Due to a succession of untimely staff departures, Harwich Public Schools was unable to complete its report in time for inclusion in this analysis.

² Formerly the Virtual Education Space (VES)

³ In addition to these standardized reports, each grantee was required to provide the Department with a report from its own external evaluator.

Budget and Expenditures

For fiscal year 2005, a total of about \$1.9 million was awarded to the 18 grantees that submitted reports. At year-end, approximately \$1.8 million was spent, leaving less than 5% of the FY 2005 available funds unspent. Figure 3 and the accompanying table display the proportion of expenditure by category. At 36%, the largest expenditure category was professional development. This exceeds the federal guidelines that require at least 25% of Title II-D funds to be spent for professional development. At 32% and 25% respectively, hardware purchases and administrative costs (including evaluation) also accounted for a significant portion of the total expenditures. Only 7% of the funding was used to purchase software.

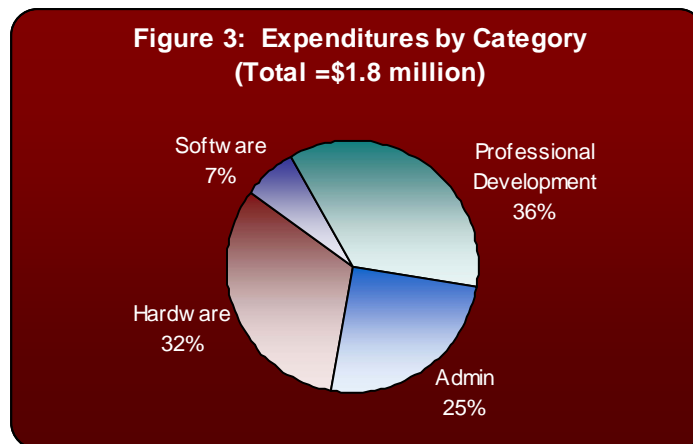


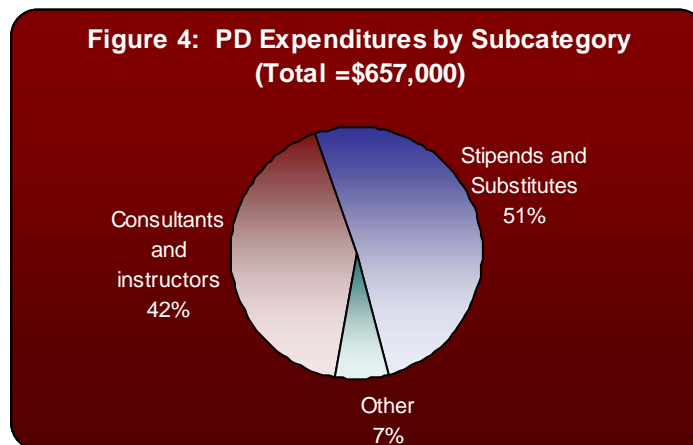
Table 3: Approximate Expenditures by Category

Category	Approximate Expenditure	Percent of Award
Professional Development	\$657,000	36%
Hardware	\$585,000	32%
Administrative	\$458,000	25%
Software	\$127,000	7%
TOTAL	\$1,827,000	

Professional Development Expenditures

On average, grantees spent more than \$36,000 on professional development. As illustrated by Figure 4, a further breakdown of total professional development expenditures reveals that:

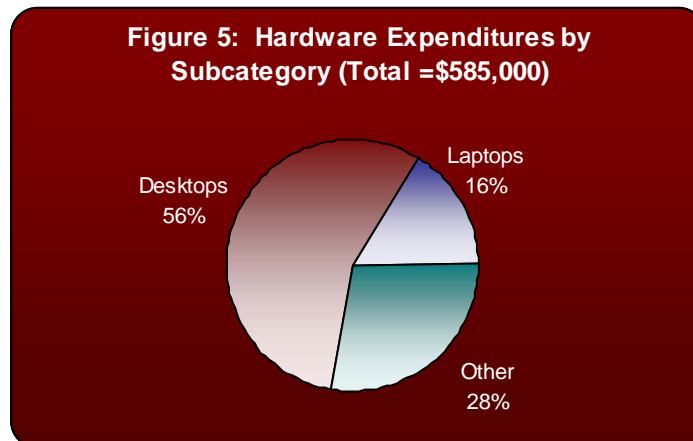
- 51% (\$337,000) was used for participant stipends or substitute teachers, which allowed teachers to participate in professional development during the regular school day.
- 42% (\$273,000) was used for consultant and instructor costs.
- 7% (\$47,000) was used for other expenditures including: training programs, honoraria, graduate credit and private school participation.



Hardware Purchases

Hardware purchases were reported by 17 of the grantees. On average, these grantees spent more than \$34,000. As illustrated by Figure 5, a further breakdown of total hardware expenditures reveals that:

- 56% (\$327,000) was used for purchasing laptop computers. Interestingly, only 36% (\$116,952) of the amount spent on laptops can be attributed to the three one-to-one laptop projects.
- 16% (\$96,000) was used for purchasing desktop computers.
- 28% (\$161,000) was used for other hardware purchases including networking hardware, assistive technology, printers, digital imaging equipment, projectors, equipment carts and flash drives.

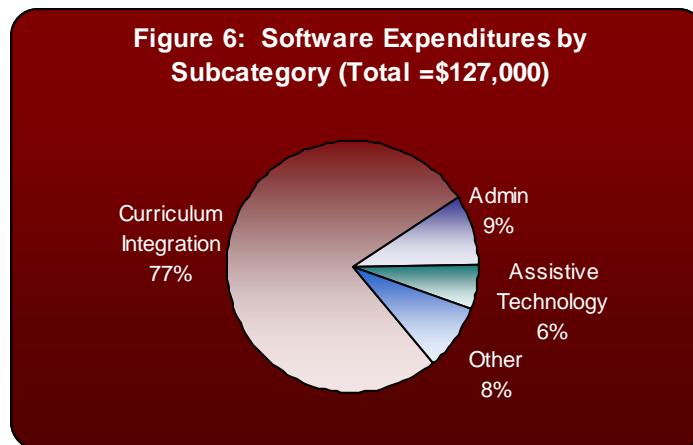


Software Purchases

Software purchases were reported by 13 grantees. Among them the average software purchase was about \$10,000. As illustrated by Figure 6, a further breakdown of total software expenditures reveals that:

- 77% (\$98,000) was used to purchase curriculum integration software. Of this, 81% (\$78,182) was used for one-time purchases and the remaining 19% (\$18,448) was used to purchase a software subscription.
- 9% (\$11,000) was used to purchase administrative software. Of this, 93% (\$10,613) was used for one-time purchases and the remaining 7% (\$849) was used to purchase a software subscription.

- 6% (\$8,000) was used to purchase assistive technology software.
- 8% (\$10,000) was used for other software purchases.



Administrative Expenditures

Remaining expenditures can be described as follows:

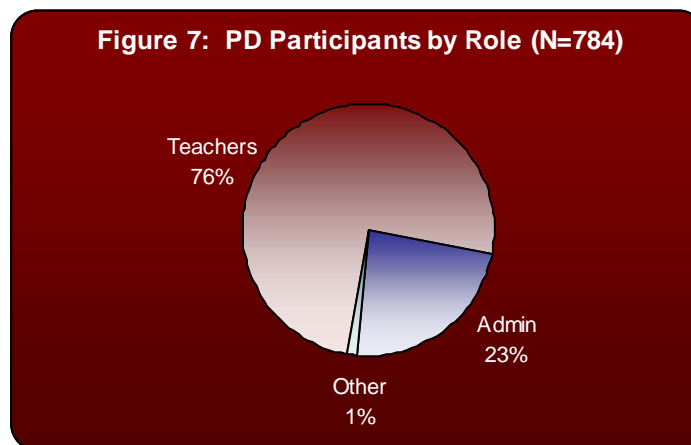
- 8% of total expenditures (\$149,000) are attributable to program evaluation costs. Average program evaluation expenses were approximately \$8,000.
- 8% of total expenditures (\$140,000) are attributable to project coordination and administrative costs. Seven projects reported expenses in this subcategory with an average of about \$20,000.
- 6% of total expenditures (\$102,000) are attributable to other costs such as supplies, maintenance and support and travel.

Program Activities

Professional Development Activities

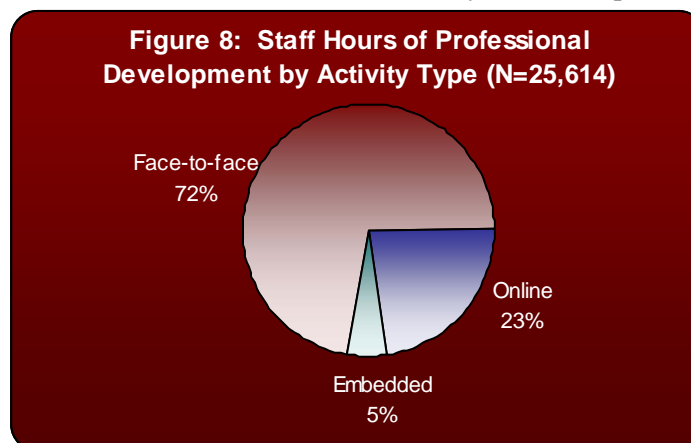
During FY 2005, Fund Code 170B supported more than 315 professional development events⁴. The average number of events was nine per project with actual numbers ranging from as few as three to as many as 27 events. Overall the grants provided professional development to 784 individuals. The average number of professional development participants was 44 per project with actual participation ranging from as few as nine to as many as 174 individuals. Grantees report a total of 317 individuals completing at least 45 hours of grant-funded professional development. On average each grant had 20 participants completing 45 hours or more with actual figures ranging from 8 to 36 individuals. As shown in figure 7, 76% of the 170B professional development participants were teachers and 23% were administrators.

Figure 7: PD Participants by Role (N=784)



Grantees were also asked to report on the number of staff hours of professional development provided for three distinct types of professional development: face-to-face activities such as workshops, seminars and study groups; embedded activities such as coaching or mentoring; and online training. In total, the grantees provided more than 25,000 staff hours of training. As shown in figure 8, 72% of the hours were provided through face-to-face activities, 23% through online professional development, and 5% through embedded activities. It is important to note that embedded activities can be difficult to track and, thus may be underreported.

Figure 8: Staff Hours of Professional Development by Activity Type (N=25,614)



⁴ This figure excludes the 138 one-on-one sessions conducted in Clarksburg.

Hardware and Software Used

Grantees were also asked to identify the various types of hardware and software being used in their programs. Table 4 shows each of the items listed in the survey and the number of grantees using them, in descending order. The most commonly used items were online resources/websites, multimedia presentations, spreadsheets, MassONE and curriculum software – each used by more than 50% of the grantees.

Table 4: Hardware and Software Used		(N=18)
Item	Number of projects	
Online resources/websites, streaming video/audio	16	
Multimedia presentation	15	
Spreadsheet	13	
MassONE ⁵ (formerly VES)	12	
Curriculum software (e.g., Geometer's Sketchpad, etc.)	10	
Database	8	
Web design software (e.g., Front Page, Dreamweaver, etc.)	8	
Digital camera	8	
Other online teaching system (e.g., UMass Online, etc.)	7	
TestWiz	7	
Digital camcorder	7	
Scanner	7	
Graphing calculator	6	
Electronic whiteboard	5	
Handheld computer	3	
Probes/data loggers	2	
Videoconferencing	2	
NCS Mentor	0	
Other	3	

Technology Development

Five grantees reported that their projects were developing technology systems or products. In total they reported spending over 2,000 staff hours on various development activities – an average of 461 staff hours per project. Actual levels of effort ranged from 71 hours to 1,160 hours.

⁵ MassONE responses exclude three grants that used the system only for the required data submission for this report

Program Impact

Addressing Barriers to Effective Use of Technology

Each grantee was asked to identify the extent to which their Title II-D grant had allowed their district, and any partnering districts, to address specified barriers to effective use of technology. Table 5 summarizes grantees responses to each of the specified barriers. N represents the number of districts indicating that they have faced such a barrier and the percent represents the proportion of those districts indicating that grant funds have allowed them to substantially or fully address problems with that barrier. For instance, the most commonly identified barrier was the lack of adequately trained instructional staff. In all, grantees indicated that this was a problem for 37 districts and that 43% of those districts were able to use grant funds to substantially or fully address the problem.

Based on these responses, it appears that grant funds were most effective in addressing barriers related to software followed by training of instructional staff. In addition, more than one-third of the districts reporting hardware related barriers (out of date and/or insufficient quantities) found grant funds to be helpful in this regard. Although relatively few districts identified Internet connections and space issues as barriers, more than one-third of those that did were able to affect substantial improvements with their grant funding. The available resources seem to be less focused on addressing problems with networking and infrastructure, the training of technical staff and administrators, and building security.

Table 5: Grant funds have allowed our district to substantially or fully address problems with:

	N	Percent
Out of date hardware	21	38%
Insufficient quantities of hardware	22	36%
Unreliable or slow Internet connections	8	38%
The lack of age-appropriate or educationally-relevant software	15	53%
The lack of software products aligned with state standards	11	55%
Networking and infrastructure	13	31%
The lack of trained technical staff	8	25%
The lack of adequately trained administrators	19	16%
The lack of adequately trained instructional staff	37	43%
Building security	3	0%
Insufficient or inappropriate space	8	38%

N= the total number of districts, excluding those responding "N/A"

% = proportion of N districts choosing "substantially" or "fully"

Impact on Staff

Technology Use Survey

Each grantee was asked to administer the “Title II-D Technology Use Survey” to each of its participating teachers and administrators prior to the mid-year and year-end reports. Prior to the mid-year report, the survey asked participants to reflect back on the previous school year (2003-2004) in addressing each of the questions posed. Grantees submitted these responses as part of their mid-year progress reports. For the year-end report participants were asked to answer the same series of questions related to their activities during the 2004-2005 school year. While differences are not directly attributable to grant activities, comparing responses for the two points in time provides some insight into how participants’ technology usage changed during the first year of the grant. Tables 12 and 13 summarize responses from both points in time.

Table 12: Technology Use Survey Responses		
Item	2003-2004 Response (N=411)	2004-2005 Response (N=377)
How often do you use technology for professional activities such as lesson planning, administrative tasks, communications and collaboration?		
Nearly every day	65%	77%
About once a week	12%	10%
About once a month	4%	3%
Rarely or never	6%	2%
No response	13%	8%
How often do you use instructional technology with students for activities such as research, multimedia, simulations, data interpretation, communications and collaboration?		
Nearly every day	19%	28%
About once a week	28%	44%
About once a month	18%	11%
Rarely or never	18%	8%
No response	17%	9%
How often do your students use technology at school for activities such as research, multimedia, simulations, data interpretation, communications and collaboration?		
Nearly every day	19%	32%
About once a week	26%	36%
About once a month	21%	12%
Rarely or never	13%	7%
No response	13%	13%
How often do you use technology to support data-driven decision making?		
Nearly every day	9%	12%
About once a week	19%	15%
About once a month	22%	29%
Rarely or never	36%	29%
No response	14%	15%

In the first year of the grant, at least weekly:

- 87% of respondents reported using technology for professional activities – an increase of 10 percentage points over the prior year.
- 72% reported using instructional technology with their students – an increase of 25 percentage points over the prior year.
- 68% have students using technology for school related activities – an increase of 23 percentage points over the prior year.
- Only 27% reported that they use technology to support data-driven decision making with the same frequency – reflecting no meaningful change from the prior year.

For both years very few participants reported using technology to deliver distance learning courses to students or other professionals. There may have been a modest increase in participants using distance learning for professional development workshops in their own districts.

Table 13: Technology Use Survey Responses, continued		
Item	2003-2004 Response (N=411)	2004-2005 Response (N=377)
What kinds of distance learning courses did you teach in your <u>own</u> district?		
courses for students	1%	2%
professional development workshops	2%	6%
credit courses for teachers and administrators	1%	2%
What kinds of distance learning courses did you teach in your <u>other</u> districts?		
courses for students	0%	0%
professional development workshops	1%	1%
credit courses for teachers and administrators	2%	1%

Technology Self-Assessment Tool (TSAT)

In total, 13 grantees reported that 416 teachers had completed the TSAT⁶. Reliable results were reported for 297 teachers⁷. As displayed in figure 21:

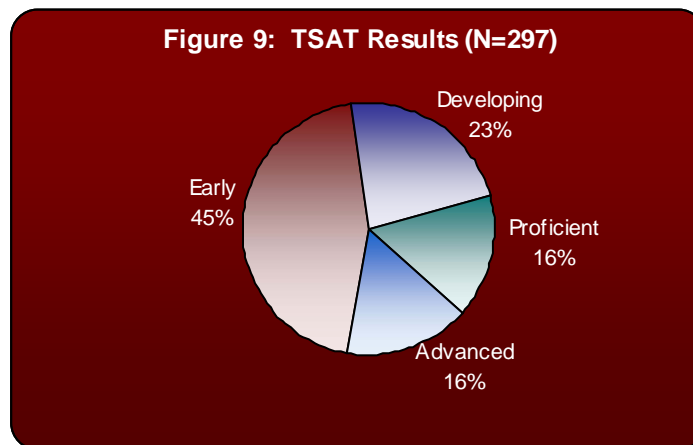
- 45% were at the early technology level.
- 23% were at the developing technology level.
- 16% were at the proficient level.
- 16% were at the advanced level.

These results serve as a baseline of teacher skill levels at the early stages of grant implementation. Clearly, there is considerable opportunity for grantees to further enhance teachers' technology skills. Near the end of their

⁶ Five grantees reported that none of their participating teachers had taken the TSAT. They were: Amherst-Pelham, Framingham, Lower Pioneer Valley, Northampton, and North Central Charter Essential School.

⁷ Boston reported that 119 teachers took the TSAT, but did not report any results.

second year, grantees will be asked to have teachers take the TSAT again. Those results will be compared to the baseline to determine whether there is any measurable improvement in teachers technology skills.



Impact on Students

Nine grantees reported that their project directly involves students. Table 8 summarizes the available information on students directly involved by the projects. Each grantee was also asked to estimate the level of student technology literacy for the students involved in their project. Only a few grantees fully reported these data, thus it is not possible to analyze them for this report.

Table 8: Students Directly Involved

Grade-levels	Number of Grantees	Number of Students
PreK-4	3	615
5-8	8	2,568
9-12	4	77

Appendix: FY 2005 Title II-D High Need School Districts

The term high-need school district means a school district that meets two conditions:

- (A) The district has at least 12% of the student population or at least 1000 children come from families with incomes below the poverty line (based on the U.S. Census)⁸.
- (B) The district operates one or more schools identified under section 1116 or the district has a substantial need for assistance in acquiring and using technology, based on the guidelines stated in the “Local Technology Benchmark Standards for 2003”.

Public Schools

Amherst	Easthampton	Haverhill	Marlborough	Provincetown	Tisbury
Avon	Everett	Holyoke	Methuen	Quincy	Ware
Barnstable	Fall River	Hull	Milford	Revere	Wareham
Boston	Falmouth	Ipswich	New Bedford	Salem	Watertown
Bourne	Fitchburg	Lenox	North Adams	Savoy	Webster
Brockton	Framingham	Lawrence	Northampton	Somerville	Wellfleet
Cambridge	Gardner	Leominster	Oak Bluffs	Southbridge	Westfield
Chelsea	Gloucester	Lowell	Oxford	Springfield	West Springfield
Chicopee	Greenfield	Lynn	Pittsfield	Sturbridge	Winchendon
Clarksburg	Harwich	Malden	Plymouth	Taunton	Worcester

Regional School Districts

Adams-Cheshire	Hawlemont	New Salem-Wendell
Athol-Royalston	Martha’s Vineyard	Northampton-Smith
Dennis-Yarmouth	Mohawk Trail	Quabog Regional
Gill-Montague	Narragansett	

Agricultural/Vocational Technical School Districts

Bristol County Agr	Greater Lowell Voc Tec	So Middlesex Voc Tech Reg
Essex Agr Tech	Greater New Bedford Northern	Southeastern Reg Voc Tech
Franklin County	Berkshire Voc	Southern Worcester Cty VT
Greater Fall River	North Shore Reg Voc	Whittier Voc
Greater Lawrence RVT	Pathfinder Voc Tech	

Charter Schools

Abby Kelley Foster Regional CS	Community Day CS	North Central Charter ESS
Academy of Pacific Rim CS	Conservatory Lab CS	River Valley CS
Atlantis CS	Edward Brooke CS	Robert M. Hughes Academy CS
Barnstable Grade 5 HMCS	Health Careers Academy HMCS	Roxbury Prep CS
Benjamin Banneker CS	Lawrence Family Development CS	S.Boston Harbor Academy CS
Boston Evening Academy HMCS	Lowell Middlesex Academy CS	Sabis International CS
Boston Renaissance CS	Media & Tech CS	Seven Hills CS
Champion HMCS	Neighborhood House CS	Somerville CS
City On A Hill CS	New Bedford Global Learn. HMCS	Uphams Corner CS
Codman Academy CS	New Leadership HMCS	

⁸ The FY 2005 High Need School Districts list is the same as the FY 2004 list because the new U.S. Census data has not been published at the time the FY 2005 Request for Proposals were issued.

