

LoTi Technology Use Profile



Name of Organization:

State of New Hampshire

Number of Participants:

8,350

Data Collection Dates:

Jul 02, 2005 through Jul 01, 2006



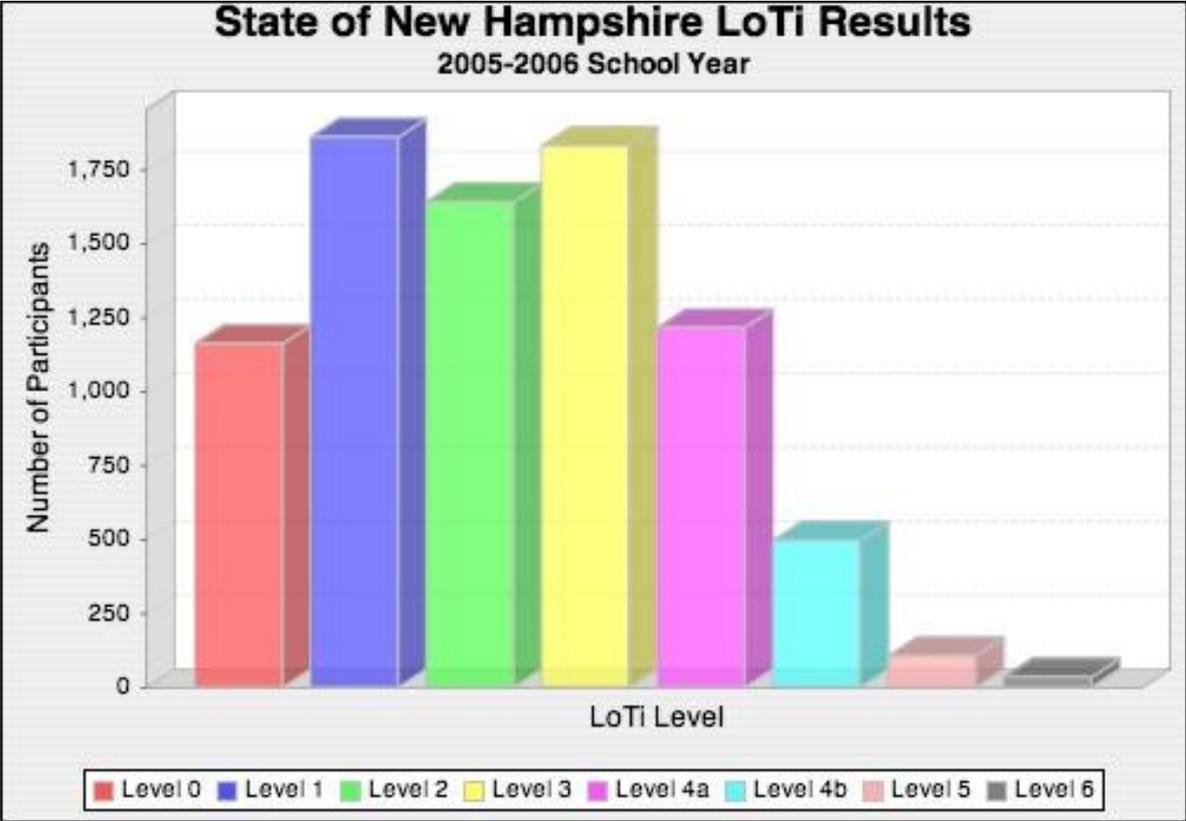
Introduction

- A technology use profile was recently conducted to ascertain each participant's current level of technology implementation using the Level of Technology Implementation (LoTi) Questionnaire. This questionnaire measures three critical components related to supporting or implementing the instructional use of computers at your site: LoTi (Levels of Technology Implementation), PCU (Personal Computer Use), and CIP (Current Instructional Practices). This profile focused on the use of technology as an interactive learning medium because this particular component has the greatest and lasting impact on classroom pedagogy and is the most difficult to implement and assess. Such information will enable questionnaire sponsors to target funding sources and provide professional development opportunities directed at moving participants to a higher level of technology implementation in the classroom, and in doing so, better prepare students for the challenges facing them in a highly competitive, technology-oriented society.
- The questionnaire generated a profile for each participant in three domains: Level of Technology Implementation (LoTi), Personal Computer Use (PCU), and Current Instructional Practices (CIP). The Level of Technology Implementation (LoTi) profile approximated the degree to which each participant either supports or implements the instructional uses of technology in a classroom setting. The Personal Computer Use (PCU) profile addressed each participant's comfort and proficiency level with using computers (e.g., troubleshooting simple hardware problems, using multimedia applications) at home or in the workplace. The Current Instructional Practices (CIP) profile revealed each participant's support for or implementation of instructional practices consistent with a learner-based curriculum design (e.g., learning materials determined by the problem areas under investigation, multiple assessment strategies integrated authentically throughout the curriculum, teacher as co-learner/facilitator, focus on learner-based questions).
- The questionnaire did not consider the complexity of software applications used at the site or the frequency of their use. The information provided was based exclusively on the perceptions of the LoTi Questionnaire participants. The subsequent data analysis including all findings, goals, and recommendations are based on these returns.



Figure 1: Level of Technology Implementation (LoTi)

- Figure 1 displays the Level of Technology Implementation (LoTi) ranking for the 8,350 participants from State of New Hampshire. The LoTi profile approximates the degree to which each participant is either supporting or implementing the instructional uses of technology in a classroom setting. Based on their responses, the median LoTi Level for State of New Hampshire corresponded with a Level 2 (Exploration).
- A Level 2 (Exploration) implies that technology-based tools supplement the existing instructional program (e.g., tutorials, educational games, basic skill applications) or complement selected multimedia and/or web-based projects (e.g., internet-based research papers, informational multimedia presentations) at the knowledge/comprehension level. The electronic technology is employed either as extension activities, enrichment exercises, or technology-based tools and generally reinforces lower cognitive skill development relating to the content under investigation.



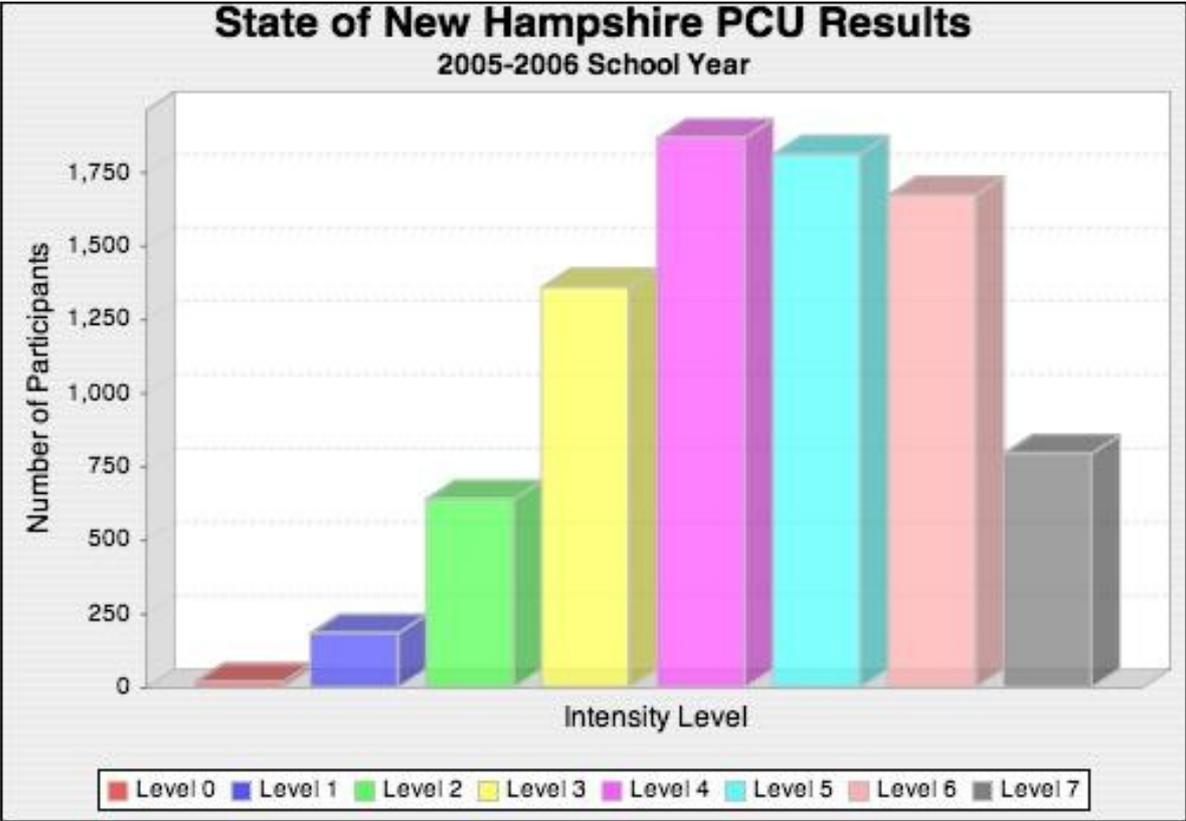
Median LoTi Score: Level 2 (Exploration)

Mode LoTi Score: Level 1 (Awareness)



Figure 2: Personal Computer Use (PCU)

- Figure 2 displays the perceptions of the State of New Hampshire participants toward questions involving their personal computer use. The PCU profile addresses each participant's comfort and proficiency level with using computers (e.g., troubleshooting simple hardware problems, using multimedia applications) at home or in the workplace. Based on their responses, the median PCU Level for State of New Hampshire corresponded with a PCU Intensity of Level 5 (Somewhat True of Me Now).
- A PCU Intensity Level 5 indicates that the participant demonstrates high skill level with using computers for personal use. Participants at Intensity Level 5 are commonly able to use the computer to create their own web pages, produce sophisticated multimedia products, and/or effortlessly use common productivity applications (e.g., Microsoft Excel, FileMaker Pro), desktop publishing software, and web-based tools. They are also able to confidently troubleshoot most hardware, software, and/or peripheral problems without assistance from technology support staff.



Median PCU Score: PCU Intensity Level 5 (Somewhat True of Me Now)
 Mode PCU Score: PCU Intensity Level 4 (Somewhat True of Me Now)

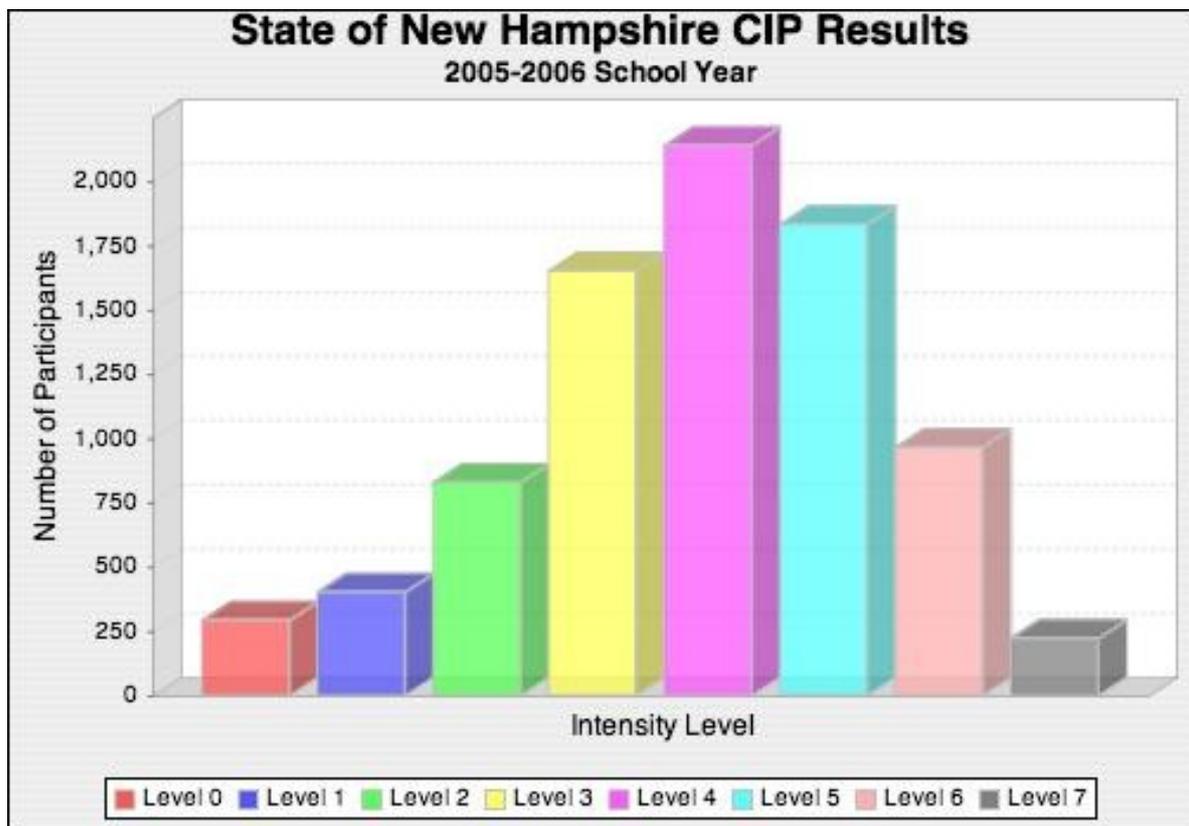
Intensity Levels Legend

- Level 0 – Level 2: Not True of Me Now
- Level 3 – Level 5: Somewhat True of Me Now
- Level 6 – Level 7: Very True of Me Now



Figure 3: Current Instructional Practices (CIP)

- Figure 3 displays the perceptions of the State of New Hampshire participants toward questions involving their current instructional practices. The CIP profile reveals each participant's support for or implementation of instructional practices consistent with a learner-based curriculum design (e.g., learning materials determined by the problem areas under investigation, multiple assessment strategies integrated authentically throughout the curriculum, teacher as co-learner/facilitator, focus on learner-based questions). Based on their responses, the median CIP Level for State of New Hampshire corresponded with a CIP Intensity Level 4 (Somewhat True of Me Now).
- At a CIP Intensity Level 4, the participant may feel comfortable supporting or implementing either a subject-matter or learning-based approach to instruction based on the content being addressed. In a subject-matter based approach, learning activities tend to be sequential, student projects tend to be uniform for all students, the use of lectures and/or teacher-directed presentations are the norm as well as traditional evaluation strategies. In a learner-based approach, learning activities are diversified and based mostly on student questions, the teacher serves more as a co-learner or facilitator in the classroom, student projects are primarily student-directed, and the use of alternative assessment strategies including performance-based assessments, peer reviews, and student reflections are the norm.



Median CIP Score: CIP Intensity Level 4 (Somewhat True of Me Now)
 Mode CIP Score: CIP Intensity Level 4 (Somewhat True of Me Now)

Intensity Levels Legend

Level 0 – Level 2: Not True of Me Now
 Level 3 – Level 5: Somewhat True of Me Now
 Level 6 – Level 7: Very True of Me Now



Figure 4: Survey Type

- Figure 4 compares the number of participants who completed the LoTi Questionnaire by Survey Type throughout State of New Hampshire. Based on their responses, approximately 84% of participants (6,986 participants) reported the Survey Type as "Inservice Teachers". Additionally, 10% of participants (860 participants) responded "Instructional Specialists"; 4% of participants (310 participants) responded "Building Administrators"; and 2% of participants (194 participants) responded "Media-Technology Specialists" to the question of Survey Type.

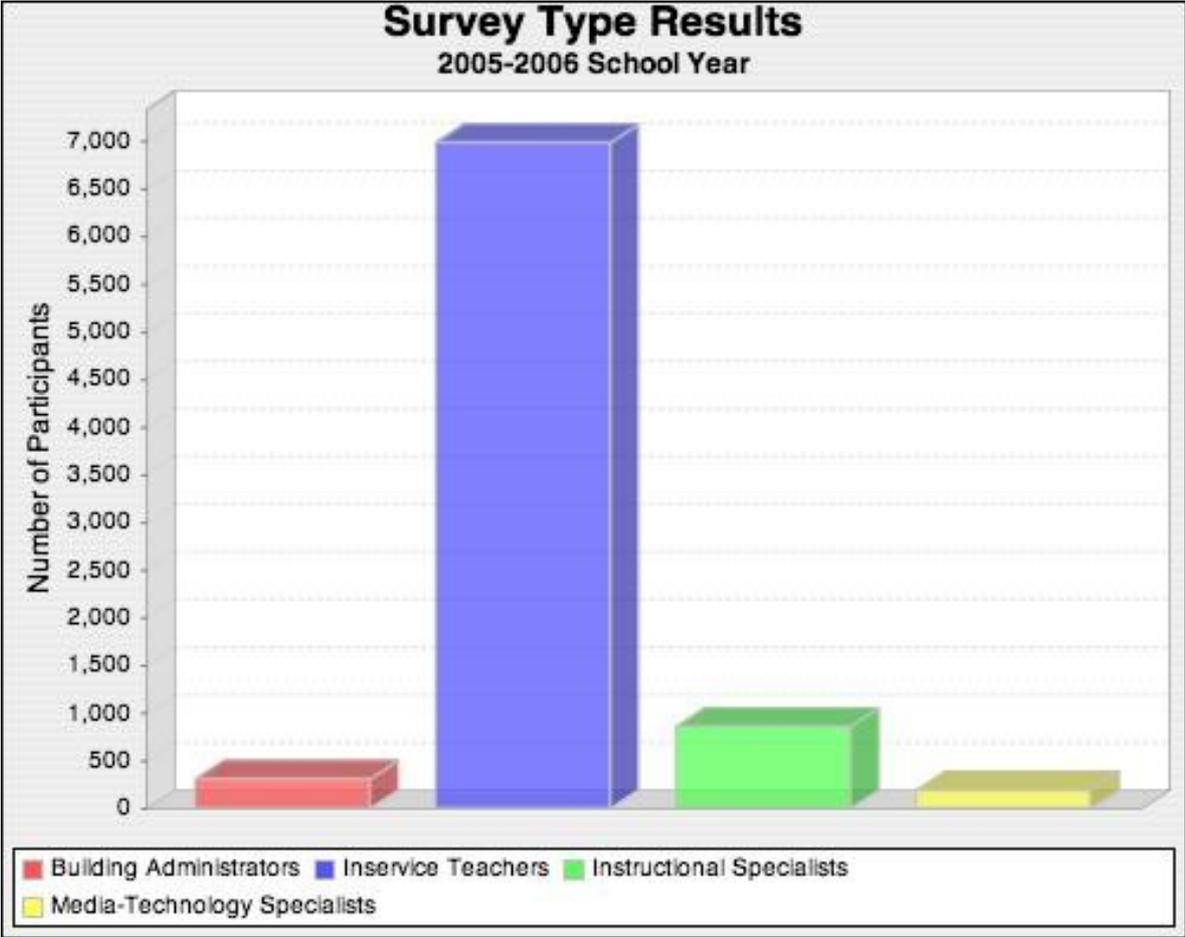




Figure 5: Subject Specialty

- Figure 5 compares the number of participants who completed the LoTi Questionnaire by Subject Specialty throughout State of New Hampshire. Participants in State of New Hampshire were asked the question, "Which category best describes your primary subject/specialty?" Based on their responses, approximately 55% of participants (4,520 participants) reported the Subject Specialty as "Other (e.g., Physical Education, Industrial Technology, Administration, Elementary, Other Electives)". Additionally, 30% of participants (2,508 participants) responded "Humanities (e.g., Language Arts, Fine Arts, Theatrical Arts, Social Studies)"; 8% of participants (631 participants) responded "Mathematics (e.g., Geometry, Algebra, Statistics)"; and 7% of participants (620 participants) responded "Sciences (e.g., Physical Science, Chemistry, Health Science)" to the question of Subject Specialty.

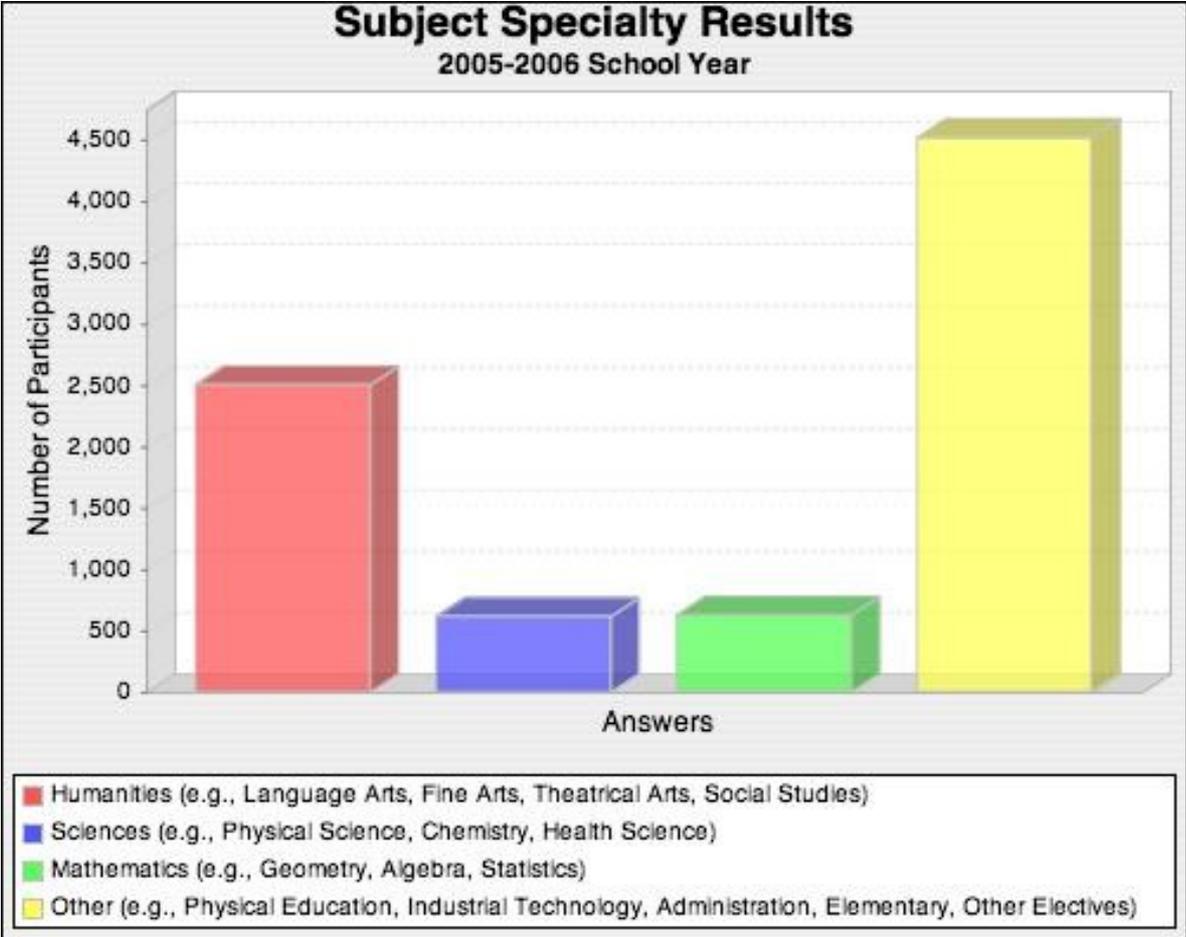




Figure 6: Grade Level

- Figure 6 compares the number of participants who completed the LoTi Questionnaire by Grade Level throughout State of New Hampshire. Participants in State of New Hampshire were asked the question, "Which category best describes your primary grade level?" Based on their responses, approximately 48% of participants (3,925 participants) reported the Grade Level as "Elementary Grades (PreK-Grade 2, PreK-Grade 5, PreK-Grade 6, PreK-Grade 8, Grade 3-5)". Additionally, 27% of participants (2,247 participants) responded "Secondary Grades (Grade 9-12, Grade 10-12)"; 22% of participants (1,772 participants) responded "Intermediate Grades (Grade 6-8, Grade 6-9, Grade 7-8)"; and 3% of participants (242 participants) responded "All Grade Levels (PreK-Grade 12)" to the question of Grade Level.

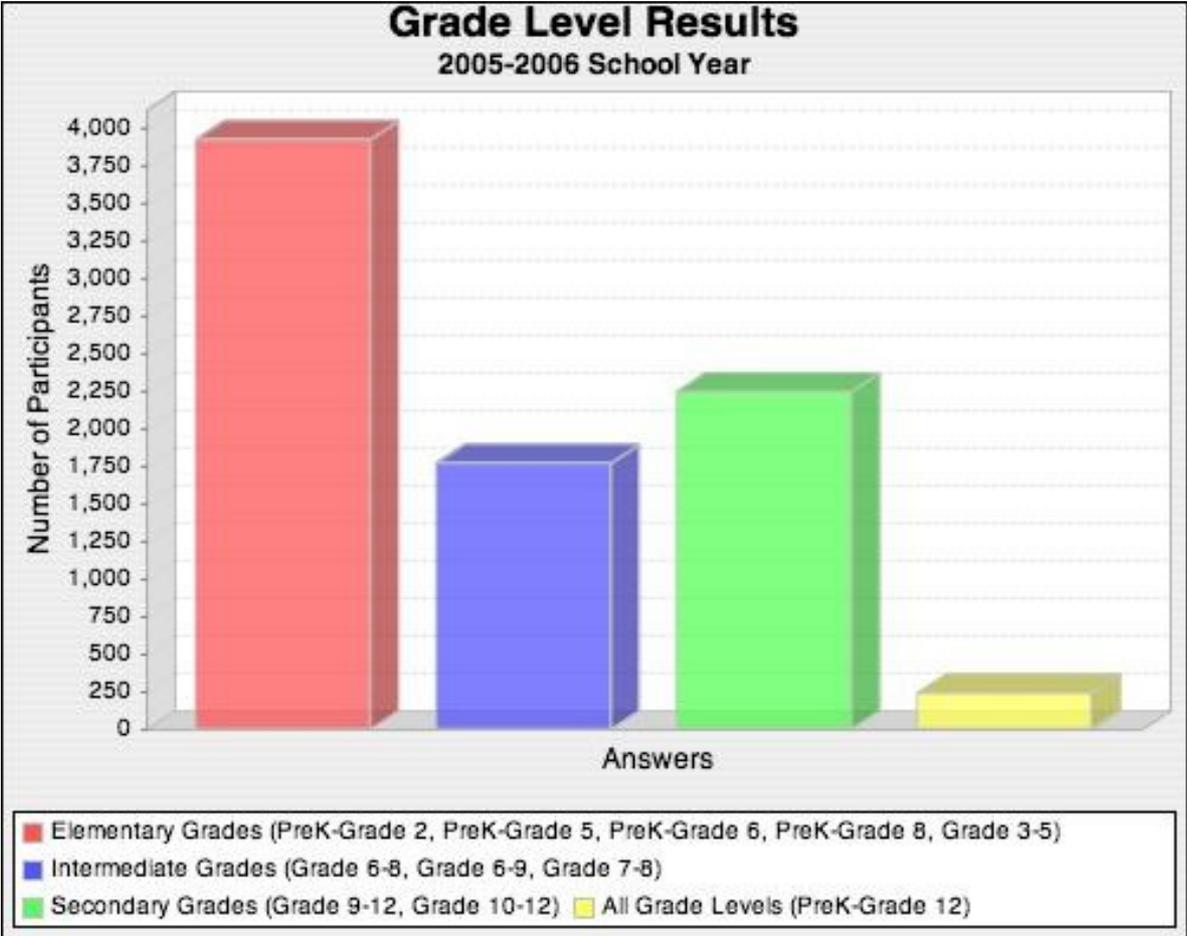




Figure 7: Years Teaching

- Figure 7 compares the number of participants who completed the LoTi Questionnaire by Years Teaching throughout State of New Hampshire. Participants in State of New Hampshire were asked the question, "How many years of experience do you have in education?" Based on their responses, approximately 33% of participants (2,678 participants) reported the Years Teaching as "More than Twenty Years". Additionally, 29% of participants (2,403 participants) responded "Ten to Twenty Years"; 20% of participants (1,641 participants) responded "Five to Nine Years"; and 18% of participants (1,481 participants) responded "Less than Five Years" to the question of Years Teaching.

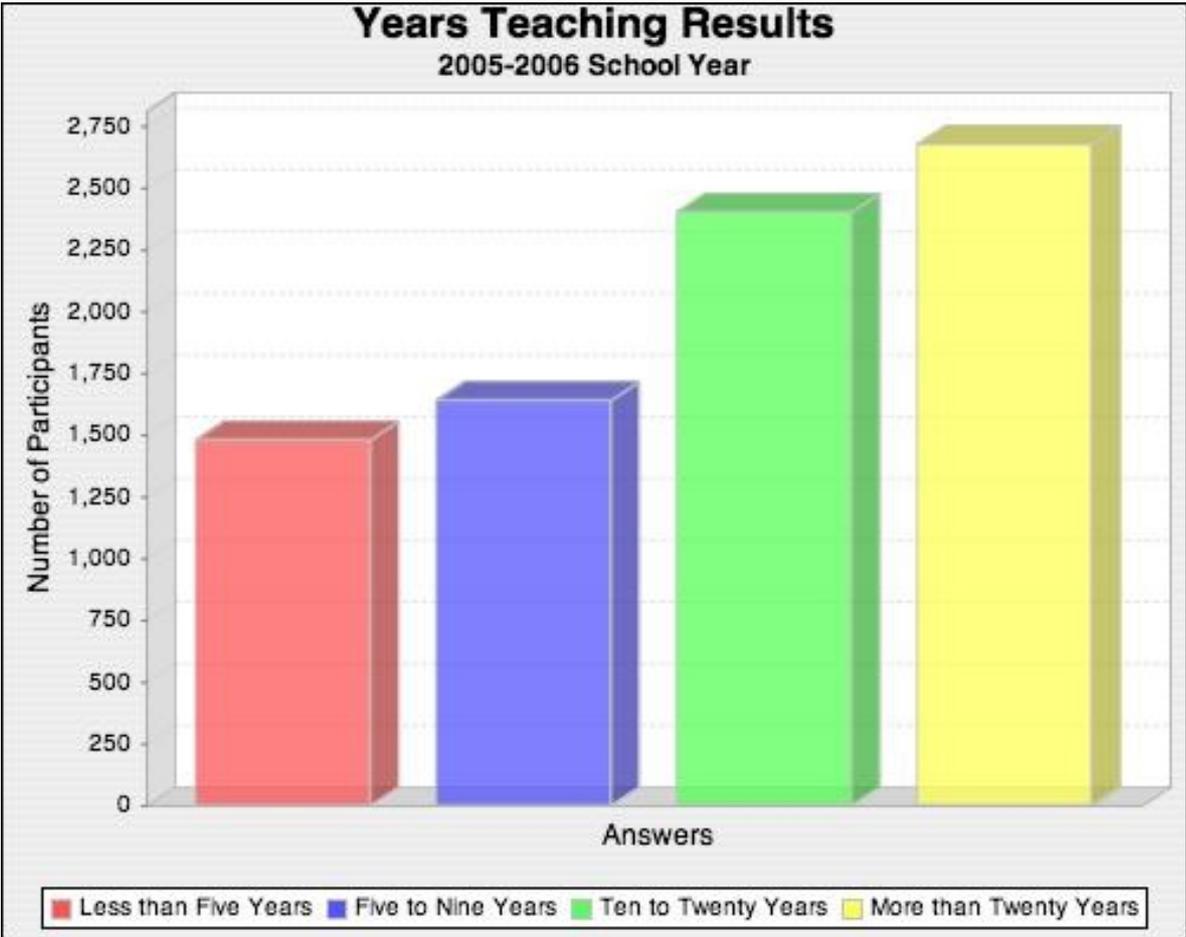




Figure 8: Technology Relevance

- Figure 8 compares the number of participants who completed the LoTi Questionnaire by Technology Relevance throughout State of New Hampshire. Participants in State of New Hampshire were asked the question, "Do you feel like technology is relevant to your instructional setting?" Based on their responses, approximately 91% of participants (7,512 participants) responded "Yes" while 9% of participants (754 participants) responded "No" to the question of Technology Relevance.

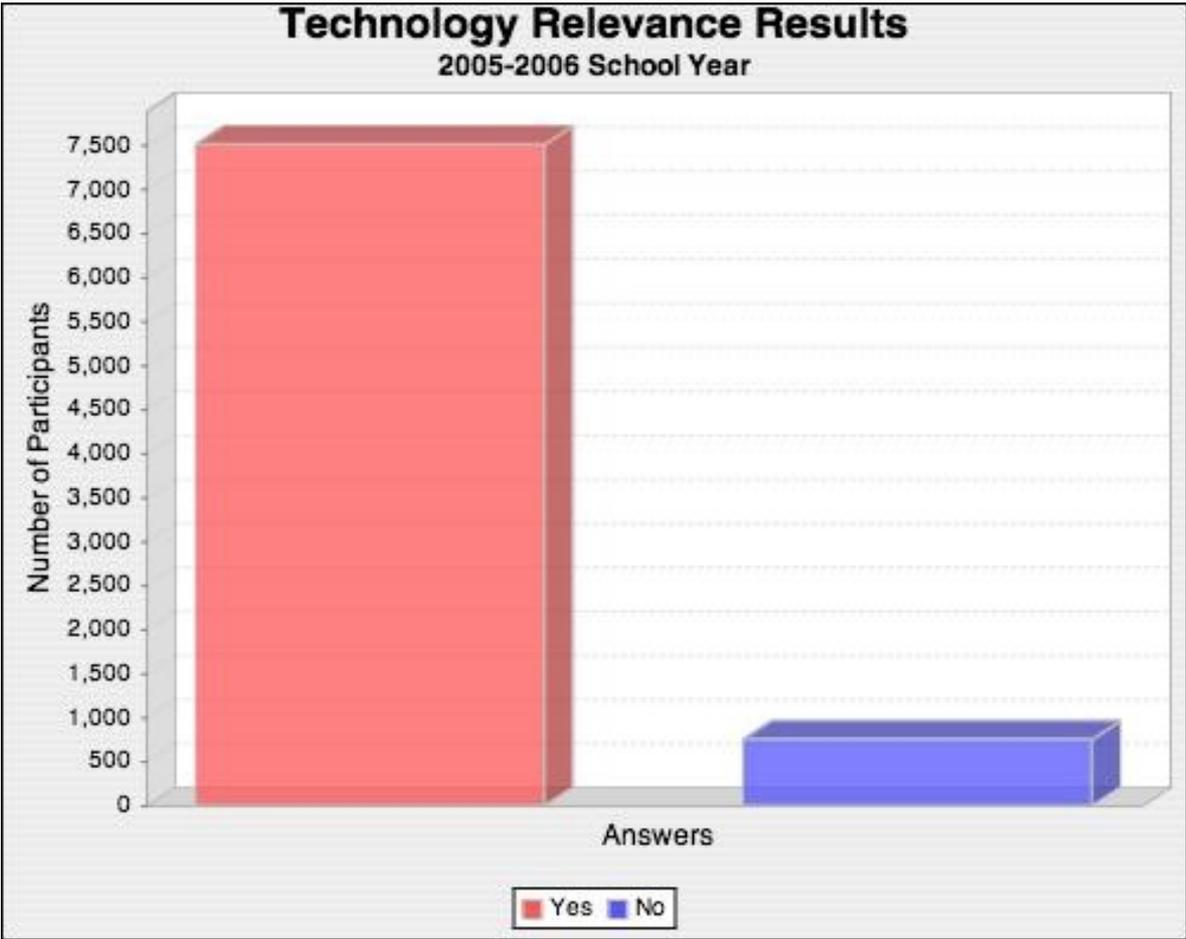




Figure 9: Number Of Classroom Computers

- Figure 9 compares the number of participants who completed the LoTi Questionnaire by Number Of Classroom Computers throughout State of New Hampshire. Participants in State of New Hampshire were asked the question, "How many computers do you have for instructional use in your classroom?" Based on their responses, approximately 63% of participants (5,145 participants) reported the Number Of Classroom Computers as "One to Two". Additionally, 15% of participants (1,232 participants) responded "Three to Five"; 11% of participants (929 participants) responded "None"; and 11% of participants (906 participants) responded "More than Five" to the question of Number Of Classroom Computers.

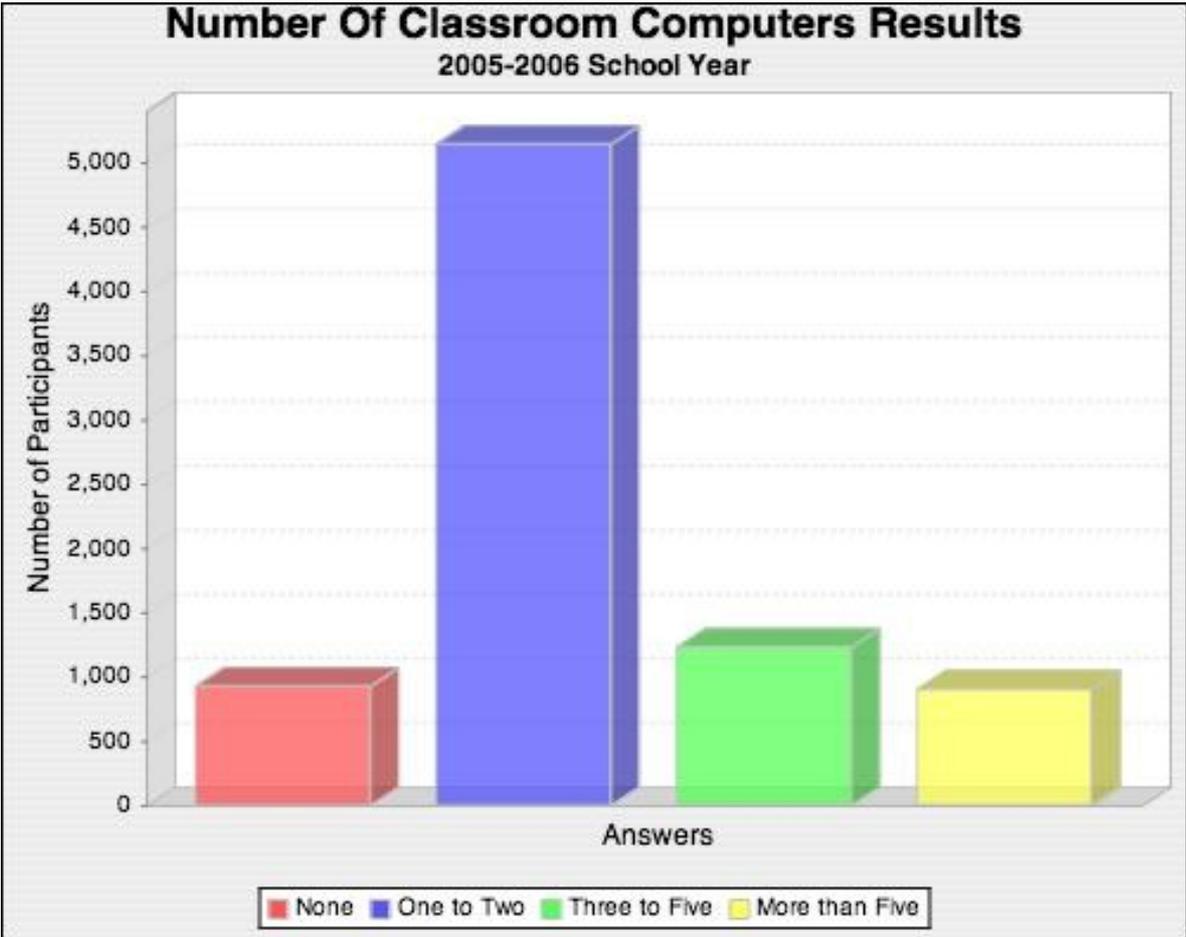




Figure 10: Classroom Internet Connection

- Figure 10 compares the number of participants who completed the LoTi Questionnaire by Classroom Internet Connection throughout State of New Hampshire. Participants in State of New Hampshire were asked the question, "Do you have an internet connection in your classroom?" Based on their responses, approximately 95% of participants (7,835 participants) responded "Yes" while 5% of participants (391 participants) responded "No" to the question of Classroom Internet Connection.

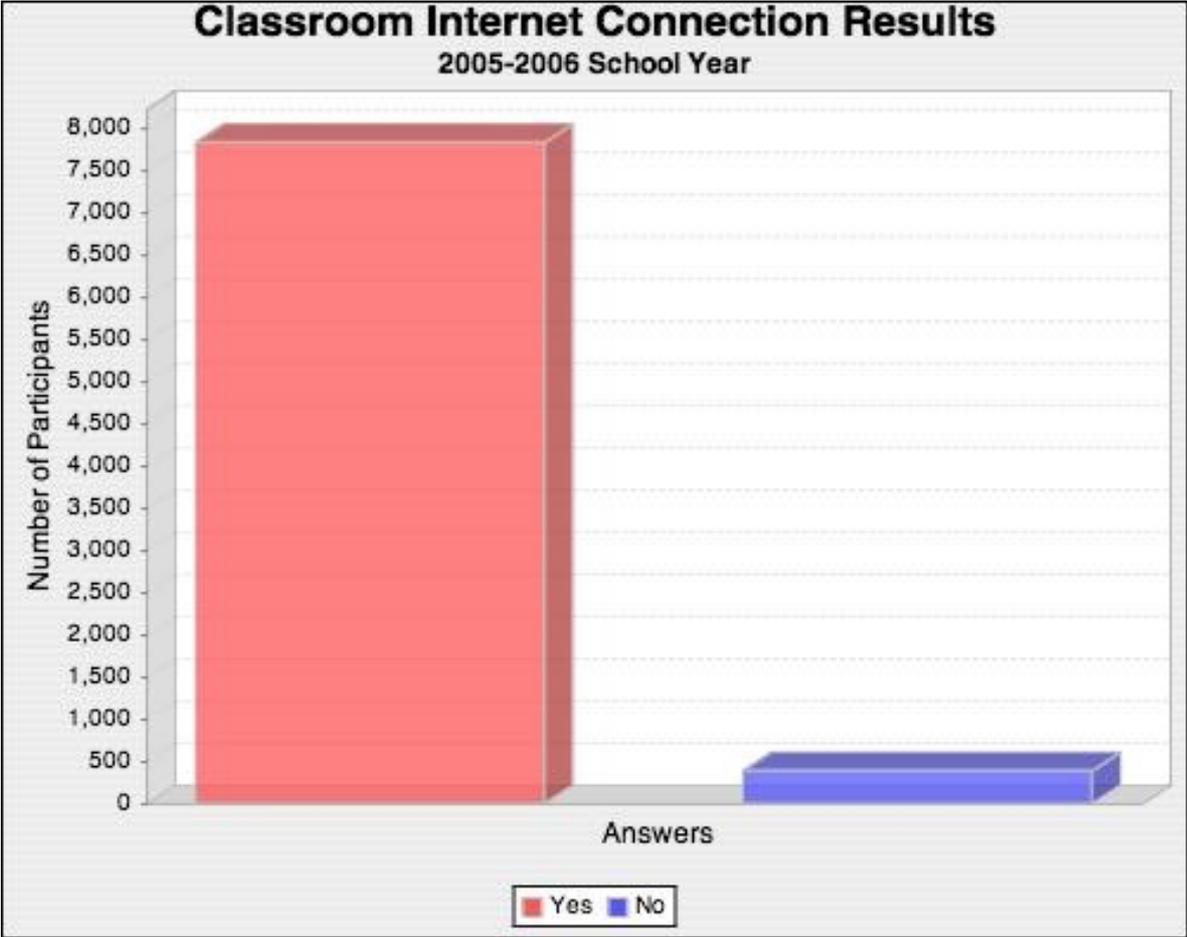




Figure 11: Educator Computer Frequency

- Figure 11 compares the number of participants who completed the LoTi Questionnaire by Educator Computer Frequency throughout State of New Hampshire. Participants in State of New Hampshire were asked the question, "Approximately how often do you use computers to do your job as an educator?" Based on their responses, approximately 77% of participants (6,325 participants) reported the Educator Computer Frequency as "Daily". Additionally, 16% of participants (1,297 participants) responded "A Few Times a Week"; 5% of participants (374 participants) responded "A Few Times a Month"; and 3% of participants (250 participants) responded "A Few Times a Year" to the question of Educator Computer Frequency.

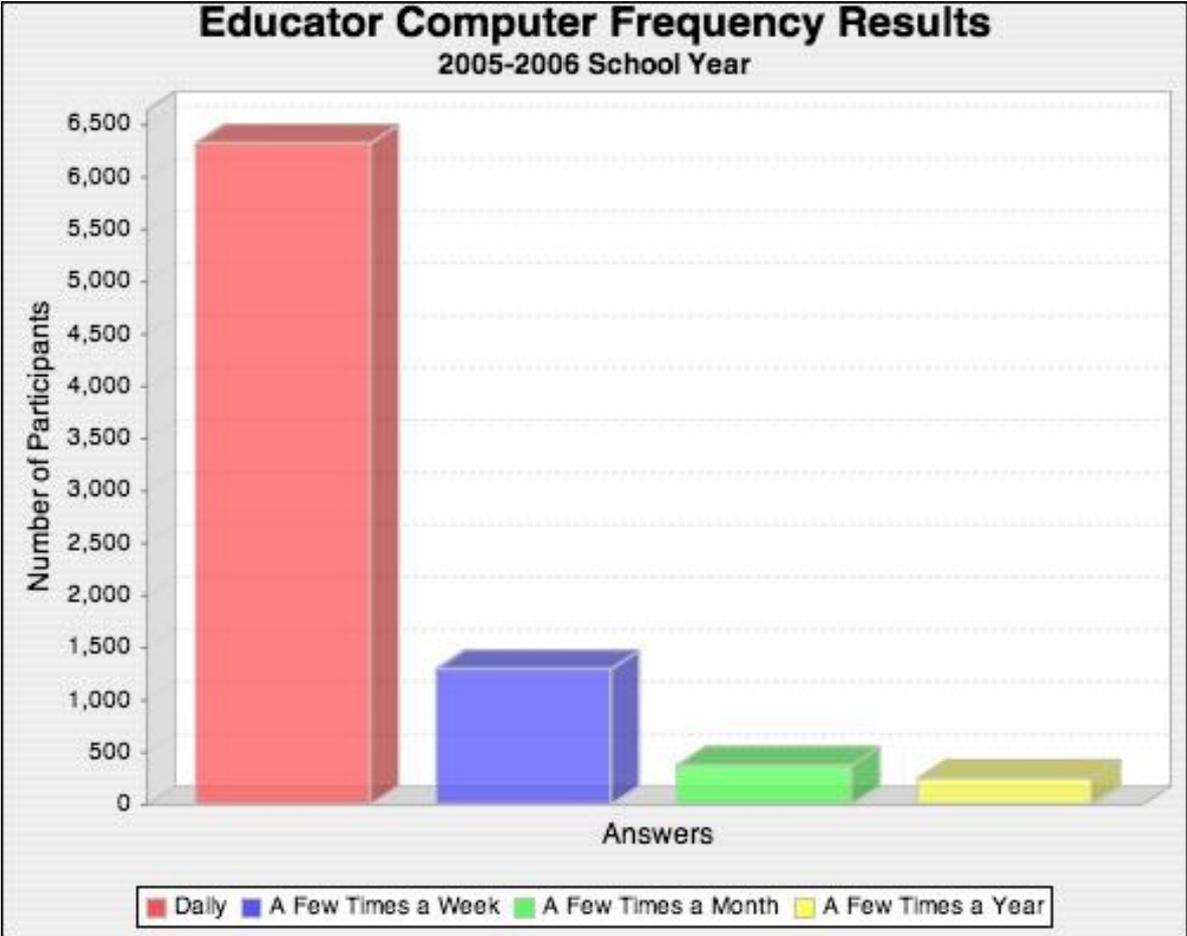




Figure 12: Student Computer Frequency

- Figure 12 compares the number of participants who completed the LoTi Questionnaire by Student Computer Frequency throughout State of New Hampshire. Participants in State of New Hampshire were asked the question, "Approximately how often do students use computers in your instructional setting?" Based on their responses, approximately 28% of participants (2,231 participants) reported the Student Computer Frequency as "A Few Times a Week". Additionally, 25% of participants (1,985 participants) responded "A Few Times a Year"; 24% of participants (1,942 participants) responded "Daily"; and 23% of participants (1,841 participants) responded "A Few Times a Month" to the question of Student Computer Frequency.

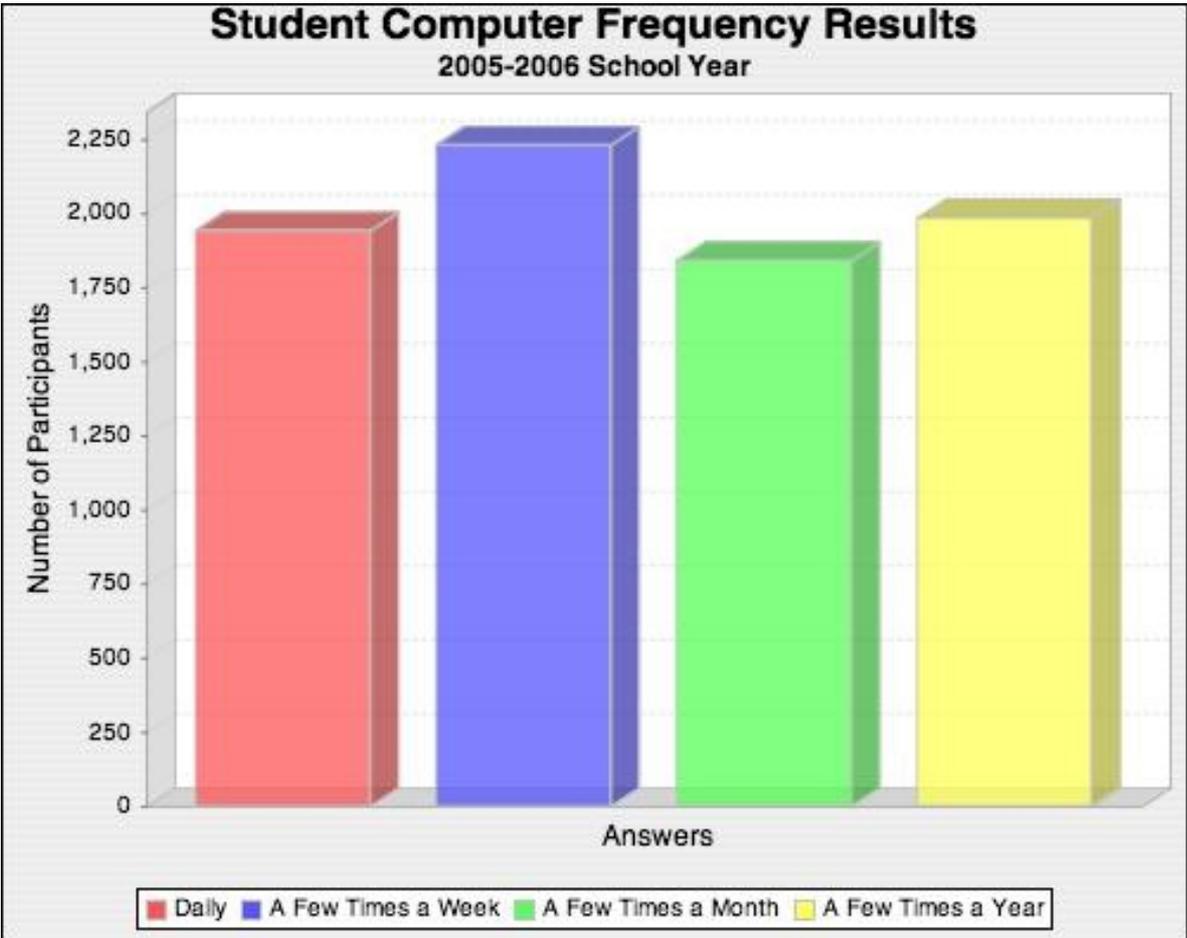




Figure 13: Home Computer Use

- Figure 13 compares the number of participants who completed the LoTi Questionnaire by Home Computer Use throughout State of New Hampshire. Participants in State of New Hampshire were asked the question, "Do you have a personal computer at home?" Based on their responses, approximately 97% of participants (8,022 participants) responded "Yes" while 3% of participants (252 participants) responded "No" to the question of Home Computer Use.

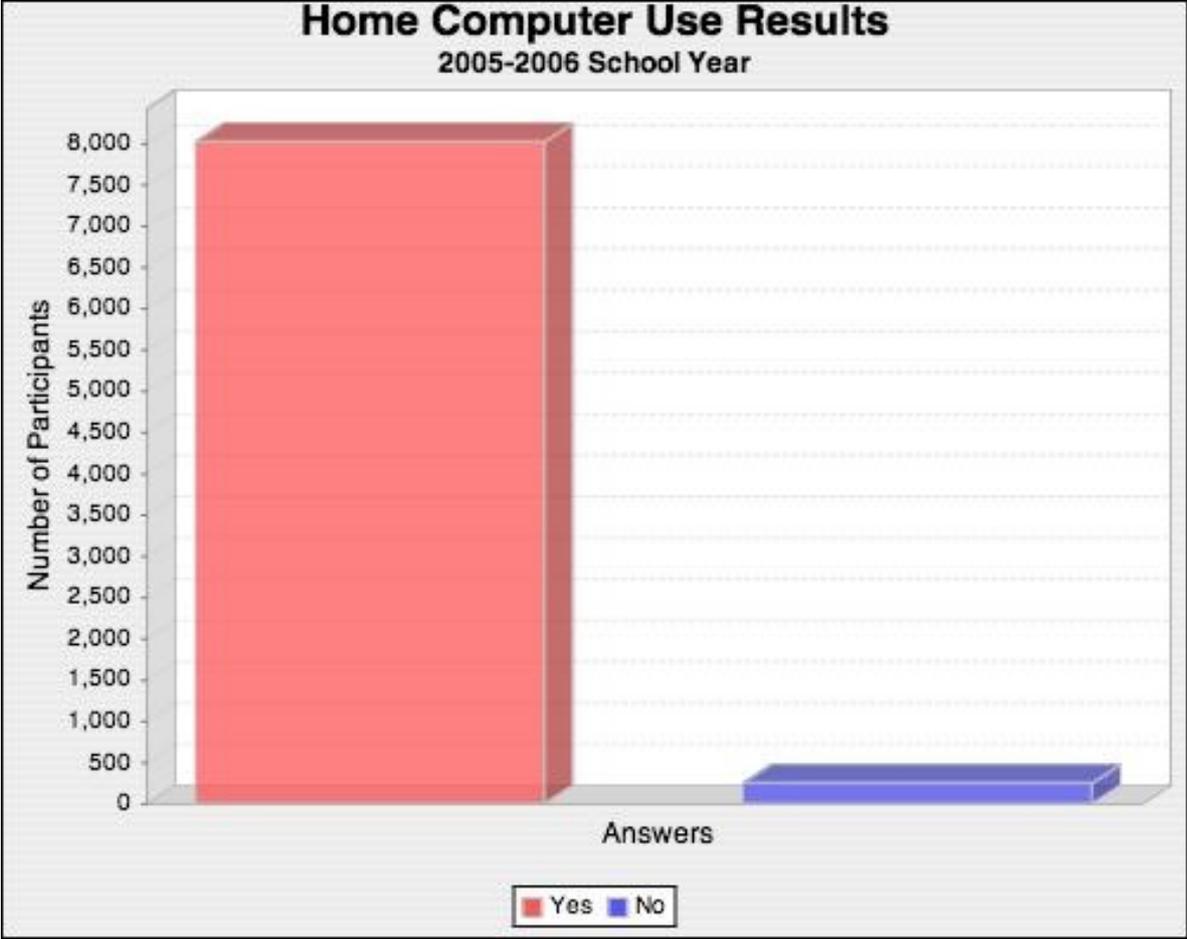




Figure 14: Home Internet Connection

- Figure 14 compares the number of participants who completed the LoTi Questionnaire by Home Internet Connection throughout State of New Hampshire. Participants in State of New Hampshire were asked the question, "Do you have an internet connection at home?" Based on their responses, approximately 94% of participants (7,818 participants) responded "Yes" while 6% of participants (470 participants) responded "No" to the question of Home Internet Connection.

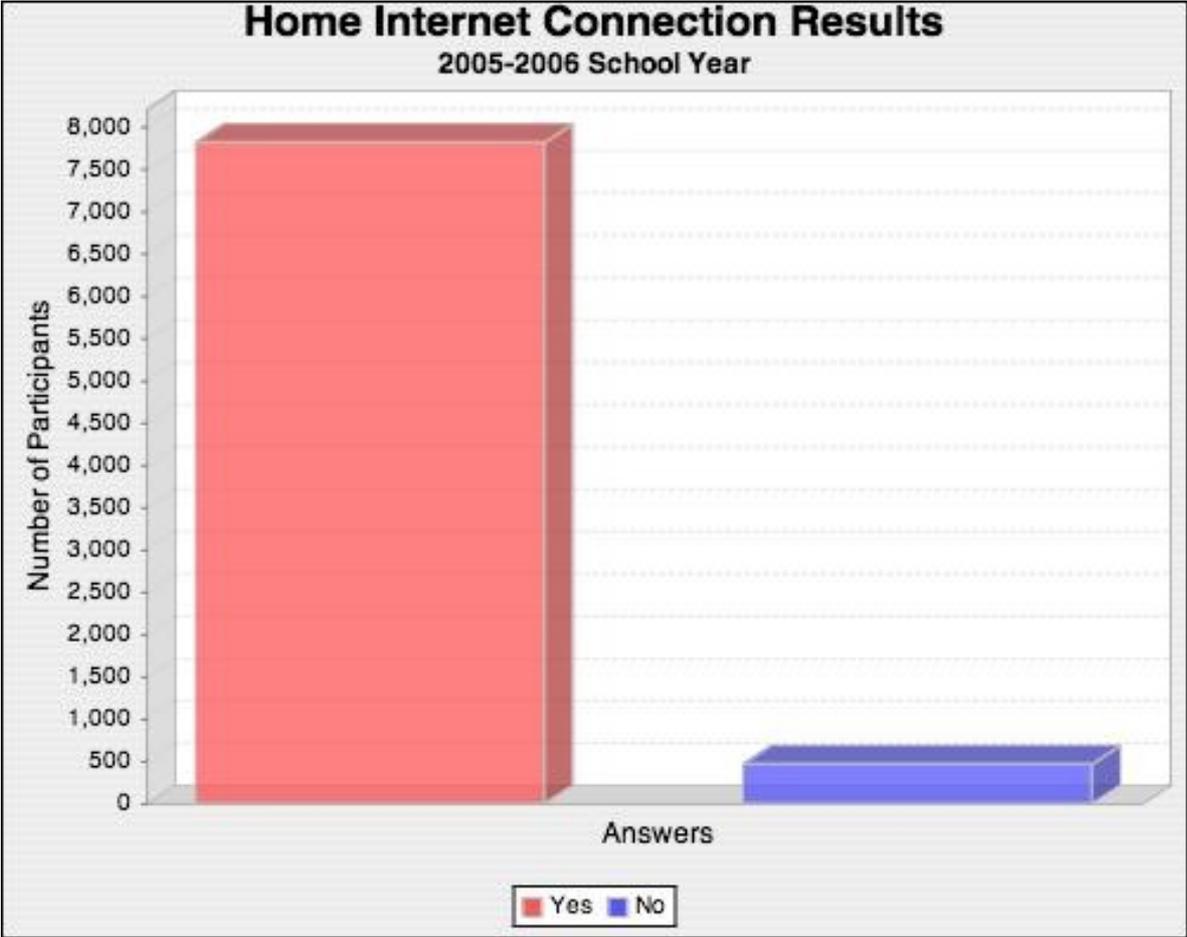




Figure 15: Content Of Technology Training

- Figure 15 compares the number of participants who completed the LoTi Questionnaire by Content Of Technology Training throughout State of New Hampshire. Participants in State of New Hampshire were asked the question, "Which statement best describes the content of your technology-related training?" Based on their responses, approximately 50% of participants (4,109 participants) reported the Content Of Technology Training as "A combination of technology skills and curriculum integration training". Additionally, 30% of participants (2,459 participants) responded "Mostly technology skills training (e.g., training on software applications, the internet, troubleshoot hardware)"; 12% of participants (971 participants) responded "Mostly curriculum integration training (e.g., how technology can be effectively integrated in the classroom)"; and 9% of participants (739 participants) responded "No Training" to the question of Content Of Technology Training.

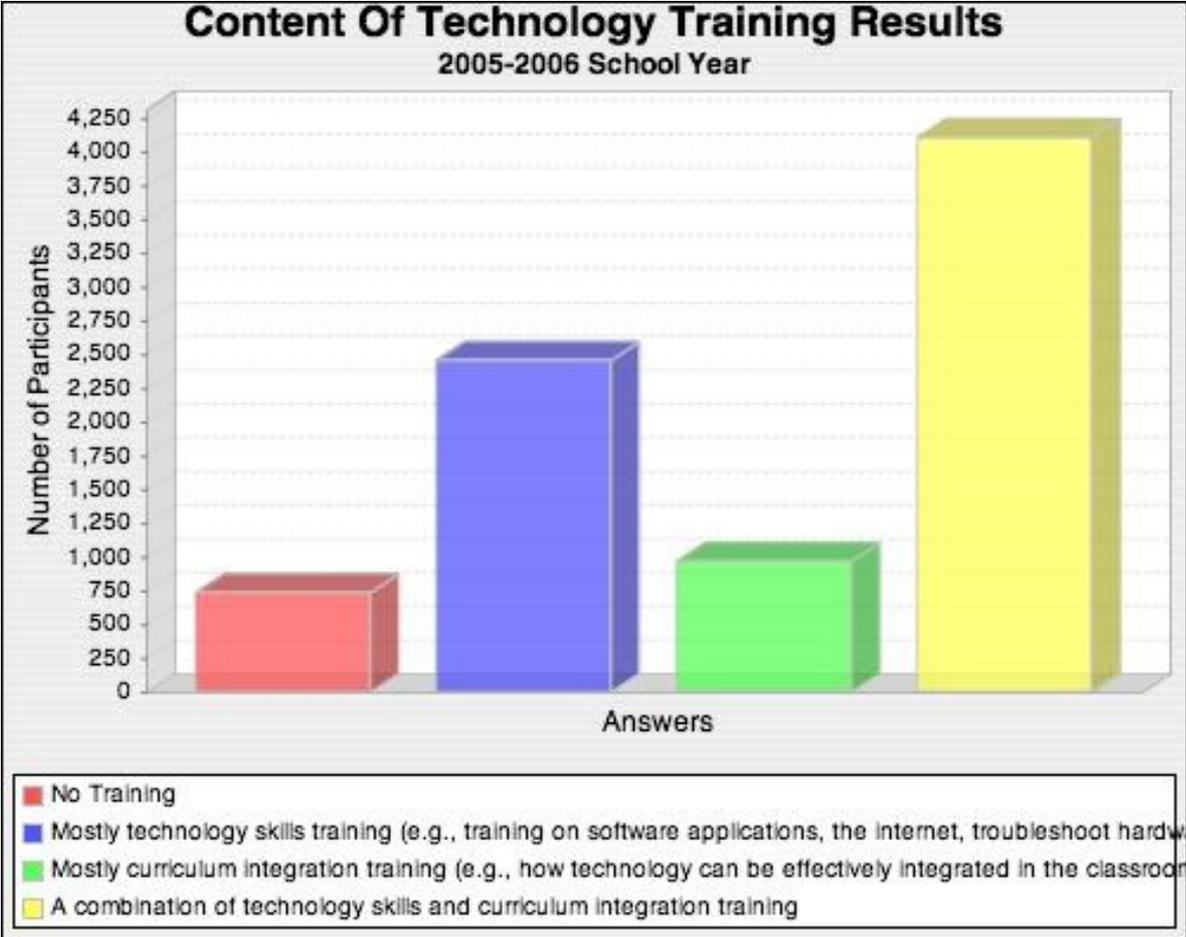




Figure 16: Greatest Obstacle

- Figure 16 compares the number of participants who completed the LoTi Questionnaire by Greatest Obstacle throughout State of New Hampshire. Participants in State of New Hampshire were asked the question, "What do you perceive as your greatest obstacle to further using technology in your instructional setting?" Based on their responses, approximately 53% of participants (4,280 participants) reported the Greatest Obstacle as "Time to Learn, Practice, and Plan". Additionally, 27% of participants (2,199 participants) responded "Access to Technology"; 16% of participants (1,250 participants) responded "Other Priorities (e.g., Statewide Testing, New Textbook Adoptions)"; and 4% of participants (284 participants) responded "Lack of Staff Development Opportunities" to the question of Greatest Obstacle.

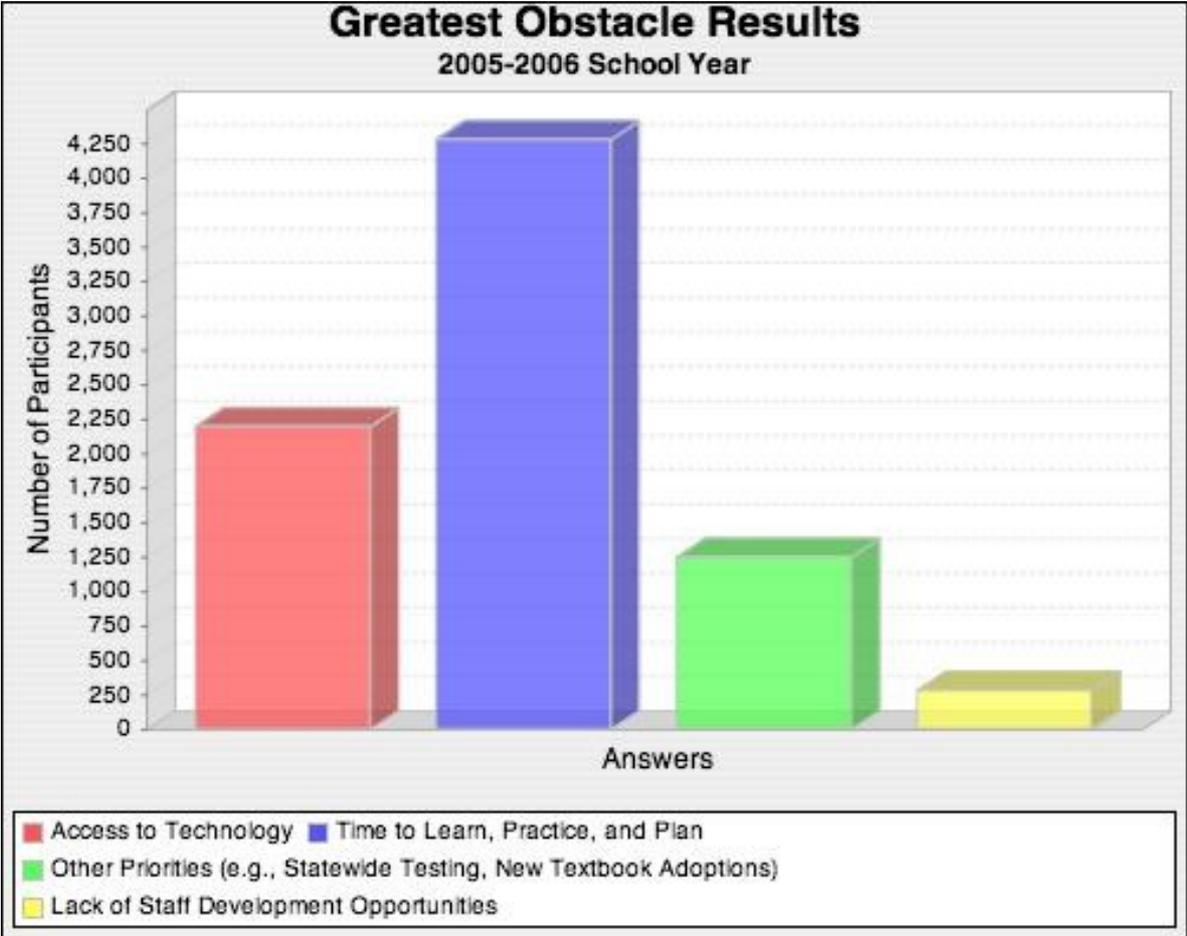
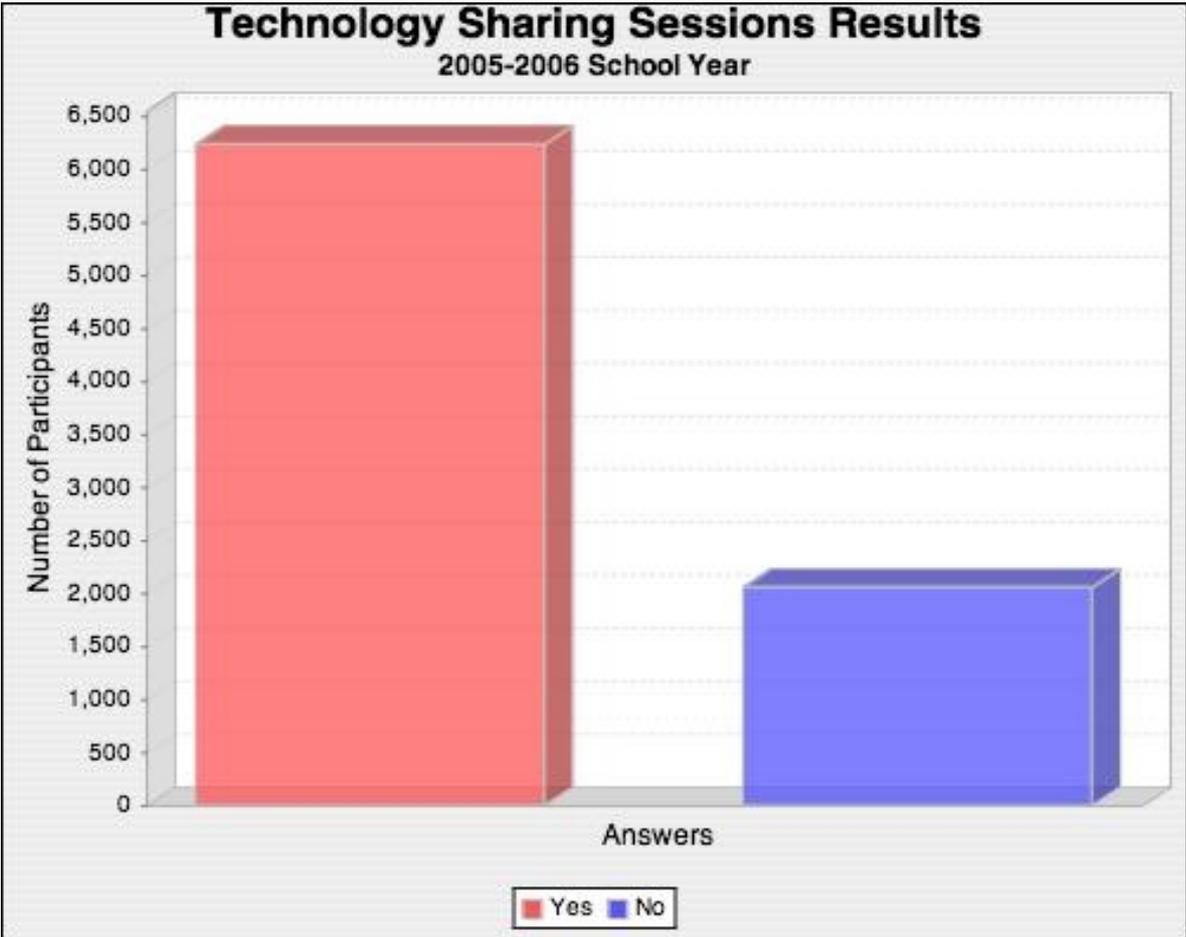




Figure 17: Technology Sharing Sessions

- Figure 17 compares the number of participants who completed the LoTi Questionnaire by Technology Sharing Sessions throughout State of New Hampshire. Participants in State of New Hampshire were asked the question, "Do you participate in formal or informal technology sharing sessions, such as faculty meetings, inservice training, lunchtime discussions, before or after school meetings, or common preparation time within your instructional setting?" Based on their responses, approximately 75% of participants (6,238 participants) responded "Yes" while 25% of participants (2,059 participants) responded "No" to the question of Technology Sharing Sessions.





LoTi Findings

| LoTi Level | Description | # Participants | % Participants |
|--------------------------------|---|----------------|---------------------|
| Level 0 | There is no visible evidence of computer access or instructional use of computers in the classroom. | 1,162 | 14% |
| Level 1 | Available classroom computer(s) are used primarily for teacher productivity (e.g., email, word processing, grading programs). | 1,860 | 22% |
| Level 2 | Student technology projects (e.g., designing web pages, research via the internet, creating multimedia presentations) focus on the content under investigation. | 1,641 | 20% |
| Level 3 | Tool-based applications (e.g., graphing, concept-mapping) are primarily used by students for analyzing data, making inferences, and drawing conclusions. | 1,831 | 22% |
| Level 4a | The use of outside resources and/or interventions aid the teacher in developing challenging learning experiences using available classroom computers. | 1,216 | 15% |
| Level 4b | Teachers can readily design learning experiences with no outside assistance that empower students to identify and solve authentic problems using technology. | 497 | 6% |
| Level 5 | Teachers actively elicit technology from outside entities to expand student experiences directed at problem-solving, issues resolution, and student action. | 107 | 1% |
| Level 6 | Computers provide a seamless and almost transparent medium for information queries, problem-solving, and/or product development. | 36 | less than 1% |
| Access to Computers | Percent of participants indicating they <i>HAVE</i> access to computers for instructional purposes. | 8,288 | 99% |
| Target Technology Level | Participants indicating they implement technology in their respective classrooms at the Target Technology Level (LoTi Level 4b) or above. | 640 | 8% |



LoTi Findings

- Approximately 8% of State of New Hampshire participants (640 participants) completing the Level of Technology Implementation (LoTi) Questionnaire self-assessed themselves at the Target Technology Level as defined by the National Education Technology Standards (NETS) and Technology Standards for School Administrators (TSSA). This level is characterized by technology use embedded in challenging and engaging learning experiences that promote problem-solving, critical thinking, and self-directed learning.
- Approximately 56% of the 8,350 State of New Hampshire participants were clustered in Levels 0 through 2. These levels represent the lower portion of the LoTi Framework (see Appendices) and focus primarily on teacher's use of productivity tools, student use of tutorial programs, and "project-based" learning opportunities at the knowledge/comprehension level.
- Though 99% of State of New Hampshire participants reported having instructional access to computers for teacher and student use, approximately 90% of these same participants indicated that they felt comfortable using computers at home and in the workplace (e.g., accessing email, creating multimedia products, troubleshooting computer problems).
- Approximately 82% of State of New Hampshire educators indicated that they either supported or implemented one or more attributes of a learner-centered curriculum with or without a computer. A learner-centered curriculum includes attributes such as a focus on multiple assessment strategies, an emphasis on higher order thinking skills, and the creation of a problem-based learning environment. Research has found strong links between computers used in conjunction with these attributes and higher student achievement based on standardized test scores.



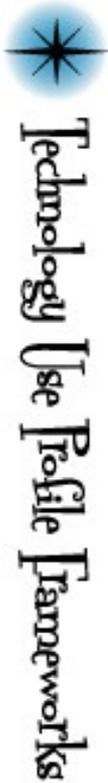
LoTi Goals

- Move 31% of the staff member(s) positioned at a Level 2 implementation of technology to a Level 4a during the current school year. This recommendation is based on the relatively high Current Instructional Practices (CIP) scores of these staff members toward a learner-based approach in the classroom and their relatively high Personal Computer Use (PCU) scores.
- Move 69% of the staff member(s) positioned at a Level 2 implementation of technology to a Level 3 during the current school year. This recommendation is consistent with these staff members current scores for Current Instructional Practices (CIP) and Personal Computer Use (PCU).
- Move 23% of the staff member(s) positioned at a Level 0 implementation of technology to a Level 4a during the current school year. This recommendation is based on the relatively high Current Instructional Practices (CIP) scores of these staff members toward a learner-based approach in the classroom and their relatively high Personal Computer Use (PCU) scores.
- Move 14% of the staff member(s) positioned at a Level 0 implementation of technology to a Level 3 during the current school year. This recommendation is based on the relatively moderate Current Instructional Practices (CIP) scores of these staff members toward a learner-based approach in the classroom and their relatively high Personal Computer Use (PCU) scores.
- Move 63% of the staff member(s) positioned at a Level 0 implementation of technology to a Level 2 during the current school year. This recommendation is consistent with these staff members current scores for Current Instructional Practices (CIP) and Personal Computer Use (PCU).
- Additional goal statements that target other participants at their respective level of technology implementation should be considered based on available financial and personnel resources.



LoTi Recommendations

- Consolidate the group's technology, instruction, assessment courses and inservices into a single staff development program based on the Levels of Technology Implementation framework. This will enable participants to visualize the symbiotic relationship among instruction, assessment, and technology implementation. Simply knowing how to use a specific technology application does not automatically push a participant to a higher level of technology use. Moving participants to a higher level of technology implementation requires a personal commitment to changing one's paradigm about existing instruction and assessment practices (e.g., moving from traditional paper and pencil forms of student assessment to alternative, multi-dimensional forms of assessment) regardless of one's skill level with software applications.
- Ensure that each classroom teacher from your group has at least one functional computer and printer in their classroom for instructional purposes. Within your group, 99% of participants indicated that they have access to computers, but even participants who indicated they have computer access may not have a functional computer and printer in their classroom. According to the LoTi Questionnaire, "computer access" means that a staff member and/or student can use or borrow a computer within the school building for instructional purposes; including computers in the classroom, computer labs, computers on carts, general access computers in the library, or something similar.
- Provide staff development that models specific strategies and techniques for integrating higher-order thinking skills with the available classroom computers using tool-based applications (e.g., spreadsheets, graphs, multimedia, databases, concept-mapping, internet tools). This recommendation is targeted at moving participants to Level 3 relating to their level of technology implementation.
- Provide staff development that increases participants confidence and competence with designing Level 4b (Target Technology) instructional modules using a constructivist, experiential-based approach to curriculum development. This recommendation is targeted at (1) moving participants to a Level 4a implementation of technology, (2) improving the perceptions of Level 4a participants regarding their ability to support or integrate technology at a Level 4a, and (3) moving participants to a Level 4b relating to their level of technology implementation.
- Review existing districtwide professional development programs in light of the results from this study. Currently, 56% of the survey participants self-assessed themselves at Levels 0-2, yet close to 71% of these same participants indicated that they were implementing one or more of the attributes of a learner-centered curriculum. It is respectfully recommended that stakeholders consider new approaches and/or modify existing approaches to districtwide professional development so that educators can make better connections between technology use and student authentic problem-solving in the classroom. This recommendation is targeted at moving lower level survey participants to Level 3.



Level of Technology Implementation (LoTi) Framework

- **Level 0 – Nonuse:** Nonuse implies there is a perceived lack of access to technology-based tools (e.g., computers) or a lack of time to pursue electronic technology implementation. Existing technology is predominately text-based (e.g., ditto sheets, chalkboard, overhead projector).
- **Level 1 – Awareness :** Awareness implies that the use of technology-based tools is either (1) one step removed from the classroom teacher (e.g., integrated learning system labs, special computer-based pull-out programs, computer literacy classes, central word processing labs), (2) used almost exclusively by the classroom teacher for classroom and/or curriculum management tasks (e.g., taking attendance, using grade book programs, accessing email, retrieving lesson plans from a curriculum management system or the internet) and/or (3) used to embellish or enhance teacher-directed lessons or lectures (e.g., multimedia presentations).
- **Level 2 – Exploration:** Exploration implies that technology-based tools supplement the existing instructional program (e.g., tutorials, educational games, basic skill applications) or complement selected multimedia and/or web-based projects (e.g., internet-based research papers, informational multimedia presentations) at the knowledge/comprehension level. The electronic technology is employed either as extension activities, enrichment exercises, or technology-based tools and generally reinforces lower cognitive skill development relating to the content under investigation.
- **Level 3 – Infusion:** Infusion implies that technology-based tools including databases, spreadsheet and graphing packages, multimedia and desktop publishing applications, and internet use complement selected instructional events (e.g., field investigation using spreadsheets/graphs to analyze results from local water quality samples) or multimedia/web-based projects at the analysis, synthesis, and evaluation levels. Though the learning activity may or may not be perceived as authentic by the student, emphasis is, nonetheless, placed on higher levels of cognitive processing and in-depth treatment of the content using a variety of thinking skill strategies (e.g., problem-solving, decision-making, reflective thinking, experimentation, scientific inquiry).
- **Level 4a – Integration (Mechanical):** Integration (Mechanical) implies that technology-based tools are integrated in a mechanical manner that provides rich context for students' understanding of the pertinent concepts, themes, and processes. Heavy reliance is placed on prepackaged materials and/or outside resources (e.g., assistance from other colleagues), and/or interventions (e.g., professional development workshops) that aid the teacher in the daily management of their operational curriculum. Technology (e.g., multimedia, telecommunications, databases, spreadsheets, word processing) is perceived as a tool to identify and solve authentic problems as perceived by the students relating to an overall theme/concept. Emphasis is placed on student action and on issues resolution that require higher levels of student cognitive processing and in-depth examination of the content.
- **Level 4b – Integration (Routine):** Integration (Routine) implies that technology-based tools are integrated in a routine manner that provides rich context for students' understanding of the pertinent concepts, themes, and processes. At this level, teachers can readily design and implement learning experiences (e.g., units of instruction) that empower students to identify and solve authentic problems relating to an overall theme/concept using the available technology (e.g., multimedia applications, internet, databases, spreadsheets, word processing) with little or no outside assistance. Emphasis is again placed on student action and on issues resolution that require higher levels of student cognitive processing and in-depth examination of the content.
- **Level 5 – Expansion:** Expansion implies that technology access is extended beyond the classroom. Classroom teachers actively elicit technology applications and networking from other schools, business enterprises, governmental agencies (e.g., contacting NASA to establish a link to an orbiting space shuttle via internet), research institutions, and universities to expand student experiences directed at problem-solving, issues resolution, and student activism surrounding a major theme/concept. The complexity and sophistication of the technology-based tools used in the learning environment are now commensurate with (1) the diversity, inventiveness, and spontaneity of the teacher's experiential-based approach to teaching and learning and (2) the students' level of complex thinking (e.g., analysis, synthesis, evaluation) and in-depth understanding of the content experienced in the classroom.
- **Level 6 – Refinement:** Refinement implies that technology is perceived as a process, product (e.g., invention, patent, new software design), and/or tool for students to find solutions related to an identified "real-world" problem or issue of significance to them. At this level, there is no longer a division between instruction and technology use in the classroom. Technology provides a seamless medium for information queries, problem-solving, and/or product development. Students have ready access to and a complete understanding of a vast array of technology based tools to accomplish any particular task at school. The instructional curriculum is entirely learner-based. The content emerges based on the needs of the learner according to his/her interests, needs, and/or aspirations and is supported by unlimited access to the most current computer applications and infrastructure available.



Personal Computer Use (PCU) Framework

- **PCU Intensity Level 0:** A PCU Intensity Level 0 indicates that the participant does not feel comfortable or have the skill level to use computers for personal use. Participants at Intensity Level 0 rely more on the use of overhead projectors, chalkboards, and/or traditional paper/pencil activities than using computers for conveying information or classroom management tasks.
- **PCU Intensity Level 1:** A PCU Intensity Level 1 indicates that the participant demonstrates little skill level with using computers for personal use. Participants at Intensity Level 1 may have a general awareness of various technology-related tools such as word processors, spreadsheets, or the internet, but generally are not using them.
- **PCU Intensity Level 2:** A PCU Intensity Level 2 indicates that the participant demonstrates little to moderate skill level with using computers for personal use. Participants at Intensity Level 2 may occasionally browse the internet, use email, or use a word processor program; yet, may not have the confidence or feel comfortable troubleshooting simple "technology" problems or glitches as they arise. At school, their use of computers may be limited to a grade book or attendance program.
- **PCU Intensity Level 3:** A PCU Intensity Level 3 indicates that the participant demonstrates moderate skill level with using computers for personal use. Participants at Intensity Level 3 may begin to become "regular" users of selected applications such as internet browsers, email, or a word processor program. They may also feel comfortable troubleshooting simple "technology" problems such as rebooting a machine or hitting the "Back" button on an internet browser, but mostly rely on technology support staff or others to assist them with any troubleshooting issues.
- **PCU Intensity Level 4:** A PCU Intensity Level 4 indicates that the participant demonstrates moderate to high skill level with using computers for personal use. Participants at Intensity Level 4 commonly use a broader range of software applications including multimedia (e.g., Microsoft Powerpoint), spreadsheets, and simple database applications. They typically have the confidence and are able to troubleshoot simple hardware, software, and/or peripheral problems without assistance from technology support staff.
- **PCU Intensity Level 5:** A PCU Intensity Level 5 indicates that the participant demonstrates high skill level with using computers for personal use. Participants at Intensity Level 5 are commonly able to use the computer to create their own web pages, produce sophisticated multimedia products, and/or effortlessly use common productivity applications (e.g., Microsoft Excel, FileMaker Pro), desktop publishing software, and web-based tools. They are also able to confidently troubleshoot most hardware, software, and/or peripheral problems without assistance from technology support staff.
- **PCU Intensity Level 6:** A PCU Intensity Level 6 indicates that the participant demonstrates high to extremely high skill level with using computers for personal use. Participants at Intensity Level 6 are sophisticated in the use of most, if not all, multimedia, productivity, desktop publishing, and web-based applications. They typically serve as "troubleshooters" for others in need of assistance and sometimes seek certification for achieving selected technology-related skills.
- **PCU Intensity Level 7:** A PCU Intensity Level 7 indicates that the participant demonstrates extremely high skill level with using computers for personal use. Participants at Intensity Level 7 are expert computer users, troubleshooters, and/or technology mentors. They typically are involved in training others on any technology-related tasks and are usually involved in selected support groups from around the world that allow them access to answers for all technology-based inquiries they may have.



Current Instructional Practices (CIP) Framework

- **CIP Intensity Level 0:** A CIP Intensity Level 0 indicates that one or more questionnaire statements were not applicable to the participant's current instructional practices.
- **CIP Intensity Level 1:** At a CIP Intensity Level 1, the participant's current instructional practices align exclusively with a subject-matter based approach to teaching and learning. Teaching strategies tend to lean toward lectures and/or teacher-led presentations. The use of curriculum materials aligned to specific content standards serves as the focus for student learning. Learning activities tend to be sequential and uniform for all students. Evaluation techniques focus on traditional measures such as essays, quizzes, short-answers, or true-false questions. Student projects tend to be teacher-directed in terms of identifying project outcomes as well as requirements for project completion.
- **CIP Intensity Level 2:** Similar to a CIP Intensity Level 1, the participant at a CIP Intensity Level 2 supports instructional practices consistent with a subject-matter based approach to teaching and learning, but not at the same level of intensity or commitment. Teaching strategies tend to lean toward lectures and/or teacher-led presentations. The use of curriculum materials aligned to specific content standards serves as the focus for student learning. Learning activities tend to be sequential and uniform for all students. Evaluation techniques focus on traditional measures such as essays, quizzes, short-answers, or true-false questions. Student projects tend to be teacher-directed in terms of identifying project outcomes as well as requirements for project completion.
- **CIP Intensity Level 3:** At a CIP Intensity Level 3, the participant supports instructional practices aligned somewhat with a subject-matter based approach to teaching and learning—an approach characterized by sequential and uniform learning activities for all students, teacher-directed presentations, and/or the use of traditional evaluation techniques. However, the participant may also support the use of student-directed projects that provide opportunities for students to determine the "look and feel" of a final product based on specific content standards.
- **CIP Intensity Level 4:** At a CIP Intensity Level 4, the participant may feel comfortable supporting or implementing either a subject-matter or learning-based approach to instruction based on the content being addressed. In a subject-matter based approach, learning activities tend to be sequential, student projects tend to be uniform for all students, the use of lectures and/or teacher-directed presentations are the norm as well as traditional evaluation strategies. In a learner-based approach, learning activities are diversified and based mostly on student questions, the teacher serves more as a co-learner or facilitator in the classroom, student projects are primarily student-directed, and the use of alternative assessment strategies including performance-based assessments, peer reviews, and student reflections are the norm.
- **CIP Intensity Level 5:** At a CIP Intensity Level 5, the participant's instructional practices tend to lean more toward a learner-based approach. The essential content embedded in the standards emerges based on students "need to know" as they attempt to research and solve issues of importance to them using critical thinking and problem-solving skills. The types of learning activities and teaching strategies used in the learning environment are diversified and driven by student questions. Both students and teachers are involved in devising appropriate assessment instruments (e.g., performance-based, journals, peer reviews, self-reflections) by which student performance will be assessed. However, the use of teacher-directed activities (e.g., lectures, presentations, teacher-directed projects) may surface based on the nature of the content being addressed and at the desired level of student cognition.
- **CIP Intensity Level 6:** Similar to a CIP Intensity Level 7, the participant at a CIP Intensity Level 6 supports instructional practices consistent with a learner-based approach, but not at the same level of intensity or commitment. The essential content embedded in the standards emerges based on students "need to know" as they attempt to research and solve issues of importance to them using critical thinking and problem-solving skills. The types of learning activities and teaching strategies used in the learning environment are diversified and driven by student questions. Students, teacher/facilitators, and occasionally parents are all involved in devising appropriate assessment instruments (e.g., performance-based, journals, peer reviews, self-reflections) by which student performance will be assessed.
- **CIP Intensity Level 7:** At a CIP Intensity Level 7, the participant's current instructional practices align exclusively with a learner-based approach to teaching and learning. The essential content embedded in the standards emerges based on students "need to know" as they attempt to research and solve issues of importance to them using critical thinking and problem-solving skills. The types of learning activities and teaching strategies used in the learning environment are diversified and driven by student questions. Students, teacher/facilitators, and occasionally parents are all involved in devising appropriate assessment instruments (e.g., performance-based, journals, peer reviews, self-reflections) by which student performance will be assessed.



Bibliography

Bibliography

- Alvarez, Marino C. (Oct., 1998). *Developing critical and imaginative thinking within electronic literacy*. NASSP Bulletin, 82(600), 41–7.
- Archer, Jeffery. (October, 1, 1998). *The link to higher scores*. Technology in Schools supplement to Education Week, 28(5).
- Flescher, Eric Z. (1997). *Discovery and experiential-based learning with computer simulations*. University of Kansas. Dissertation Abstracts, 59(04A).
- Moersch, Christopher M. (1995). *Levels of technology implementation (LoTi): a framework for measuring classroom technology use*. Learning & Leading with Technology, 40–42.
- Oliver, Kevin Matthew (1999). *Student use of computer tools designed to scaffold scientific problem-solving with hypermedia resources: a case study*. University of Georgia. Dissertation Abstracts, 60(05A).
- Wiburg, Karin M. and Carter, Bruce (Sept. 1994). *Thinking with computers*. Computing Teacher, 22, 7–10.



Inquiries

- For any further inquiries, please contact the National Business Education Alliance (NBEA) by any means listed below or visit the LoTi Connection to learn more about the Levels of Technology Implementation:

Mail:

National Business Education Alliance
6963 Tradewinds Drive
Carlsbad, CA 92011

Phone:

760-431-2232

Fax:

760-931-0203

Web:

www.loticonnection.com