

Maine Learning Technology Initiative 2024–25 Evaluation Report

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Executive Summary

Building on two decades of previous experience supporting 1:1 device allocation, the Maine Learning Technology Initiative (MLTI) seeks to expand access to digital devices, support high-quality professional learning and school infrastructure related to technology, and provide leadership opportunities to students throughout the state. The Year 4 evaluation of MLTI focused on providing feedback to the Maine Department of Education Learning Through Technology (LTT) team on implementation of the initiative's components, including documenting the resources and services provided through MLTI by the LTT team, the extent of school, teacher, and student participation in each of the program components, and feedback on the quality, relevance, and utility of these components. The evaluation also examined key school, instructional, and student outcomes related to the use and integration of technology into classroom instruction.

The evaluation team collected survey data from 144 teachers and 730 students in a representative sample of 28 schools, gathered program-wide extant data and artifacts generated from program activities, conducted interviews with seven technology coordinators from seven schools and four teachers from three schools, and conducted focus groups with nine students from two schools. This section summarizes the evaluation's findings from analyses of these data, and offers recommendations based on those findings.

Overall, the MLTI program received positive feedback from participants on the resources and services provided. Students were allocated 1:1 devices in nearly all 238 schools in districts that opted into the MLTI program. Though participation in professional learning was low, teachers reported the content and facilitation to be of high quality and relevant to their instruction. Over 1,000 students participated in various leadership events, and surveyed students generally expressed confidence in their foundational knowledge about technology.

Below is a summary of specific findings and recommendations related to each of the three MLTI program components: technology provision, professional learning and infrastructure support, and student leadership opportunities. Recommendations were developed by the American Institutes for Research® (AIR®) research team through a synthesis of results from both the process and outcome evaluations, as well as examination of trends in findings across Years 1 to 4 of the evaluation.

Technology Provision

The MLTI program continued to be consistent in providing 1:1 devices to all students and most staff at schools that opted into the program. Nearly all school administrative units (SAUs) received enough devices to provide them at a 1:1 ratio for students. As in prior years, the percentage of districts that received 1:1 devices for instructional staff was lower than for students. It is unclear whether this percentage meets the need for new staff devices at those schools.

Recommendation. Confirm with schools the counts of instructional staff who need devices and adjust allocations based on how quickly those devices need replacement.

Schools use Teach with Tech grant funding for a variety of interesting and potentially beneficial supplemental technology-based activities. Teachers used supplemental funds to integrate technology into their instruction, and technology coordinators described that grant funds increased access to technology for teachers and students. There was a wide range in the amount of funds received in each district and what the funds were used to purchase.

Recommendation. Consider opportunities to test the impact of receiving Teach with Tech funds on key school, teacher, or student outcomes, and examine the cost effectiveness of different allocations of grant funds.

Schools generally have fast and reliable internet access; however, student internet access at home may be less certain. Overall, most schools opting into the MLTI program had fast and reliable internet. However, only about a quarter of teachers reported their schools offering internet access to students at home. Evaluating the extent to which student access to home internet is an issue at schools could help ensure devices deployed to students are fully utilized.

Recommendation. Examine the extent to which students have access to home internet and consider possible solutions for addressing problems arising from limited home internet access for students at schools opting into MLTI (e.g., professional learning for teachers in areas with limited home internet access; wireless hot-spots with devices for students in areas with limited home internet access.)

Professional Learning and Infrastructure Support

Participation in professional learning opportunities remained low, despite a large number of resources developed and positive feedback on those resources. The LTT team developed hundreds of online resources and in-person professional learning opportunities. However, participation in these opportunities remained low. For example, only 5% of teachers reported participating in professional development offered by the MLTI Ambassadors.

Recommendation. Better target professional learning resources by involving teachers and school administrators in decisions about the content, delivery, and timing of professional learning opportunities to ensure that teachers are aware of these opportunities, able to attend, and motivated to participate.

Recommendation. Consider alternative methods to MLTI coaching (e.g., a community of practice model) that remove barriers of access for teachers and allow more efficient use of MLTI Ambassadors' time and expertise.

There is a need for professional development on ways to use technology to encourage student collaboration and support differentiated instruction. One category of professional learning that teachers expressed interest in receiving more of was on the use of technology to support nontraditional, student-centered instructional approaches. Specifically, only about a third of teachers reported using technology to help provide instruction to students with different ability levels at least once a week.

Recommendation. Provide targeted professional development resources and opportunities on the use of technology for differentiated instruction and to support student collaboration.

Student Leadership Opportunities

This year's Student Conference was well organized, but some students requested additional on-site supports. Overall, students had very positive feedback on the Student Conference. Most students were satisfied with the overall organization and content of conference sessions. However, students expressed a need for help navigating the university campus, and for more educators to be available to ask questions during session activities.

Recommendation. Provide a welcome packet to students that includes a map of the campus, and potentially enlist students from the university to volunteer as ambassadors to visiting students.

Recommendation. Ensure that there is at least a 1:15 ratio of educators to students in sessions that include hands-on, student-centered activities.

Students most enjoyed leadership opportunities that provided them with hands-on opportunities to design and create their own projects. In both the SLAM program and the Student Conference, students reported that they most enjoyed participating in the activities that gave them opportunities for choice and creativity. Similarly, students who attended the students' conference most enjoyed sessions where they could create their own designs from

scratch (i.e., designing a digital escape room), including opportunities for activities that did not require their laptop.

Recommendation. Design session activities that provide students with multiple possible ways to approach the task, and nondigital “unplugged” activities that supplement or support activities that are done on students’ devices.

Summary

In the 2024–25 school year, the MLTI program successfully supported staff and students at hundreds of Maine schools through the provision of computing devices, professional learning opportunities, and student leadership opportunities. Overall, program participants provided positive feedback on these resources and services. Students in schools opting into the MLTI device program also reported a higher level of interest and engagement in their classes this year, compared with the 2021–22 evaluation year. Based on an analysis of data collected on the implementation of program activities and program outcomes, the recommendations compiled in this report suggest several ways to streamline MLTI activities to make efficient use of available resources and target the needs of participating schools to increase participation.

I. Introduction

The American Institutes for Research® (AIR®) has conducted an independent evaluation of the Maine Learning Technology Initiative (MLTI) program for the Maine Department of Education (henceforth, “the Department”) since 2021. In Years 1 through 3 of the program evaluation (September 2021–August 2024), AIR provided early evidence and formative feedback to the Department and other stakeholders regarding how MLTI activities are being implemented, how teachers and students are using 1:1 technology and what types of support they need, and statewide progress toward the aims of the initiative. At the conclusion of each of these prior years of the project, AIR submitted an evaluation report, along with a memo outlining initial indicators of the *digital divide* in Maine. This report for Year 4 of the evaluation (September 2024–August 2025) presents findings from analysis of data on the implementation and outcomes of Year 4 MLTI activities and, where available, builds on evidence presented in prior evaluation reports.

History and Goals of the Program

MLTI builds on an original initiative developed in 2001 to deploy 1:1 devices, provide broadband services, and offer professional learning opportunities (Maine Department of Education, n.d.). In 2021, the Maine Department of Education Office of Innovation developed an updated MLTI focused on equitable access to and use of technology to improve student-centered learning. The goal of the program is to prepare students to be innovative leaders in a digital economy and educated and adaptable members of a global workforce (Maine Department of Education, 2020). The program seeks to:

...close Maine’s digital learning gap by creating, developing, and continuously improving the redesigned program’s interrelated dependent components into supports, measures, services and activities that build a foundation of a State and local partnership focused on the equitable integration of technology into engaging and effective educational experiences. (MLTI Advisory Board, 2020, p. 5)

Through MLTI programming, the Learning Through Technology (LTT) team at the Department oversees the provision of computing devices, professional development opportunities, and student leadership opportunities to Maine’s K–12 public schools to support the attainment of Maine’s college and career readiness standards. MLTI provides grant funding to any Maine public school that agrees to participate in the initiative. Schools may use funding to provide MLTI-approved devices to students and educators. In Year 4, MLTI allowed for schools to choose to provide devices at any grade level (K–12) beyond the Year 3 expansion, serving a potential population of 167,702 students and 15,233 educators in Grades K–12. A total of

238 schools participated in MLTI in Year 4 (July 2024–June 2025), representing 40% of the public schools in Maine that offer Grades K–12 (National Center for Educational Statistics, n.d.).

At the start of Year 4 of the evaluation, AIR and the LTT team revisited and collaboratively revised the evaluation approach for Years 4 through 6 (as outlined in the Evaluation Plan submitted to the Department in April 2025) to better reflect the current goals of the Department and be responsive to the shifting technology education landscape in Maine. Following this revised approach, AIR studied the implementation of the MLTI program along three major components of MLTI (technology provision, professional development opportunities, and student leadership opportunities), and tracked outcomes aligned to the MLTI logic model at three levels of analysis (school, instructional, and student) across the state.

Program Components

The MLTI program provides support for schools, teachers, and students through three primary program components.

- **Technology Provision.** This component comprises activities and services provided by MLTI to directly and financially support the procurement of computing devices and other digital technologies for use in schools. Subcomponents include:
 - 1:1 computing devices for students in eligible grades of schools opting into the MLTI program;¹
 - supplemental grants for additional digital technologies (e.g., 3D printers, laser cutters, robotics and coding kits); and
 - broadband internet through the Maine School and Library Network (MSLN).
- **Professional Learning for Educators and Infrastructure Support.** This component comprises statewide support on technology instruction and infrastructure provided by two MLTI digital learning specialists, one MLTI Ambassador program facilitator, five MLTI Ambassadors, and one MLTI technology infrastructure specialist. Subcomponents include:
 - self-paced professional learning activities on instruction with technology;
 - coaching and professional learning events on instruction with technology; and
 - cybersecurity and cyber safety events.

¹ During Year 1 of the project, MLTI provided devices to students in Grades 7 and 8. In Year 2 and Year 3 of the evaluation, schools choose to either expand “down” to younger contiguous grades (i.e., Grade 6 and Grade 5) or “up” to older contiguous grades (i.e., Grade 9 and Grade 10), or a combination of both. For example, a school may have chosen to expand to Grade 6 in Year 2, and to Grade 9 in Year 3. In Years 4 through 6, schools select any single grade to receive new devices from MLTI.

- **Student Leadership Opportunities.** This component comprises virtual and in-person events about educational technology that aim to engage students and provide them with leadership opportunities. Subcomponents include:
 - Student Leadership Ambassadors of Maine (SLAM) program;
 - the MLTI Student Conference; and
 - the Computer Science Education (CSEd) Showcase and Maine Winter Classic events.

Logic Model

The MLTI logic model summarizes the key components of the initiative and their anticipated influence on school, instructional, and student outcomes (Exhibit 1). The design of the initiative components was inspired by the Future Ready Schools framework (Office of Educational Technology, 2016), which includes school-level factors that are theorized to help support the integration of technology into instruction. These factors include:

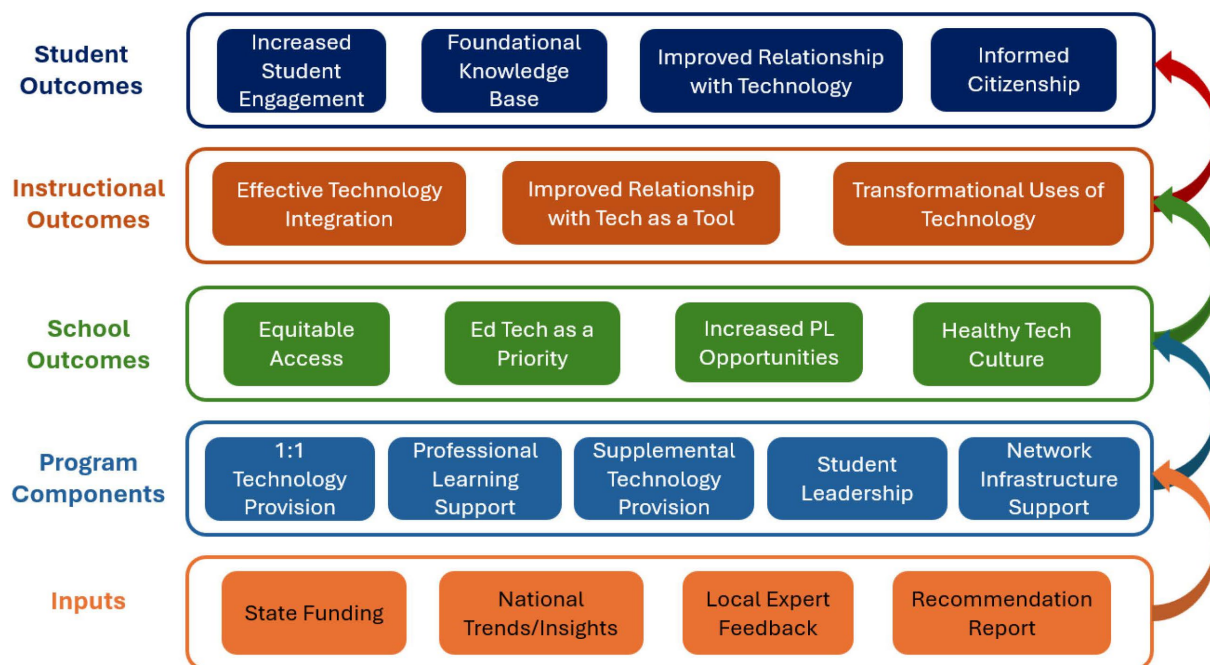
- **technology infrastructure**, including wireless connectivity, network bandwidth, and technical support staff who ensure the reliable use of technology;
- **school leadership**, promoting a shared vision for teaching and learning using technology, along with a culture of trust and innovation; and
- **professional learning**, encompassing job-embedded professional development and collaboration in a learning community.

Building on this framework and evidence from the educational technology literature, the LTT team hypothesizes that the initiative’s components will influence four school-based outcomes: (a) more equitable access to educational technology, (b) the prioritization of educational technology integration, (c) increased opportunities to participate in high-quality professional learning, and (d) cultivation of a healthy and ethical digital school culture (Bowman, et al., 2022; Hur et al., 2016; Margolin et al., 2019; Timotheou et al., 2023).

Enhancing these school-based outcomes will influence teachers’ (a) integration of technology in their classroom, (b) attitudes toward using technology, and (c) more transformative uses of technology (Liu et al., 2017; Puentedura, 2006; Hamilton et al., 2016).

The LTT team anticipates these instructional changes, in turn, will provide students with increased access to technology-enhanced learning opportunities and foster greater classroom engagement. Specifically, the initiative will promote teachers’ use of technology for student-centered instruction that improves students’ (a) engagement in learning with technology, (b) digital competency, (c) healthy relationship with technology, and (d) digital citizenship (Fernández-Prados, et al., 2021; Nkomo et al., 2021; Vuorikari, et al., 2022).

Exhibit 1. Logic Model for the MLTI Program



Source. LTT team.

Program Outcomes

Based on the MLTI logic model, through provision of the MLTI components, the LTT team aims to target several outcome constructs across three outcome domains: school outcomes, instructional outcomes, and student outcomes.

School outcomes include the following:

- *Strategic vision for technology integration:* School leaders develop and implement a clear, future-focused plan for integrating technology that aligns with instructional goals and student needs.
- *Professional development & capacity building:* Continuous learning opportunities help educators develop skills to effectively integrate technology into instruction.
- *Equitable access to technology & resources:* The school ensures all students and educators have reliable access to devices, high-speed internet, and quality digital resources.
- *Cultivation of a digital culture:* The school promotes responsible, ethical, and innovative use of technology by students, staff, and the broader community.
- *Continuous improvement & sustainability:* The school regularly evaluates its technology initiatives and invests in long-term sustainability.

Instructional outcomes include the following:

- *Enhanced student engagement in learning:* Students actively participate and invest in their learning process, demonstrating curiosity, persistence, and enthusiasm in classroom activities.²
- *Development of critical academic skills:* Students acquire and apply essential skills in problem-solving, analysis, and communication that prepare them for future academic and career success.
- *Improved digital literacy & technology integration:* Students effectively use technology to access information, collaborate, create content, and solve problems while practicing digital responsibility.
- *Equitable access to learning opportunities:* All students, regardless of background or ability, have equal opportunities to succeed academically, supported by inclusive teaching practices and access to resources.

Student outcomes include the following:

- *Increased student engagement:* Students' ownership and desire to participate in activities within the school environment, aligned with their learning abilities, styles, and motivation.
- *Foundational knowledge base:* Digital literacy, critical thinking, creativity, and collaboration; aims to prepare students with the skills and knowledge needed to thrive in a tech-driven world while fostering equity, adaptability, and responsible digital citizenship.
- *Improved relationship with tech:* Students develop a positive, productive, and responsible approach to using technology for learning. It emphasizes proficiency, critical thinking, and ethical behavior in digital environments.
- *Informed citizenship:* Students' understanding and practice of responsible, ethical, and active participation in the digital world. It emphasizes critical thinking, respect for others, and contributing positively to online communities.

² This instructional outcome was measured using student survey responses about their engagement.

Review of Prior Evaluation Findings

The Year 4 evaluation builds on the findings from Years 1 through 3.³ Overall, in Years 1 and 2, the evaluation found that the LTT team largely succeeded in its goal of providing devices to students and educators on a 1:1 basis through the MLTI program. In Year 3, the evaluation found that the LTT team excelled in developing several self-paced professional learning resources focused on technology integration, with evidence that the topics of these resources matched teacher interests in learning about new types of technology. Additionally, the LTT team focused its infrastructure support on cybersecurity by providing presentations and conducting a large tabletop exercise on this topic; participants typically rated the quality of this support as high. The LTT team also provided funds through the Cyber Performance Grants for districts to improve their cybersecurity through the acquisition of firewalls and computer monitoring systems. Among the schools we profiled in the Year 3 report, evidence existed that schools had a reliable and robust technology infrastructure. Technical difficulties were infrequent, and teachers had positive attitudes and beliefs about technology integration.

The Year 3 evaluation also reported areas for growth. For example, staff at the schools we profiled in Year 3 described a range of low and medium levels of school leadership for technology integration, with most schools not having a formal vision for technology use. Although teachers did, overall, feel encouraged by their colleagues to experiment with technology, this encouragement did not tie into specific goals or initiatives within the schools. Additionally, at the time of the Year 3 report, the LTT team had not yet developed many professional learning resources on artificial intelligence, which surveyed teachers expressed as a topic of interest.

Based on the findings from Year 3, the evaluation team recommended some areas of growth primarily related to professional learning and infrastructure. Given the finding that staff at most schools reported not having formal schoolwide visions or initiatives for technology use, the evaluation team recommended that the LTT team consider offering a professional learning series to school administrators focused on school technology leadership. In response to teacher interest in artificial intelligence, the evaluation team also recommended that the LTT team consider developing additional professional learning resources focused on the use of artificial intelligence tools in classroom instruction. With respect to technology infrastructure support, the evaluation team recommended that the LTT team expand Cyber Performance Grants to

³ In Year 1, 23 schools participated in the teacher survey. School profiles based on interviews and focus groups with staff were created at seven schools. In Year 2, 24 schools participated in the teacher survey and 19 schools participated in the student survey. In Year 3, 25 schools participated in the teacher survey. In Years 2 and 3, school profiles were created based on interviews and focus groups with staff at eight schools.

additional schools and provide targeted support for the minority of schools in which technology infrastructure was not yet as robust.

As described in further detail in later sections of this report, in Year 4, the LTT team acted on many of the recommendations provided in the Year 3 evaluation. For example, the LTT team expanded the supports offered to schools by the MLTI program by continuing to offer resources and professional learning opportunities about cybersecurity, including opportunities for school and district leaders. In particular, the LTT team offered more professional learning opportunities related to artificial intelligence, a support that was specifically requested by teachers in Year 3.

II. Evaluation Overview

As in Years 1 through 3, the primary goal of the Year 4 evaluation was to provide formative feedback to the Maine Department of Education and other stakeholders about how MLTI components were implemented, how teachers and students used technology, and what types of supports or resources would be useful. To address these topics, the evaluation team gathered extant data on all participating MLTI schools, administered a teacher and student survey to a sample of 28 schools, conducted interviews with technology leaders and teachers from 10 schools, and conducted focus groups with students from two schools.

Based on services requested by the Department, the AIR evaluation team used these data sources to conduct a formative evaluation of MLTI, using a mixed methods approach to analyze the wide range of primary and secondary data (see Exhibit 2). As part of this formative evaluation, the AIR team conducted a **process evaluation** to describe the initiative's implementation, as well as an **outcomes evaluation** to report on progress toward school, instructional, and student outcomes.

Process Evaluation

The process evaluation describes the implementation of MLTI activities, the level of participation, and perceptions of participants across each of the three program components (see Appendix A for additional details on the process evaluation methods). The AIR evaluation team collected quantitative and qualitative extant data in the form of program records, artifacts, and feedback forms generated through MLTI activities, as well as primary data in the form of surveys, interviews, and focus groups. Results from analysis of these data will inform the Department about the extent to which MLTI participants received services related to each program component and provide the Department with formative feedback to help them

improve MLTI components. The following evaluation questions (EQs) address the processes of implementing each MLTI component:

1. What were the **outputs** (i.e., activities or services) funded by the initiative?
2. What was the extent of stakeholder (i.e., district staff, teacher, and student) **participation** in the initiative activities or services?
3. What were stakeholder perceptions of the **quality, relevance, and utility** of the activities or services funded by the initiative?

Outcomes Evaluation

The outcomes evaluation measures progress toward achieving the initiative's goals with respect to student, instructional, and school outcomes (see Appendix A for additional details on the outcomes evaluation methods). The AIR evaluation team collected quantitative data gathered from extant program records and teacher and student surveys, and complemented these data with qualitative results from interviews and focus groups. AIR staff collaborated with the Department to refine and operationalize the metrics for evaluating success with respect to these outcomes. The following EQs address outcomes targeted by MLTI at each level of analysis:

1. To what extent did the initiative influence **school** outcomes?
2. To what extent did the initiative influence **instructional** outcomes?
3. To what extent did the initiative influence **student** outcomes?

Data Collection and Sources

The process and outcomes evaluations draw on data from four primary data sources: extant data collected by the LTT team as part of their provision of MLTI components, teacher and student surveys administered by the AIR evaluation team to a sample of participating MLTI schools, interviews with school technology coordinators and teachers, and focus groups with students. These data were collected at various points throughout the implementation of MLTI during the 2024–25 school year. Exhibit 2 below provides a list of major data sources and specific data collected, the timing of data collection, study sample, and EQs addressed.

Exhibit 2. Timing and Scope of Evaluation Data Collection Activities

Data source	Specific data collected	Timing	Scope of data	EQs
Extant data	Program records (e.g., devices allocated and received, participation in professional learning events and coaching, event registration)	Fall/ spring	All 238 schools	1–3
	Artifacts (e.g., artifacts of supplemental grant reporting, self-paced learning videos/podcasts; programming materials)	Fall/ spring	All 238 schools	1–3
	Feedback forms (e.g., teacher, IT staff and student feedback on professional learning, coaching, and events)	Fall/ spring	All 238 schools	1–3
Survey data	Teacher surveys	Spring	144 teachers in 12 schools	1–6
	Student survey	Spring	748 students in 12 schools	1–6
Interviews	Interviews with technology coordinator	Spring	7 technology coordinators	3–4
	Interviews with teachers	Spring	4 interviews	3–4
Focus groups	Focus groups with students	Spring	2 focus groups	3

Note. EQ = evaluation question. IT = information technology.

Extant Data. The AIR evaluation team collected extant data provided by the LTT team to measure the implementation of the technology provision, professional learning, and student leadership program components. Extant data consisted of program-wide data from all 238 schools that opted into the MLTI program. The AIR team downloaded these data each year at two timepoints based on availability; once in winter (halfway through the school year) and once in the spring (at the end of the school year). Data were generated by participation in program activities (e.g., event registration), through primary data collected by the LTT team (e.g., participant feedback forms), and from artifacts generated through program services and activities across the state. See Appendix B for a detailed summary of the extant data sources that the AIR team requested related to each component of MLTI.

Survey Data. The AIR evaluation team collaborated with LTT and school staff to coordinate administration of both the teacher and student surveys at a sample of 28 public schools in Maine. This sample was stratified by district-level economic status (e.g., percentage of students who qualify for free or reduced-price lunch) and with proportional representation by

superintendent region, which included a range of large and small schools in rural and urban districts.⁴

The AIR team administered teacher surveys to all instructional staff at sample schools (approximately 922 teachers)⁵ once in the spring (near the end of the school year), consisting of 12 multi-part items with either Likert (*strongly disagree* to *strongly agree*) or frequency (*never* to *nearly every day*) rating scales, two open response items, and four items asking about teacher background information. Survey items asked teachers to indicate the types of professional learning opportunities related to educational technology they received that year, both through MLTI and from other sources. Teachers also provided information on the number of hours of professional learning they participated in, the topics covered, and suggestions for additional topics they would be interested in. Items also asked about teacher and student use of technology in their classrooms, access to technology, and technology support at their school.

The AIR team also administered student surveys to all students in Grades 5 through 12 in the 28 survey schools (approximately 7,805 students) once in the spring (near the end of the school year). Student surveys consisted of 15 items with both Likert (*strongly disagree* to *strongly agree*) and frequency (*never* to *nearly every day*) rating scales. Survey items asked students about the quality and access to technology at their school, the way they use and interact with technology, and their general level of engagement in their classes.⁶

Interview Data. The AIR evaluation team conducted semi-structured virtual interviews with a sample of seven school technology coordinators as well as four teachers. These interviews elicited descriptions of the school staff members' satisfaction with devices purchased through the MLTI program as well as questions that addressed the domains of school leadership, technology infrastructure, and professional learning. The technology coordinator interview also included questions about interviewees' perceptions of the supplemental technology purchased through the Teach with Tech grant. For technology coordinator interviews, the AIR team drew a purposive sample to maximize the diversity of superintendent regions and grade levels represented by the schools selected to participate. The schools represented by the final sample of seven interviewed technology coordinators characterized five superintendent regions in Maine and a diversity of grade levels (three elementary schools and four schools serving middle and high school grades). Teachers were invited to participate in an interview if, on the teacher survey, they reported that they were willing to participate in an interview with the AIR

⁴ In Year 4, the AIR evaluation team used the same sample of 28 schools selected during Year 3. See Appendix A for additional details on sampling.

⁵ Estimated teacher and student sample sizes were derived from 2024–25 full-time equivalent teacher totals and student enrollment totals in Grades 5 through 12 from the National Center for Educational Statistics Common Core of Data.

⁶ For copies of the full teacher and student survey instruments, please contact the evaluation team.

evaluation team. Of the 13 teachers who indicated an interest in participating in an interview, only four teachers from three schools responded to the AIR team's requests to schedule an interview. The four teachers were located across two superintendent regions and primarily taught middle and high school grade levels.

Focus Group Data. The AIR evaluation team conducted virtual student focus groups with a small sample of students who participated in the MLTI student conference. In June 2025, AIR researchers conducted two focus groups with students from two schools who attended the student conference. Of a list of six schools that the MLTI team indicated would be willing to convene a student focus group, these two schools distributed parent consent forms and scheduled a student focus group with the AIR evaluation team. The focus groups were facilitated by an AIR researcher and included four to five students in each focus group. Participating students were randomly selected from the students who had received parent or guardian permission to participate. One focus group included sixth grade students and the other included eighth grade students. Focus group protocols included prompts for students to describe their participation in the MLTI student conference and their perceptions of the quality of the student conference, its relevance to their experiences, needs, and interests, and the utility of the student conference.⁷

Limitations

As with all research methodologies, there are limitations to this evaluation approach that should shape the interpretation of the findings. A significant limitation of this Year 4 evaluation comes from low survey response rates for teachers and students within our 28 sample schools. Overall, we received responses from 144 teachers in nine schools out of an expected sample of 922 teachers, for an overall response rate of 16%. We received responses from 730 students in 11 schools out of an expected sample of 7,805 students, for an overall response rate of 9%.

Low response rates can potentially introduce bias as the sample may no longer represent the population of schools along various characteristics (e.g., socioeconomics, geographic location), and those who chose to respond may differ in meaningful ways from those who did not. To address this potential bias, the AIR evaluation team conducted nonresponse weighting with calibration for all survey results to better align the proportion of responding schools to the target sample of schools that opted into the MLTI based on these characteristics (see Appendix A for details on this approach).

⁷ For copies of the full technology coordinator and teacher interview protocols, or the student focus group protocol, please contact the evaluation team.

While these weighting procedures can help to reduce bias in nonresponse, in cases of extremely low response rates, the ability to fully correct for this bias is limited. Results may not reflect the diversity of experiences across the broader population of MLTI schools, especially if the responding students, teachers, and schools differed systematically from those who did not respond. Therefore, results should be interpreted with caution, and it is inadvisable to generalize findings from the survey analyses beyond the sample on which data were collected to the broader population of schools opting into MLTI, or to schools in the state.

III. Process Evaluation Results

The results from the process evaluation are presented in this section, answering each of the following research questions for each program component:

1. What were the **outputs** (i.e., activities or services) funded by the initiative?
2. What was the extent of stakeholder (i.e., district staff, teacher, and student) **participation** in the initiative activities or services?
3. What were stakeholder perceptions of the **quality, relevance, and utility** of the activities or services funded by the initiative?

Where available, Year 4 results are presented together with similar results from prior years' evaluations to aid in the comparison of trends in program activities across multiple years.

Component 1: Technology Provision

This section presents results from the analyses of data related to the component of provision of education technology by the MLTI program. This component included the provision of *1:1 computing devices* to students and instructional staff at all MLTI schools, the provision of *supplemental technology* funded through the Teach with Tech grant, and the facilitation of *broadband internet* access in Maine schools. For each of these subcomponents, we present evidence of the provision of technology by the MLTI program, the number and percentage of schools across the state that received support from MLTI, and feedback on the quality, relevance, and utility of the technology provided from MLTI surveys and qualitative interviews.

1:1 Computing Devices

To evaluate the provision of computing devices to staff and students, the AIR evaluation team collected program-wide extant data on the number of devices allocated to all 238 schools that opted into the MLTI program, the type of device, and the cost of the devices. Student survey responses provided information on how devices were accessed in the school and their

satisfaction with the devices, and teacher survey responses provided information on additional software or tools that they would like to access.

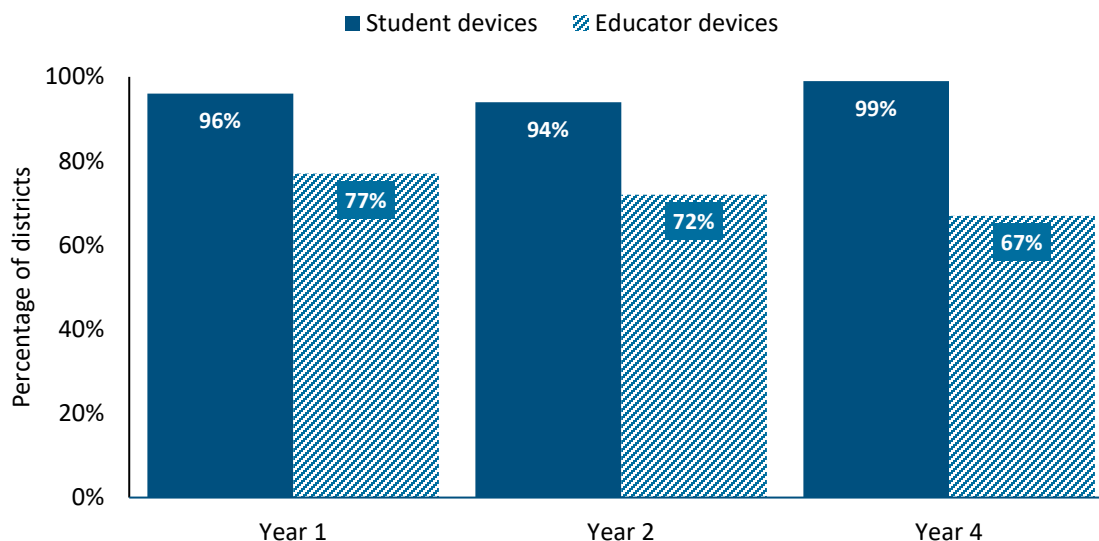
Outputs

In Year 4, the Department reimbursed SAUs for 15,816 devices allocated to students and an additional 4,016 devices allocated to educators.⁸ A total of 238 schools participated in MLTI in Year 4, representing 40% of the public schools in Maine that offer Grades K–12. The estimated cost of these reimbursed allocations was \$9,069,787, or approximately \$457 per device.

Participation

In Year 4, the MLTI program allocated student devices on a 1:1 basis to nearly all SAUs that opted into MLTI (Exhibit 3). Devices for educators were allocated on a 1:1 basis in about two thirds of the SAUs (67%). In addition, from the survey sample, all responding students and teachers reported receiving a computing device from their school. These results were consistent with findings from prior years, with a small increase in the percentage of student devices and a small decrease in the percentage of educator devices allocated.

Exhibit 3. The Percentage of Schools or SAUs That Received a 1:1 Allocation of MLTI Devices to Students and Educators, by Program Year



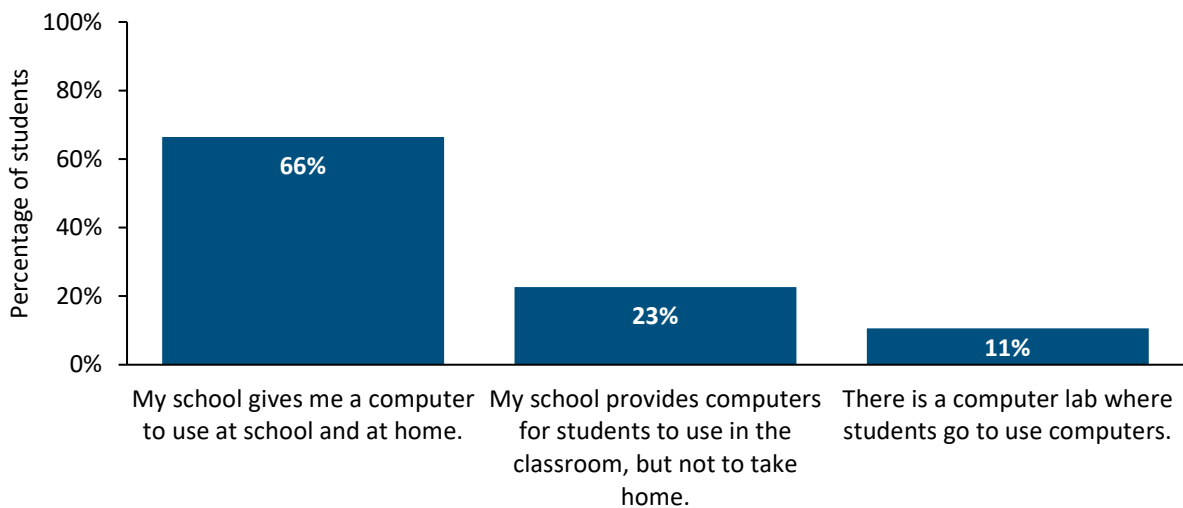
Source. Device Allocation Data.

Note. Year 1: $N = 151$ schools; Year 2: $N = 183$ schools (student devices), $N = 145$ schools (teacher devices); Year 4: $N = 176$ SAUs (student devices), $N = 178$ SAUs (teacher devices). 1:1 device allocation was not reported in Year 3.

⁸ Total allocations were based on the number of students enrolled and the number of staff employed by a school, with a 10% buffer to account for any enrollment or staffing changes. Data Source: Extant data (Device Program Snapshot).

The AIR evaluation team analyzed survey responses from 677 students to identify the most common ways students accessed their computing devices at their schools this year (Exhibit 4). Most students reported that their school provided them with a computer that they were able to use both at school and at home (66%). Almost a quarter of students reported accessing devices through a computer lab (23%). Few students reported that schools provided devices that they could only use in school but not take home (11%) and very few (less than 1%) indicated some other method of access such as study hall.

Exhibit 4. Methods for Student Access to Computing Devices

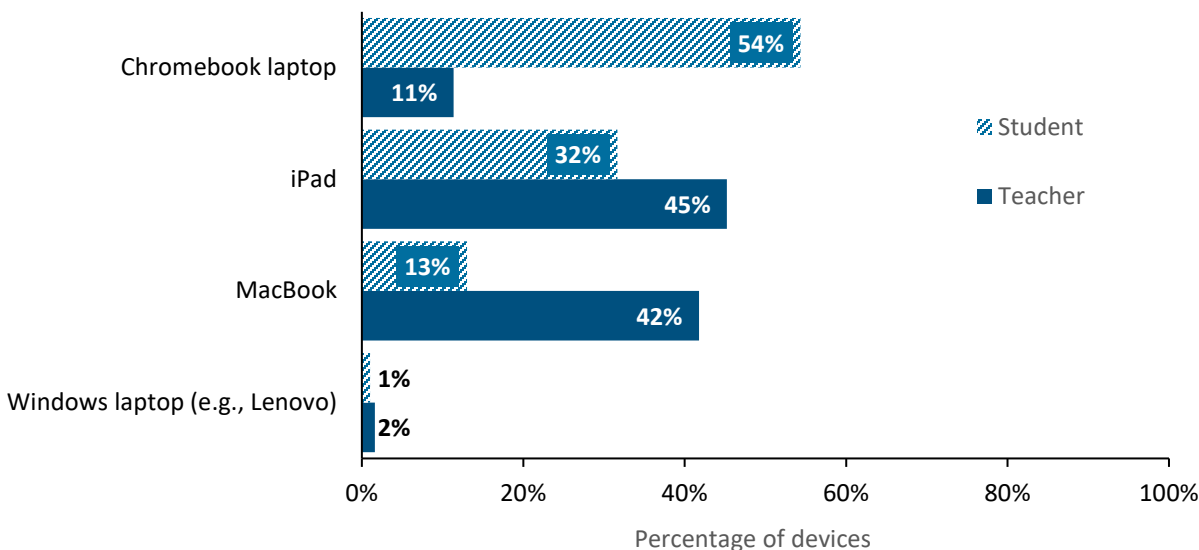


Source. Student survey.

Note. N = 677 students. The student survey item asked, “How does your school give you access to a computer?”

Extant data on device allocation also provided information on the type of devices allocated to 15,816 students and 4,016 teachers (Exhibit 5). More than half of students (54%) reported receiving a Chromebook laptop, and nearly a third (32%) reported receiving an iPad. Few students reported receiving a MacBook (13%) or Windows laptop (1%). Nearly half of teachers reported receiving either an iPad (45%) or a MacBook (42%). Fewer teachers reported receiving a Chromebook (11%) or a Windows laptop (2%).

Exhibit 5. Percentage of Students and Teachers Receiving Each Type of Computing Device



Source. Extant data (Device Program Snapshot).

Note. $N = 15,816$ students. $N = 4,016$ teachers.

Quality, Relevance, and Utility

The AIR evaluation team analyzed survey responses from 669 students to describe the extent to which they found the computing devices that they received as useful for supporting their learning in class. Overall, most students (94%) felt that the devices were either moderately or very useful. Few students said that the devices were only somewhat useful (10%), and almost no students felt that the devices were only slightly useful (3%) or not at all useful (3%).

During interviews with teachers, AIR asked teachers to indicate the extent to which the quality of their devices was sufficient for teaching and learning and whether their devices were useful. All four interviewed teachers reported that the quality of devices provided by their school was sufficient, and three teachers indicated that the devices were useful. Survey responses from 111 teachers showed that nearly all (95%) responded that they usually or almost always received access to instructional software and tools. Furthermore, only nine surveyed teachers also provided responses to an open-ended item that asked whether there were other software and tools they would like to access. Three of those nine teachers provided responses related to course management applications, such as learning management software and behavior management systems. Two teachers expressed interest in accessing classroom management software with screen monitoring features, such as ClassroomScreen; these tools were also requested by six teachers in Year 3. One teacher requested training on how to use personalized learning tools, including IXL, Reveal Math, Aleks, and IC; these tools had also been requested by 10 teachers in Year 3. Other responses mentioned the need for remote desktop access and

hardware constraints that prevent their ability to use technology, such as having slow laptops or the inability to download software.

Supplemental Grant

The Teach with Tech supplemental grant program provided districts with funding to purchase supplemental technology beyond the computing devices provided by the MLTI program. Districts that applied for the funding were allowed to choose how these funds were allocated. To evaluate the Teach with Tech program, the AIR evaluation team collected program-wide extant data on the amount and utilization of funding across all participating schools in the MLTI program and feedback from interviews with seven technology coordinators.

Outputs

Overall, 46 of the 238 MLTI schools (19%) received a total of \$992,566 in additional funding through the Teach with Tech grant.⁹ On average, MLTI districts received supplemental funding of \$21,577; the smallest grant was for \$730 and the largest was for \$90,133.

Smaller grants (below \$5,000) were used to purchase items such as robotics kits, augmented reality or virtual reality devices, 3D printers, and video/camera equipment. The recipient of the smallest grant, for \$730, used the funds to purchase “Arduino Kits.” Larger awards (above \$50,000) were typically used to purchase items such as drones, virtual reality devices, 3D printers, robots, and video/camera equipment. The recipient of the largest grant, for \$90,133, reported purchasing “3D printers, engravers, LEGO equip, scanner, and so much more... creating a mobile STEM lab.”

Participation

Districts chose to apply for funding to help finance the purchase of a range of supplemental technologies (Exhibit 6). Exactly half of participating districts used the Teach with Tech funds to purchase 3D printers and laser cutters. A little more than a third of districts (35%) used the funds to purchase LEGOs, robotics, or drone kits, and about a quarter used the funds to purchase either augmented or virtual reality technology (25%) or video or camera equipment (23%). Fewer than one in five schools used the funds to purchase tools and accessories (19%), computers, phones, or tablets (8%), or other technologies such as Speechify (8%).

⁹ Three additional schools that had not opted into the MLTI device allocation program also received a total of \$28,598 in Teach with Tech grants this year.

Exhibit 6. Number of Districts Purchasing Different Types of Supplemental Technology Through the Teach With Tech Grant Program

Supplemental technology	N districts	% of districts
Printers & laser cutters (e.g., 3D printers, laser engraver, poster printer)	24	50%
LEGOs, robotics, drones, & kits (e.g., VEX robotic kits, LEGO Spike Kits, Sphero)	17	35%
AR/VR (e.g., Merge Cubes, VR headsets)	12	25%
Video & camera equipment (e.g., GoPro, podcasting equipment, camcorder)	11	23%
Tools & accessories (e.g., Logitech Crayons, SmartBoard, microscopes)	9	19%
Computers, phones, & tablets (e.g., iMac, MacBooks, phones)	4	8%
Other (e.g., Wingspan Studios, Speechify, Dig)	4	8%

Source. Extant data (Teach with Tech artifacts).

Note. Percentages reported are out of 45 districts opting into MLTI that received a Teach with Tech grant. Some districts purchased supplemental technologies from multiple categories; therefore, percentages add up to over 100%.

School staff from 40 of the 45 schools that received Teach with Tech funds provided documentation to the Department about the ways in which they used the newly purchased supplemental technologies or shared stories about their use of technologies with other educators. Staff from 25 schools delivered presentations to school boards or technology committees about the ways in which they used supplemental technologies, and staff from four schools presented at Maine education conferences. Additionally, staff from 11 schools reported that they had hosted professional learning opportunities for teachers and school staff about how to use supplemental technologies and the ways in which they could be integrated into instruction. Staff from 18 schools shared model lesson plans that incorporate the new technologies, and staff from 19 schools provided a “good news story” to illustrate the use and impact of Teach with Tech funds at their schools.

In the documentation shared with the Department, school staff described several examples of how teachers and students used the supplemental technologies purchased with Teach with Tech funds. Examples shared with the Department indicate that students in elementary through high school grade levels used supplemental technologies (e.g., 3D printers, laser cutters, virtual reality equipment, robotics and drone kits) purchased through the grant. Furthermore, technologies were used in multiple subject areas. For example, students at one school used their 3D printer to create an affordable alternative to shoes that cost as little as \$7 a pair. Their goal was to help all people have access to affordable and unique footwear. At

another school, students used their 3D printer in French class to create molds for baking chocolate. Students then conducted research on France and French culture and presented their information and chocolates at a “chocolate fair.” Staff at several schools described using virtual reality headsets to visit classic fairy tale worlds, explore ancient civilizations in social studies class, or learn about Parkour movements in physical education class. At one school, students used outdoor trail cameras to identify local wildlife and investigate animal tracks. Finally, students at one school used a wood cutting device and other materials to create their own guitars, which they then learned how to play.

Quality, Relevance, and Utility

Six of the seven interviewed technology coordinators were able to speak to their school’s experience with the Teach with Tech grant. Technology coordinators reported purchasing supplemental technology that included 3D printers, virtual reality equipment, robotics or coding technologies, drones, laser cutters, and LEGO SPIKE kits. Four technology coordinators reported that the supplemental technologies were used to give students new experiences, particularly in the STEM and social studies subject areas. One technology coordinator said “I could do a field trip right here” using virtual reality equipment, and another described more opportunities for students to experience coding and robotics. In their responses, technology coordinators discussed additional benefits to schools that included increased availability of technology, increased opportunities for teachers to use technology, enjoyable experiences for students, and increased attention on the school’s innovation. One technology coordinator said, “We’ve had school districts visit us because we’re kind of unique in how we’re doing technology... There’s a lot of examples of middle school and high school technology integrations, but not many are pushing down [to low grade levels] like we are.”

Broadband Internet

Broadband internet is provided to Maine public schools through the MSLN, a service provided by NetworkMaine through the University of Maine, and paid for by the federal E-Rate program and the Maine Telecommunications Access Fund. To evaluate access and speed of broadband internet that might impact the utility of other MLTI resources and supports, the AIR evaluation team analyzed extant data from all 167 schools participating in the MLTI program that received broadband internet from NetworkMaine. Responses from teacher surveys and interviews with teachers and tech coordinators provided perceptions of the availability of internet access at their schools.

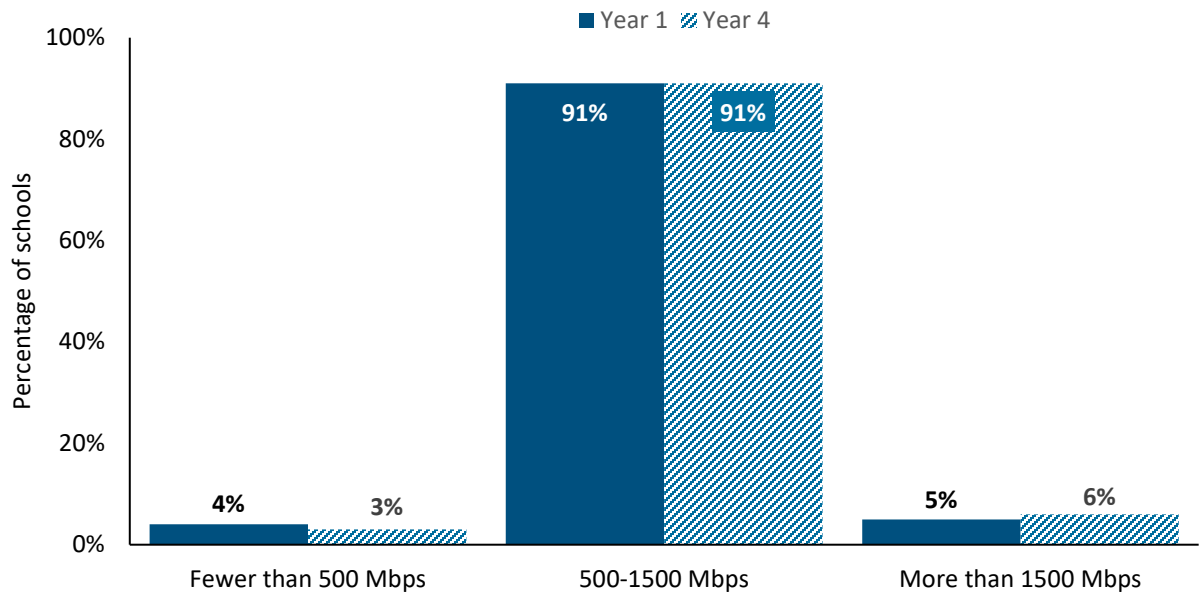
Outputs

Across the state of Maine, 457 schools received internet access through this program in the 2024–25 school year. On average, NetworkMaine provided these schools with broadband internet with download speeds of over 1000 megabytes per second (Mbps), with nearly all 457 schools receiving internet through MSLN (98%) reporting download speeds of 500 Mbps or more.

Participation

Of the 238 schools that opted into the MLTI program, approximately three quarters (70%, or 167 schools) received their broadband internet access through the MLSN program. This is similar to the overall proportion (71%, or 141 schools) receiving internet through the MLSN program in the Year 1 (2021–22) evaluation. Of those 167 schools in Year 4, nearly all (91%) reported download speeds between 500 and 1000 Mbps. Very few schools reported download speeds below 500 Mbps (3%) or above 1500 Mbps (6%). Overall, the proportion of schools that reported download speeds in each category were similar to those reported in the Year 1 (2021–22) evaluation (see Exhibit 7).

Exhibit 7. Reported Broadband Internet Download Speeds Available at MLTI Schools



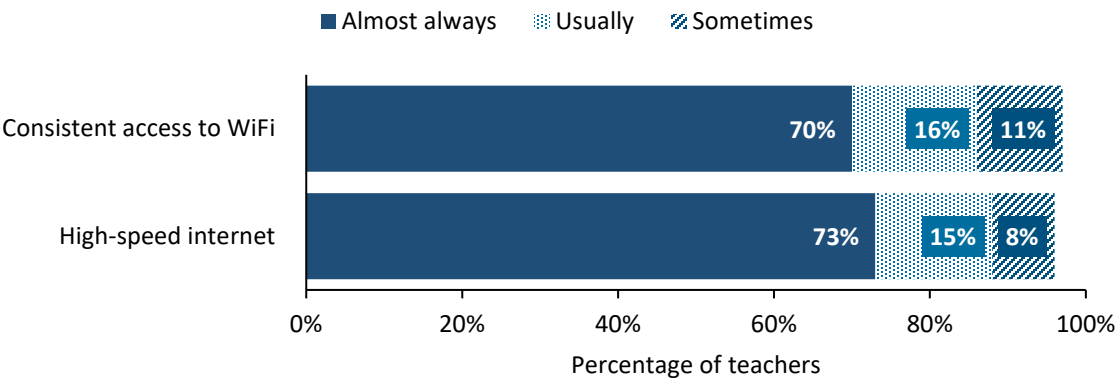
Source. Extant data (NetworkMaine bandwidth speeds).
Note. Year 1 N = 141 schools; Year 4 N = 167 schools. Broadband speeds were not reported in Year 2 or Year 3.

Quality, Relevance, and Utility

All four teachers and seven technology coordinators who we interviewed indicated various strengths about the technology infrastructure at their schools. For example, three teachers and all seven technology coordinators reported that they have access to up-to-date software on their devices. Similarly, three of the four teachers and all seven technology coordinators reported that they have access to dependable Wi-Fi at their school.

Additionally, survey responses from 98 teachers provided feedback on the extent to which schools provided internet access (Exhibit 8). Overall, most teachers reported that their school either almost always or usually provided access to high-speed internet (88%) and consistent access to Wi-Fi (86%).

Exhibit 8. Teacher-Reported Availability of School-Provided Internet



Source. Teacher survey.
Note. N = 98 teachers. The survey item asked respondents to rate how often their school can provide the following supports for technology use: “High-speed internet” and “Consistent access to Wi-Fi.” Response options of Almost always, Usually, and Sometimes are shown; other options not shown are Rarely and Never.

SUMMARY OF RESULTS FOR COMPONENT 1: TECHNOLOGY PROVISION

1:1 Computing Devices

During the 2024–25 school year, the LTT team provided 1:1 student computing devices to 99% of districts and 1:1 staff computing devices to 67% of districts that opted into the MLTI program. This finding is consistent with the levels of 1:1 devices provided in prior evaluation years. Apple devices (iPads and MacBooks) continued to be the most popular devices for

instructional staff, while Chromebooks continued to be the most popular device selected for students. Overall, most students found these devices to be either moderately or very useful.

Supplemental Grants

The LTT team provided Teach with Tech grant funds to 46 schools that opted into the MLTI program in Year 4, an increase from 33 schools in Year 3. Total funds awarded totaled almost \$1 million, with an average of over \$21,000 per district, and were most often used to purchase hardware such as 3D printers and laser cutters, robotics kits, and AR/VR headsets. Schools used technologies purchased with these grants for a variety of student project-based learning activities, from designing and producing affordable 3D printed footwear, to using trail cameras to identify and track local wildlife.

Broadband Internet

During the 2024–25 school year, 70% of schools that opted into MLTI received their broadband internet through the NetworkMaine MSLN program. Nearly all schools (91%) reported download speeds between 500 and 1000 Mbps, consistent with what has been reported in prior evaluation years. Additionally, almost all teachers and technology coordinators reported consistent access to high-speed internet and Wi-Fi at their schools.

Component 2: Professional Learning and Infrastructure Support

This section presents results from the analyses of data related to the professional learning and infrastructure component of the MLTI program. This component included professional learning opportunities provided by the program, including self-paced online professional learning opportunities, in-person coaching and both in-person or hybrid (e.g. online or in-person) professional learning events. This component also includes efforts by the LTT team to provide support for technology infrastructure in schools throughout the state, particularly in cyber safety and security. For each of these subcomponents, we present the resources developed and services offered, the number of teachers who participated in professional learning activities, the number of schools that received infrastructure support, and feedback on these components from MLTI surveys and qualitative interviews.

Self-Paced Professional Learning

To evaluate teachers' opportunities for self-paced professional learning offered by the MLTI program, the AIR evaluation team analyzed the content of podcasts and webinars posted to the MLTI YouTube channel. Participation in these self-paced learning opportunities were evaluated through analysis of applications for credits for professional learning hours completed by

viewers of these videos and responses to the teacher survey. Program feedback surveys collected by the LTT team provided information on participants' satisfaction with these opportunities.

Outputs

As indicated by a review of extant artifacts, MLTI Ambassadors organized these online professional learning resources into playlists, which the AIR team then coded into 13 topical categories (Exhibit 9).¹⁰ Through Year 3 of the evaluation, MLTI had developed 222 self-paced professional learning resources. In Year 4, MLTI developed an additional 50 self-paced professional learning resources, bringing the total to 272 self-paced professional learning resources.¹¹ Most of the 50 new videos addressed the topical category of applications and tools (34 new videos) and to a lesser extent artificial intelligence (five new videos) or digital citizenship (four new videos), with all remaining categories containing three or fewer new videos.

Exhibit 9. Self-Paced Learning Resource Categories, Playlists, and Videos

Topic area	Playlist topical category	Number of playlists	Number of digital resources created in Year 4	Total number of videos or resources
Technology integration	Applications and tools	8	34	155
	Artificial intelligence	1	5	5
	Technology integration	2	2	12
Active learning and student engagement	Recipes for project-based learning	4	0	20
	Student engagement	1	0	17
	Active learning	1	0	9
Digital citizenship	Digital citizenship	5	4	26
Digital instructional design	Digital instructional design	3	2	8
	Blended learning	1	0	4
Computer science	Computer science and computer science integration	2	3	10

¹⁰ To categorize the playlists of professional learning resources into topical categories, AIR conducted qualitative coding based on the names of these playlists. In some cases, AIR grouped playlists with similar themes under a single category (e.g., the Digital Citizenship 101 and News & Media Literacy playlists were grouped into the digital citizenship category). In other cases, the MLTI YouTube channel used the same category title for multiple related playlists.

¹¹ 101 of the 272 total videos or resources are student-created tutorials for the MLTI SLAM Show.

Topic area	Playlist topical category	Number of playlists	Number of digital resources created in Year 4	Total number of videos or resources
Other	Support for ALL: Differentiation in the classroom	1	0	4
	Teacher wellness	1	0	1
	Compilation of topics	0	0	1
	Total	22	50	272

Source. Extant data (MLTI video playlists).

Note. AIR determined the playlist categories based on the MLTI YouTube playlist titles or themes of the videos included in the playlist. Two resources in this table were not included in YouTube playlists but were instead other self-paced learning opportunities (i.e., Padlet of resources, digital board game).

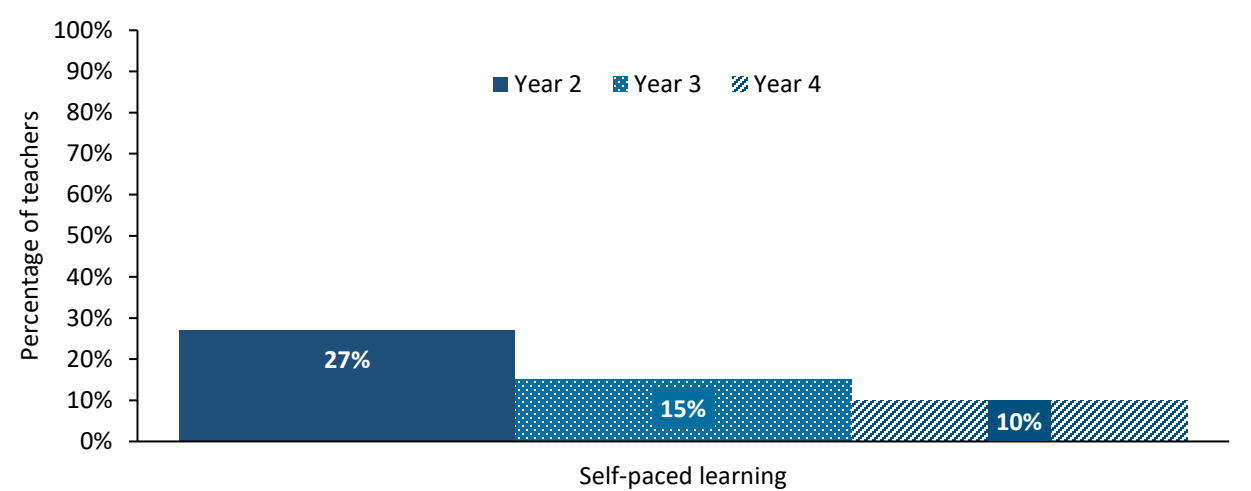
Participation

Overall, the 272 videos developed by the LTT team and available for viewing on the MLTI YouTube page garnered 37,873 total views in Year 4. Twenty-seven of those viewers requested “contact hours” (i.e., applied for credit for professional learning hours) for their time spent watching the MLTI video. Nine of the viewers requesting contact hours were teachers in six schools that had opted into the MLTI program. While it is possible that many more teachers viewed these resources, these findings suggest that teachers in 2% of MLTI schools requested contact hours after viewing an MLTI video.

Survey responses from 117 teachers provided data on teacher participation in asynchronous professional learning through MLTI videos. Overall, in Year 4, few teachers (10%) indicated that they engaged in MLTI videos or other asynchronous content. Compared to survey responses from 186 teachers in Year 3, this represented a decrease in participation in asynchronous professional learning of 5 percentage points, and a decrease in participation of 17 percentage points from Year 2 (see Exhibit 10).¹²

¹² Year 1 survey results were not disaggregated by type, and so are not presented here for comparison. Overall participation in any MLTI professional development reported on the teacher survey in Year 1 was 9% (*N* = 192 teachers).

Exhibit 10. Percentage of Teacher Survey Respondents Participating in MLTI Self-Paced Learning, by Program Year

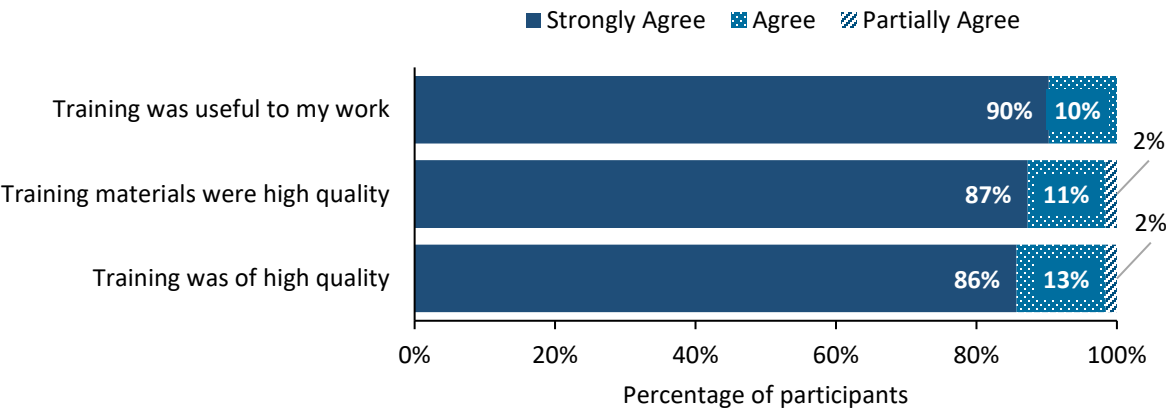


Source. Teacher survey.
Note. *N* = 306 teachers in Year 2; *N* = 186 teachers in Year 3; *N* = 117 teachers in Year 4. Survey items: Self-paced learning (“Engaging with MLTI videos or other asynchronous content”).

Quality, Relevance, and Utility

To describe the extent to which teachers found the training and/or materials they received to be high quality and useful to their work, the AIR evaluation team analyzed 66 responses on feedback surveys collected by the LTT team (Exhibit 11). Overall, all teachers agreed or strongly agreed that the training was useful (100%), and nearly all agreed or strongly agreed that the training materials (98%) and training (98%) were of high quality.

Exhibit 11. Percentage of Participants Expressing Different Levels of Satisfaction With MLTI Self-Paced Professional Learning Resources



Source. Extant data (Professional learning feedback survey).
Note. *N* = 66. Survey items asked respondents to rate their agreement with the following statements: “Training was of high quality,” “Training materials were high quality,” and “Training was useful to my work.” Response options of partially agree, agree, or strongly agree are shown; other options not shown are partially disagree, disagree, and strongly disagree.

Coaching and Professional Learning Events

During Year 4, MLTI continued to offer in-person and hybrid professional learning opportunities through a variety of channels. To evaluate teachers’ opportunities for coaching and professional learning events, the AIR evaluation team analyzed the LTT team’s calendar of scheduled events and feedback surveys collected by the LTT team from event participants. Feedback surveys collected by the LTT team and teacher interviews conducted by the AIR team provided information on participants’ satisfaction with these opportunities. Teacher survey responses also provided data on additional types of professional learning opportunities sought by teachers.

Outputs

MLTI reported 132 professional learning opportunities outside of the self-paced learning opportunities posted on the MLTI YouTube channel. These additional professional learning opportunities primarily consisted of school and district professional development days, conference presentations or sessions, and more individualized coaching sessions. Analysis of 447 feedback forms collected by the LTT team after professional learning opportunities showed that nearly half of participants (48%) participated in events about educational technologies such as artificial intelligence. About one fifth of participants reported attending events about technology integration (21%). Fewer participants (8%) indicated participating in events related

to digital instructional design or various unique individual topics such as teacher wellness and engaging parents (19%).

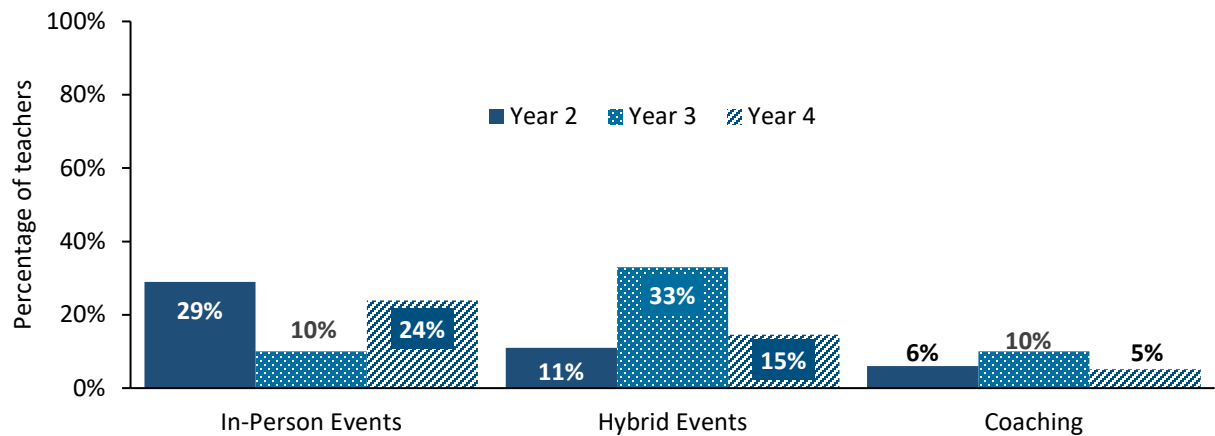
Participation

Analysis of program-wide extant data shows that a total of 447 staff attended an MLTI professional learning and completed a feedback form. This included 354 teachers, 30 IT staff, and 63 other school staff (e.g., school counselors or librarians).

Survey responses from 117 teachers provided data on teachers’ participation in professional learning events. Overall, nearly half of surveyed teachers (44%) indicated that they took part in either a coaching or professional learning event. Nearly a quarter of teachers (24%) reported participating in in-person group events, while about one fifth (15%) reported participating in live online events. Few teachers (5%) reported engaging in coaching by working with an MLTI Ambassador.

Compared with survey responses from 186 teachers in Year 3 (see Exhibit 12), teachers reported an increase of 14 percentage points in participation at in-person events and a decrease of 18 percentage points and 5 percentage points in participation in hybrid events and coaching, respectively. Overall, the proportions of teachers participating in these events reflected similar levels of participation in these categories of professional learning as were found in Year 2.

Exhibit 12. Percentage of Teacher Survey Respondents Participating in MLTI Coaching or Professional Learning Events, by Program Year



Source. Teacher survey.

Note. N = 306 teachers in Year 2; N = 186 teachers in Year 3; N = 117 teachers in Year 4. Survey items: In-Person Events (“In-person group offering, e.g., conference or presentation”); Hybrid Events (“Online live offering, e.g., webinars, book studies”); and Coaching (“Working with an MLTI Ambassador”).

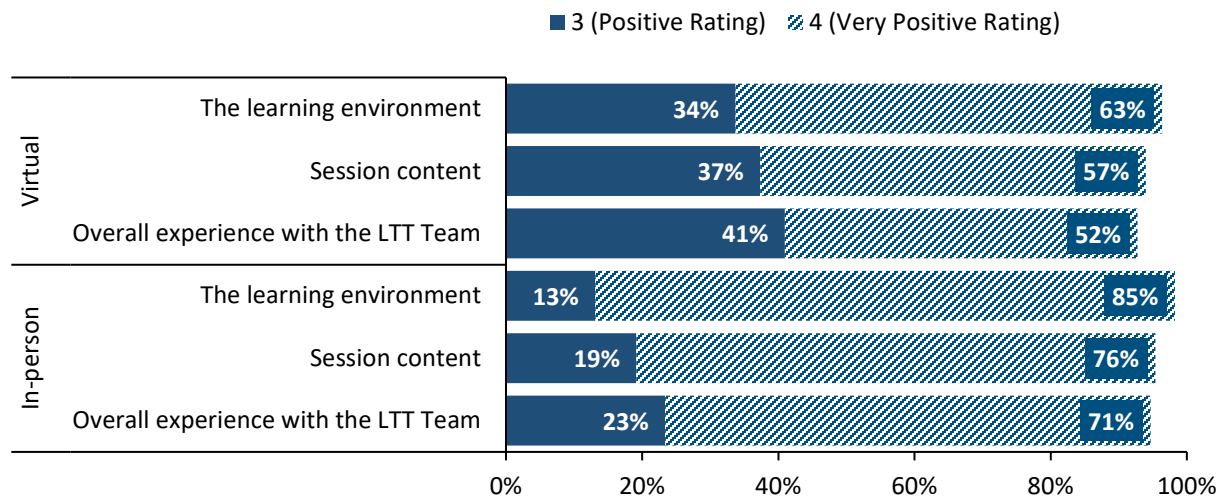
Quality, Relevance, and Utility

Overall, interviewed teachers reported varying levels of formal professional learning opportunities focused on technology for teaching and learning. Two of the four interviewed teachers reported that they tend to learn about new technologies by experimenting on their own. For example, one teacher stated that, “I do most of it myself” when asked about how they learn about new technology. Two teachers and five of the seven interviewed technology coordinators reported that teachers collaborate, mainly informally, with their fellow teachers about new technology or technology integration. Two technology coordinators also indicated that they offer professional learning or support to teachers. Two of the four teachers interviewed indicated that their school did offer formal, whole group professional development. For example, one teacher reported that the LTT team presented on artificial intelligence at their school. Teachers also reported participating in conferences and online, asynchronous professional development.

In contrast, interviewed technology coordinators indicated that they receive more professional learning on technology. Three of the seven technology coordinators reported that their school offers whole-group professional development, with one tech coordinator stating, “We do a lot of professional development ... whether it be a particular software as the subject or artificial intelligence as the subject...” Two technology coordinators reported that they attended conferences. Other professional development opportunities reported by the technology coordinators included online, asynchronous opportunities, 1-on-1 coaching from an MLTI Ambassador, and 1-on-1 or small group coaching with school staff. Only one technology coordinator reported that their school does not offer sufficient professional learning opportunities for staff.

Professional development feedback forms were distributed to teachers and other staff to gauge the effectiveness of in-person and virtual learning events. These survey items asked respondents to rate their experience on a scale of 1 to 4, with 1 being the lowest rating possible and 4 being the highest. Exhibit 13 displays the percentage of teachers who reported the two most positive ratings (a rating of 3 or 4) for the in-person and virtual learning events. Overall, teachers provided positive ratings for both the in-person (96%) and virtual learning (95%) events.

Exhibit 13. Teacher Feedback on In-Person Learning Events



Source. Extant data (professional development feedback form).

Note. N = 282 teachers in-person; 83 teachers virtual. Survey items asked respondents to rate the following statements: “The Learning Environment of the session was” (1 = uncomfortable; 4 = very comfortable); “Based on my overall experience today with the LTT team, I would” (1 = opt for alternative professional development opportunities; 4 = actively seek out LTT sessions); and “The content of this session” (1 = did not meet my needs; 4 = was applicable to my goals.)

The survey also presented teachers with an open-ended question about any additional professional learning opportunities focused on educational technology that they would find useful. Survey responses from 86 teachers identified at least one additional professional learning opportunity they would find useful. Several of these topics were also common requests in prior evaluation years. Here, we present the most frequent types of professional learning they requested in Year 4, and the proportions of teachers who also requested those topics in prior evaluation years:

- how artificial intelligence tools can be used in educational settings (requested by 29% of the 86 respondents to this question in Year 4; and by 23% of the 128 respondents in Year 3);
- instructional tools for specific content areas, such as mathematics, computer science, or visual arts (21% in Year 4; 14% in Year 3; and by 6% of the 112 respondents in Year 2);
- professional development that went beyond learning how to use instructional tools and was more focused on integrating the technology into their instruction (14% in Year 4; 8% in Year 3; and 13% in Year 2);
- software for classroom management, such as screen sharing tools, learning management systems, or grading tools (10% in Year 4; 8% in Year 3; and 13% in Year 2);

- how to use a specific instructional tool, such as Google Suite and MTSS Technology tools (6% in Year 4; 25% in Year 3; 32% in Year 2, and by 10% of the 87 respondents in Year 1);
- training about digital citizenship to help students safely interact in a digital environment (6% in Year 4);
- how to use technology for different pedagogies, such as gamified learning and student-centered pedagogy (5% in Year 4; and 7% in Year 3).

Cybersecurity and Cyber Safety

In Year 4, the MLTI program continued to provide resources and training to school leaders, teachers, and staff on how to protect their schools from cyber threats, establish best practices for technology use, and help students navigate the digital world safely and responsibly. To evaluate the support for cybersecurity and cyber safety provided, the AIR evaluation team analyzed extant data in the form of artifacts and feedback surveys collected by the LTT team and responses from interviews with teachers and technology coordinators.

Outputs

In the 2024–25 school year, MLTI maintained an up-to-date website dedicated to cybersecurity and infrastructure support resources, such as a step-by-step cyber incident response guide, cybersecurity planning resources, and links to technology policies and laws. MLTI also developed a Digital Citizenship Toolkit that compiles a comprehensive set of resources related to digital safety and security. MLTI also produced an AI Guidance Roadmap that provides an overview of the Department’s approach to artificial intelligence and ways in which artificial intelligence can be safely and ethically used for teaching and learning.

In addition to guides and resource documents, MLTI offered training on digital leadership for cybersecurity and digital citizenship, and led training on strategic leadership for artificial intelligence and emerging technologies in schools. For example, MLTI offered “K12 Cyberstorm,” a statewide incident response tabletop exercise webinar in which schools practiced a cyber incident and reviewed the response with colleagues. This webinar provided a case study, resource tools, response guides, and breach testimony of previous cybersecurity incidents. Additionally, the webinar led to ongoing support for school systems to update local response plans.

Participation

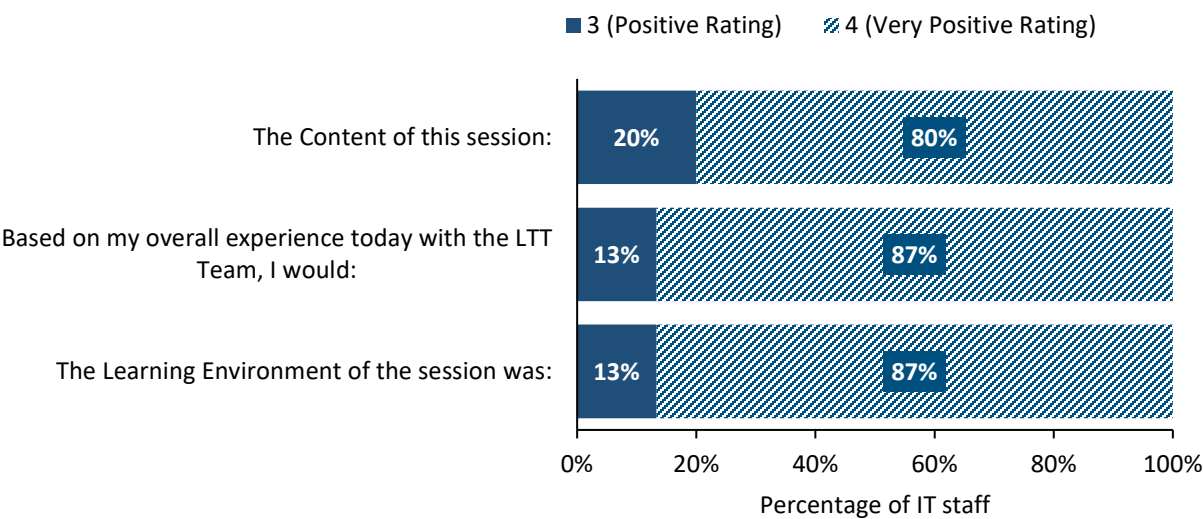
Based on responses to feedback surveys collected by the LTT team, 15 IT staff attended three events offered by the MLTI team on the topics of cyber safety and cybersecurity. From interviews, four teachers indicated that their school offered some student training about online safety, with three teachers reporting that their school offered curriculum for online safety and

digital citizenship. Six interviewed technology coordinators also indicated that their school takes appropriate steps to ensure student safety online, with four reporting they offered student training and three reporting that they monitor students’ online activity.

Quality, Relevance, and Utility

MLTI collected satisfaction feedback on the quality and content of professional development sessions. This included feedback from three K12 Cyberstorm sessions on cyber safety and security that were attended primarily by school IT staff. In Year 4, 15 IT staff members who participated in these sessions completed the feedback form. Overall, feedback was very positive. All respondents (100%) reported that content, their experience, and the session were of high quality or very high quality (Exhibit 14).

Exhibit 14. IT Staff Feedback on K12 Cyberstorm Learning Events



Source. Extant data (professional feedback form–Cyberstorm).
Note. N = 15 IT staff. Survey items asked respondents to rate the following statements: “The Learning Environment of the session was” (1 = uncomfortable; 4 = very comfortable); “Based on my overall experience today with the LTT team, I would” (1 = opt for alternative PD opportunities; 4 = actively seek out LTT sessions); and “The content of this session” (1 = did not meet my needs; 4 = was applicable to my goals).

SUMMARY OF RESULTS FOR COMPONENT 2: PROFESSIONAL LEARNING AND INFRASTRUCTURE SUPPORT

Self-Paced Professional Learning

The LTT team produced an additional 50 self-paced professional learning resources in the 2024–25 school year, for a total of 272 online available resources. Few teachers on the survey reported accessing these videos for professional learning, reflecting a downward trend in participation in these resources since Year 2 of the evaluation, and very few teachers who viewed videos requested contact hours. However, nearly all teachers who did participate and provided feedback agreed or strongly agreed that the videos were useful and high quality.

Coaching and Professional Learning Events

The LTT team offered 132 professional learning opportunities in the 2024–25 school year outside of online videos, attended by nearly half of surveyed teachers. Compared to the Year 3 evaluation, there was a small increase in participation at in-person events, and a small decrease in participation at hybrid events or coaching. Overall, teachers provided very positive feedback on the content, environment, and overall experience with MLTI professional learning opportunities. Similar to Year 3, many teachers were interested in opportunities for professional learning on the integration of AI into the classroom. There were some differences in the source of professional learning opportunities; teachers were more likely to report self-directed or informal peer learning opportunities, while technology coordinators reported more formal professional learning opportunities.

Cybersecurity and Cyber Safety

In the 2024–25 school year, the LTT team developed resources such as the Digital Citizenship Toolkit and AI Guidance Roadmap, and the technology infrastructure specialist presented a K12 Cyberstorm webinar to schools and districts. Fifteen IT staff attended three events related to cybersecurity and cyber safety, with all staff providing either positive or very positive feedback on the content, environment, and overall experience of the events.

Component 3: Student Leadership Opportunities

This section presents results from the analyses of data related to the student leadership opportunities component of the MLTI program. This component included two primary student leadership opportunities: the MLTI student conference and the Student Leadership Ambassadors of Maine (SLAM) program. For these two opportunities, the AIR evaluation team analyzed extant data in the form of artifacts and registration forms to provide descriptions of the structure and content of these events, and the number of students and schools that were represented. The AIR team also analyzed extant data from feedback forms collected by the LTT team and qualitative data from student focus groups to provide findings on the quality, relevance, and utility of these events.

In addition to the SLAM Program and the student conference, during the 2024–25 school year, the LTT team also held the Computer Science Education (CSEd) Showcase event and the Maine Winter Classic, an online game-based opportunity. While detailed data on these events were not collected as part of the Year 4 evaluation, an overview of these additional student opportunities is provided in Box 1 below.

BOX 1. OVERVIEW OF THE CSED SHOWCASE AND THE MAINE WINTER CLASSIC

CSEd Showcase

The Department hosted the third annual CSEd Showcase in December 2025. The 2-hour event was held in Portland, Maine, and included interactive exhibits and panel discussions about computer science education. Exhibits highlighted students, educators, and community organizations and the ways in which they use computer science in areas related to 3D design, coding and programming, robotics, artificial intelligence, and more.¹³

Maine Winter Classic

The Maine Winter Classic was held for its second year in March of 2025. During the Maine Winter Classic, all Maine students were invited to participate in a virtual, interactive game-based experience in which students learned about computer science, digital citizenship, digital design, gamification, and other topics. Overall, 4,834 students from 53 schools participated in this event, representing participation from 22% of all schools opting into the MLTI program.¹⁴

SLAM Program and Student Conference

The AIR evaluation team analyzed extant program data (e.g., registration records, flyers, conference schedules) collected from the LTT team to provide a description of the content of each student leadership opportunity and the level of participation in each event. The AIR team also analyzed extant data in the form of responses to feedback forms collected by the LTT team and qualitative responses to student focus groups to provide data on student perceptions of these events.

¹³ The AIR team did not receive student participation records or feedback forms from the CSEd Showcase.

¹⁴ The AIR team did not receive feedback forms from the Maine Winter Classic.

Outputs

During the 2024–25 school year, SLAM Showcase events were held at five schools across the state of Maine.¹⁵ Each SLAM Showcase event included an interactive day of in-person opportunities to learn about education technology. The Showcase event opened with a keynote that explained the event. Following the keynote, students were organized into groups and attended sessions that focused on topics such as coding, 3D printing, graphic design, animation, robotics, and virtual reality. All topics were taught by Student Leaders and Ambassadors. At the end of the day, Student Leaders and Ambassadors produced a live “SLAM Show” that included recorded interviews with students and educators about their activities and learnings during the day. The live “SLAM Show” video recordings would later be uploaded to the MLTI YouTube channel for asynchronous viewing.

Students who attended the MLTI Student Conference had the opportunity to participate in a variety of sessions related to education technology (Exhibit 15). During the MLTI Student Conference, MLTI offered 37 different session types, with each session offered in the morning and again in the afternoon. Sessions about computer programming software were the most common type of session offered at the conference, including sessions about coding and robotics. These sessions accounted for 12 out of the 37 types of sessions (32%). The second most common type of session offered was those focused on video or photography editing software. These accounted for 7 out of 37 sessions (19%).

Exhibit 15. Types of Sessions at the MLTI Student Conference

Session topic category	Number of sessions
Computer programming software	12
Video or photography editing software	7
Other (e.g., University of Maine in Orono Composite Center Tour, Drone Pilot Training)	7
Simulation software	4
Data processing tools	3
Geography or mapping software	2
Game-based software	1
Word processing software	1
Total	37

Source. Extant data (Student Conference artifacts).

¹⁵ SLAM student leaders also participated in the CSEd Showcase in December 2024 and the MLTI Student Conference in May 2025.

Participation

To determine the number of student participants in each event, we analyzed registration records received from the LTT team. Overall, a total of 1,350 students from across 37 schools participated in either the SLAM program (564 students from five schools) or the Student Conference (752 students from 32 schools), which represents participation from students at approximately 16% of all MLTI schools (Exhibit 16).

Exhibit 16. Number of Students and Schools Participating in the MLTI Student Conference and the SLAM Program

Events	Number of students participating	N schools participating	% MLTI schools participating
SLAM Program	564	5	2%
MLTI Student Conference	752	32	13%
Total	1,350	37	16%

Source. Extant data (registration records).

Quality, Relevance, and Utility

At the end of each of the five SLAM Showcase events this year, Student Leaders and Ambassadors produced a live “SLAM Show” with recorded interviews with students about what they enjoyed learning during the day. In total, 23 students across five schools were interviewed during SLAM Show videos. After reviewing this year’s five school SLAM Show videos posted on the MLTI YouTube channel, the AIR evaluation team identified aspects of SLAM Showcase events that students enjoyed most.

- 35% of interviewed students (eight students) enjoyed learning about TinkerCAD and 3D modeling software.
- 26% of interviewed students (six students) enjoyed learning about animation.
- 26% of interviewed students (six students) enjoyed learning about virtual reality.
- 22% of interviewed students (five students) enjoyed learning about coding or programming.

In June 2025, AIR researchers conducted two focus groups with students from two schools who attended the Student Conference. The purpose of the student focus group was to gather students’ perceptions of the usefulness, strengths, and areas for improvement of the Student Conference.

Overall, students from both focus group schools (nine students in total) indicated that they found the Student Conference useful and named specific elements of the Student Conference that they enjoyed. When asked about Student Conference sessions that were useful to their schoolwork, students reported that learning about new websites and technologies was useful. Students said that it was useful to learn about using 3D printers, designing video game avatars, creating Google slides, and visiting new websites and indicated that they could use this information on future assignments. For example, one student said, “In some [sessions] we did Google Slides, which is helpful. If we ever have a project in school, we need to use Google Slides.” Additionally, students described elements of the Student Conference that they liked. Students at one school described specific sessions, such as the 3D Dream Home Design with Google SketchUp session and the Weaving the Binary Code: Learning through Patterns session. Students at both schools also reported that they enjoyed the overall environment of the Student Conference. Students enjoyed walking around the University of Maine campus, the options for lunch, the music that was played at the conference, and simply spending the day with their friends. Students shared that it was “a lot more organized this year” and “very well put together.”

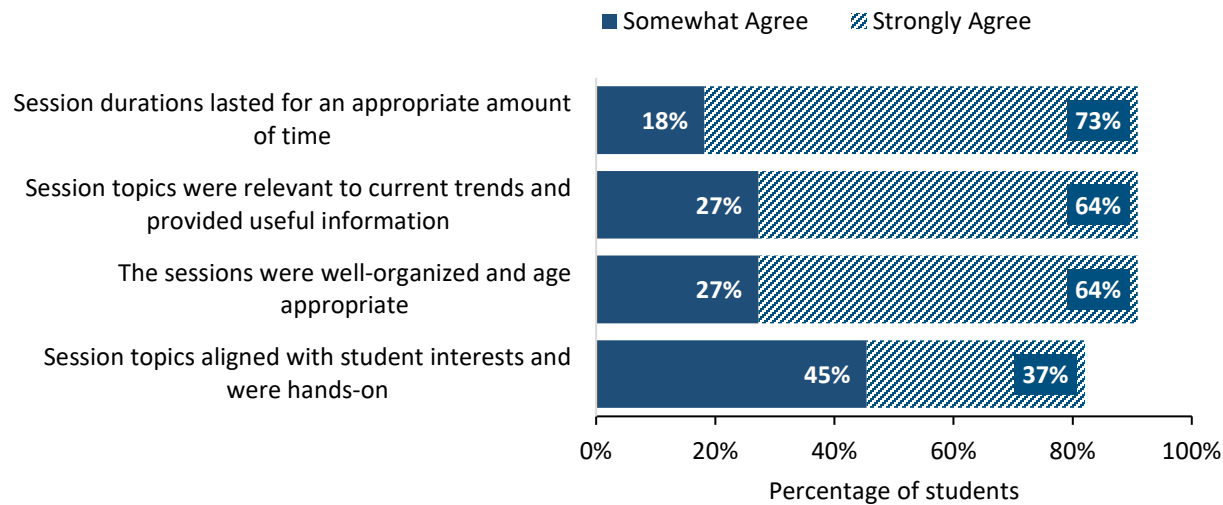
Student focus group participants also indicated that they learned about a variety of technologies during the Student Conference. Students reported that they learned new information about 3D art, batteries, coding, binary code, and designing video game avatars. Additionally, students indicated that they were able to share their work with peers during Student Conference sessions. For example, one student said, “In one of my programs, I was sharing ideas with my friend, and we were trying to create a 3D space, sharing ideas.” Students also indicated that the sessions focused on designing and drawing (e.g., a session on creating a digital escape room, a session about a studio adventure story) allowed them to be creative. One student shared, “In the digital escape room, you can do whatever theme you want and whatever questions you want. So, you have a lot of freedom in that.”

During the focus groups, students shared a few challenges they encountered and spoke more about suggestions about specific sessions and logistics that could be used to improve the Student Conference in subsequent years. When asked about challenges they encountered during the Student Conference, students primarily named logistical challenges such as trouble with Google sign-on, short time for activities, and small room space. Additionally, students offered suggestions for how to improve the Student Conference. For example, students offered suggestions to overcome the logistical challenges noted, such as providing clearer directions for navigating the university campus, having more educators available to answer questions during session activities, and shortening session times so students could “try out different things” and participate in more sessions during the day. Students also provided suggestion to make the conference more engaging, such as adding more hands-on activities instead of working on their

laptop, including a session about Spheros, and making improvements to the opening and closing sessions (e.g., making the sessions more challenging, structuring so everyone could use the polling features). Despite the challenges and suggestions mentioned above, students said that they would like to attend the Student Conference again next year, and one student elaborated on their response, saying “It’s a good experience to have and it can teach some computer skills that [students] might have not known before.”

The AIR evaluation team also analyzed data from 11 feedback forms collected by the LTT team to provide information on student perceptions of their experiences at the conference. Overall, nearly all students (92%) reported that they were either satisfied or extremely satisfied with the general organization of the conference. Three quarters of students (75%) considered the registration process for the Student Conference somewhat easy or easy. Additional items asked students for feedback specifically about the length, topics, and relevance of the conference sessions (Exhibit 17). Nearly all students agreed or strongly agreed that the sessions were of an appropriate length (91%), were relevant and useful (91%), and were well-organized and age-appropriate (91%). Most students (82%) agreed or strongly agreed that the session topics were interesting and hands-on.

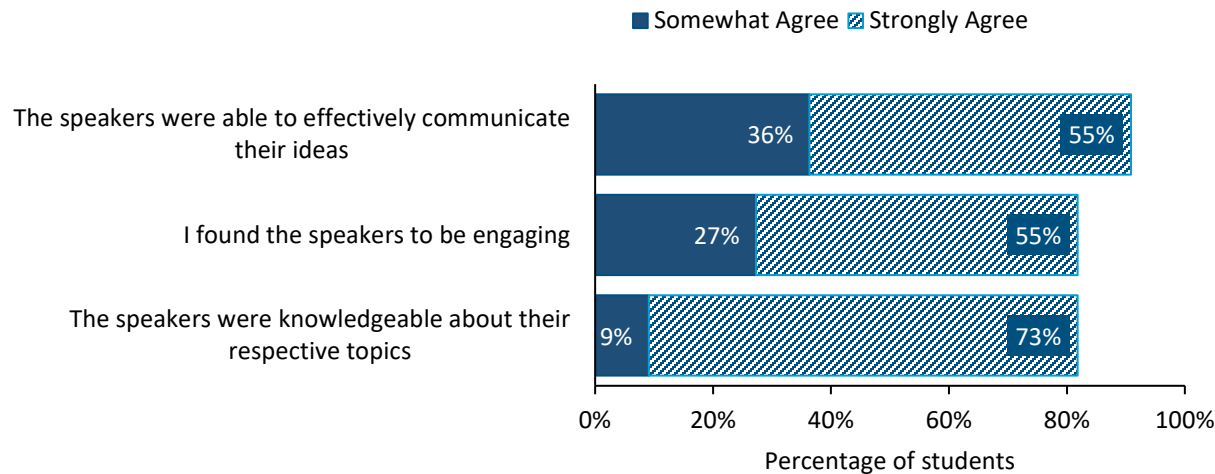
Exhibit 17. Student Feedback on the Sessions at the Student Conference



Source. Extant data (Student Conference feedback form).
Note. N = 11 students. Survey item asked respondents to rate their agreement with the following statements: “The sessions were well-organized and age appropriate,” “Session topics were relevant to current trends and provided useful information,” “Session topics aligned with student interests and were hands-on,” and “Session durations lasted for an appropriate amount of time.” Response options of somewhat agree and strongly agree are shown; other options not shown are neither agree or disagree, somewhat disagree, and strongly disagree.

A final set of items asked students for feedback specifically about the speakers at the conference (Exhibit 18). Nearly all students (91%) agreed or strongly agreed that the speakers were able to effectively communicate their ideas. Most students agreed or strongly agreed that the speakers were engaging (82%) and knowledgeable about their topics (82%).

Exhibit 18. Student Feedback on the Speakers at the Student Conference



Source. Extant data Student Conference feedback form).
Note. N = 11 students. Survey item asked respondents to rate their agreement with the following statements: “The speakers were knowledgeable about their respective topics,” “The speakers were able to effectively communicate their ideas,” and “I found the speakers to be engaging.” Response options of somewhat agree and strongly agree are shown; other options not shown are neither agree or disagree, somewhat disagree, and strongly disagree.

SUMMARY OF RESULTS FOR COMPONENT 3: STUDENT LEADERSHIP OPPORTUNITIES

SLAM Program

Over 550 students from five different schools participated in the SLAM program this year. Each event included a keynote presentation and interactive, collaborative sessions taught by Student Leaders and Ambassadors. The most common sessions offered were on the use of computer programming software or video and photography editing software. Students expressed that they particularly enjoyed learning about 3D modeling software, animation, and virtual reality.

Student Conference

Over 750 students attended the MLTI Student Conference this year, from 32 different schools. MLTI offered 37 different sessions on technology. In general, most students felt the conference was well-organized and that the sessions and speakers were of high quality and relevant to their interests. About a quarter of students thought that the registration process could be improved, and students in the focus group asked to have additional educators on site to answer questions. Students specifically expressed enjoying sessions that allowed them hands-on learning opportunities.

IV. Outcomes Evaluation Results

This section presents the results from the outcomes evaluation, answering EQs 4–6 about the extent to which the resources and activities of the initiative influenced multiple outcomes at the school, instructional, and student levels.

1. To what extent did the initiative influence **school** outcomes?
2. To what extent did the initiative influence **instructional** outcomes?
3. To what extent did the initiative influence **student** outcomes?

Where available, Year 4 results are presented together with similar results from prior years' evaluations to aid in the comparison of trends in program activities across multiple years.

School Outcomes

The AIR evaluation team analyzed teacher and student survey data and interviews with teachers and technology coordinators to assess the extent to which MLTI schools exhibited a strategic vision for technology integration, provided professional learning opportunities for staff on technology integration, provided equitable access to resources for all students, cultivated a digital culture, and invested in long-term sustainability of technology initiatives at the school.

Strategic Vision for Technology Integration

Interviews with four teachers indicated that they believe their schools have visions for technology, and that most do feel that school leaders encourage them to experiment with technology. When asked about a school-wide vision for technology, three out of four teachers interviewed indicated that their school has some parameters around technology use for

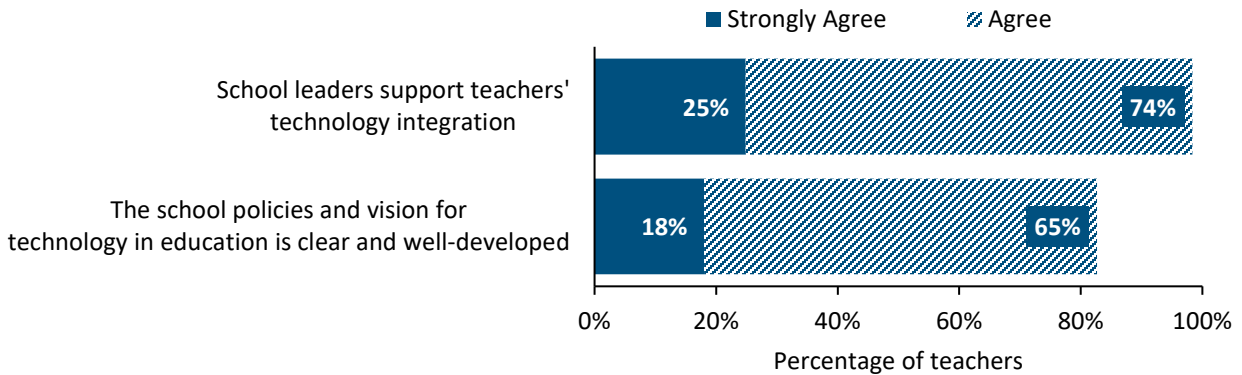
teaching and learning. For example, one teacher noted that, “The goal is that every student can access the technology they need.” Another teacher reported that their school vision is based on “developing the balance of how to use the tools.” However, one teacher and one out of seven technology coordinators reported that their school does not have a vision, and some teachers reported that few schools have formal expectations about technology use, but instead have more informal approaches to technology policy.

Technology coordinators also provided details on the focus of their schools’ vision for technology use. Four out of seven technology coordinators interviewed indicated that their school’s formal vision for technology use centers on student use of devices. For example, one technology coordinator stated that, “Our vision as a district is that kids use technology to enhance the curriculum that is being delivered in the classroom.” Another technology coordinator stated, “We want to teach students to use technology appropriately and effectively.” Three technology coordinators indicated that their school’s vision for technology use focused on teacher integration of technology, with one technology coordinator reporting that, “...our vision is that every single teacher utilizes technology.”

Despite teachers noting the existence of school-wide technology visions, three out of four teachers indicated that school leaders do not explicitly communicate expectations about technology use. One teacher stated that, “There are no expectations,” with another reporting that they “don’t feel any particular incentive or initiative from any administration level to use technology.” Conversely, all seven technology coordinators interviewed reported that expectations about technology use are verbally communicated to staff from school leaders and administrators. Four of the seven technology coordinators indicated that expectations are shared out via staff meetings, with varying frequency.

In addition to responses to interviews, the AIR team also analyzed scale scores from multiple items on the teacher survey to assess the extent to which teachers felt that there was strong leadership support and a strategic vision for technology integration at their school (Exhibit 19).

Exhibit 19. Teachers’ Perceptions of Their Schools’ Strategic Vision for Technology Integration



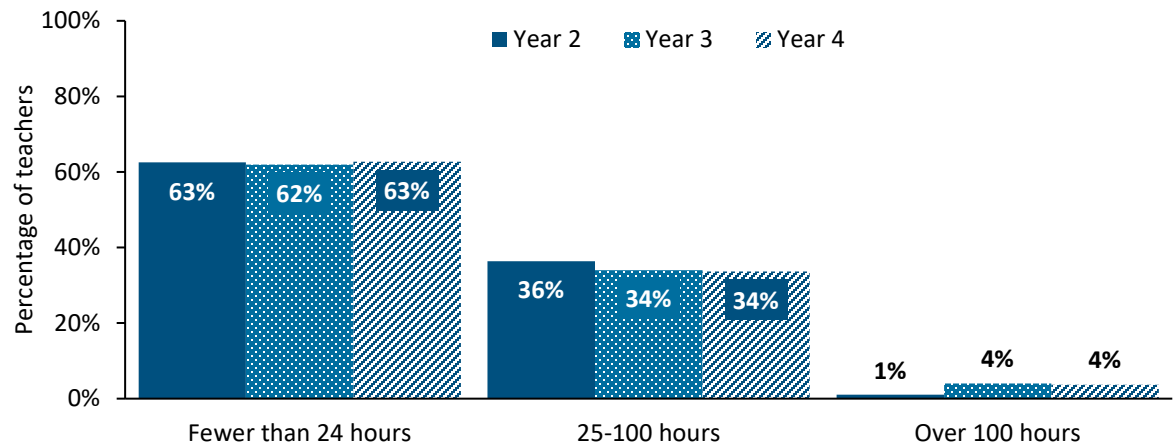
Source. Teacher survey.
Note. N = 111 teachers. Response options of agree and strongly agree are shown; other options not shown are disagree and strongly disagree.

Teachers responded to two items that asked about leaders’ support for technology integration, and four items that asked about their schools’ policy and vision for technology. Nearly all (99%) of the 111 responding teachers agreed or strongly agreed that their school leaders supported technology integration in their classroom. Most teachers (83%) agreed or strongly agreed that their schools’ technology plans and policies were well-developed and widely known by school staff.

Professional Development and Capacity Building

The teacher survey included items asking teachers about their participation in any professional development focused on educational technology that they received during the 2024–25 school year, outside of those received through the MLTI program (Exhibit 20). On average, the 113 surveyed teachers reported having about 26 hours of professional development focused on technology. This is similar to the average number of hours of professional development for technology reported by 184 teachers on the Year 2 survey (25 hours) and reported by 297 teachers on the Year 3 survey (29 hours).

Exhibit 20. Percentage of Teachers Who Reported Participating in Professional Development Focused on Educational Technology, by Number of Hours Reported and Evaluation Year



Source. Teacher survey.
Note. Year 2 *N* = 184 teachers; Year 3 *N* = 97 teachers; Year 4 *N* = 113 teachers. FRPL = lowest, middle, and highest tertiles of proportions of students eligible for free- or reduced-price lunch in schools opting into the MLTI program. Survey items asked teachers to provide the number of total hours spent in professional development activities focused on educational technology across the following categories: “formal whole-group professional learning,” “formal individualized professional learning,” and “informal or self-organized professional learning.” The Year 1 teacher survey did not measure continuous hours of professional learning.

Overall, in Year 4 nearly two thirds of teachers (63%) reported having fewer than 24 hours of professional development focused on technology. Over one third of teachers (34%) reported having between 25 and 100 hours of professional development focused on technology. Few teachers (4%) reported having over 100 hours of professional development focused on educational technology. These proportions were similar to those observed in the Year 2 and Year 3 evaluations.

Equitable Access to Technology and Resources

To assess outcomes related to equitable access to technology and resources in schools, we analyzed survey data to understand teacher and student experiences with the availability of technology and the use of technology for differentiation according to student needs in the classroom. Overall, all (100%) of the 109 teachers and 675 students who responded to these items on the survey reported receiving a computing device from their school.

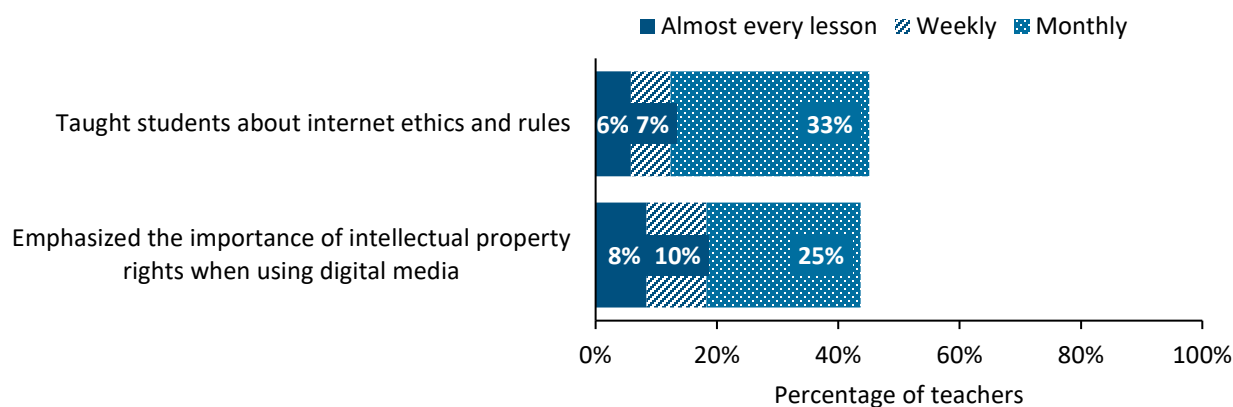
In terms of access to reliable internet, only about a quarter (26%) of the 98 teachers who responded to this survey item reported that their school was able to usually or almost always offer internet access at home for qualifying students.

Cultivation of a Digital Culture

Despite the lack of formal expectations about the use of technology reported by teachers during the interviews, all interviewed teachers indicated that school leaders do encourage them to experiment with and use technology. Similarly, six out of seven technology coordinators reported that school leaders encourage technology use. Two teachers noted that school leaders give them autonomy to experiment with technology. One teacher expressed that the autonomy was a positive, stating that “teachers are allowed to make all...decisions” about what programs to use in their classrooms. Similarly, other teachers noted that school leaders get devices from MLTI to encourage technology use, and that working with a technology coordinator or integrator helps as well. Four out of seven tech coordinators indicated that teachers are encouraged to use technology in their classrooms, and two technology coordinators indicated that school leaders encourage teachers to work with the technology coordinator to learn about new technologies.

To assess outcomes related to the cultivation of a digital culture at the school, we analyzed results from responses on the teacher survey that asked teachers to report on the frequency of their instruction on the ethical and socially responsible use of technology (Exhibit 21). Overall, of the 112 surveyed teachers, nearly half of teachers reported providing instruction on internet ethics and rules (46%) and the importance of intellectual property when using digital media (43%) at least once a month.

Exhibit 21. Percentage of Teachers Reporting Delivering Instruction on Ethical and Socially Responsible Technology Use at Least Monthly



Source. Teacher survey.

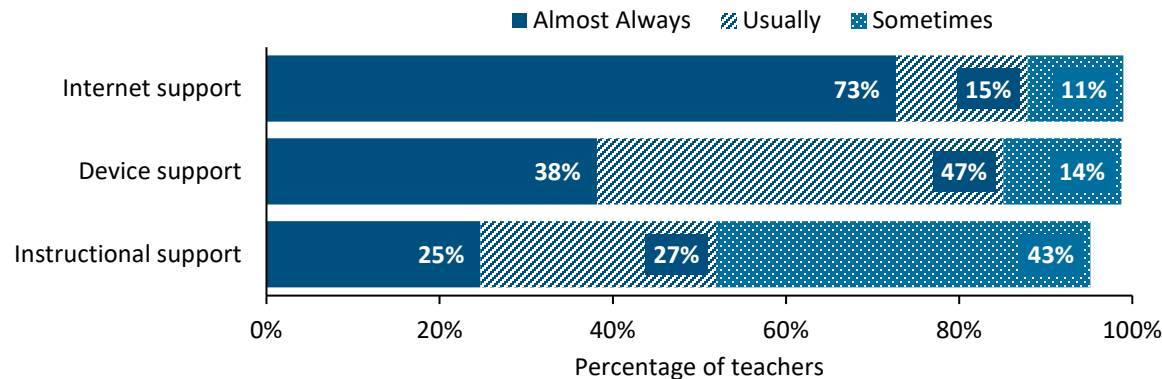
Note. N = 112 teachers. Survey item: “How frequently did you do the following during this school year?” Response options of almost every lesson, weekly, and monthly are shown; other options not shown are less than monthly and almost never.

Continuous Improvement and Sustainability

All teachers and technology coordinators interviewed indicated various strengths about the technology infrastructure at their schools. For example, three out of four teachers, and all seven technology coordinators, reported that they have access to dependable Wi-Fi at their school. Similarly, three teachers and all seven technology coordinators reported that they have access to up-to-date software. All teachers reported that they feel the quality of technology available at their school is sufficient, and three teachers indicated that the technology was useful. When discussing technology integration, three of the four teachers reported that students use Chromebooks and are allowed to take them home from school. All four teachers also reported that their school has a school-based staff member they can go to for technical support. All seven technology coordinators reported that they provide support to students and teachers when technology problems arise.

To assess outcomes related to continuous improvement and sustainability, the AIR team analyzed scale scores of multiple items on the teacher survey to understand teacher perceptions of the level of support for the use of technology that is provided to them by their school (Exhibit 22). Teachers responded to two items about school support for internet and Wi-Fi, two items about support for devices, and two items about support for instruction with technology. Overall, of the 112 teachers surveyed, most teachers reported almost always or usually receiving support for high-speed internet and Wi-Fi access (88%) and technical support with their classroom devices (85%). About half of teachers (52%) reported pedagogical support and tools related to integrating technology into classroom instruction.

Exhibit 22. Teachers’ Perceptions of the Frequency With Which Their School Provides Support for Technology



Source. Teacher survey.
Note. N = 112 teachers. Response options of almost always, usually, and sometimes are shown; other options not shown are rarely and never.

SUMMARY OF RESULTS FOR SCHOOL OUTCOMES

Strategic Vision for Technology Integration

Results from interviews and surveys showed that, in general, both tech coordinators and teachers felt that their school had a coherent vision for technology integration and that school leaders were supportive and allowed teachers freedom to explore technology. However, some teachers also reported that there were few formal or clear expectations from school leaders about the use of technology.

Professional Development and Capacity Building

About two thirds of teachers reported fewer than 24 hours of professional development focused on technology per year. The overall average and distribution of hours of professional development focused on technology remained similar to what was seen in prior years.

Equitable Access to Technology and Resources

All surveyed teachers and students reported receiving devices this year. Less than half of teachers reported that the school offered solutions for home internet access to students.

Cultivation of a Digital Culture

Teachers reported that school leaders provide them with autonomy to choose how they integrate technology. Fewer than half of teachers surveyed reported explicitly providing instruction on healthy or ethical use of technology with students.

Continuous Improvement and Sustainability

Most teachers felt their school provided adequate access to high-speed wireless internet and support for their use of technology in the classroom. However, fewer than half of surveyed teachers reported pedagogical support for integrating technology in their classrooms.

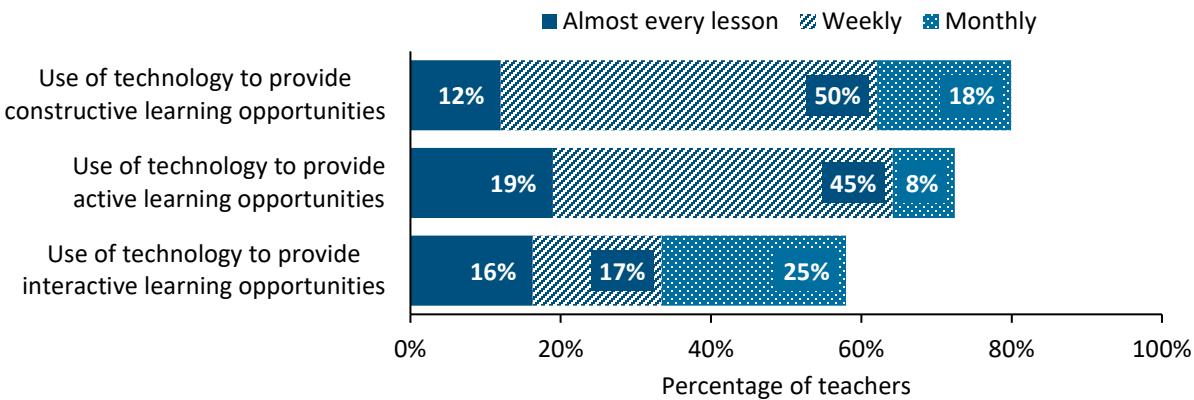
Instructional Outcomes

The AIR evaluation team analyzed teacher and student survey data and interviews with teachers and technology coordinators to assess the extent to which teachers in schools that opted into the MLTI program provided instruction that developed students' critical academic skills, improved their digital literacy and integration of technology into their classrooms, and provided equitable access to learning opportunities for all students.

Instruction for the Development of Critical Academic Skills

We analyzed scale scores from multiple items from the teacher survey to assess the frequency with which teachers in schools that opted into the MLTI program used technology to provide instruction that supported student learning (Exhibit 23). The three scales captured a continuum of technology-supported instruction that provides students with hands-on learning opportunities (active learning; 2 items), opportunities to generate new knowledge (constructive learning; 4 items), and opportunities to co-construct new understandings through peer interaction (interactive learning; 3 items; Antonietti et al., 2023). Overall, most of the 111 survey teachers (80%) reported using technology to provide constructive learning opportunities for their students at least once a month. Nearly three quarters (72%) of teachers reported using technology to provide active learning opportunities for students at least once a month. Over half of teachers (58%) reported using technology to provide interactive instruction that gave students opportunities to collaborate with their peers at least once a month.

Exhibit 23. Teachers’ Reported Use of Technology in Instruction for Interactive, Constructive, and Active Learning



Source. Teacher survey.
Note. N = 111 teachers. Response options of almost every lesson, weekly, and monthly are shown; other options not shown are less than monthly and almost never.

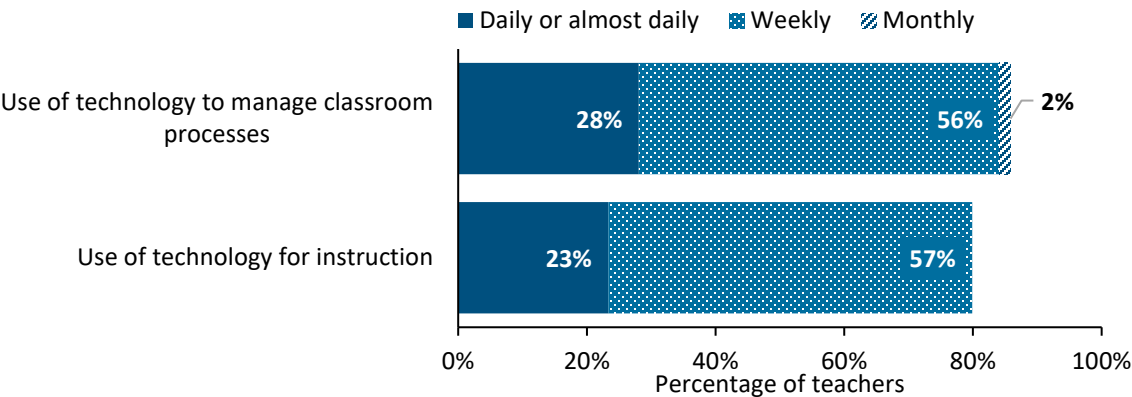
All four interview teachers indicated that technology helps them to prepare, differentiate, and personalize instruction, and allows students to be creative and collaborative. Three out of four teachers indicated that they use Google Suite to help prepare instruction. Other methods of preparing include creating quizzes, organizing resources, projecting materials, and sharing materials with students. Teachers also reported several software and programs they use to personalize instruction, including Canva, Google Suite, Prodigy, and Newsela. Teachers also reported various ways that students use technology for creativity and collaboration. Three out of four teachers indicated that students use technology to play educational games, and two of the four teachers indicated that students use technology to draft responses to various prompts.

Technology coordinators indicated limited knowledge on how teachers use technology for preparation, personalization, and delivery of instructional materials. Two out of seven interview technology coordinators reported that teachers can use a variety of software, with one stating that “software requests are a huge part of customizing their classes.” Two technology coordinators indicated that students get to try out different software, like 3D printers, and two others indicated that students use software like Canva and Adobe, to encourage creativity. Six of the seven technology coordinators interviewed reported that students collaborate using Google Suite.

Instruction for Improved Digital Literacy and Technology Integration

To assess outcomes related to instruction for improved digital literacy and technology integration, we analyzed scale scores from multiple items on the teacher survey to understand how technology is integrated into the classroom (Exhibit 24). Teachers responded to six items that asked about their use of technology to manage classroom processes, and three items that asked about their use of technology for instruction. Survey responses from 115 teachers showed that most teachers reported using technology at least monthly for both managing classroom processes such as to create instructional materials and communicate with parents (86%), and for instructional purposes conveying learning objectives and content in a vivid and comprehensible way (80%).

Exhibit 24. Teachers’ Reported Use of Technology for Instruction

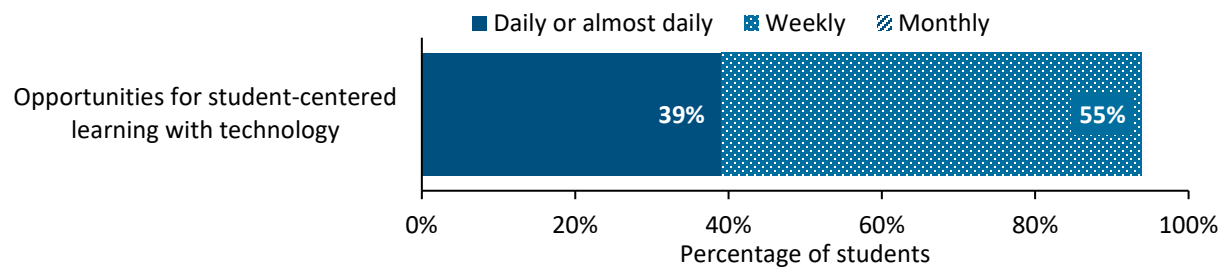


Source. Teacher survey.
Note. N = 115 teachers. Response options of daily or almost daily, weekly, and monthly are shown; other options not shown are less than monthly and almost never.

Scale scores generated from four student survey items measured the extent to which students reported having opportunities for student-centered learning, such as contributing to the selection of learning activities or using investigations to find answers to questions in class

(Zhang et al., 2021). Survey responses from 706 students showed that nearly all students (94%) experienced opportunities for student-centered learning with technology (Exhibit 25).

Exhibit 25. Percentage of Students Reporting Participating in Student-Centered Learning With Technology at Least Monthly



Source. Student survey.
Note. N = 706 students. Response options of daily or almost daily, weekly, and monthly are shown; other options not shown are less than monthly and almost never.

Equitable Access to Learning Opportunities

Survey results from 106 teachers showed that over three quarters (78%) reported that their school usually or almost always provided access to technology that helped students at all ability levels succeed academically. Results from 112 surveyed teachers showed that about a third (35%) reported designing technology-based learning activities for students with different achievement levels on at least a weekly basis.

SUMMARY OF RESULTS FOR INSTRUCTIONAL OUTCOMES

Instruction for the Development of Critical Academic Skills

About three quarters of teachers reported providing instruction focused on developing critical academic skills. Fewer teachers reported providing instruction for developing 21st century skills.

Instruction for Improved Digital Literacy and Technology Integration

Most teachers reported using technology for both productivity and management tasks, as well as for instructional purposes. Most students also reported engaging frequently in student-driven instruction in their classrooms.

Equitable Access to Learning Opportunities

Most teachers reported that their school provided technology that helped students with different ability levels succeed academically, but only about half of teachers reported frequently integrating technology in learning activities for students with different achievement levels.

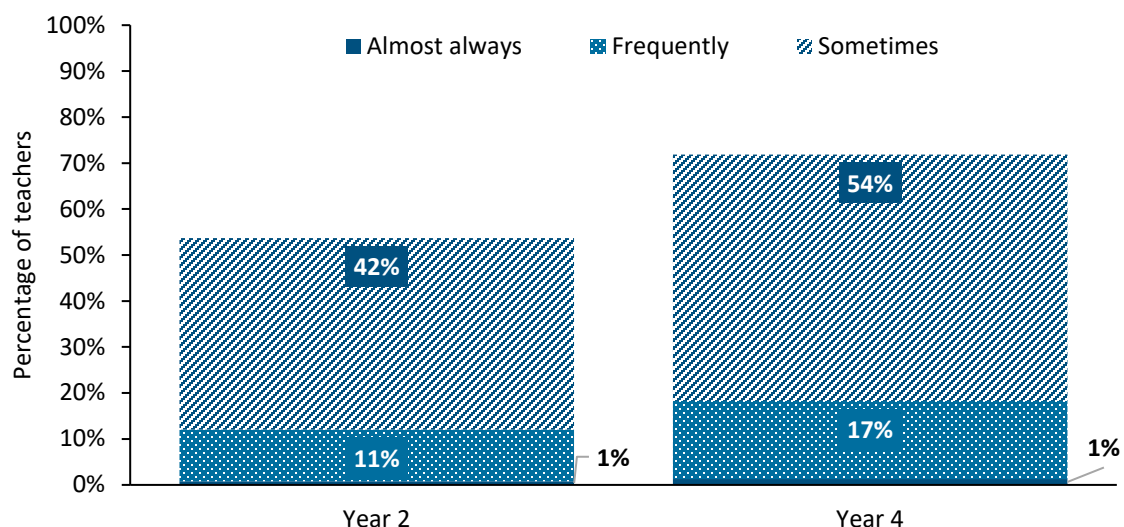
Student Outcomes

The AIR evaluation team analyzed student survey data to assess the extent to which students in schools that opted into the MLTI program were engaged in their classes and felt competent in their foundational skills using technology. Items also assessed the extent to which students had a healthy relationship with technology and were able to demonstrate good citizenship when conducting themselves online.

Increased Student Engagement

The AIR evaluation team analyzed scale scores of responses from 713 students to multiple items on the student survey assessing the extent to which students in schools that opted into MLTI were engaged in their classes (Exhibit 26). Students responded to five survey items that asked them about their affective, behavioral, and cognitive interest in their classes (Fredricks, et al., 2004).

Exhibit 26. Student Interest and Engagement in Classes



Source. Student survey.

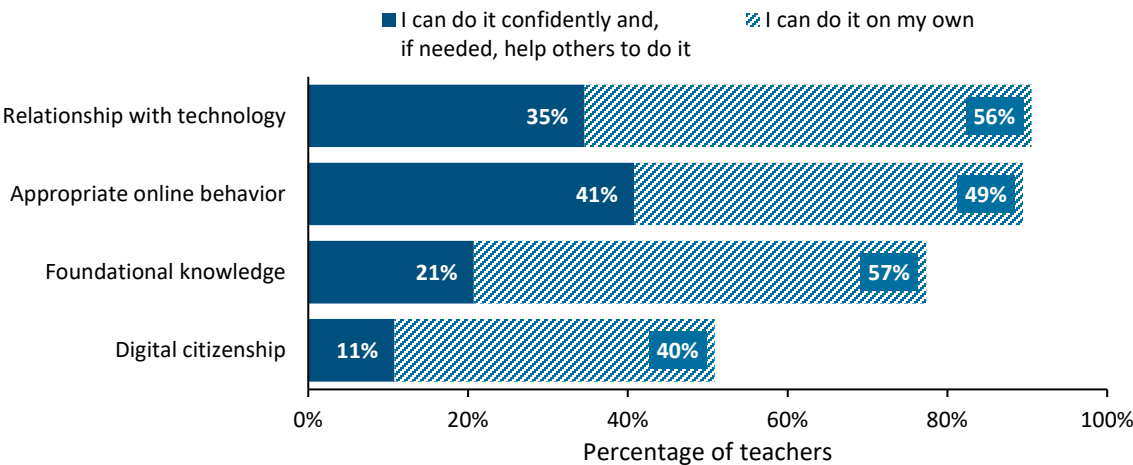
Note. Year 2 *N* = 1,463 students; Year 4 *N* = 713 students. Response options of almost always, frequently, and sometimes are shown; other options not shown are rarely and never.

Nearly three quarters of students (72%) reported that they were at least sometimes interested and engaged in their classes. This shows an increase in student engagement of 18 percentage points from the Year 2 evaluation, where over half of students (54%) reported being at least sometimes engaged and interested in their classes.

Foundational Knowledge Base, Improved Relationship With Tech, and Informed Citizenship

The AIR evaluation team analyzed scale scores of multiple items on the student survey that assessed students’ confidence in various areas of digital competency (Vuorikari et al., 2022). Students were asked to respond to twelve items about their foundational knowledge about technology, nine items about their relationship with technology, and nine items about their informed citizenship (i.e., three items on their knowledge of appropriate online behavior, and six items on their digital citizenship). Overall, most students reported that they could perform either on their own or confidently enough to teach others, tasks that demonstrate their positive relationship with technology (91%) or tasks that demonstrate their knowledge of appropriate online behavior (89%). More than three quarters of students (77%) reported confidence in their foundational knowledge about technology. About half of students (51%) reported that they felt confident in their ability to demonstrate their digital citizenship through their use of technology (see Exhibit 27).

Exhibit 27. Student Self-Assessment of Their Foundational Knowledge About Technology, Positive Relationship With Technology, Knowledge About Appropriate Online Behavior, and Demonstration of Digital Citizenship



Source. Student survey.
Note. Relationship with technology N = 689 students; Appropriate online behavior N = 668 students; Foundational knowledge N = 698 students; Digital citizenship N = 675 students. Response options of I can do it confidently, and, if needed, help others to do it, and I can do it on my own are shown; other options not shown are I can do it with help and I can’t do it.

SUMMARY OF RESULTS FOR STUDENT OUTCOMES

Increased Student Engagement

Nearly three quarters of students reported that they were interested and engaged in their classes during the 2024–25 school year. This was a meaningful increase from Year 2 evaluation findings, which showed only about half of students reporting they were at least sometimes engaged or interested.

Foundational Knowledge Base, Improved Relationship With Technology, and Informed Citizenship

Overall, across multiple items assessing students' perception of their competence in their technological skills on various dimensions, surveyed students felt competent in their technological skills. The highest proportion of students felt competent in their skills demonstrating their relationship to technology and knowledge of appropriate online behavior. Students felt the least competent in their skills demonstrating digital citizenship.

V. Discussion and Recommendations

Building on two decades of previous experience supporting 1:1 device allocation, MLTI seeks to continue to provide students and educators with access to technology tools, support teacher use of technology in their classroom instruction, and maintain technology infrastructure in schools throughout the state. The Year 4 evaluation of MLTI focused on providing feedback to the Department on the resources and services provided through the program, the extent of participation in program activities, and feedback on the quality of the resources and opportunities provided, relative to each of the initiative's three major components. The evaluation also examined various school, instructional, and student outcomes related to the use and integration of technology into classroom instruction within schools that opted into the MLTI program. The evaluation team conducted teacher and student surveys in a representative sample of 28 schools, examined various extant data on program implementation and feedback on program activities, and conducted interviews and focus groups with various stakeholders including technology coordinators, teachers, and students. This section discusses the evaluation's findings on the process and outcomes, and offers recommendations for the Department and the LTT team based on those findings, relative to each component.

Technology Provision

The MLTI program continued to be consistent in providing 1:1 devices to students and staff at schools that opted into the program. Nearly all SAUs received enough devices to provide them at a 1:1 ratio for students, and two thirds of SAUs received enough devices to provide devices at a 1:1 ratio for instructional staff. These results reflect similar levels of 1:1 device provision for students and instructional staff as in prior years of the evaluation. In prior years, the percentage of districts that received adequate devices to provide 1:1 devices for instructional staff was lower (32 percentage points) than for students. This difference may reflect a longer lifespan of devices for instructional staff. It could also be that for districts that choose to allow students to move with their devices, new devices are required for each new cohort of students, while returning staff reuse the same devices year after year.

Recommendation. Confirm with schools the counts of instructional staff that need devices, and adjust allocations based on how quickly devices need replacement.

Schools use Teach with Tech grant funding for a variety of interesting and potentially beneficial supplemental technology-based activities. For example, some teachers used the supplemental technologies purchased with these funds to integrate technology into their instruction of core content in their literature, social studies, and physical education classes. These innovations were shared with the LTT team and within districts and schools (e.g., at school board meetings and in professional learning opportunities with school staff). However, it is unclear how often teachers had the opportunity to share these ideas with educators at other schools. Of the 45 schools that opted into the MLTI program and received grant funding, four presented these findings at education conferences.

Also, while qualitative feedback from staff at the schools that received these funds shared their perceptions of the benefits of the supplemental technologies to teachers' use of technology and students' learning experiences, this does not provide direct evidence on which uses of the funds provide the greatest benefit per dollar spent.

Recommendation. Consider opportunities to test the impact of receiving Teach with Tech funds on key school, teacher, or student outcomes and examine the cost effectiveness of different allocations of grant funds.

Schools generally have fast and reliable internet access; however, student internet access at home may be less certain. Overall, three quarters of schools opting into the MLTI program received broadband internet through NetworkMaine, and nearly all of those schools had internet speeds over 1000 Mbps. Most teachers responding to the survey also reported consistent access to Wi-Fi and high-speed internet at their schools. However, only about a

quarter of teachers reported their schools offering internet access to students at home. Particularly in light of the finding that the most common method of MLTI device distribution is to provide students a device to use both at school and home, it may be important for the LTT team to better understand the extent of limited home internet access and how this might influence how devices are utilized, or inform guidance provided to teachers on instruction with technology in these areas (e.g., assigning online homework).

Recommendation. Examine the extent to which students have access to home internet and consider possible solutions for addressing problems arising from limited home internet access for students at schools opting into MLTI (e.g., professional learning for teachers in areas with limited home internet access; wireless hot-spots with devices for students in areas with limited home internet access.)

Professional Learning and Infrastructure Support

Participation in professional learning opportunities remained low despite a large number of resources developed and positive feedback on those resources. In Year 4, the LTT team continued to develop hundreds of online resources and in-person or hybrid professional development opportunities for teachers in schools that opted into the MLTI program. However, participation in these opportunities remained low, with fewer than a third of teachers reporting participating in any category of MLTI professional learning and declines in the percentage of teachers reporting participating in coaching, live online offerings, and online self-paced learning relative to prior years.

Recommendation. Better target professional learning resources by involving teachers and school administrators in decisions about the content, delivery, and timing of professional learning opportunities to ensure that teachers are aware of these opportunities, able to attend, and motivated to participate.

Coaching was one category of professional learning that has consistently shown lower levels of participation. Across Years 2 through 4 of the MLTI program, no more than 10% of teachers have ever reported participating in coaching with the MLTI Ambassadors. It is unclear from the data whether this is an issue of teachers' motivation to schedule coaching sessions, barriers to teachers' ability to schedule coaching sessions, or limitations in the availability and capacity of MLTI Ambassadors to reach all teachers. However, regardless of the cause of low participation, these findings may suggest the need for alternative approaches to providing coaching.

Recommendation. Consider alternative methods to MLTI coaching (e.g., a community of practice approach) that remove barriers of access for teachers and allow more efficient use of MLTI Ambassadors time and expertise.

There is a need for professional development on ways to use technology to encourage student collaboration and support differentiated instruction. One category of professional learning that teachers expressed interest in receiving more of was on the use of technology to support nontraditional, student-centered instructional approaches. Specifically, only about a third of teachers reported using technology to help provide instruction to students with different ability levels at least once a week.

Recommendation. Provide targeted professional development resources and opportunities on the use of technology for differentiated instruction and to support student collaboration.

Student Leadership Opportunities

This year’s Student Conference was well organized, but some students requested additional on-site supports. Overall, students had very positive feedback on the Student Conference. Most students were satisfied with the overall organization and content of conference sessions. However, students expressed a need for help navigating the university campus and for more educators to be available to ask questions during session activities.

Recommendation. Provide a welcome packet to students that includes a map of campus and enlist students from the university to volunteer to act as ambassadors to the visiting students. Ensure that there is at least a 1:10 ratio of educators to students in sessions that include student-centered activities.

Students most enjoyed leadership opportunities that provided them with hands-on opportunities to design and create their own projects. In both the SLAM program and the Student Conference, students reported that they most enjoyed participating in the activities that gave them opportunities for choice and creativity. For example, students in the SLAM Showcase expressed the most interest in learning about programs like TinkerCAD, which allow students to design and generate their own 3D models. Similarly, students who attended the Student Conference most enjoyed sessions where they could create their own designs from scratch (i.e., designing a digital escape room), including opportunities for activities that did not require their laptop.

Recommendation. Design session activities that provide students with multiple possible ways to approach the task and nondigital “unplugged” activities that supplement or support activities that are done on students’ devices.

VI. Conclusion

Overall, in the 2024–25 school year, the MLTI program successfully supported staff and students at hundreds of Maine schools through the provision of computing devices, professional learning opportunities, and student leadership opportunities. Program participants provided positive feedback on these resources and services.

Outcomes showed that levels of professional development on technology offered and the proportion of teachers and students receiving 1:1 devices remained similar to what has been reported in past years. Most teachers generally felt well-supported by their schools in the use of technology, although some teachers expressed a lack of clarity in expectations about the use of technology from school leaders. Most students showed confidence in their digital competencies, with the lowest proportion of students expressing confidence in demonstrating digital citizenship. Overall, students in schools opting into the MLTI device program reported higher level of interest and engagement in their classes this year, compared with the 2021–22 evaluation year.

Based on an analysis of data collected on the implementation of program activities and program outcomes, the recommendations compiled in this report suggest several ways to streamline MLTI activities to make efficient use of available resources and target the needs of participating schools to increase participation.

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Appendix A. Details on the Evaluation Methods

Process Evaluation

The process evaluation took a mixed methods approach, incorporating multiple qualitative and quantitative data sources to understand the process of implementation of each of the three MLTI program components: Technology Provision, Professional Learning, and Student Leadership. For each component, analyses provide descriptive information for each school year about the extent to which MLTI activities and services were provided (EQ1), the level of participation in these services and activities (EQ2), and participant perceptions of the quality, relevance, and utility of the services and activities provided (EQ3).

Qualitative Analyses

Qualitative analyses encompassed technology coordinator and teacher interviews, a student focus group, and extant data (in the form of program artifacts) measuring each component of the MLTI program as shown in Exhibit A–1.

Exhibit A–1. Qualitative Data Sources for the Process Evaluation

Components	Subcomponents	Data sources		
		Interviews	Focus group	Artifacts ^a
Technology Provision	1:1 devices	✓		
	Supplemental grants	✓		v
	Broadband	✓		
Professional Learning	Self-paced			✓
	Coaching/events			✓
	Cybersecurity			✓
	Cyber safety			✓
Student Leadership	Student Conf./Winter Classic		✓	✓
	SLAM videos/showcase			
	CSEd Showcase			

^a These are extant data provided to the AIR evaluation team by the LTT team.

The analysis of qualitative interview and focus group data was systematic and used a multistep comparative approach (Strauss & Corbin, 1990). The AIR evaluation team used NVivo software to support the coding of themes across the data sources. The analysts reviewed code matrices to determine dominant themes and note relationships between various codes (Miles et al., 2014). To ensure that the codes were applied consistently, the team compared coding across analysts. The evaluation team identified common themes and divergent cases that defined the key responses related to the key domains of the implementation framework.

To categorize artifacts (e.g., artifacts of supplemental grants; self-paced learning videos/podcasts; programming materials), the AIR evaluation team conducted qualitative coding based on the names or content of artifacts. For example, the AIR team grouped self-paced learning playlists with similar themes under a single category (e.g., the Digital Citizenship 101 and News & Media Literacy playlists were grouped into the digital citizenship category). The evaluation team identified common themes in the artifacts that were related to the key domains of the implementation framework.

Quantitative Analyses

Quantitative analyses encompass data from teacher and student surveys and extant data (in the form of program records and feedback forms) measuring each component of the MLTI program as shown in Exhibit A–2.

Exhibit A–2. Quantitative Data Sources for the Process Evaluation

Components	Subcomponents	Data sources		
		Surveys	Program records ^a	Feedback forms ^a
Technology Provision	1:1 devices	✓	✓	
	Supplemental grants		✓	
	Broadband	✓	✓	
Professional Learning	Self-paced	✓	✓	
	Coaching/events	✓		✓
	Cybersecurity		✓	✓
	Cyber safety		✓	
Student Leadership	Student Conf./Winter Classic		✓	✓
	SLAM videos/showcase		✓	
	CSEd Showcase		✓	

^a These are extant data provided to the AIR evaluation team by the LTT team.

Quantitative analyses for the process evaluation consisted of descriptive statistics such as counts of participants or distributions of responses on survey items. For all prior years where there were comparable data, AIR reported results from Year 4 together with results from prior years to allow for comparisons on how program activities have changed over time.

Outcomes Evaluation

The outcomes evaluation primarily analyzed quantitative data from teacher and student surveys administered by the AIR evaluation team to a representative sample of participating MLTI schools to understand the relationship between the implementation of the MLTI program and school (EQ4), instructional (EQ5), and student (EQ6) outcomes (see Exhibit A–3). AIR conducted initial outreach to these schools by email and phone call, and LTT provided support with contacting nonresponsive schools. Qualitative data from technology coordinator interviews, teacher interviews, and student focus groups provided additional insights to enrich and contextualize the quantitative findings for school, instructional, and student outcomes, respectively.

Exhibit A–3. Quantitative Data Sources for the Outcomes Evaluation

Outcome domain	Outcome construct	Surveys	
		Teacher	Student
School	Strategic vision for technology integration ^{1,2}	✓	
	Professional development & capacity building ^{1,2}	✓	
	Equitable access to technology & resources ^{1,2}	✓	
	Cultivation of a digital culture ^{1,2}	✓	
	Continuous improvement & sustainability ¹	✓	
Instructional	Enhanced student engagement in learning		✓
	Development of critical academic skills	✓	
	Improved digital literacy & technology integration ²		✓
	Equitable access to learning opportunities ^{1,2}	✓	
Student	Increased student engagement		✓
	Foundational knowledge base ³		✓
	Improved relationship with tech ³		✓
	Informed citizenship ³		✓

Note. Survey data findings for these outcomes are supplemented with qualitative insights from (1) school technology coordinator interviews, (2) teacher focus groups, and (3) student focus groups.

For quantitative survey data, the AIR evaluation team provided descriptive analyses of individual items or constructs that measured outcomes within each outcome domain. For all prior years where there were comparable data available, the AIR team compared results to examine how these outcome metrics have changed over time. The AIR team analyzed qualitative data as described in the Process Evaluation section above, with relevant findings reported together with quantitative findings by outcome.

Psychometric Analyses of Survey Constructs

For outcomes measured on the survey, the AIR evaluation team conducted psychometric analyses of sets of survey items that capture important aspects of MLTI implementation. We used the Rasch rating scale model to assess whether there was evidence that the set of items were unidimensional¹⁶ and could be represented as a single scale construct (Andrich, 1978; Wright & Masters, 1982). For sets of items where there was evidence of unidimensionality, we generated an overall scale score for those items and reported measures of internal consistency (e.g., Cronbach’s alpha). Scale scores were then converted into the original response scales for ease of interpretation. For these scale scores, the AIR team reported the overall distribution of responses as well as disaggregated by school and classroom variables as described above. See Exhibit A–4 for the unidimensionality and scale reliabilities for the student survey, and Exhibit A–5 for the unidimensionality and scale reliabilities for the teacher survey.

Exhibit A–4. Outcome Constructs Represented in the Student Survey

Outcome domain	Outcome construct	Number of items	Uni-dimensional?	Scale reliability (α)
Instructional	Enhanced student engagement in learning ^a	5	Yes	0.82
	Improved digital literacy & technology integration	4	Yes	0.64
Student	Increased student engagement ^a	5	Yes	0.82
	Foundational knowledge base	12	Yes	0.91
	Improved relationship with tech	9	Yes	0.92
	Informed citizenship			
	Appropriate online behavior	3	Yes	0.85
	Digital citizenship	6	Yes	0.85

^a Results for the instructional and student outcomes for student engagement were measured using the same items on the student survey.

¹⁶ Evidence of unidimensionality was assessed using a principal component analysis of residuals. Scales with eigenvalues of less than 2 on the first component were determined to have evidence of unidimensionality (Raïche, 2005).

Exhibit A–5. Outcome Constructs Represented in the Teacher Survey

Outcome domain	Outcome construct	Number of items	Uni-dimensional?	Scale reliability (α)
School	Strategic vision for technology integration			
	Clarity and transparency of vision	3	Yes	0.95
	School leaders' role	2	Yes	0.90
	Professional development & capacity building	5	No	n/a
	Equitable access to technology & resources	3	No	n/a
	Cultivation of a digital culture	2	Yes	0.84
	Continuous improvement & sustainability			
	Internet and Wi-Fi access	2	Yes	0.98
	Device, support	2	Yes	0.98
	Instructional support	2	Yes	0.67
Instructional	Development of critical academic skills			
	Active use	2	Yes	0.79
	Constructive use	4	Yes	0.89
	Interactive use	3	Yes	0.94
	Improved digital literacy & technology integration			
	Use of technology for management	6	Yes	0.80
	Use of technology for instruction	3	Yes	0.89
	Equitable access to learning opportunities	2	No	n/a

Note. n/a = items did not form a scale and were reported individually.

Survey Sampling, Nonresponse, and Weighting Approach

In the 2023–24 school year, the AIR evaluation team used a stratified systematic sampling approach to select 28 schools (10%) from the population of 283 schools that opted into the MLTI program that year, in three stages. First, we grouped schools into those that did and did not receive a Teach with Tech grant. Then, within those two groups (“strata”), we created three additional strata representing the lowest, middle, and highest thirds of school-level proportions of students eligible for free or reduced-price lunch. Finally, the data were sorted by superintendent-level region, school level (elementary, middle, and high schools), and locale (rural: distant or remote, town or rural: fringe, and city or suburb), and 28 schools were systematically sampled from within each stratum, including at least one school from each of these characteristics.

Sampling weights were assigned as the inverse of the probability of selection based on the sampling strata described above, calculated as the number of sampled schools in each stratum divided by the total number of schools in those strata in the population. These sampling weights aim to increase the proportional representation of each school in the 28 sample schools to represent the total number of schools in each stratum from the full population of 283 schools that opted into the MLTI program in Year 3.

The Year 4 evaluation experienced low survey response rates at the school (43%), teacher (16%), and student (9%) level. Exhibit A6 provides the proportion of school, teacher, and student-level responses compared to the overall proportion of schools, teachers, and students in the sample, and the overall population, by various observable characteristics.

Exhibit A–6. Observable Characteristics of Schools, Teachers, and Students in the Survey Population, Sample, and Responses

	MLTI population	Sample	Responding		
	Schools (N = 238)	Schools (N = 28)	Schools (N = 12)	Teachers (N = 144)	Students (N = 730)
TWT grant					
No	0.90	0.50	0.45	0.24	0.20
Yes	0.10	0.50	0.64	0.76	0.80
Tertiles of FRPL					
Low	0.33	0.32	0.27	0.47	0.60
Medium	0.33	0.32	0.64	0.43	0.33
High	0.33	0.36	0.18	0.10	0.07
Region					
Aroostook	0.10	0.14	0.18	0.03	0.04
Penquis	0.11	0.14	0.2	0.28	0.23
Washington	0.07	0.07	0.18	0.08	0.05
Hancock	0.09	0.07	0.18	0.38	0.48
Mid-Coast	0.11	0.11	0.09	0.12	0.11
Western	0.14	0.07	0.00	0.00	0.00
Cumberland	0.12	0.14	0.09	0.00	0.00
Kennebec	0.17	0.18	0.09	0.10	0.08
York	0.08	0.07	0.00	0.00	0.00

	MLTI population	Sample	Responding		
	Schools (N = 238)	Schools (N = 28)	Schools (N = 12)	Teachers (N = 144)	Students (N = 730)
Locale					
City/Suburb	0.17	0.25	0.18	0.19	0.18
Rural	0.57	0.54	0.82	0.53	0.40
Town	0.25	0.21	0.09	0.28	0.41
School Level					
Elementary	0.24	0.14	0.09	0.00	0.00
Middle	0.56	0.68	0.82	0.90	0.95
High	0.20	0.18	0.18	0.10	0.05

Note. TWT = Teach with Tech; FRPL = free- or reduced-price lunch.

To attempt to reduce bias introduced through nonresponse, the AIR evaluation team weighted survey results using the sampling weights described above and calibrated to reflect school- and individual-level nonresponse. Calibration was conducted within five strata representing important contextual factors related to technology access and use in Maine: geographic locale (rural: distant or remote, town or rural: fringe, and city or suburb) and the proportion of students in the school that are eligible for free- and reduced-price lunch.

To calibrate the sampling weights based on school nonresponse, the AIR evaluation team calculated a ratio of the total number of schools in each stratum divided by the sum of the sampling weights for schools that received any teacher or student survey responses in each stratum. Then, this ratio was multiplied by schools' sampling weight. To calibrate weights based on individual (teacher or student) nonresponse, the AIR team calculated a combined school and individual weight, using the inverse proportion of individual survey response rates within each school, multiplied by the school-level weights generated above. Next, the AIR team calibrated these combined weights by multiplying them by a ratio of the total number of individuals in each stratum divided by the sum of the weights for individuals with responses within each stratum.

Overall, there were minor differences (fewer than 10 percentage points) in the weighted survey results. However, these differences did not impact the overall interpretation of the findings. Therefore, the AIR team reported the weighted results in the body of the report. The corresponding unweighted results are available from the evaluation team upon request.

Appendix B. Extant Data Table

This appendix provides a detailed list of the extant data on MLTI program activities collected by AIR from the LTT team. Exhibit B–1 provides the specific data source received, a detailed description of the specific properties of the data received, and the timing of data collection, for each relevant MLTI program component and subcomponent.

Exhibit B–1. Specific Properties and Timing of Extant Data Requests for Analysis of Implementation of Program Components in Years 4–6

Component	Subcomponent	Specific data source	Description of data properties requested	Timing
Technology Provision	1:1 devices	MLTI Eligible Unit Opt-in Agreement	A list of schools that have opted to participate in MLTI	Fall
		Purchase and ordering reports from vendors	Number and type of devices ordered	Winter
		Device deployment survey conducted by Maine Department of Education	Timing of device delivery and distribution	Spring
		Administrative records about student enrollment and teacher employment	Number of students and teachers per school, to indicate student-to-device and teacher-to-device ratios	Spring
		School technology allocations	Number of student and teacher devices allocated per school	Winter
	Supplemental grants	#TWT grant award amounts per school	A list of schools receiving each grant and the amount of the grant	Fall
		#TWT grant purchase records	A description of the type and quantity of technology purchased with grant funds	Winter
		#TWT grant artifacts	Documentation of the use of grant-funded technology	Spring
	Broadband	MSLN broadband data	Participation in program and broadband speed	Winter

Component	Subcomponent	Specific data source	Description of data properties requested	Timing
Professional Learning	Self-paced	Applications for professional development credits	Number of teachers who applied for professional development credits through MLTI self-paced, online videos	Spring
	Coaching/ events	MLTI Ambassador coaching sessions	Attendance, date, location, and topic of MLTI coaching sessions	Spring
		MLTI professional learning events	Attendance, date, location, and topic of MLTI in-person professional learning events	Spring
		Professional learning artifacts	Self-paced learning videos/podcasts and calendar of professional learning events	Spring
		Professional learning feedback forms	Ratings of professional learning coaching and events	Spring
	Cybersecurity	District or school cybersecurity site visits	Attendance, date, location, and topic of IT specialist meetings with district and school staff	Spring
		IT feedback forms	Ratings of IT support visits	Spring
	Cyber safety	Participation in cyber safety program	Number of teachers who enrolled in CommonSense Media cyber safety program	Spring
Student Leadership	Student Conf./ Winter Classic	Participation in the Student Conference	Event registration records	Spring
		Student Conference artifacts	List of Student Conference sessions	Spring
		Participation in the Winter Classic	Event registration records	Spring
		Student feedback forms	Ratings of Student Conference and Winter Classic	Spring
	SLAM videos/ showcase	Participation in SLAM	Event registration records	Spring
	CSEd Showcase	Participation in the CSEd Showcase	Event registration records	Spring

Note. All data sources were requested from the Maine Department of Education by AIR. #TWT = Teach with Tech.

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