**Connecticut State Department of Education**

# *Enhancing Education Through Technology*

**2003 - 2004**
**Program Evaluation**
**Final Report**

**November 2004**

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Program Evaluation Data Analysis Research Services

## Acknowledgements

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# Executive Summary

## Introduction

This report summarizes the findings from evaluation activities conducted between January and August 2004 related to the Connecticut Enhancing Education Through Technology (CT EETT) program. The purpose of the evaluation has been to coordinate and systematize evaluation activities among the CT EETT component projects and to determine initial effects through collection and analysis of evaluation data.

The Connecticut Enhancing Education Through Technology program, administered by the Connecticut State Department of Education's Office of Curriculum, Instruction and Assessment, supports local initiatives to improve student academic performance through the use of technology in elementary and secondary schools. CT EETT's goals include 1) ensuring that every student is technologically literate by the end of eighth grade, regardless of race, ethnicity, gender, economic status, or disability, and 2) encouraging effective integration of technology with teacher training and curriculum development to establish research-based instructional methods that can be implemented as best practices by state and local educational agencies. Grants under the statewide program are awarded in four areas:

- **Blue Chip School Grants** support the development and implementation of comprehensive plans to integrate multimedia technology into student-centered and inquiry-based instructional practices that result in improved student performance, increased parent involvement, and enriched instructional effectiveness. The grant period for Blue Chip Schools was November 2002 through June 2004. During the 2003 – 2004 academic year, Blue Chip initiatives were under way in 16 schools. Duration of program implementation among the schools varied, with as much as one year of implementation completed as of June 2004.

- **Category A Grants** support programs to achieve one or more of 10 objectives in the following grant categories:
    1. Establish or expand partnerships
    2. Adapt or expand technology
    3. Acquire courses and curricula that include integrated technology
    4. Promote meaningful parental involvement
    5. Prepare technology leaders
    6. Acquire applications of technology to support school reform
    7. Acquire connectivity linkages, resources, and services
    8. Use technology to collect, manage, and analyze data
    9. Implement performance measurement systems
    10. Develop information technology courses

  The grant period for Category A awards was November 2002 through June 2004. During the 2003 – 2004 academic year, Category A programs were active in 20 educational agencies and partnerships. Duration of program implementation among the projects varied, with as much as one year of implementation completed as of June 2004.

- **Local Competitive Grants** support programs designed to achieve one of six objectives:
    1. Prepare elementary and secondary school courses for delivery via distance learning to aid in reducing racial, ethnic, and economic isolation
    2. Use technology to promote parental and family involvement
    3. Develop a cadre of technology leaders among educators and non-instructional staff
    4. Purchase or upgrade technologies for district-wide information systems that assist in data collection, management, and analysis to inform and enhance teaching and school reform efforts
    5. Develop and implement information technology courses for middle and secondary schools
    6. Assist districts in maintaining effective educational technology infrastructure to expand technology access for the learning community

  The grant period for Local Competitive awards is November 2003 through June 2005. During the 2003 – 2004 academic year, 39 grants supported projects through 24 educational agencies or partnerships. For most projects, implementation was in planning stages or just beginning in June 2004.

- **The Statewide Professional Development, Educational Technology Systemic Evaluation, and Educational Technology Development Grant** supports 1) provision of technology-related professional development for teachers and administrators, 2) evaluation of statewide educational technology activities – including review of proposals for Category A and Local Competitive grant projects – and 3) technology development, including technical assistance for districts and schools and coordination and collaboration activities to promote local efforts to increase educational technology capacity. During the funding cycle that began in September 2003 and continued through August 2004, this grant was awarded to the Connecticut Alliance of Regional Education Service Centers (RESCs).

The CT EETT evaluation was guided by three Connecticut State Board of Education goals related to improving academic performance and access to and use of educational technology. The Connecticut State Board of Education Performance Goals are as follows:

1. By 2013 – 2014, all students will reach high standards, at a minimum attaining proficiency or better in reading/language arts and mathematics;
2. All limited English proficient students will become proficient in English, and reach high academic standards, at a minimum attaining proficiency or better in reading/language arts and mathematics; and
3. By 2005 – 2006, all students will be taught by highly qualified teachers.

Seven framing questions were developed in collaboration with the CT EETT coordinators to form the basis for evaluation activities and reports. These questions incorporated the performance goals listed above and the CT EETT program goals and performance indicators.

The CT EETT evaluation design included collection and analysis of both qualitative and quantitative data. CT EETT evaluation activities began in January 2004. The first year

evaluation focused on Blue Chip School implementation and initial outcomes. Sources of evaluation data included project documents; Blue Chip School site visits, focus groups and interviews; the Connecticut Strategic School Profiles; the University of Connecticut Husky Educational Technology Assessments; CT State Department of Education CAPT and CMT reports; Alliance of RESCs initiative documentation including Alliance evaluation reports, and the Gates Foundation Taking a Good Look at Instructional Technology survey (TAGLIT).

## Evaluation Findings

The following summary of the evaluation findings is organized by evaluation topics and questions.

**1. In what ways did CT EETT initiatives affect access to educational technology in schools in high-need districts and districts statewide?**

**Finding:** All Blue Chip Schools and most Category A and Local Competitive projects reported increased access to educational technology as a result of CT EETT. Many cited this outcome as the most successful aspect of their projects thus far. Increased access most often involved desktop and laptop computers, mobile laptop laboratories, SMARTboard information display/data input devices, data projectors, and network equipment such as hubs and servers. State-level quantitative data related to technology access during the 2003 – 2004 academic year was not yet available for this report. In the 2002 – 2003 school year, most Blue Chip Schools provided greater than average access to technology compared to schools statewide. However, a majority of the teachers responding to the TAGLIT survey considered current levels of access to technology inadequate or somewhat adequate. Most students and teachers responding to the TAGLIT survey reported having access to computers at home. District technology staff, surveyed by the Alliance of RESCs, consider support for technology, such as technical assistance and professional development, to be nearly as important to successful technology integration as access to technology itself.

**2. Is there evidence that CT EETT initiatives increased teacher technology literacy competencies?**

**Finding:** All Blue Chip Schools and many of the Category A and Local Competitive projects reported increased teacher technology competencies as a result of CT EETT initiatives. Almost all projects reported providing or planning activities intended to result in increased teacher technology competencies. Technology literacy professional development was provided in CT EETT projects and statewide through large and small group and individualized instruction, coaching, modeling, mentoring and general classroom technical support. The Alliance of RESCs reported providing a total of 1,231 days of professional development, regional training, and technical assistance related to technology use and integration. Alliance training requests changed over the first year of CT EETT from basic content to more advanced technology competencies. Eighty-four percent of those Blue Chip School teachers completing the UConn Level I educational

technology assessment passed, demonstrating possession of at least adequate technology competencies. However, less than half of district technology staff surveyed statewide by the Alliance believe that all staff in their district have an adequate base-level of knowledge related to technology. In responses to the TAGLIT survey, 43% of teachers reported participating in 4 hours or less of professional development related to technology per year. In TAGLIT survey responses, teachers were more likely to report being able to use technology tools than to report actually using those tools in teaching and learning.

**3. In what ways did CT EETT initiatives contribute to the establishment of successful research-based instructional methods that effectively integrate educational technology?**

**Finding:** The CT EETT initiatives have begun to contribute to the establishment of successful research-based instructional methods that effectively integrate educational technology. Blue Chip Schools initiatives included implementation of comprehensive school change models using technology as the impetus, involvement in action-research projects in conjunction with Gates Leadership training, and use of technology integration research in lesson design. Category A and Local Competitive projects reported beginning initiatives related to increasing research-based integration of technology in instruction that included distance learning, professional development, online research and curriculum development.

**4. Is there evidence that CT EETT initiatives resulted in systemic change in the utilization of educational technology to support school improvement?**

**Finding:** Most Blue Chip Schools reported evidence of systemic change in the utilization of educational technology to support school improvement. Many also reported systemic changes in other aspects of school and district operation. Examples included school-wide use of data to inform instruction, creation of schedules and protocols to coordinate technology use, closer relationships between school and district technology operations, and development of new curricula that integrate newly accessible technology. Several Category A and Local Competitive projects reported systemic changes across multiple districts. Systemic changes in these projects included broad-based use of data through data warehouse and student management software, instructional resource database development, and district policy development related to use of data. The Alliance of RESCs provided professional development and technical assistance activities that supported systemic change at the school level.

**5. As a result of CT EETT initiatives were students more likely to be technologically literate by the end of eighth grade?**

**Finding:** All Blue Chip Schools reported that students were more likely to be technologically literate as a result of CT EETT initiatives. Examples included increased mastery of technology tools such as word processors, presentation software, web-based research, handheld computers, video production equipment and science probes. Student work has become increasingly technologically sophisticated, according to students and staff in

some schools. Approximately two-thirds of Category A and Local Competitive projects reported completion of activities or preparation and planning for activities designed to increase technology literacy among students. Though planned, no state-wide quantitative measure of student technology competencies is yet available. Most district technology staff who responded to the Alliance survey reported believing that all students in their districts have an adequate, age appropriate, base-level knowledge of technology. Half or more of students responding to the TAGLIT survey reported being comfortable performing a variety of technology related tasks. Students were more likely than teachers to report being comfortable with technology, according to the TAGLIT survey.

**6. Is there evidence that CT EETT initiatives resulted in increased student proficiency in reading/language arts and mathematics?**

**Finding:** Initial qualitative data indicates that CT EETT initiatives have helped improve student achievement in Blue Chip Schools. Examples include teacher reports of improved quality of student products, such as written and electronically presented reports, and student reports of increased ease and greater enjoyment of learning. CAPT scores increased across the three Blue Chip high schools from 2002 - 2003 to 2003 - 2004. Many schools also reported that CT EETT initiatives resulted in student outcomes that may lead to improved student proficiency, such as increased motivation, increased engagement and time on task, and increased study time. It is important to note that implementation was in initial stages for many of the Category A and Local Competitive projects and student outcome data was not yet available. According to the Alliance survey, district technology staff believe that technology use in the classroom improves education and that their districts expect all students to attain improved academic outcomes through the use of technology.

**7. To what extent did CT EETT outcomes for students vary by English proficiency, race, ethnicity, gender, disability status, and status as economically disadvantaged?**

**Finding:** Available quantitative and qualitative data did not indicate variation in CT EETT outcomes due to English proficiency, race, ethnicity, gender, disability status, or economic status in Blue Chip Schools. Category A and Local Competitive projects reported initiatives to ensure equal opportunities for all students including peer mentoring, after school assistance, translation technology, and home language web resources. According to Alliance survey data, district technology staff believe technology use in the classroom increases learning opportunities for students with disabilities, different learning styles, and differing levels of English proficiency.

## Conclusion

According to first year data, progress was made toward the CT EETT goals among recipients of all four types of sub-grants: Blue Chip Schools, Category A projects, Local Competitive projects, and the Alliance of RESCs. CT EETT initiatives intended to increase access to educational technology did so, expanding the availability of many types of current and emerging technologies. The initiatives also increased teacher technology literacy competencies,

though educators expressed the need for continuing professional development. In many cases, CT EETT initiatives contributed to the establishment of research-based instructional methods that began effective integration of technology into instruction. Systemic change in the utilization of educational technology to support school improvement was evident in many CT EETT projects at school and district levels. Many projects reported increased technology literacy, engagement and enthusiasm for learning among students, though quantitative data related to student outcomes is limited at this time. CT EETT projects described efforts to involve all students in technology initiatives and to use technology to meet the specific educational needs of students.

The 2003 – 2004 evaluation of CT EETT activities found that this was a period of project design, development, and initial implementation for most projects. In many cases, project activities involved planning and organization, procurement and installation of technology, professional development, and initial introduction of new technologies and instructional methods into their curricula. Though student outcome data is limited thus far, the initial effects of the CT EETT initiatives - new knowledge and skills among teachers, increased access to technology in the classroom, curricula and lessons in which technology is effectively integrated, and new tools for measuring technology needs and usage - are likely to impact student achievement in subsequent years.

# Connecticut State Department of Education
# *Enhancing Education Through Technology*
# 2003 – 2004 Program Evaluation Report

## Introduction

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- **Blue Chip School Grants** support the development and implementation of comprehensive plans to integrate multimedia technology into student-centered and inquiry-based instructional practices that result in improved student performance, increased parent involvement, and enriched instructional effectiveness. The grant period for Blue Chip Schools was November 2002 through June 2004. During the 2003 – 2004 academic year, Blue Chip initiatives were under way in 16 schools. Duration of program implementation among the schools varied, with as much as one year of implementation completed as of June 2004. (See Appendix A for brief descriptions of the Blue Chip School initiatives.)

- **Category A Grants** support programs to achieve one or more of 10 objectives in the following grant categories:
    1. Establish or expand partnerships
    2. Adapt or expand technology
    3. Acquire courses and curricula that include integrated technology
    4. Promote meaningful parental involvement
    5. Prepare technology leaders
    6. Acquire applications of technology to support school reform
    7. Acquire connectivity linkages, resources, and services
    8. Use technology to collect, manage, and analyze data
    9. Implement performance measurement systems
    10. Develop information technology courses

The grant period for Category A awards was November 2002 through June 2004. During the 2003 – 2004 academic year, Category A programs were active in 20 educational agencies and partnerships. Duration of program implementation among the projects varied, with as much as one year of implementation completed as of June 2004. (See Appendix A for brief descriptions of the Category A projects.)

- **Local Competitive Grants** support programs designed to achieve one of six objectives:
    1. Prepare elementary and secondary school courses for delivery via distance learning to aid in reducing racial, ethnic, and economic isolation
    2. Use technology to promote parental and family involvement
    3. Develop a cadre of technology leaders among educators and non-instructional staff
    4. Purchase or upgrade technologies for district-wide information systems that assist in data collection, management, and analysis to inform and enhance teaching and school reform efforts
    5. Develop and implement information technology courses for middle and secondary schools
    6. Assist districts in maintaining effective educational technology infrastructure to expand technology access for the learning community

  The grant period for Local Competitive awards is November 2003 through June 2005. During the 2003 – 2004 academic year, 39 grants supported projects through 24 educational agencies or partnerships. For most projects, implementation was in planning stages or just beginning in June 2004. (See Appendix A for brief descriptions of the Local Competitive projects.)

- **The Statewide Professional Development, Educational Technology Systemic Evaluation, and Educational Technology Development Grant** supports 1) provision of technology-related professional development for teachers and administrators, 2) evaluation of statewide educational technology activities – including review of proposals for Category A and Local Competitive grant projects – and 3) technology development, including technical assistance for districts and schools and coordination and collaboration activities to promote local efforts to increase educational technology capacity. During the funding cycle that began in September 2003 and continued through August 2004, this grant was awarded to the Connecticut Alliance of Regional Education Service Centers (RESCs).

The CT EETT evaluation was guided by three Connecticut State Board of Education goals related to improving academic performance and access to and use of educational technology, as well as seven framing questions, based in part on the three goals. The Connecticut State Board of Education Performance Goals are as follows:

1. By 2013 – 2014, all students will reach high standards, at a minimum attaining proficiency or better in reading/language arts and mathematics;
2. All limited English proficient students will become proficient in English, and reach high academic standards, at a minimum attaining proficiency or better in reading/language arts and mathematics; and
3. By 2005 – 2006, all students will be taught by highly qualified teachers.

Seven framing questions were developed in collaboration with the CT EETT coordinators to form the basis for evaluation activities and reports. These questions incorporated the performance goals listed above and the CT EETT program goals and performance indicators stated in the Connecticut Consolidated State Application for State Grants, dated June 12, 2002. The CT EETT program goals include assisting all students in becoming technologically literate by the end of eighth grade and encouraging effective integration of technology with teacher training and curriculum development to establish successful research-based instructional methods.

The framing questions are listed below:

1. In what ways did CT EETT initiatives affect access to educational technology in schools in high-need districts and districts statewide?
2. Is there evidence that CT EETT initiatives increased teacher technology literacy competencies?
3. In what ways did CT EETT initiatives contribute to the establishment of successful research-based instructional methods that effectively integrate educational technology?
4. Is there evidence that CT EETT initiatives resulted in systemic change in the utilization of educational technology to support school improvement?
5. As a result of CT EETT initiatives were students more likely to be technologically literate by the end of eighth grade?
6. Is there evidence that CT EETT initiatives resulted in increased student proficiency in reading/language arts and mathematics?
7. To what extent did CT EETT outcomes for students vary by English proficiency, race, ethnicity, gender, disability status and status as economically disadvantaged?

This report is organized in sections corresponding to the framing questions, with sub-sections for the grant areas. Information on the Category A and Local Competitive grant projects has been consolidated, due to the many similarities between the projects.

# Methodology

A series of CT EETT evaluation activities were conducted, starting in January 2004. The evaluation design included collection and analysis of both qualitative and quantitative data. The first year evaluation focused on Blue Chip School implementation and initial outcomes.

The following are brief descriptions of evaluation activities, organized by program area.

**Blue Chip Schools**

- Document Review – Schools submitted interim and annual project reports, detailing activities and progress toward goals. The reports were reviewed and summarized to identify trends and patterns across projects. Fifteen of 16 schools submitted annual reports in time for inclusion in this report. One school also provided two reports of research studies related to its project.

- Site Visits – Members of the evaluation team conducted site visits to each of the Blue Chip Schools. The visits included meetings and interviews with project leaders, a review of project goals and progress, data collection, school tours, and informal classroom visits. Focus groups with project constituents also were conducted during site visits.

- Focus Groups – At each Blue Chip school, focus groups were conducted with teachers, examining topics such as their use of technology in instruction and to communicate with students, parents and colleagues, participation in professional development, access to technical support, use of technology to assist learners of different abilities, and perceptions of program successes and challenges. Where possible, focus groups were held with students and parents. Student focus groups, conducted at 11 schools, examined students' use of technology in school and at home and their perceptions of the effects of technology use on their learning. Focus groups with parents were conducted at two schools, soliciting parent perceptions of project successes and challenges and effects of the projects on their children and themselves. In schools where teacher focus groups could not be held, teachers were interviewed during classroom visits, using the focus group protocol. A table of focus groups and interviews appears on the next page.

**Blue Chip School Focus Group Participants by School and Role**

| Name of School | Focus Groups | | | Interviews[1] |
|---|---|---|---|---|
| | Teachers | Students | Parents | Teachers |
| Danbury (Alternative Center for Excellence) | 6 | 10 | | |
| Derby Middle School | 6 | 5 | | 1 |
| Hall Memorial School | 8[2] | 9 | 2 | 2 |
| J.M. Wright Regional Vocational Technical School | 4 | 4 | | 3 |
| Killingly Intermediate School | 6 | | | 7 |
| Lebanon Middle School | 15 | | | |
| Mansfield Middle School | 8 | | 1[3] | |
| Mary Morrison School | 15[4] | 5 | | |
| Metropolitan Learning Center | 2 | 2 | | |
| New Britain High School | 10 | 6 | | |
| North Stonington School | 15 | 9 | 3 | |
| Sunset Ridge School | 3 | | | |
| Thomas Edison Middle School | 21 | 8 | | |
| Walsh Elementary School | | | | 3 |
| West Middle Elementary School | 10 | 6 | | |
| Wintergreen Interdistrict Magnet School | 10 | 13 | | |
| **Total** | **142** | **77** | **6** | **13** |

1 This includes small-group and individual meetings or classroom discussions that utilized the focus group protocol.
2 Teachers participated in short focus group sessions.
3 Parent participated in a teacher focus group session.
4 Teachers were involved in focus groups on a rotating basis due to staggered lunch schedules.

- Technology Data Review – Data on technology present in participating schools during the 2002 – 2003 school year was obtained from the Connecticut Strategic School Profiles available through the Connecticut State Department of Education web site. This was the most recent year for which profiles were available. The data for 2002 – 2003 reflects school status before Blue Chip grant activities began, and should be considered baseline. Technology data was not available for one participating school, Derby Middle School, because it was administratively part of the district's high school during 2002 – 2003.

- Teacher Technology Competency Assessments - Participation in an assessment of teacher technology competencies was required under the Blue Chip grant program. The three-level assessment was developed by the Husky Educational Technology Assessment Program at the University of Connecticut Neag School of Education and was aligned with the performance indicators contained in the Connecticut Teacher Technology Competencies (CTTC). During the 2003 – 2004 school year, Blue Chip Schools were required to have all teachers complete the Level I assessment. The assessment included

file editing tasks, such as word processing and spreadsheet operations, and open-ended items that in early versions of the assessment were submitted via a web-board and in later versions were completed in word processing documents. The Level I assessment was administered as a single-point measure rather than as pre- and post-intervention measures, so it cannot be used to gauge changes in competency levels. Detailed reports of Level I assessment results were provided to teachers, listing achievement across the four competency strands. School summary reports provided to the evaluation team provided results for individuals taking the assessment, broken down by strand. (Individuals were not identified.) Teachers in one school also completed the Level II assessment, and a summary of their results was provided to the evaluation team. The Level II assessment involves development of a proposal for integrating technology into instruction. No schools completed the Level III assessment, which involves development of a teacher portfolio that documents how technology was used in an academic setting to achieve academic goals such as increasing student performance or motivation. (See Appendix B for the UCONN school summary report and a sample teacher report.)

- Student Assessments – Data from Connecticut's statewide assessments (CAPT and CMT) were obtained from the reports available through http://www.captreports.com and http://www.cmtreports.com. These data will be used to track progress toward state goals for student achievement in reading/language arts and mathematics over the course of the Blue Chip projects. Data were obtained for the Connecticut Academic Performance Tests (CAPT) for 2003 and 2004. The 2004 CAPT, administered near the end of the Blue Chip projects' first full academic year, may be considered a measure of initial outcomes for projects involving grade 10 students. The most recent Connecticut Mastery Test (CMT) for grades 4, 6 and 8 was administered during the fall of 2003, early in project implementation, so data from this test are considered baseline. Data for the fall 2002 test also were included as baseline.

**Category A and Local Competitive Projects**

- Document Review – Districts and partnerships conducting Category A and Local Competitive initiatives submitted interim and annual project reports, detailing activities and progress toward goals. The reports were reviewed and summarized to identify trends and patterns across projects. Seventeen of 20 Category A projects (85%) and 27 of 39 Local Competitive projects (69%) submitted annual reports in time for inclusion in this report. Information on the Category A and Local Competitive grant projects has been consolidated in this report, due to the many similarities between the projects.

**Alliance of RESCs (Statewide Professional Development, Educational Technology Systemic Evaluation, and Educational Technology Development Projects)**

The Alliance of RESCs and the individual RESCs provided the evaluators with documentation of activities performed under each component of this grant. In addition, the Alliance contracted for an external evaluation of its activities. All documentation was reviewed for the CT EETT evaluation. Descriptions of the Alliance's activities and documentation appear below:

- The Alliance provided a chronological summary of statewide professional development activities and a spreadsheet file, listing school-based professional development, regional training for educators, and technical assistance services provided by the participating RESCs between October 2003 and August 2004. Detailed records of school-based and technical assistance activities, such as the time devoted to specific topics and technical issues, were incomplete due to the large number of activities involved and the difficulty of compiling records from the RESCs' separate internal accounting systems. This data was used by the evaluation team for descriptive purposes only. Complete records of regional training services, which were offered through Tech Times, were available. These courses were categorized by the Connecticut Teacher Technology Competencies to which they applied for analysis by the CT EETT evaluation team.

- During the 2003 – 2004 academic year, the Alliance developed and implemented a web-based data collection tool for assessing the quality and value to participants of technology-related statewide professional development activities. While the online tool, named Tech Tracks, was in development, participants in training and technical assistance activities were asked to complete a paper survey questionnaire. After Tech Tracks began operation in April 2004, participants were invited to fill out the survey online, and RESC staff began entering the hard-copy responses into the system. On August 31, 2004, data was extracted from the system for analysis and reporting. A total of 2,691 responses were in the system at that time, representing approximately half the responses received. The majority of responses that were entered related to regional training activities funded under CT EETT (82%, n = 2,157). Most respondents identified themselves as teachers (78%, n = 1,342), with the remainder reporting roles such as librarian, media specialist, technology coordinator, instructional assistant, paraprofessional, administrator, other certified or noncertified staff, or other. The Tech Tracks report was reviewed by the CT EETT evaluation team.

- The Alliance compiled and produced a CD-ROM of successful examples of technology-integrated lessons and learning units submitted by teachers statewide. Technical difficulties delayed release of the CD until September 2004, so information on its contents and distribution are not included in this report.

- As part of its educational technology evaluation activities, the Alliance conducted classroom observations, focus groups, and a survey of district staff to identify the level of technology usage and technology-related needs in school districts statewide. The results of these activities were presented in the report *State of the State: Use of Technology in*

*Connecticut School Districts*. The process was intended to establish baseline levels of technology usage and needs and as a pilot of the assessment, with revisions planned in subsequent years. The classroom observations provided a broad measure of the degree of technology presence and usage in a variety of schools in all RESC regions, as well as examples of classroom use and of challenges at the classroom level. Copies of the observation reports were provided to the CT EETT evaluation team and were summarized for this report. Each RESC held a focus group of technology stakeholders – including school administrators, department chairs, RESC staff, librarians, teachers, and technology coordinators – to help identify key themes and concerns to be included in the statewide survey. The survey was designed to solicit information related to use of technology at the district and school level, desired and obtained technology outcomes, professional development strategies, district support for technology use, satisfaction with professional development and with use of technology, opportunities for and barriers to technology use, and demographic information. A link to the web-based survey was e-mailed to an individual in each of the state's 169 public school districts who had been identified by RESC staff as the person in the district most familiar with technology. A total of 68 responses were received, representing a 40% response rate. The Alliance provided a copy of the project report to the CT EETT evaluation team for use in this report. The report provides a statewide perspective that includes some CT EETT project participants. Data was not available to determine if the survey sample was representative. Therefore, this data should not be considered representative of the state.

- The Alliance provided the CT EETT evaluation team with an overview of educational technology development activities – statewide coordination and collaboration - conducted between October 2003 and August 2004 to promote efforts to increase educational technology capacity. These activities were largely meetings, discussions, information sharing, and planning. The information provided was used for descriptive purposes.

- Educational technology development activities also included a statewide conference on technology in education conducted during June 2004. Approximately 200 educators attended the one-day conference, titled "Technology as a New Literacy." Information on conference topics, attendance, and feedback was provided to the CT EETT evaluation team for use in this report.

**TAGLIT Survey**

- During the 2002 – 2003 and 2003 – 2004 school years, representatives of 59 school districts participated in training offered through the Gates Foundation's Technology for Leadership and Learning in Connecticut grant. Principals participating in the training were required to complete the Taking a Good Look at Instructional Technology survey (TAGLIT) and to have teachers in their schools complete it as well. They also could designate groups of students to take the survey (for example, all students, or all grade 8 students). Among principals, 130 of 243 (53%) registered for the survey completed it, as did 5,618 of 7,306 teachers (77%) registered and 10,027 of 12,449 (81%) students registered. The survey assesses technology planning, policies, and expenditures at the district level; technology use, skills, professional development and support among

teachers; technology use, skills, and effects among students; technology-related connections between schools and their communities; and technology-related resources and support. Information provided by the state coordinator for TAGLIT indicated that the districts participating in Gates training included all 16 that received Blue Chip grants, seven that received Category A grants, and five that received Local Competitive grants. The coordinator also reported that districts that had not participated in the Gates training could volunteer for the survey. A report generated by the survey provider did not specify the number of districts represented in the survey results. Information from the survey is included in this report to provide perspective. However, as specific characteristics of the sample were unavailable, this data should not be considered representative of districts or schools statewide.

# Evaluation Findings

The following summary of the evaluation findings is organized by evaluation topics and questions.

**1. In what ways did CT EETT initiatives affect access to educational technology in schools in high-need districts and districts statewide?**

**Finding: All Blue Chip Schools and most Category A and Local Competitive projects reported increased access to educational technology as a result of CT EETT. Many cited this outcome as the most successful aspect of their projects thus far. Increased access most often involved desktop and laptop computers, mobile laptop laboratories, SMARTboard information display/data input devices, data projectors, and network equipment such as hubs and servers. State-level quantitative data related to technology access during the 2003 – 2004 academic year was not yet available for this report. In the 2002 – 2003 school year, most Blue Chip Schools provided greater than average access to technology compared to schools statewide. However, a majority of the teachers responding to the TAGLIT survey considered current levels of access to technology inadequate or somewhat adequate. Most students and teachers responding to the TAGLIT survey reported having access to computers at home. District technology staff, surveyed by the Alliance of RESCs, consider support for technology, such as technical assistance and professional development, to be nearly as important to successful technology integration as access to technology itself.**

**Blue Chip Schools**

All Blue Chip Schools reported in annual reports or during site visits that Blue Chip initiatives increased access to educational technology for students and teachers. In every school, increases were attributed to equipment and software purchased with grant funds. Several schools also reported increased access through additional resources provided by district or other sources, or through changes in school operations or policies that improved access to existing technology. Technologies most often cited in reports of increased access were:

- ✓ Laptop computers and mobile laptop laboratories,
- ✓ Desktop computers,
- ✓ SMARTboard information display/data input devices and data projectors,
- ✓ Network infrastructure such as hubs and servers,
- ✓ DANA computers (small, elementary laptop computers made for classroom use),
- ✓ Palm personal digital assistants and related hardware, and
- ✓ Video and multimedia production equipment.

In half of Blue Chip Schools, educators reported that increased access to technology was among the most successful aspects of their Blue Chip initiatives. Examples provided by the schools included:

- Use of wireless laptop laboratory carts facilitated access to and use of technology tools in the classroom.
- Introduction of DANA computers, laptops and SMARTboards allowed teachers and students to become comfortable with technology integration.
- Installation of SMARTboards in classrooms enabled teachers to make lessons more interactive, increasing student engagement and teacher efficiency.
- Improvements to network infrastructure and acquisition of more powerful computers relieved technical shortcomings that previously had hindered attempts at technology integration.
- Development of a video production studio and use of the studio in classes provided opportunities for technology education and increased schoolwide daily communication between students and staff.
- Acquisition and use of Destination Reading literacy software resulted in increased student enjoyment of reading and motivation to read.

Five schools reported the following challenges related to access to technology:

- Purchases of new equipment created inequities of access among students and teachers because grant funds were not sufficient to provide new technology for all classrooms.
- Increased access to technology required schools to set and enforce policies to focus student use on appropriate educational activities.
- Despite increased access, demand for equipment exceeded supply.
- Delays in equipment delivery resulted in program setbacks.
- Some new technologies were subject to loss, breakage, high repair costs, repair-related delays, and technical problems. These challenges were reported most often in schools using Palm PDAs.

The increase in access during the 2003 – 2004 academic year could not be quantified due to delays in availability of technology data. During the 2002 – 2003 academic year, the most recent year for which data is available, most Blue Chip Schools provided a greater than average degree of access to technology for students compared to Connecticut schools statewide. This data, submitted for the annual Strategic School Profiles, should be considered baseline, as it reflects conditions before implementation of Blue Chip initiatives. During 2002 – 2003, the ratio of students to instructional computers in Blue Chip Schools ranged from 0.8 to 4.4, with an average ratio of 2.9, compared to a state ratio of 4.0. At that time, Connecticut's statewide ratio was equal to the nationwide average, according to data published in EducationWEEK magazine's special report *Technology Counts 2004* (Volume 23, No. 35, 5/8/2003, page 68). Access data is summarized in a table on the next page. Most Blue Chip Schools' reported ratios were equal to or lower than their districts' ratios, as well.

**Access to Computer Technology in Blue Chip Schools (2002-2003)**

| School Name | Number of Students per Academic Computer | |
|---|---|---|
| | In School | In District at Level* |
| Alternative Center for Excellence | 3.7 | 4.4[1] |
| Derby Middle | [2] | |
| Hall Memorial | 3.5 | 3.5 |
| J.M. Wright RVTS | 0.9 | 2.3 |
| Killingly Intermediate | 4.2 | 4.2 |
| Lebanon Middle | 3.5 | 3.5 |
| Mansfield Middle | 1.6 | 1.6 |
| Mary Morrison | 2.1 | 2.9 |
| Metropolitan Learning Center | 0.8 | N/A[3] |
| New Britain High | 4.4 | 3.3[1] |
| North Stonington Elementary | 3.2 | 3.2 |
| Sunset Ridge | 3.7 | 7.5 |
| Thomas Edison Magnet | 2.0 | 2.0 |
| Walsh | 4.4 | 4.9 |
| West Middle | 3.0 | 4.5 |
| Wintergreen Magnet | 2.8 | 2.8 |

Source: Strategic School Profiles for 2002-2003.
* Elementary, middle or high school levels.
1 ERG data was substituted for district data in the Strategic School Profile.
2 Data is not available because Derby Middle School was part of Derby High School during 2002-2003.
3 District/ERG data were not provided for Metropolitan Learning Center.

## Category A and Local Competitive Projects

Most Category A and Local Competitive projects that addressed access issues reported increased access to technology among project constituents. These included projects in the following grant categories:

- Distance learning community,
- Establish or expand partnerships,
- Adapt or expand technology,
- Promote meaningful parental involvement (Parent communication),
- Acquire applications of technology to support school reform,
- District-wide information systems,
- Network infrastructure, and
- Acquire connectivity linkages, resources, and services.

Among the 23 active projects that had planned to increase access during the 2003 -2004 school year, 18 (78%) reported in annual progress reports that they had achieved increased access to computer hardware or software, network services, or related technology. Among an

additional four active distance learning projects that were in planning stages (scheduled to begin implementation during 2004 – 2005), one reported an increase in computer access for teachers related to the planning process. Two projects had not yet begun implementation.

Examples of purchases made to increase access to technology among project participants included the following hardware and software:

- ✓ Laptop and desktop computers,
- ✓ Network equipment,
- ✓ SMARTboards and data projectors,
- ✓ Digital cameras and scanners,
- ✓ Assistive technology,
- ✓ New or upgraded student management systems,
- ✓ Web development software,
- ✓ Instructional software, and
- ✓ Software for developing lessons and web sites, increasing teacher productivity, and generating surveys.

Project activities that resulted in improved access included:

- ✓ Developing a local network available in every classroom,
- ✓ Lending parents a digital camera for use in digital storytelling projects,
- ✓ Developing a publishing center where parents could create letters, brochures and flyers, and
- ✓ Providing e-mail accounts for parents.

Reported outcomes of access-related activities included the following examples:

- One project purchased additional computers for an existing mobile laptop laboratory, making the total number sufficient for an entire class and resulting in a dramatic increase in use of the lab.
- Another project reported upgrading the school's access to the Internet, which made using the Internet easier for teachers and "positively impacted all classes."
- A third project reported that assigning laptops to teachers had given them constant access to communication tools that facilitated curriculum development.

Several projects reported that increasing access to technology remained a challenge due to limited funds for purchases, delays in technology acquisition and in opening of computer laboratories, and delays in release of grant funds.

**Alliance of RESCs**

The Alliance of RESCS report *State of the State: Use of Technology in Connecticut School Districts* presented data on access-related issues, including opportunities for and barriers to technology integration and district support for technology use. Data from this pilot

assessment of technology usage and need is not necessarily representative of conditions in districts and schools statewide.

Responses to access-related survey items suggest that district technology staff consider access to support for educational technology, such as technical assistance and professional development, to be nearly as important as access to technology itself if districts are to integrate technology into instruction effectively.

Among the five resources most often cited by RESC survey respondents as providing opportunities for advances in technology integration, three were technologies and two were support services.

**Resources Providing Opportunities for Technology Integration***

| **In my district, access to the following provides an opportunity to help us move forward with technology integration:** | **Total Agree** |
|---|---|
| Networked computer labs | 95.3% |
| Technical assistance available through the district | 86.0% |
| Projectors for teachers | 84.4% |
| Technical assistance available through RESCs | 81.2% |
| Frequent and easy access to digital cameras | 79.7% |

* Excerpted from: *State of the State: Use of Technology in Connecticut School Districts*, Table 30, page 24.

Two access issues were among the five factors most often cited as barriers to advances in technology integration: insufficient funding (limiting ability to provide necessary resources) and time or scheduling difficulties (limiting teachers' ability to access technology or prepare technology-integrated lessons). Other barriers most often cited related to staff preparation, staff perceptions, and the rate of change in computer applications. Respondents also cited outdated equipment (29%), insufficient access to technology for staff (25%) or for students (23%), or lack of adequate infrastructure (16%) as barriers to progress in technology integration.

**Perceived Barriers to Technology Integration***

| **In my district, the existence of the following is a barrier to our ability to move forward with technology integration:** | **Total Agree** |
|---|---|
| Insufficient funding | 65.0% |
| Staff insecurity about their ability to use technology | 56.4% |
| Staff uncertainty about the relevance of technology to student outcomes | 48.4% |
| Rapid changing of software and licensing | 47.6% |
| Time or scheduling difficulties | 45.2% |

* Excerpted from: *State of the State: Use of Technology in Connecticut School Districts*, Table 31, page 25.

Most survey respondents agreed that eight resources are critical to districts' being able to use technology effectively. The resources ranged from hardware (such as reliable equipment) to

services (technical support, professional development) to staffing (technology coordinators) and staff requirements (competency standards).

**District Support for Technology Use***

| In my opinion, a district MUST have at least the following to be able to use technology effectively: | Total Agree |
|---|---|
| Adequate network resources | 100.0% |
| High quality and effective software across the curriculum | 100.0% |
| Sufficient technical support to maintain technology in working order | 100.0% |
| Updated and reliable equipment | 100.0% |
| Broadband/high speed Internet access in every classroom | 98.5% |
| Access to necessary professional development for all staff | 98.4% |
| A technology coordinator for the district | 96.9% |
| Basic competency requirements for all staff | 96.9% |

* Excerpted from: *State of the State: Use of Technology in Connecticut School Districts*, Table 28, page 23.

Classroom observations conducted for the pilot assessment reported computers installed in all 24 of the classrooms visited. The number of computers installed varied from one to 20, and additional computers were present in two classrooms due to use of laptop laboratory carts (with 20 and 24 laptops). In the majority of classrooms:

- ✓ Installed computers were connected to the Internet (92%),
- ✓ Additional technology such as digital cameras or televisions were present (88%),
- ✓ Computers were in use during the observation period (83%), and
- ✓ Signs of computer use such as computer-generated projects were posted (75%).

**TAGLIT Survey**

Among teachers responding to the TAGLIT survey, nearly two-thirds rated access to computers as less than adequate, and nearly two-thirds characterized the placement of computers as inappropriate in light of their schools' instructional technology goals. As the specific characteristics of the TAGLIT sample are unknown, this data should not be considered representative of districts or schools statewide.

The TAGLIT survey asked teachers to rate the adequacy of access to technology, both hardware and software, on a four-point scale (inadequate, somewhat adequate, adequate, excellent) in light of their schools' technology goals. Among the 5,141 teachers who responded, 31% rated access to computers as inadequate, 32% as somewhat adequate, 23% as adequate, and 12% as excellent. Teachers were more likely to rate access to other types of hardware, such as printers and projectors, as adequate or excellent. Asked to characterize the placement of computers in light of their schools' instructional technology goals, 61% of teachers rated placement as inappropriate, 22% as somewhat appropriate, 12% appropriate, and 4% ideal.

**Summary of Teacher Responses to Access Items***

| Technology | Inadequate | Somewhat Adequate | Adequate | Excellent |
|---|---|---|---|---|
| Computers | 31% | 32% | 23% | 12% |
| Printers | 13% | 30% | 30% | 26% |
| Projection devices | 10% | 27% | 34% | 28% |
| Digital cameras/scanners | 15% | 34% | 29% | 21% |
| Basic (software) tools | 14% | 34% | 29% | 20% |
| Multimedia (software) tools | 8% | 25% | 36% | 29% |
| Communication (software) tools | 19% | 29% | 25% | 25% |
| Research and problem-solving (software) tools | 19% | 30% | 29% | 21% |
| Curriculum focused (software) tools that support specific subjects | 16% | 27% | 28% | 27% |

* Source: TAGLIT survey items 5a.2 and 5b.1.

Most teachers (91%, n = 5,112) and most students (88%, n = 8,824) reported on an item for both teachers and students related to access at home having access to a computer at home that they used with the Internet. An additional 5% of teachers (n = 281) and 9% (n = 902) of students reported having computers at home that they do not use, or that they use without accessing the Internet. The remainder reported no access to computers at home.

School leaders reported a ratio of students to instructional computers of 4:1, matching Connecticut's reported statewide ratio. Three-quarters of school leaders who responded to TAGLIT (74%, n = 96) reported that their schools had formal policies on equitable student access to technology.

**2. Is there evidence that CT EETT initiatives increased teacher technology literacy competencies?**

**Finding: All Blue Chip Schools and many of the Category A and Local Competitive projects reported increased teacher technology competencies as a result of CT EETT initiatives. Almost all projects reported providing or planning activities intended to result in increased teacher technology competencies. Technology literacy professional development was provided in CT EETT projects and statewide through large and small group and individualized instruction, coaching, modeling, mentoring and general classroom technical support. The Alliance of RESCs reported providing a total of 1,231 days of professional development, regional training, and technical assistance related to technology use and integration. Alliance training requests changed over the first year of CT EETT from basic content to more advanced technology competencies. Eighty-four percent of those Blue Chip School teachers completing the UConn Level I educational technology assessment passed, demonstrating possession of at least adequate technology competencies. However, less than half of district technology staff surveyed statewide by the Alliance believe that all staff in their district have an adequate base-level of knowledge related to technology. In responses to the TAGLIT survey, 43% of teachers reported participating in 4 hours or less of professional development related to technology per year. In TAGLIT survey responses, teachers were more likely to report being able to use technology tools than to report actually using those tools in teaching and learning.**

**Blue Chip Schools**

Qualitative data from Blue Chip School site visits and progress reports indicate that teacher technology competencies increased as a result of CT EETT initiatives. Quantitative results of the UCONN Level I educational technology assessment showed that most teachers tested possessed at least adequate technology competencies across the four standards of the Connecticut Teacher Technology Competencies (CTTC). However, the CT EETT evaluators were unable to obtain UCONN Level I data on teacher skills at the individual standards or competency levels of the CTTC.

During site visits, teachers, administrators, and parents at Blue Chip Schools reported that CT EETT initiatives resulted in increased teacher technology knowledge, skill, and confidence. Project participants attributed the change to professional development teachers received under the grant. Reported evidence of increased teacher technology competencies from administrator observations and teacher self-reports included greater use of technology, greater integration of technology into the curriculum, production of teacher electronic portfolios, and completion of professional goals in technology.

Blue Chip Schools indicated in annual reports and during site visits that teachers were integrating technology into instruction in new ways as a result of professional development provided through the CT EETT grant. Examples included:

- ✓ Use of new educational software,
- ✓ Creation and implementation of technology-integrated activities for students,

- ✓ Teaching of new advanced technology courses,
- ✓ Use of multiple media for increased communication with students, other teachers, and parents, and
- ✓ Increasingly effective use of online learning environments.

Teachers reported in focus groups that their levels of technology competency varied from novice to advanced prior to Blue Chip implementation. Most reported having gained knowledge, skill, and confidence through professional development. Still, reported levels of competence and comfort varied within and among schools. At some schools, all participants in teacher focus groups reported moderate-to-expert technology skills. At other schools, some teachers reported that they were still learning the basics of technology use and integration, while others described sophisticated integration of technology such as presenting simulations and gathering, analyzing and presenting data during classes.

In the 15 Blue Chip Schools for which data was available, the majority of teachers participated in and passed the UCONN Level I assessment. Among the 578 teachers at those schools whose participation in the assessment was funded, 453 (78%) completed the Level I assessment. Among those who completed the assessment, 382 (84%) passed. Teachers who failed the test were given the opportunity to retake it, with only the most recent result reported to their schools. Among the eight schools that were indicated on the UCONN report as having completed Level I testing as of August 2004, five had pass rates of 100% on the assessment, and one had a rate of 95%. The lowest pass rate was 24%, at a school where technology use was widespread and professional development focused on new multimedia technology acquired through the Blue Chip grant rather than on the applications and activities covered in the Level I assessment. At two schools, 30 or more teachers had not yet been tested. (See Appendix B for a sample teacher report.)

**UCONN Husky Educational Technology Assessment Program (HETAP), as of August 17, 2004**

| Assessment Level | Number of Contracted Schools | Number of Contracted Participants | Number Completed | Number Remaining | Number Passed | Number Failed | Average Score |
|---|---|---|---|---|---|---|---|
| **Level I** | | | | | | | |
| **Totals** | 15 | 578 | 462 | 117 | 382 | 71 | |
| **Total Percent** | | | 78% | 20% | 84% | 16% | 88% |
| | | | | | | | |
| **Level II** | | | | | | | |
| **Totals** | 1 | 28 | 28 | 0 | 28 | 0 | N/A |
| **Total Percent** | | | 100% | 0% | 100% | 0% | |

Teachers at one Blue Chip School completed the Level II assessment as well. All 28 teachers who participated in the assessment passed. This school used a new professional development model focused on developing technology leaders among teachers and having them provide individualized and small-group instruction to support teachers through the assessments.

Schools reported presenting technology-related professional development in many forms, including large- and small-group instruction, individualized instruction, general classroom technical support, coaching, modeling and mentoring. Professional development was largely presented by RESC staff through required contracts with Blue Chip Schools. Some schools also utilized technology leaders among their own teaching staffs to train and coach colleagues, and some relied on hardware and software vendors for training on specific systems or programs.

During site visits to several schools, participants expressed the belief that the organization and method of professional development delivery affected the degree of improvement of teacher technology competencies and influenced the overall success of the Blue Chip initiative. Participants reported that the most effective training model for increasing teacher technology competencies combined small-group and individualized instruction that was tailored to the specific needs and abilities of teachers and that included ongoing classroom support, such as coaching or mentoring. Several schools reported that the small-group or individual training provided by a RESC technology integration specialist was a key factor in teachers' increased competency.

Leaders of Blue Chip Schools initiatives reported challenges to professional development including: addressing the varied technology needs and abilities of all teachers, overcoming initial teacher discomfort with and resistance to technology, providing training during union work-to-rules actions that discouraged teacher participation, and district opposition to releasing teachers from classroom obligations to attend training.

Reaction to the UCONN Level I assessment varied among the Blue Chip Schools. Four schools reported in progress reports and during site visits that participation in the assessment had had a positive effect on teacher competencies because it required teachers to take responsibility for and to develop their technology skills. Ten schools reported that the assessment was among the most challenging aspects of their Blue Chip initiatives. For example, leaders at one school reported that participation in the Level I assessment negatively impacted teachers' attitudes toward all aspects of the grant, and those at two schools questioned the assessment's validity as a measure of teacher competencies.

Additional reported challenges related to the Level I assessment included:

- ✓ A lack of clear expectations or scoring rubrics,
- ✓ Contradictory instructions,
- ✓ Content some teachers considered irrelevant,
- ✓ A high degree of teacher anxiety,
- ✓ Scheduling difficulties,
- ✓ Technical problems related to the web board used for open-ended questions, and
- ✓ Weighting of sectional scores that caused some teachers to fail despite high overall scores.

**Category A and Local Competitive Projects**

More than 90% of active projects reported providing or planning professional development to increase teacher competencies. Nearly half of active Category A and Local Competitive projects that submitted annual progress reports reported that CT EETT initiatives had increased teacher technology competencies. Many projects cited the development of teacher technology competencies as among the most successful aspects of their CT EETT projects.

All Category A and Local Competitive projects were required to include a professional development component aligned with the Connecticut Teacher Technology Competencies. Seven of the 44 Local Competitive and Category A projects for which annual reports were received were in grant categories the primary goal of which was development of technology leaders, cadres of teachers who could serve as experts in the effective integration of technology into instruction.

Among the seven technology leaders projects, six reported providing or planning professional development designed to increase teacher technology competencies. One project did not begin grant activities until June 2004. Four of the six projects that had begun implementation reported that professional development had increased teacher competencies. For example, one school reported in its annual progress report that teacher knowledge of and confidence with technology had increased as a result of CT EETT initiatives.

Among the 35 active projects that did not focus primarily on the development of teacher technology competencies, 15 reported increased teacher technology competencies or outcomes that reflected increased competencies. This included four projects that were in planning stages.

Examples of the reported outcomes that reflected increased teacher technology competencies included:

- ✓ Increasing numbers of teachers integrating technology into lessons,
- ✓ Teacher participation in Technology Expos,
- ✓ Teachers' assisting colleagues with integration efforts,
- ✓ Sharing and presentation of new technology-integrated lessons among teachers,
- ✓ Incorporation of technology into professional goals, and
- ✓ Increased use of technology resources.

Professional development for teachers ranged in size from whole-group to small-group and one-on-one instruction and in scope from comprehensive programs on basic computer skills to focused sessions on specific technologies, such as SMARTboards and PDAs. Most projects also provided training on advanced techniques such as web design, making effective use of e-mail and the Internet for increased communication, use of technology for evaluation, and analyzing data to drive instruction.

A few projects cited challenges related to increasing teacher technology competencies. Challenges included limited funding available for professional development, the steep learning curve for technology novices, the amount of time involved in learning new technology, and recruiting teachers to participate in professional development.

**Alliance of RESCs**

The Alliance of RESCs provided statewide professional development for educators focused on improving student academic achievement through technology. Professional development delivery included school-based professional development, regional training for educators, technical assistance services, and creation of a compilation CD-ROM of best practices in technology-integrated instruction. The table below summarizes projected days of training by the member RESCs, with the total number of days provided.

**Summary of Professional Development Services**

| Projected RESC Days: | School-Based Professional Development | Regional Training | Technical Assistance |
|---|---|---|---|
| ACES | 155 | 83 | 27 |
| CREC | 168 | 100 | 30 |
| CES | 117 | 72 | 17 |
| Education Connection | 72 | 36 | 32 |
| EASTCONN | 65 | 33 | 42 |
| LEARN | 71 | 36 | 32 |
| **Total Days Projected** | **648** | **360** | **180** |
| **Total Days Reported*** | **669** | **390** | **172** |

* Reported totals not available by RESC.

School-based professional development included training, planning, coaching, and collaboration on issues related to technology integration, such as integration strategies, alignment with curriculum, and core technology competencies. The Alliance reported a change in requests for these services through the year from requests for training in core skills and basic topics to requests for training in more complex issues of technology integration in curricula and planning.

A summary of regional training courses offered through Tech Times between October 2003 and August 2004 listed 501 classes, some offered over multiple days or evenings. Examples of training topics include "Enhancing the Writing Process Using Word in the Classroom (grades 1-5)," "World Language and Culture Acquisition through Technology," "Geometer's Sketchpad," and "Using Technology to Meet the Needs of Multiple Intellects."

Technical assistance services were district-based and consisted of two to four days of assistance such as assessing technology competencies, reviewing and updating district technology plans, developing needs assessment tools, training for technical support, and consulting on curriculum development and systems design.

The Successful Practices CD, containing approximately 30 exemplary lessons, was delayed due to technical difficulties and is scheduled for distribution during fall 2004.

Respondents to the Tech Tracks survey were asked to identify the standard from the Connecticut Teacher Technology Competencies (CTTC) addressed by the course in which they had participated. The standard most frequently cited was Educational Technology Concepts and Operations, which comprises knowledge and skills related to use of technology for teaching and learning, troubleshooting strategies, use of networks, and knowledge of emerging technologies.

**CTTC Standards Addressed in Professional Development**
**(n = 2,209)**

| Standard | Percentage |
|---|---|
| Educational Technology Concepts and Operations | 55.5% |
| Creating Learning Environments and Experiences | 24.3% |
| Productivity and Professional Practice | 19.8% |
| Social, Legal, Ethical, and Human Issues | 0.4% |

The majority of respondents to Tech Tracks rated professional development workshops and technical assistance, and the providers, as excellent and indicated that the services provided had been appropriate for their own levels of expertise. Training survey items related to motivating the respondent to learn the subject matter, providing useful examples, and providing practice. Presenter survey items related to clarity and understandability, willingness to and ability to clearly answer questions, knowledge of the subject, concern and interest, preparedness, and provision of helpful feedback to participants.

The Alliance of RESCS report *State of the State: Use of Technology in Connecticut School Districts* presented data on technology competencies among district and school staff. Data was not available to determine if the survey sample was representative. Therefore, this data should not be considered representative of the state.

Respondents to the survey of district technology personnel indicated that their districts expected all staff to meet numerous technology-related performance goals. Performance goals cited by more than 95% of respondents included the following:

- ✓ Use technology in an ethical manner,
- ✓ Feel confident in their ability to use technology,
- ✓ Use technology to improve the efficiency of teaching tasks,
- ✓ Understand when to use technology to support learning,
- ✓ Use technology to improve the efficiency of administrative tasks, and
- ✓ Develop an awareness of information literacy.

Approximately half of respondents indicated that their districts "are not really assessing staff technology competencies." Less than half indicated that they were satisfied with their district's ability to assess staff or student competencies or to achieve staff technology competencies.

Most respondents indicated that in their districts professional development in technology was tied to staff and district needs, that technology was integrated into professional development,

and that there was a shared vision for technology. However, less than half of respondents to the survey indicated that they believed all staff in their district have an adequate base-level knowledge of technology.

Responses to survey items concerning access to resources suggest that district technology staff consider access to support for educational technology, such as technical assistance and professional development, to be nearly as important as access to technology itself.

The Alliance of RESCs produced a statewide conference titled "Technology as a New Literacy," which was attended by approximately 200 educators.

More than half of respondents rated the conference as excellent on four measures, including motivating the respondent to learn, challenging the respondent's thinking, providing useful examples, and providing helpful ideas for practice. Rating the conference on a four-point scale where 1=poor and 4=excellent, more than 90% of respondents rated the conference at 3 or above on these measures. More than 95% of respondents indicated they felt the conference had been worth their time. Effects of the conference on teacher competencies were not measured.

**TAGLIT Survey**

Teachers who responded to the TAGLIT survey were more likely to report that they were able to use four types of technology tools than to report that they actually used the tools in teaching and learning. Approximately half of responding teachers indicated that they could use communications tools or research and problem-solving tools to complete tasks independently, or could teach others to use the tools to complete the tasks. Smaller proportions reported that they integrated the tools in teaching and learning.

**Self-Assessment of Teacher Technology Skills***

| | % Able to Complete Tasks Independently or to Teach Others to Do So Using the Tools | % Who Integrate the Tools in Teaching and Learning |
|---|---|---|
| Basic tools | 45% | 37% |
| Communication tools | 54% | 25% |
| Multimedia tools | 32% | 21% |
| Research/problem solving tools | 51% | 39% |

* Source: TAGLIT Survey State Report, Tables 2a.1 through 2a.4 and Tables 2b.2 through 2a.5.

Teacher respondents to the TAGLIT survey were most likely to report using word processors in teaching and learning. In response to items on specific technology tools, nearly three-quarters of teachers (71%, n = 3,650) responded that they made a conscious effort to include word processing in teaching and learning or naturally included it and used it "in powerful ways." More than half of teachers reported using electronic or online references and world wide web research in teaching and learning. Less than half reported including e-mail in teaching and learning, and less than one-quarter reported including spreadsheets or databases.

When asked about participation in technology-related professional development, 43% of teachers reported participating in four hours or less per school year. (Numbers responding to this item were not available.)

**Teacher Reports of Technology Professional Development***

| | 4 Hours or Less | 5-14 Hours | 15-24 Hours | 25 Hours or More |
|---|---|---|---|---|
| Percent Reporting | 43% | 40% | 10% | 7% |

* Source: TAGLIT Survey State Report, Chart 2c.1.

Nearly one-third of leaders (30%, n = 39) reported that their schools do not have a policy on assessment of staff technology competencies.

**Leader Reports of Policy on Assessment of Staff Technology Competencies***

| | n | No Policy | Informal Policy | Formal Policy, Partially Operational | Formal Policy, Fully Operational |
|---|---|---|---|---|---|
| Percent Reporting | 130 | 30% | 40% | 16% | 12% |

* Source: TAGLIT Survey State Report, Table 1b.1.

**3. In what ways did CT EETT initiatives contribute to the establishment of successful research-based instructional methods that effectively integrate educational technology?**

**Finding: The CT EETT initiatives have begun to contribute to the establishment of successful research-based instructional methods that effectively integrate educational technology. Blue Chip Schools initiatives included implementation of comprehensive school change models using technology as the impetus, involvement in action-research projects in conjunction with Gates Leadership training, and use of technology integration research in lesson design. Category A and Local Competitive projects reported beginning initiatives related to increasing research-based integration of technology in instruction that included distance learning, professional development, online research and curriculum development.**

**Blue Chip Schools**

In site visits and interim and annual reports, six Blue Chip Schools specifically reported that their CT EETT initiatives supported establishment of research-based instructional methods that integrated technology. Four additional schools provided some information in annual reports regarding the role of CT EETT initiatives in establishment of research-based instructional methods.

- One school designed its Blue Chip initiative to support a comprehensive school change effort founded on a research-based instructional method (the Digital Classroom Design Model, Cicchetti, 2003) that uses technology integration to change the roles of teachers

and students, making students more active, constructive learners. The Blue Chip grant funded professional development for teachers and acquisition of technology to assemble digital classrooms.

- Two schools reported that action-research projects initiated in conjunction with the Gates Leadership training were used to identify and explore instructional uses of technology for potential implementation.
- Three schools reported that professional development provided through the Blue Chip initiative had trained teachers to implement research-based instructional strategies and methods and to use research to design technology-integrated lessons.
- Two schools reported that staff studied and considered current research and new methods for integrating technology into instruction, but did not state how their CT EETT initiatives had contributed to this effort.
- Two schools reported that Blue Chip initiatives were supporting implementation of new curricula, but did not specify whether the curricula were research-based.

**Category A and Local Competitive Projects**

More than half of the Category A and Local Competitive projects that addressed establishment of research-based instructional methods reported that CT EETT activities during the 2003 – 2004 academic year related to that goal.

The 15 active projects that addressed research-based instructional methods were in the following grant categories:

- Distance learning community,
- Acquire courses and curricula that include integrated technology, and
- Acquire applications of technology to support school reform.

Among the active projects, four were distance learning projects in the planning phase, with implementation scheduled to begin in fall 2004. Two distance learning projects, as well as six of 11 projects in other grant categories, reported CT EETT activities that contributed to establishment of research-based instructional methods. One distance learning project was not yet active at the end of the 2003 – 2004 school year.

Activities contributing to establishment of research-based instructional methods included the following:

- ✓ Professional development on topics such as technology integration, Internet resources, new instructional models, successful methods and best practices, and use of online curriculum standards,
- ✓ Use of online resources to access current research on instructional methods,
- ✓ Acquisition and development of curricula and technology modules,
- ✓ Acquisition of computer hardware and software, and
- ✓ Planning and program development.

**Alliance of RESCs**

RESC documentation on school-based professional development cited numerous training sessions devoted to technology integration. However, only two, three-day training programs were specifically designated as having a research component: one regarding research in technology integration strategies, and one regarding research in best practices for study groups.

The instructional practices compiled for distribution on the Successful Practices CD were required to be innovative, effective, technology-integrated learning units or activities that were aligned with Connecticut Curriculum Frameworks. However, teachers who submitted successful practices were not required to provide specific evidence that their learning units or lessons were research-based.

**4. Is there evidence that CT EETT initiatives resulted in systemic change in the utilization of educational technology to support school improvement?**

**Finding: Most Blue Chip Schools reported evidence of systemic change in the utilization of educational technology to support school improvement. Many also reported systemic changes in other aspects of school and district operation. Examples included school-wide use of data to inform instruction, creation of schedules and protocols to coordinate technology use, closer relationships between school and district technology operations, and development of new curricula that integrate newly accessible technology. Several Category A and Local Competitive projects reported systemic changes across multiple districts. Systemic changes in these projects included broad-based use of data through data warehouse and student management software, instructional resource database development, and district policy development related to use of data. The Alliance of RESCs provided professional development and technical assistance activities that supported systemic change at the school level.**

**Blue Chip Schools**

Most Blue Chip Schools (14 of 16) reported systemic changes in the utilization of technology stemming from their CT EETT initiatives. Many also reported systemic changes in other aspects of school and district operation.

Instances of systemic change in utilization of technology that were cited in annual reports or reported during site visits and focus group sessions included the following:

- ✓ Use of data to drive instruction and guide improvement of the education process,
- ✓ Creation of equipment and laboratory reservation systems to coordinate resources with demand,
- ✓ Use of technology for non-instructional purposes such as personal organization among school staff, and

- ✓ Use of computers to review lesson plans, record teacher observations, conduct teacher evaluations, conduct staff surveys, and communicate with parents.

School staff also reported that the Blue Chip initiatives had resulted in development and revision of curricula, development of schoolwide visions for technology integration, a closer connection between school and district technical infrastructure and operations, and increased district technology resources devoted to the school.

Examples of systemic changes that extended beyond technology utilization included the following:

- The focus of one technical high school's Blue Chip initiative was implementation of a new instructional model that required rewiring most classrooms for installation of networked computers and significant technical support for new classroom computer clusters. School leaders set new policies to allow students in the school's electrical trade and advanced technology programs to become involved in improving school technology infrastructure and in providing technical support.
- The Blue Chip initiative at a middle school led to changes in several district policies. One change allowed the middle school to become involved in the technology component of high school performance graduation requirements. Middle school experiences related to Blue Chip activities also influenced a district policy under development on staff technology competencies.
- Activities related to the Blue Chip initiative at an urban high school prompted the school business department to transition from a traditional approach to business education to one featuring more specialized courses and a technological focus.
- One elementary school developed a new model for professional development for its Blue Chip initiative that required district approval of release time for all teachers for monthly training. The district granted the release time, and later expanded the professional development model on a quarterly basis to all schools in the district.

Other changes not specifically related to utilization of technology included creation of new staff positions to provide support for technology integration, creation of permanent budget items for purchase and maintenance of technology, strengthened school policies on ethical use of technology, alignment of subject-area and technology standards, and alignment of school and district technology goals.

Several project leaders stated that Blue Chip Schools initiatives have helped change the culture or understanding of technology use in education at the school or district level. Examples include one coordinator who reported that the initiative had shown district leaders how technology can help all students reach their full potential. Another noted that experiences in Blue Chip had helped district leaders understand that technology integration requires a program approach, rather than just the purchase of equipment.

**Category A and Local Competitive Projects**

All Category A and Local Competitive projects specifically designed to result in systemic changes in the utilization of educational technology reported progress toward that goal.

The seven projects with goals directly related to systemic change were in the following grant categories:

- Use technology to collect, manage, and analyze data
- District-wide information systems, and
- Implement performance measurement systems.

Activities described in annual project progress reports included:

- ✓ Acquisition of systems to support change initiatives, such as data warehouse or student management software,
- ✓ Professional development for administrators and teachers on topics such as data analysis and interpretation, data-driven decision-making, use of curriculum development tools, and use of survey systems,
- ✓ Identification of student data elements to be used to analyze achievement,
- ✓ Loading and checking of student data in data warehouse systems,
- ✓ Development of a database of technology-infused lessons and learning units keyed to state standards,
- ✓ Development of district policies on inclusion of data in school improvement plans,
- ✓ Alignment of district technology benchmarks with state standards,
- ✓ Completion of a survey related to parent use of technology for home-school communication, and
- ✓ Ongoing professional dialogue about assessment and evaluation of student learning.

Projects in several other grant categories reported activities that may, in time, lead to systemic changes in the use of educational technology to support school improvement. Two projects in networking infrastructure reported activities related to implementation of systems to support curriculum revision and communication and collaboration among teachers. And one project in connectivity reported that improved Internet access had led to curriculum revisions.

**Alliance of RESCs**

Systemic change in utilization of educational technology was not a direct objective of Alliance activities. However, some of the professional development and technical assistance activities reported in Alliance documentation supported systemic change at the school level, for example by building school capacity for data management and analysis.

The baseline survey data presented in the Alliance report *State of the State: Use of Technology in Connecticut School Districts* may in future help provide evidence of systemic

changes in technology utilization among districts. The sample used for this pilot assessment is not necessarily representative of districts statewide. Baseline results for select indicators are presented below.

- The majority of respondents indicated that their districts used technology to improve communication, to increase staff productivity, to collect student or staff data, and to improve organizational management (90% or more agreement).
- More than half of the respondents indicated that they were satisfied with their districts' use of technology to increase staff productivity (71%) and for data collection (61%). Approximately one-half indicated satisfaction with district use of technology for organizational development (49%).
- Approximately two-thirds of respondents (63%) reported that more than half of the schools in their districts had fully and effectively integrated technology into teaching and learning.

**5. As a result of CT EETT initiatives were students more likely to be technologically literate by the end of eighth grade?**

**Findings: All Blue Chip Schools reported that students were more likely to be technologically literate as a result of CT EETT initiatives. Examples included increased mastery of technology tools such as word processors, presentation software, web-based research, handheld computers, video production equipment and science probes. Student work has become increasingly technologically sophisticated, according to students and staff in some schools. Approximately two-thirds of Category A and Local Competitive projects reported completion of activities or preparation and planning for activities designed to increase technology literacy among students. Though planned, no state-wide quantitative measure of student technology competencies is yet available. Most district technology staff who responded to the Alliance survey reported believing that all students in their districts have an adequate, age-appropriate, base-level knowledge of technology. Half or more of students responding to the TAGLIT survey reported being comfortable performing a variety of technology-related tasks. Students were more likely than teachers to report being comfortable with technology, according to the TAGLIT survey.**

**Blue Chip Schools**

Qualitative data from all Blue Chip Schools indicated that students were more likely to be technologically literate as a result of Blue Chip Schools initiatives. Quantitative data on student technology literacy was not available. Measurements of student technology literacy in eighth grade have not yet been implemented by the State Department of Education.

Evidence of increased student technology competency included reports from teachers that students had come to view the use of technology as a tool to assist them in the attainment of other goals as opposed to an activity for its own sake, that they were mastering technology tools

and producing increasingly sophisticated products, and that they were learning how to use new technologies such as handheld computers (typically Palm Pilots), video production studios, and science probes.

Five Blue Chip annual reports indicated that students were required to complete a technologically-integrated project or electronic portfolio, or to meet performance graduation requirements in technology to demonstrate technological competency. One school indicated that more than 70% of eighth grade students successfully completed a series of tasks required under newly implemented performance graduation requirements.

Students who participated in focus group sessions reported an increase in their comfort with technology over the past year. Other student participants reported that their comfort levels concerning technology were high at the beginning of the year and had remained unchanged. Students who reported increased comfort attributed the change to increased use of technology, the presence of increasingly sophisticated equipment in their schools, and more in-depth coverage of technical skills in class.

Half of Blue Chip Schools reported taking steps to align curricula, activities or local technology goals with Connecticut Student Technology Competencies. Seven Blue Chip Schools reported revising curricula to include increased integration of technology and to develop technology competencies among students.

Students at most schools participated in a variety of technology activities that were unavailable prior to the Blue Chip grant. Activities ranged from use of the Internet for research to use of multimedia tools for presentations and video editing, from reading on PDAs to using scientific probes to gather environmental data.

Students' level and range of technology competency varied widely, according to teachers and school leaders. In some Blue Chip School communities, students were unlikely to have computers at home or to have used them extensively in school in prior years. In other communities, and in the participating magnet schools, students were more likely to have strong technology backgrounds.

Reported challenges related to students' technical competencies included addressing inadequate preparation among incoming students and providing the instructional time necessary to build skills sequentially.

**Category A and Local Competitive Projects**

Roughly two-thirds of active Category A and Local Competitive projects reported activities or preparation and planning for activities designed to increase technology literacy among students. Reports were evenly divided between current activities and planning or preparatory activities.

Among the 44 active projects that submitted annual progress reports, two received funding under the Information Technology Courses grant category, which supports development

of information technology courses. Both projects reported planning and preparatory activities such as curriculum research and development and team meetings.

Among the 40 active projects not focused directly on student competencies, 11 reported current activities that increased, or were likely to increase student technology literacy. An additional 14 projects reported planning or preparation for activities intended to increase student technology competencies. Preparatory activities included professional development for teachers, development of curricula and of web-based instructional environments, development of tools for assessing student technology literacy, and alignment of curricula and activities with the Connecticut Technology Standards for Students.

Reported current activities related to students' technology literacy included the following:

- ✓ Assessment of students' technology literacy needs, and planning of instruction to meet those needs,
- ✓ Technology lessons as an integral part of core subject instruction,
- ✓ Instruction on use of technology in the library media center and computer laboratories,
- ✓ Use of laptop computers for class activities such as Internet searches and data entry and analysis,
- ✓ Introduction to and daily instructional use of PDAs,
- ✓ Classes and practice sessions concentrating on keyboarding skills,
- ✓ Provision of access to computers for homework use after school, and
- ✓ Establishment of a technology portfolio requirement (among high school students).

Three Category A and Local Competitive projects reported student outcomes. One cited development of a high level of student technology proficiency over a short time period as one of the most successful aspects of the CT EETT initiative. Two reported that students had presented their technology projects during school technology nights for parents.

**Alliance of RESCs**

Reported uses of technology and expectations for student technology competencies were consistent among respondents to the survey of district staff conducted by the Alliance of RESCS. Perceived levels of student preparation and reported methods of assessing student technology literacy varied widely. Results of select indicators appear below. Data was not available to determine if the survey sample was representative. Therefore, this data should not be considered representative of the state.

- Nearly all survey respondents (99%) indicated that their districts use technology to create student products, for example, with Word or PowerPoint.
- A majority of respondents (89%) indicated that their districts expect all students to attain CT student technology standards. A smaller proportion (63%) reported being satisfied with achievement of student technology competencies.

- Most respondents (90% or more) indicated that their districts expect all students to reach the following performance goals:
    - ✓ Attain basic literacy in technology,
    - ✓ Communicate information using technology,
    - ✓ Gather information using technology,
    - ✓ Select the proper technology to enhance their productivity, and
    - ✓ Analyze, evaluate, and synthesize information using technology.
- Two-thirds of respondents (65%) indicated that all students in their district have an adequate, age-appropriate, base-level knowledge of technology.

**Methods Used to Encourage or Assess Student Technology Learning***

| My district uses the following to encourage/assess student learning in the area of technology: | Total Agree |
|---|---|
| Informal assessments (e.g. observations) | 87.7% |
| High School graduation requirements specific to technology | 57.2% |
| Course requirements specific to technology | 48.2% |
| Benchmark performance tasks | 43.7% |
| Specific technology projects at each grade level | 47.6% |
| Electronic portfolios | 41.3% |
| Educational technology examinations | 21.7% |

* Excerpted from: *State of the State: Use of Technology in Connecticut School Districts*, Table 16, page 16.

**TAGLIT Survey**

Nearly three-quarters of students responding to the TAGLIT survey (73%) indicated that they use technology in class at least weekly. As the specific characteristics of the TAGLIT sample were not available, this data should not be considered representative of districts or schools statewide.

In self-reports of their ability to complete tasks using technology tools, students were more likely than teachers to rate themselves as capable of completing tasks independently or teaching others to do so. The survey asked students and teachers to rate their ability to perform 22 tasks using basic technology tools, multimedia tools, communication tools, and research and problem-solving tools. Ability ratings were on a four-point scale ranging from "I don't know how to do this" to "I can teach others how to do this." Students' self-ratings exceeded teachers' on 14 of the 22 tasks. Ratings were averaged across the tasks in each tool category.

**Comparison of Self-Reported Technology Skills Among Students and Teachers**
**Average Percentage Reporting Ability to Complete Tasks**
**Independently or to Teach Others to Do So***

| Tasks Using: | Students | Teachers |
|---|---|---|
| Basic tools (using word processors, spreadsheets, and databases) | 50% | 45% |
| Multimedia tools (using drawing/ painting software, digital or video cameras, scanners, and presentation and multimedia software) | 47% | 32% |
| Communication tools (using e-mail, online discussions, and web authoring tools) | 62% | 54% |
| Research and problem-solving tools (using CD-ROMs, online reference software, search engines, graphing calculators, probes, and graphic organizers) | 52% | 51% |

* Source: TAGLIT Survey State Report, Tables 2a.1 through 2a.4 and Tables 3a.1 through 3a.4.

In individual items, more than three-quarters of students indicated they could do the following tasks independently, or could teach others to do them:

- ✓ Use a word processor to create documents,
- ✓ Use drawing or painting software to create pictures,
- ✓ Use e-mail to send and receive messages,
- ✓ Use online discussions to gather information, and
- ✓ Use a search engine to find information on the World Wide Web.

While more than half of students reported being able to use presentation software, less than half indicated they could complete tasks using a spreadsheet or database program, video technology, web authoring tools, or Boolean operators in World Wide Web searches.

**6. Is there evidence that CT EETT initiatives resulted in increased student proficiency in reading/language arts and mathematics?**

**Finding: Initial qualitative data indicates that CT EETT initiatives have helped improve student achievement in Blue Chip Schools. Examples include teacher reports of improved quality of student products, such as written and electronically presented reports, and student reports of increased ease and greater enjoyment of learning. CAPT scores increased across the three Blue Chip high schools from 2002 - 2003 to 2003 - 2004. Many schools also reported that CT EETT initiatives resulted in student outcomes that may lead to improved student proficiency, such as increased motivation, increased engagement and time on task, and increased study time. It is important to note that implementation was in initial stages for many of the Category A and Local Competitive projects and student outcome data was not yet available. According to the Alliance survey, district technology staff believe that technology use in the classroom improves education and that their districts expect all students to attain improved academic outcomes through the use of technology.**

**Blue Chip Schools**

Qualitative evidence from site visits and Blue Chip Schools' progress reports indicate that CT EETT initiatives resulted in increased student proficiency in reading/language arts and mathematics. It is important, in reviewing the data presented below, to consider that 2003-2004 was the first academic year of program implementation, and many programs were not fully implemented until late in the year.

The 2004 Connecticut Academic Performance Tests (CAPT), administered near the end of the Blue Chip Schools' first full academic year of implementation, may be considered a measure of initial outcomes for initiatives involving tenth grade students. Score data for the 2003 CAPT was used to establish a baseline for analyses of trends in student performance. (See Appendix C for score data.) Score data was not available for Alternative Center for Excellence, in Danbury, because fewer than 20 students in the school participated in CAPT.

Analysis of CAPT trends in mathematics and in reading/language arts showed a greater degree of improvement from 2003 to 2004 among Blue Chip Schools than among high schools statewide. A comparison of the percent of students scoring at or above the proficient level in math in 2003 and 2004 showed a statistically significant gain of 10.5% among the three Blue Chip high schools for which data was available.

**CAPT Math: Percentage Scoring At or Above Proficient Level**

| | 2003 n | 2003 CAPT | 2004 n | 2004 CAPT | 2003-2004 Difference |
|---|---|---|---|---|---|
| **Statewide** | 37,201 | 74.3% | 39,706 | 76.4% | +2.1%* |
| **Blue Chip Schools**** | 711 | 46.2% | 735 | 56.7% | +10.5%* |

* Difference is statistically significant ($p<.05$).
** Does not include data for Alternative Center for Excellence (Danbury).

For the three schools for which CAPT data was available, the change in percentage of students scoring at or above the proficient level ranged from a loss of 1.5% to a gain of 13.4%. Only the largest gain was statistically significant.

A comparison of the percentages of students scoring at or above the proficient level on the reading portion of CAPT in 2003 and 2004 showed a statistically significant gain of 5.0 percentage points for Blue Chip high schools.

**CAPT Reading: Percentage Scoring At or Above Proficient Level**

| | 2003 n | 2003 CAPT | 2004 n | 2004 CAPT | 2003-2004 Difference |
|---|---|---|---|---|---|
| **Statewide** | 37,252 | 77.9% | 39,642 | 79.1% | +1.2%* |
| **Blue Chip Schools**** | 716 | 57.5% | 760 | 62.5% | +5.0%* |

* Difference is statistically significant (p<.05).
** Does not include data for Alternative Center for Excellence (Danbury).

For the three schools for which CAPT data was available, the change in percentage of students scoring at or above the proficient level ranged from a gain of 4.6% to a gain of 9.1%. Two of the three gains were statistically significant.

The most recent Connecticut Mastery Test (CMT) for grades 4, 6 and 8 was administered during the fall of 2003, early in implementation of the Blue Chip initiatives, so data from this test is considered baseline. Data for the 2002 CMT also was obtained. Baseline CMT data indicates that fourth grade students in Blue Chip Schools were less likely than students in their ERGs statewide to score at or above the proficient level on math and reading. Students in the sixth and eighth grades in Blue Chip Schools were more likely than students in their ERGs statewide to score at or above the proficient level. (Comparison to ERGS could be made for five of six schools at the grade 4 level, and five of eight schools at the sixth and eighth grade levels.)

Four Blue Chip Schools reported anecdotal evidence of improved academic performance among students in annual progress reports. Evidence cited was increased quality of student products, such as writing assignments, among all students and specifically among special education students.

During site visits and in annual reports, many school teams reported the belief that the close of the 2003 – 2004 school year was too early in Blue Chip implementation for changes in student achievement to be quantified. However, three-quarters of Blue Chip Schools noted that CT EETT initiatives had resulted in student outcomes that educators believe will lead to increased achievement. Examples of such outcomes included perceived increases among students in the following areas:

- ✓ Motivation, excitement, and desire to learn,
- ✓ Engagement and time on task,
- ✓ Participation in class activities,

- ✓ Practice and study time,
- ✓ Willingness to discuss academics with parents,
- ✓ Time spent on editing and re-writing,
- ✓ Cooperative and collaborative learning,
- ✓ Participation in distance learning, and
- ✓ Ability to memorize information.

Educators also stated the belief that the following factors resulting from CT EETT initiatives will lead to increased student academic achievement:

- ✓ Development of the belief among students that practice leads to improvement,
- ✓ Higher teacher expectations for student academic achievement,
- ✓ Increased ability for all students to produce higher quality documents,
- ✓ Increasingly differentiated instruction,
- ✓ Increased focus on concepts rather than on data manipulation, and
- ✓ Improved teaching.

Challenges related to increasing student achievement that were reported during site visits and in progress reports included determining how to use technology most effectively to affect student achievement, using technology to promote both lower-level and higher-order thinking skills, and managing student use of technology to maximize its educational impact, while minimizing its potential for distraction.

**Category A and Local Competitive Projects**

Nearly half of all active Category A and Local Competitive projects for which annual progress reports were received were designed to foster student performance in academic subjects. These 18 projects were in the following grant categories:

- Information technology courses,
- Acquire courses and curricula that include integrated technology,
- Adapt or expand technology,
- Distance learning community, and
- District-wide information system.

Among the 18 projects in these grant categories, four reported positive outcomes in student academic performance. Three reported improved student achievement, and one reported increased student motivation and interest in learning, which may in time lead to improved student achievement.

All of the 18 projects designed to foster student proficiency in core subjects reported goals related directly to improving student achievement. Program plans to achieve these goals included the following:

- ✓ Use of data-driven decision making to guide instruction,
- ✓ Staff development of technology-integrated curriculum units, and student completion of the units, some of which are delivered via distance learning,

- ✓ Improved educator capacity to differentiate instruction,
- ✓ Increased involvement of parents in the learning process, and
- ✓ Increased access to key resources.

Among the 26 projects in other grant categories, five reported positive outcomes for this objective. For example, a networking infrastructure project reported that scores of students retaking the CAPT as juniors had increased, and a parental involvement project reported that parent workshops on the curricula had led to an increase in successful homework completion in language arts and mathematics.

**Alliance of RESCs**

The Alliance of RESCs compiled and produced a CD-ROM of successful technology-integrated lessons and learning units submitted by teachers statewide. The CD is scheduled for distribution during the fall of 2004. The intent of the CD is to improve instruction and student achievement.

Data from the pilot survey of district staff reported in *State of the State: Use of Technology in Connecticut School Districts* suggest that educators believe technology use in the classroom improves education. (These data are not necessarily representative of conditions in districts and schools statewide.) Responses to select items included the following:

- 100% of respondents agreed that use of technology in classrooms in their districts provides greater opportunities in learning,
- 98% agreed that it increases student motivation, and
- 84% agreed that it increases literacy.

Most respondents indicated that their districts expect all students to attain science outcomes (88%), numeracy outcomes (79%), and interdisciplinary outcomes (84%) through the use of technology.

**7. To what extent did CT EETT outcomes for students vary by English proficiency, race, ethnicity, gender, disability status, and status as economically disadvantaged?**

**Finding: Available quantitative and qualitative data did not indicate variation in CT EETT outcomes due to English proficiency, race, ethnicity, gender, disability status, or economic status in Blue Chip Schools. Category A and Local Competitive projects reported initiatives to ensure equal opportunities for all students including peer mentoring, after school assistance, translation technology, and home language web resources. According to Alliance survey data, district technology staff believe technology use in the classroom increases learning opportunities for students with disabilities, different learning styles, and differing levels of English proficiency.**

**Blue Chip Schools**

Blue Chip Schools reported no variance in CT EETT outcomes observed among students on the basis of English proficiency, race, ethnicity, gender, disability status, or economic status. Available quantitative data did not demonstrate variation in CT EETT outcomes on demographic factors.

During site visits, most Blue Chip Schools reported no differences in CT EETT outcomes among student subgroups (15 of 16 schools). On the contrary, one school noted that overall, technology use was no more effective for any particular subgroup than for others, but that it was often more effective for individual students scattered throughout all subgroups.

Schools did report use of technologies specific to certain subgroups that may affect CT EETT outcomes in the future. Examples included the following:

- ✓ Use of assistive and non-assistive technology to aid students with visual impairments or limited fine motor skills,
- ✓ Provision of technology for use at home by economically disadvantaged students,
- ✓ Use of technology to differentiate instruction for students on the basis of learning modality or special need,
- ✓ Use of technology to improve organization and literacy skills and to enable production of higher-quality products among special education students,
- ✓ Enrollment of targeted LEP students in video production courses to help develop communication skills, and
- ✓ Use of translation tools to improve understanding of lessons and the English language among Limited English Proficient (LEP) students.

Two schools reported that use of technology posed challenges and may lead to variation in outcomes for subgroups of students. The challenges were: 1) that specific technologies (Palm Pilots) were not well adapted for students with visual impairments, and 2) that students from economically disadvantaged households did not have access to some computer programs at home, necessitating the conversion of documents between programs used in school and those used at home.

Results of the CAPT for 2003 and 2004 indicate that academic proficiency outcomes in Blue Chip Schools do vary by demographic subgroup, in most cases generally reflecting variations evident at the state level. This suggests that Blue Chip initiatives did not affect variance among subgroups in attainment of proficiency during the first year of implementation.

CAPT score data was not reported for schools or subgroups with fewer than 20 students. For this reason, proficiency levels for certain subgroups in each school could not be compared to statewide levels.

The most recent Connecticut Mastery Test (CMT) for grades 4, 6 and 8 was administered during the fall of 2003, early in implementation of the Blue Chip initiatives, so data from this assessment is considered baseline.

**Category A and Local Competitive Projects**

Approximately one-third of Category A and Local Competitive projects reported actions taken or goals set to ensure that CT EETT initiatives foster academic achievement among English proficient and LEP students equally. Quantitative outcome data were not available for students in project schools.

Among the 42 active projects that had begun activities, 13 reported taking steps to ensure that CT EETT initiatives help improve academic achievement for LEP students or setting goals toward that end. The remainder of Category A and Local Competitive projects either did not address this evaluation question in their annual progress reports (n = 25) or stated that the question was not applicable to the project due to the project design (such as parent-focused projects) or the makeup of school populations (n = 6).

Reported actions taken to foster academic achievement among LEP students included the following:

- ✓ Differentiating instruction to meet students' varied abilities and needs,
- ✓ Providing professional development for teachers to help them differentiate instruction appropriately,
- ✓ Providing workshops to increase student and parent awareness of opportunities to increase proficiency,
- ✓ Pairing LEP students with bilingual classmates who speak the same language,
- ✓ Providing access to computers, and teacher assistance, after school to help LEP students with class topics and projects,
- ✓ Providing resources for LEP students on teacher web sites,
- ✓ Allowing LEP students to use Internet resources in their language and translation services to clarify the meaning of difficult reading material, and
- ✓ Using technology to motivate and teach students of diverse language proficiencies.

**Alliance of RESCs**

Data from the pilot survey of district staff reported in *State of the State: Use of Technology in Connecticut School Districts* suggest that educators believe technology use in the classroom increases opportunities for students in some subgroups. Data was not available to determine if the survey sample was representative. Therefore, this data should not be considered representative of the state. Responses to select items included the following:

- 95% of survey respondents agreed that technology is used in their district to increase opportunities for special education students,
- 86% agreed that it is used to increase opportunities for English language learners, and
- 81% indicated that it is used to differentiate instruction.

# Conclusion

According to first year data, progress was made toward the CT EETT goals among recipients of all four types of sub-grants: Blue Chip Schools, Category A projects, Local Competitive projects, and the Alliance of RESCs. CT EETT initiatives intended to increase access to educational technology did so, expanding the availability of many types of current and emerging technologies. The initiatives also increased teacher technology literacy competencies, though educators expressed the need for continuing professional development. In many cases, CT EETT initiatives contributed to the establishment of research-based instructional methods that began effective integration of technology into instruction. Systemic change in the utilization of educational technology to support school improvement was evident in many CT EETT projects at school and district levels. Many projects reported increased technology literacy, engagement and enthusiasm for learning among students, though quantitative data related to student outcomes is limited at this time. CT EETT projects described efforts to involve all students in technology initiatives and to use technology to meet the specific educational needs of students.

The 2003 – 2004 evaluation of CT EETT activities found that this was a period of project design, development, and initial implementation for most projects. In many cases, project activities involved planning and organization, procurement and installation of technology, professional development, and initial introduction of new technologies and instructional methods into their curricula. Though student outcome data is limited thus far, the initial effects of the CT EETT initiatives - new knowledge and skills among teachers, increased access to technology in the classroom, curricula and lessons in which technology is effectively integrated, and new tools for measuring technology needs and usage - are likely to impact student achievement in subsequent years.

# Appendix A

# CT EETT Project Descriptions

# Blue Chip Schools

(Note: Project descriptions vary in level of detail due to differences in available information.)

### Alternative Center for Excellence (ACE)

Alternative Center for Excellence used the Blue Chip grant to support an initiative to increase the school's focus on academic achievement. Grant funds were used to develop two technologically enriched classrooms, to augment one pre-existing computer laboratory, to provide professional development to teaching staff, and to obtain software for conducting online surveys and assessments.

### Derby Middle School

Derby Middle School used the Blue Chip grant to integrate technology into an eighth grade academic preparation course, which was expanded from a preparatory course for the CMT critical essay to a capstone course, tying all subject areas together in a thematic study. The grant also supported the continuation and expansion of an existing Palm Pilot integration program in the Music Department. The goals of that program were electronic communication and the creation of digital student portfolios.

### Hall Memorial School

The goal of Hall Memorial's Blue Chip initiative was improved student learning and increased technology and information literacy among students in all grades. The goal was to be achieved through increased teacher technology competency, increased technology integration, and increased student and teacher access to emerging technology. To that end, grant funds were used to purchase a variety of technology, including a mobile laptop laboratory, multimedia projectors, SMARTboards, and laptops for faculty. Installation of SMART boards and the distribution of teacher laptops were phased in according to teacher interest.

### J.M. Wright Regional Vocational Technical School

J.M. Wright used its Blue Chip grant, in conjunction with other funding, to facilitate an ongoing, comprehensive school improvement initiative through full-school implementation of the Digital Classroom Instructional Model. This research-based, collaborative instruction model achieves learning through guided research, technologically integrated activities, and dialogue related to the curriculum. Blue Chip funds were used to provide professional development for teachers and to equip digital classrooms through purchases of hardware and software.

## Killingly Intermediate School

Killingly Intermediate used the Blue Chip grant in conjunction with other funding sources to enhance and enrich the district's on-going development of the Assessment Driven Instruction curriculum, on-going staff technology training, and the district's technology plan, including substantial investment in technology infrastructure. The school acquired two mobile laptop laboratories, a stationary computer lab, and high-speed switches to facilitate school-wide implementation of technology integration across the curriculum.

## Lebanon Middle School

The focus of the Blue Chip project at Lebanon Middle School was increased teacher technology competency and improved student performance in many areas of the curriculum, with a special emphasis on writing across the curriculum. All students and teachers were included in the program. Blue Chip funds were used to purchase a variety of technology, including a mobile laptop laboratory, a DANA computer lab, two projectors, one SMARTboard, and several laptops for teacher use. Purchase and implementation of NCS Concert, a web-based student information, assessment, and instruction suite referred to as a major project component, was postponed due to a delayed product roll-out date.

## Mansfield Middle School

The focus of Mansfield Middle School's project was provision of ubiquitous access to technology and resources for students, teachers and administrators through the distribution and use of Personal Digital Assistants to seventh grade students and all faculty.

## Mary Morrison School

The focus of Mary Morrison's project was utilization of technology integration to address students' multiple intelligences and to increase student achievement in numeracy and literacy. The Blue Chip grant was used to provide resources for instituting a new district-wide Information and Technology Literacy Curriculum being piloted at Mary Morrison. A focus of this curriculum was the use of student Guaranteed Assured Technology Experiences, annual projects built upon core content and technology competencies. Blue Chip funds were used to purchase 40 laptops for two mobile computer labs, eight high-powered laptops for a mobile multimedia lab, data projectors, scanners and printers for each lab, a wireless network hub for every classroom, and a network server.

## Metropolitan Learning Center School

Metropolitan Learning Center used Blue Chip funds primarily to develop a digital television studio included in the original vision for the school. This was done through the purchase of digital video cameras and production equipment and a professional-grade digital editing system. Funds were also used to provide professional development to staff.

## New Britain High School

Blue Chip funds were leveraged with funding from other grants at New Britain High School to support activities related to a technology plan already in place. These activities included further development of an existing cadre of technology leaders, enhancement of Internet connections, purchase of a satellite television system, upgrades to the library media center, addition of new Microsoft courses to the curriculum, Microsoft Office Specialist certification for teachers, initiation of programs using Palm Pilot technology, purchase of career guidance software, creation of a career exploration program, purchase of equipment for an automated library system, and acquisition of projectors.

## North Stonington Elementary School

North Stonington used Blue Chip funds in conjunction with funding from other sources to accelerate implementation of the school's newly developed strategic technology plan, a subset of the district's technology plan. Blue Chip funds supported the acquisition and use of a variety of hardware and software to support comprehensive efforts to improve student achievement and technology literacy through research-based technology integration into each discipline. Grant funded purchases include a satellite television system, components for the library automation system, digital cameras for each grade, mathematics and database management software, and teaching stations for classrooms that were not previously equipped with them, as well as professional development on technology competencies and integration strategies.

## Sunset Ridge School

Sunset Ridge used the Blue Chip grant to support efforts already under way to increase access to technology and use of multimedia technology. Grant funds were used to purchase a mobile laptop laboratory, 16 laptop computers, wireless networking equipment, a library automation system, memory upgrades for existing computers, and multimedia equipment and supplies, such as digital cameras. Project goals included improvement of teacher and administrator capacity for technology integration, introduction and promotion of concepts and strategies for the integration of technology into the curriculum, and the provision of ongoing support for teachers for implementation of technology integration and various projects with their students.

## Thomas Edison Magnet Middle School

Thomas Edison used the Blue Chip grant to accelerate technology integration, primarily through the purchase of a digital multimedia production laboratory and the provision of professional development to its staff. Blue Chip funds also were used to purchase one new mobile computer laboratory and enhancements for an existing mobile lab, SMARTboards and projectors for science classrooms, and laptops for teachers. Due to delays in the completion of the digital production studio, it was not fully incorporated into the school's regular curriculum during the 2003 – 2004 school year.

## Walsh Elementary School

This project was a comprehensive initiative designed to improve the academic achievement and technological literacy of all students at Walsh Elementary. The program focused on technology literacy initiatives that promote the use of technology in language arts and mathematics, primarily through the acquisition and use of an AWS WeatherNet station and Destination Reading software. Blue Chip funds also were used to purchase desktop computers and classroom and network printers.

## West Middle Elementary School

The West Middle project focused on the training of a cohort of 15 teachers in the comprehensive integration of technology into their classrooms. Cohort members developed and implemented technologically integrated social studies projects and integrated multimedia technologies into instruction. Blue Chip funds were used to purchase personal laptops for members of the initial cohort, as well as multimedia equipment for the school.

## Wintergreen Interdistrict Magnet School

The goal of Wintergreen Interdistrict Magnet's Blue Chip project was to provide ubiquitous access to technology. Existing AlphaSmart computers were upgraded to provide two mobile laboratories of DANA computers – a new generation of wireless, entry-level laptops from AlphaSmart Inc. - and printers for use with students in lower grades. Palm Pilots with the ability to synchronize information between school and home were distributed to all teachers and students in grades five through eight, expanding the home-school connection. Grant funds also were used to purchase a Macintosh video editing system for a student-produced daily video broadcast and to provide professional development for teachers

# 2002-2004 Category A Projects by Grant Category

## Acquire Connectivity Linkages, Resources, and Services

### Ashford

This project was developed to enable teachers to create new learning units that integrated use of the Internet into the curricula in language arts and mathematics. Five volunteer teachers spent time creating units for the Internet Integration Curriculum. Teachers participated in an evaluation of the State Technology Competencies and identified areas of the curriculum that were weak, information used to determine project designs. The five projects completed were units on smart Internet usage, author research, algebra collaboration, the Stone Rebellion, religions of the world and nutrition.

## Acquire Courses and Curricula that Include Integrated Technology

### LEARN Regional

The goal of the LEARN Regional project was to provide greater opportunities for all students to learn and utilize Higher Order Thinking Skills (HOTS). Project activities included use of the HOTS program, a research-based program that utilizes computer-based thinking activities, and Knowledge Forum, an electronic group workspace program designed to support the process of knowledge building. The project was targeted to fourth and fifth grade students. Activities included the acquisition of software to conduct the program, provision of professional development and on-going support, and establishment of key teachers as technical support trainers. Professional development was provided on HOTS and Knowledge Forum, emphasizing curricular integration with HOTS concepts.

### Mansfield

Mansfield's pilot project involved a Grade 3 classroom at Southeast School and two Grade 4 classrooms at Goodwin and Vinton Schools. Students in each classroom used PDA handheld computer technology to complete learning activities in PDA operations and keyboarding, as well as curriculum-based learning activities in the content areas. A focus of the project was the use of PDAs as home-school communication tools.

### Pomfret

The goal of Pomfret's project was increased integration of Internet Resources for teaching and learning in social studies. The project resulted in development of teacher web pages focused on supporting the social studies curriculum and revision of the curriculum to reflect current research and to integrate appropriate technology resources. Other outcomes included the development of teacher technology competencies in the effective use of the Internet to support teaching and learning and in the use of FrontPage to create educational web pages.

## Adapt or Expand Technology

### Colchester

Colchester's project focused on improving student information and technology literacy. With CT EETT funds, training was provided to educators and library media specialists in the Big 6 Information Problem Solving Model. Curriculum guides (Library Resources & Information Technology and Computer Skills) aligned with state frameworks and national standards were completed and approved by the board of education. Development of a website supporting the Big 6 process was begun. The project plan included a pilot in a classroom at each school.

### ACES

Connecticut Virtual Schools was created by ACES to assist students and teachers in becoming technologically literate by creating and running online semester-long courses for high school students and creating several technology modules for students in Grades 3 through 8. The "techmods" are Internet-based modules that teachers use with students around curricular topics. The techmods and semester-long courses were accessible on the project website (http://www.CTVS.org).

### New Britain

New Britain's project utilized SMARTboards and computer/media projection technology to provide interactive support for the delivery of instruction. The project focused on math, reading and writing competencies. All staff received instruction on the use of Smartboards and Mimio technology, which captures markings on a standard white board and transfers them to a computer for recording or manipulation.

### Stamford

Stamford's project was designed to provide staff development to all teachers to assist them in providing a more differentiated and project-based curriculum that integrates a variety of technology tools. The staff development provided all faculty with the opportunity to be trained in advanced technology tools. Faculty then worked together to adapt the curriculum to integrate technology while meeting the standards of their own disciplines.

## Use Technology to Collect, Manage, and Analyze Data

### Danbury

The main purpose of Danbury's project was to provide online resources to collect, analyze and share information for teachers, students, parents and administrators. Student and teacher technology assessments and a parent attitude survey were developed, administered and analyzed. A model lesson database was created. The CT EETT grant enabled teachers and administrators to create lessons using online surveys.

### Sprague

The Sprague project was a collaborative effort among three school districts of varying size to develop a model program that uses data to drive decision making for school improvement. The project resulted in development of a data warehouse, creation of a networked database, development of student technology competency continuums and benchmarks, and creation of a databank of model technology-integrated, standards-based lessons and units. EASTCONN worked with project schools to develop individual school portfolios as a means to evaluate their continuous school improvement efforts. EASTCONN made available its online survey tool to gather perceptual data for the portfolios. Participants received training in uploading data to the warehouse and in analyzing and using student data and student work to drive data-based decisions to improve student learning.

## Promote Meaningful Parental Involvement

### Canton Public Schools

In Canton's project, teachers and parents were trained in the use of digital cameras, iMovie software and digital storytelling in order to create video clips that were edited by CREC. One video was produced that tells the story of the project. Teachers videotaped students reading in school, and parents videotaped their children reading at home (videotaping was done one to four times per month from November 2003 to May 2004). The project allowed parents and teachers to discuss reading progress and enabled teachers to provide strategies to parents that could help their children with reading at home.

### Norwich Public Schools

The Norwich project centered on parent awareness and activities related to school technology. Parents from four participating districts were encouraged to participate in workshops on Internet safety and informational workshops about accessing information on the school web sites. Each school held a technology night to show parents the projects students created using technology. In one district, a publishing center was opened for parents to enable them to create informational brochures, flyers or letters.

### Stamford

The Academy of Information Technology Parents On-Line project was designed to determine how to encourage parental involvement in schools by utilizing technology and other services. Activities involved in this project included training teachers to use school-wide email to communicate with students and families, training parents to use Echalk, the internal email service, and training parents to use resources online. Echalk became a source of general information for all school activities and communication with parents.

## Implement Performance Measurement Systems

### Brooklyn Public Schools

The objective of the Brooklyn project was to develop a performance measurement system to help teachers and students successfully integrate technology across the curriculum. Project components included development of benchmark assessments in core curriculum areas and provision of professional development to teachers and administrators. Professional development focused on strategies for embedding technology into student activities and for using student data to inform and guide instructional practices and curriculum development. Project outcomes included development of grade-level student technology outcomes and assessments, an administrator evaluation plan, a database of model technology-integrated lessons and assessment rubrics, and provision of professional development to teachers and administrators on the effective use of technology as an instruction and assessment tool. Performance assessment rubrics were developed to measure student technology competencies in four general areas: writing, data tables and graphing, multimedia and presentation, and Internet research. Project plans included using technology assessment data and a data warehouse to assess the impact of technology on student learning, analyzing student performance data to guide instruction, and systematically infusing technology into the curriculum revision cycle.

## Prepare Technology Leaders

### Regional School District #6

The District #6 project provided professional development for teachers and administrators about instructional methods that focus on early literacy in order to support development of reading/language arts skills. School staff participated in training on development of learning units based on websites. Project plans included development of a web site to be utilized by staff, parents and students.

## Thomaston Public Schools

The goal of the Thomaston project was to bring expertise, technical skills, and technology-based lessons to the K-8 classrooms through the use of specialists who would serve as technology mentors. The grant funded professional development and stipends for technology mentors for the three schools in Thomaston: Black Rock, Thomaston Center and Thomaston High School. The mentors were to become “resident experts” in the effective use of instructional technology and were to work with grade-level teams of teachers and Education Connection staff to plan technology-integrated learning activities for students. The project intended that lesson plans would be used as templates that could be reused with different learning outcomes. The technology experts in each building were to work with teachers to select technology tools and plan technology-based activities to improve student performance on the Reading Performance Inventory.

## Thompson Public Schools

The project provided intensive technical training to a core group of Thompson "teacher leaders," who provided their colleagues with grade-level and discipline-specific training on lessons and strategies that can be used to integrate technology, as well as on troubleshooting techniques. The teacher leaders also were given the opportunity to teach after-school courses to their colleagues. Near the end of the 2003-04 school year, the teacher leaders were allowed to re-apply. All who re-applied were given a small additional stipend and agreed to continue to provide training for their colleagues through the duration of the grant period.

# 2003-2005 Local Competitive Projects by Grant Category

## Distance Learning Community

(These projects were in the planning stage during the 2003 – 2004 report period.)

### Middletown Public Schools

The Middletown project is a collaboration between two middle schools to develop two online course modules focusing on life science. The content focus will be weather and ecology.

### New London Public Schools

New London's project is a collaboration between three school districts to form a learning community through the development of and participation in three online learning modules for students in fifth grade. These modules will be thematic and focused on language arts, science and forensics, or mathematics. The project was planned to begin in the summer of 2004, due to late notification and project revisions.

### Norwalk Public Schools

The goal of the Norwalk project is the development of an Information Communication Technology Literacy (ICTL) distance learning course to enhance learning and achievement among students in sixth to ninth grades and to increase the effectiveness of teaching by integrating distance learning instruction into core academic coursework. The project is being conducted with students from seven schools, including three high-need urban districts, three suburban/regional districts and one Vermont school. The project plan includes using an interactive, project-based instructional design to deliver six differentiated distance learning curriculum modules. The planned learning environment is intended to connect students, teachers, parents, and ICT professionals using advanced and emerging Internet eLearning technology.

### Torrington Public Schools

The Torrington project is a collaboration between urban and suburban school districts, industry partners, Education Connection and the Connecticut College of Technology to develop and implement an on-line information technology research and development course. The course is to be an on-line instructional project that uses a research-based instructional model to deliver IT curriculum to students in six high schools. The model will be used as a foundation to develop a maximum of 10 qualitatively differentiated IT curriculum modules. An on-line environment will extend IT education through a variety of eLearning technologies, including on-line professional development for high school teachers in the use of the model and strategies for adapting the modules to all students.

### Wolcott Regional Vocational Technical School

The goal of the Wolcott project is to develop and implement a biotechnology research and development distance learning community, including urban, suburban/rural, and vocational-technical schools, as well as industry and institutions of higher education. The project aims to use the IBM IT Leadership Academy (ITLA) R&D instructional design as a framework to develop and deliver six biotech teaching and learning modules to high school students, to develop a readily accessible distance learning environment that connects all members of the learning community, and to provide professional development to science teachers in the instructional model.

## District-wide Information Systems

### ACES

The goal of the ACES TetraData Sharing Project is to develop a system, including training and technical support, for partner districts to collect and use information about students so that they can make informed decisions about instruction and programming. The goal is for the districts to increase student achievement through a process in which data are collected, managed, analyzed, and communicated using an information management system called the Connecticut Data Project, based on the TetraData system. ACES has partnered with three school districts to help them develop and use the student data management system, and with 13 additional school districts that are currently piloting TetraData warehousing.

### Danbury Public Schools

The goal of the Danbury project is to develop district capacity to collect, manage, analyze, and disseminate data to inform and enhance teaching and school reform efforts. This will be accomplished by upgrading of the existing student management system hardware and software, development of a data warehouse through the Connecticut Data Project, based on the TetraData system, determination of a variety of assessments to measure student competencies, and engagement in professional development activities to help district and school staff understand and use data more effectively in the decision making process.

### Manchester Public Schools

This project is a collaborative effort between the Manchester and East Hartford school districts to improve student achievement through the development of technologies to assist with the collection, management and analysis of data. Manchester is continuing, and East Hartford has begun use of the EDsmart data warehouse and software. Staff involvement with data has been expanded in both districts through initial training of administrative and supervisory staff. East Hartford is piloting a Palm Pilot program for the collection and uploading of data. Curriculum-based assessments and subgroup progress reporting formats have been standardized, and content area benchmarks are being identified.

### Torrington Public Schools

The Torrington project is a collaborative effort among seven school districts to expand the capacity to collect, manage, analyze and disseminate data to improve curriculum and instruction in math, language arts, science and technology. Project activities have included the purchase or upgrading of student management systems that effectively collect data for grades kindergarten through 12, development of a data warehouse through the CT Data Project, based on the TetraData system, regional professional development in data analysis, and participation in regional user groups to analyze student performance as a region and to share improvement efforts.

## Information Technology Courses (ITCORE)

### Putnam Public Schools

In this project, Putnam and Plainfield have formed a consortium called Broadcast 1-2 to collaborate in the development of two IT courses and lesson plans, as well as to share training, resources, ideas and experiences. The two courses will be "Web Site Development" and "Cable Television Programming," both of which will have email links for interactive responses and questions. The latter course will provide expanded programming for the two communities through the Eastern Connecticut Cable Television Network. Project activities have included planning for development and implementation of the courses and teacher participation in a workshop on TaskStream, a suite of online tools for teacher mentoring, professional development, and curriculum development.

### Stamford/Academy of Information Technology

The goal of the Stamford/AIT project is development of two multimedia courses that will allow students to explore the integration of media objects (text, graphics, video, etc.) to represent and convey information. To date, equipment for the courses has been purchased, and initial training of faculty members and curriculum development has occurred. The project is in planning stages.

## Networking Infrastructure

### The Bridge Academy

The Bridge Academy project has provided two schools with local computer networks connected to the world wide web. Students at each school have access to the network in all appropriate classrooms.

## Danbury Public Schools

Goals of Danbury's project include enabling every classroom and office in one elementary school to connect up to six computers or printers to a network and every teacher to communicate and collaborate with peers, parents, and the larger community in order to increase student learning. This will be achieved through the connection of existing classroom wiring to the network, completion of additional wiring components necessary to provide high-speed connections, and the delivery of professional development focused on the use of communication tools. Due to the late release of funds, professional development activities have been postponed until fall 2004. Installation of networking equipment has just begun.

## New London Public Schools

The goal of the New London project, according to the progress report, is to "ensure successful learning during K-3 early literacy using rapid feedback reports to the literacy teacher of DIBELS assessments." Project implementation is in planning stages.

## Putnam Public Schools

This project is designed to meet goals of Putnam's Strategic Plan in the areas of curriculum and technology to improve student achievement. The purpose of the project is to replace aging infrastructure equipment to allow faster and more efficient access to web-based programs. In addition, EASTCONN facilitators will provide professional development for Putnam administrators in the use of web-based tools and for a select group of core teachers in the use of TaskStream, specifically for revising and aligning the science curriculum. The goal is to produce a PreK-12 science curriculum that is aligned with the state frameworks. Project activities have included planning, purchase of TaskStream subscriptions, TaskStream professional development, and two Family Technology Nights.

## Waterbury Public Schools

The goal of this project is to purchase wireless access points and network cards for a number of computers to be used throughout the district. This will create wireless "hot spots" in every school, which will allow for expanded network coverage and provide network flexibility and connectivity to areas not covered by hard wires.

## Parent Communication

### Bloomfield Public Schools

The goals of the Bloomfield project include the development and utilization of a dynamic, multi-directional and easy-to-use district website. The website was on-line as of June 2004, and promotion of the site was scheduled to begin in August. The project plan also includes professional development for all levels of system users, including training of a cadre of webmasters. The goals of the website are to promote discourse, publicize detailed information on the school's progress, and foster greater parent and community involvement.

### Danbury Public Schools

The goal of Danbury's project is to increase parent communication through use of the district and school web sites. The project intends to revitalize, reorganize and publicize the district site so that it will provide a better source of information to all parents. The goal is to increase parent involvement. To date, design discussions have taken place, and the four technology leaders participated in professional development on Dreamweaver web development tools.

### Meriden Public Schools

The goal of the Meriden project is to promote parent communication through the Internet. A web tool was created to facilitate the design of teacher-made web pages. It is hoped that the teacher web pages will provide beneficial information to parents and students and that parents will indirectly gain a greater comfort level with technology. Project implementation was delayed due to funding issues.

### Putnam Public Schools

This project is a partnership among the Putnam Public Schools, the Putnam Family Resource Center and the Northeast Learning Center to develop a resource manual about NCLB for Limited English Proficient (LEP) parents. The goal is to establish supportive relationships between language minority parents and the Putnam schools and to help language minority families access the curriculum. The project intends to use technology as the medium for instruction, practice and support. To date, planning meetings have been held to form a service development team.

### Waterbury Public Schools

The goal of the Waterbury project is to introduce the use of the Internet and LetterGrade software to improve student academic achievement and increase collaboration among administrators, teachers, students and families. The goal is that LetterGrade will enable parents to access their children's assignments and grades and support their children's learning. Project activities have included purchase and installation of the software at the three middle schools, provision of professional development, and teacher use of the program to enter homeroom attendance.

### Windham Public Schools

The Windham project is focused on the development and delivery of parent workshops on book making. The workshops will be offered in both English and Spanish. The primary goals of the project are increased parent involvement and improved access to school information via the Internet. To date, the workshops have been developed, but not yet delivered.

### Wintergreen Interdistrict Magnet School

The primary goal of the Wintergreen project is to improve student achievement by preparing parents to support learning in the home, both after school and during the summer. This project intends to offer monthly parent workshops focused on curriculum and technology to enhance student learning. The goal is that the workshops will serve as a home-school connection and provide continual learning access for parents. Project activities have included provision of six parent workshops and teacher use of Blackboard, a web-based portal, to improve communication between the classroom and home, as well as to enrich classroom instruction.

## Technology Leader Development

### Bridgeport Public Schools

The primary focus of the Bridgeport project is to develop and implement a professional development module that will ensure that teachers are prepared to use and maintain telecommunications and information technologies. The program will employ a comprehensive training module that will enable teachers to develop their technology skills and improve their ability to enhance learning through the use of technology. The program will be offered to 30 teachers. An additional summer institute is planned to develop a cadre of instructional technology integration leaders for the district.

### New London Public Schools

The goal of this project is to develop technology leaders in the New London school district. Selected teachers participated in a three-day institute to prepare them for this role. The training focused on literacy development through the use of educational software and sought to raise participants' comfort level with technology use in the classroom.

### Norwich Public Schools

The goals of the Norwich project include increased student and teacher technology competencies and the integration of technology into language arts, math, and science instruction. The project aims to achieve this through the development of a three-year professional development plan based on student and teacher needs assessments and aligned with Connecticut's technology competency standards for teachers and students. Professional development will include mentoring, coaching and intervention sessions as needed. Thus far, the project has developed its first-year action plan, identified the technology leadership team, evaluated staff technology skills, and paired staff with mentors.

## Putnam Public Schools

The purpose of this project and partnership is to replicate the Plainfield technology leader/mentor model in Putnam and to enhance the model in Plainfield. Sixteen experienced mentors in Plainfield and two to four new mentors in Putnam will serve as leaders and will train other teachers and non-instructional staff in the effective integration of technology into language arts, math, and science instruction. EASTCONN will conduct professional development seminars for the mentors in these areas, and the mentors will provide assistance and collaboration as needed. Mentors in Putnam had not yet been identified as of this report.

# Appendix B

# UCONN Sample Teacher Report

**Sample Level I Teacher Report**

**University of Connecticut Educational Technology Assessment**

| **Level I Strand Rubric** | | | |
|---|---|---|---|
| **(Teacher Name)** | **Testing Date:** | | |
| **CT Competencies** | **Total Points Possible** | **Achieved Points** | **Percentage** |
| **I. Educational Technology Concepts and Operations** | | | |
| WebBoard--Prompt 1 | 1 | **1** | 100% |
| WebBoard--Prompt 2 | 1 | **1** | 100% |
| WebBoard--Prompt 10 | 1 | **1** | 100% |
| WebBoard--Prompt 3 | 1 | **1** | 100% |
| WebBoard--Prompt 4 | 1 | **0** | 0% |
| **Total for Strand 1** | **5** | **4** | **80%** |
| **II. Creating Learning Environments and Experiences** | | | |
| Word, PowerPoint, Excel, & Web Survey | 40 | **39** | 98% |
| WebBoard--Prompt 7 | 1 | **1** | 100% |
| WebBoard--Prompt 5 | 1 | **1** | 100% |
| WebBoard--Prompt 6 | 1 | **0** | 0% |
| **Total for Strand 2** | **43** | **41** | **95%** |
| **III. Productivity and Professional Practice** | | | |
| Word, Excel, PowerPoint, & WebBoard (one point for participating on WebBoard) | 40 | 39 | 98% |
| **Total for Strand 3** | **40** | **39** | **98%** |
| **IV. Social, Legal, Ethical and Human Issues** | | | |
| WebBoard--Prompt 8 | 1 | **1** | 100% |
| WebBoard--Prompt 9 | 1 | **0** | 0% |
| WebBoard--Prompt 11 | 1 | **1** | 100% |
| **Total for Strand 4** | **3** | **2** | **67%** |
| | | | |
| | **Average Percent Score Across the Four Strands** | | **85%** |

To successfully complete Level I, you must achieve an average percent of 75% or higher.

# Appendix C

# Blue Chip Schools CAPT Results

## Blue Chip Schools Baseline and First Year Data
## 2003 and 2004 CAPT Results
## Percent At or Above Proficient*

| | 2003 | | | | 2004 | | | |
|---|---|---|---|---|---|---|---|---|
| | Total Reading | | Total Mathematics | | Total Reading | | Total Mathematics | |
| **School** | n Tested | % At/Above Proficient | n Tested | % At/Above Proficient | n Tested | % At/Above Proficient | n Tested | % At/Above Proficient |
| Alternative Center for Excellence** | 19 | - | 14 | - | 20 | 70.0 | 19 | - |
| J. M. Wright RVTS | 93 | 17.2 | 87 | 14.9 | 99 | 23.2 | 97 | 13.4 |
| Metropolitan Learning Center | 85 | 83.6 | 86 | 65.1 | 81 | 92.7 | 78 | 75.6 |
| New Britain High | 538 | 60.4 | 538 | 48.2 | 580 | 65.0 | 560 | 61.6 |

* For 2003 and 2004, the proficient level is a scale score of 217 for reading and 223 for math.
** Data is not available for schools with n < 20.

## Blue Chip Schools Baseline and First Year Data
## 2003 and 2004 CAPT Results
## Percent Students Within Goal Range*

| School | 2003 | | | | 2004 | | | |
|---|---|---|---|---|---|---|---|---|
| | Total Reading | | Total Mathematics | | Total Reading | | Total Mathematics | |
| | n Tested | % within Goal Range | n Tested | % within Goal Range | n Tested | % within Goal Range | n Tested | % within Goal Range |
| Alternative Center for Excellence** | 19 | - | 14 | - | 20 | 25.0 | 19 | - |
| J. M. Wright RVTS | 93 | 0 | 87 | 1.1 | 99 | 2.0 | 97 | 1.0 |
| Metropolitan Learning Center | 85 | 36.5 | 86 | 18.6 | 81 | 54.4 | 78 | 39.7 |
| New Britain High | 538 | 24.2 | 538 | 17.3 | 580 | 27.9 | 560 | 23.0 |

* For 2003 and 2004, state goal is a scale score of 261-286 for math and 258-286 for reading.
** Data is not available for schools with n < 20.

## Blue Chip Schools Baseline and Year One Data
## CAPT Scores - Percent Proficient by Subgroup

| | 03 Math | | 04 Math | | 03 Reading | | 04 Reading | |
|---|---|---|---|---|---|---|---|---|
| **School** | n | % Proficient | n | % Proficient | n | % Proficient | n | % Proficient |
| Alternative Center for Excellence * | 14 | - | 19 | - | 19 | - | 20 | 70.0 |

| | 03 Math | | 04 Math | | 03 Reading | | 04 Reading | |
|---|---|---|---|---|---|---|---|---|
| **School** | n | % Proficient | n | % Proficient | n | % Proficient | n | % Proficient |
| J. M. Wright RVTS ** | 87 | 14.9 | 97 | 13.4 | 93 | 17.2 | 99 | 23.2 |
| Male | 52 | 23.1 | 52 | 13.4 | 55 | 12.7 | 53 | 20.8 |
| Female | 35 | 2.9 | 45 | 13.3 | 38 | 23.7 | 46 | 26.1 |
| F/R Meals | 32 | 21.9 | 48 | 12.5 | 35 | 28.6 | 49 | 26.5 |
| Full Price | 55 | 10.9 | 49 | 14.3 | 58 | 10.3 | 50 | 20.0 |

| | 03 Math | | 04 Math | | 03 Reading | | 04 Reading | |
|---|---|---|---|---|---|---|---|---|
| **School** | n | % Proficient | n | % Proficient | n | % Proficient | n | % Proficient |
| Metropolitan Learning Center ** | 86 | 65.1 | 78 | 75.6 | 85 | 83.6 | 81 | 92.7 |
| Male | 48 | 73.0 | 39 | 71.8 | 48 | 83.4 | 41 | 92.6 |
| Female | 38 | 55.3 | 39 | 79.4 | 37 | 83.7 | 40 | 92.5 |
| F/R Meals | 20 | 55.0 | 12 | - | 19 | - | 12 | - |
| Full Price | 66 | 68.2 | 66 | 77.4 | 66 | 84.9 | 69 | 92.8 |

* Data is not available for schools with n < 20.
** Demographic categories with fewer than 20 students have been omitted.

## Blue Chip Schools Baseline and Year One Data (con.)
## CAPT Scores - Percent Proficient by Subgroup

| | 03 Math | | 04 Math | | 03 Reading | | 04 Reading | |
|---|---|---|---|---|---|---|---|---|
| **School** | n | % Proficient | n | % Proficient | n | % Proficient | n | % Proficient |
| New Britain High School ** | 538 | 48.2 | 560 | 61.6 | 538 | 60.4 | 580 | 65.0 |
| Male | 230 | 51.7 | 282 | 63.1 | 238 | 48.3 | 291 | 58.1 |
| Female | 308 | 45.4 | 278 | 60.1 | 300 | 70.0 | 289 | 72.0 |
| Black | 85 | 30.6 | 102 | 52.0 | 82 | 53.7 | 110 | 59.1 |
| Hispanic | 195 | 32.3 | 197 | 41.1 | 200 | 45.0 | 209 | 50.2 |
| White | 242 | 66.0 | 243 | 83.1 | 240 | 75.9 | 243 | 81.1 |
| F/R Meals | 192 | 39.0 | 243 | 45.2 | 195 | 52.4 | 252 | 51.5 |
| Full Price | 346 | 53.2 | 317 | 74.1 | 343 | 65.0 | 328 | 75.3 |
| Special Ed. | 57 | 14.0 | 72 | 23.6 | 62 | 22.5 | 76 | 15.8 |
| Not Special Ed. | 481 | 52.3 | 488 | 67.2 | 476 | 65.4 | 504 | 72.5 |
| ELL | 25 | 44.0 | 25 | 60.0 | 26 | 26.9 | 26 | 46.2 |
| Not ELL | 513 | 48.3 | 535 | 61.7 | 512 | 62.1 | 554 | 65.9 |

** Demographic categories with fewer than 20 students have been omitted.

## CAPT Scores - Percent Proficient by Subgroup
## Statewide

| | 03 Math | | 04 Math | | 03 Reading | | 04 Reading | |
|---|---|---|---|---|---|---|---|---|
| **State** | n | % Proficient | n | % Proficient | n | % Proficient | n | % Proficient |
| State Total | 37201 | 74.3 | 39706 | 76.4 | 37252 | 77.9 | 39642 | 79.1 |
| Male | 18553 | 75.2 | 19893 | 77.2 | 18566 | 71.9 | 19827 | 74.3 |
| Female | 18648 | 73.5 | 19813 | 75.7 | 18686 | 83.8 | 19815 | 83.9 |
| Black | 4253 | 39.3 | 4666 | 42.0 | 4282 | 53.1 | 4670 | 54.4 |
| Hispanic | 3932 | 42.1 | 4390 | 46.0 | 3942 | 50.8 | 4322 | 54.6 |
| White | 27649 | 84.2 | 29107 | 86.4 | 27669 | 85.6 | 29119 | 86.7 |
| Asian | 1080 | 83.0 | 1220 | 85.6 | 1072 | 82.2 | 1204 | 84.9 |
| American Indian | 95 | 68.4 | 141 | 66.0 | 93 | 71.0 | 145 | 66.9 |
| Other Race | 192 | 50.5 | 182 | 57.1 | 194 | 55.7 | 182 | 60.4 |
| F/R Meals | 6342 | 42.4 | 6835 | 48.3 | 6410 | 50.5 | 6824 | 55.6 |
| Full Price | 30859 | 80.9 | 32871 | 82.3 | 30842 | 83.6 | 32818 | 83.9 |
| Special Ed. | 3556 | 38.7 | 4249 | 38.6 | 3604 | 40.2 | 4274 | 39.0 |
| Not Special Ed. | 33645 | 78.1 | 35457 | 81.0 | 33648 | 81.9 | 35368 | 83.8 |
| ELL | 711 | 31.6 | 1135 | 33.5 | 685 | 27.3 | 1034 | 37.0 |
| Not ELL | 36490 | 75.2 | 38571 | 77.7 | 36567 | 78.9 | 38608 | 80.2 |
| Not SPED/ELL | 32960 | 79.1 | 34382 | 82.4 | 32985 | 83.0 | 34390 | 85.3 |