PACIFIC
Research & Evaluation, LLC

TechSmart Initiative for Student Success
2016 Evaluation Report

Prepared for

Mt. Hood Cable Regulatory Commission

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Introduction

The Mt. Hood Cable Regulatory Commission (MHCRC) launched the TechSmart Initiative for Student Success in fall 2014, with plans to strategically invest a total of about $19 million through 2021 in local public schools to positively impact academic outcomes for all students in Multnomah County. The TechSmart Initiative provides grants and evaluation resources for Multnomah County school districts to identify effective classroom instruction that uses technology to foster improvement in academic outcomes for all students and to share the successful strategies across the school districts. The TechSmart Initiative is aligned with the collective effort of the broader community engaged in the All Hands Raised Partnership. The MHCRC invests in District efforts to close the achievement gap and make progress on the following academic outcomes key to student success:

Kindergarten Readiness ▮ 3rd Grade Reading ▮ 8th Grade Math ▮ 9th Grade Credit Attainment ▮ High School Graduation ▮ English Language Learners' Annual Progress

The MHCRC works closely with each school district as a planning and funding partner to develop a grant project plan tailored to each individual district's priorities. The MHCRC has two overarching goals for the TechSmart Initiative:

Goal 1: School districts funded by MHCRC grant investments will understand and implement effective instructional strategies and practices that use technology to foster improvement in academic outcomes for all students.

Goal 2: The MHCRC and school districts will validate and disseminate effective instructional strategies and practices that use technology to foster improvement in academic outcomes for all students.

The MHCRC developed a Framework for Successful Technology Implementation, which drew upon research and evidence-based practice for successful implementation of technology integration in education. Pacific Research and Evaluation (PRE), as the leader of an evaluation for the TechSmart Initiative, worked with MHCRC and its staff to design an evaluation around the Framework and create a logic model with outcomes for each of the seven factors described below. A copy of this logic model is included in the evaluation planning tool in Appendix A.

The MHCRC framework encompasses seven factors identified as essential for schools to effectively transform into technology-rich teaching and learning environments. The factors are not isolated from each other; many are linked and substantially overlap.

- **Teaching Effectiveness:** District supports regular, inclusive and shared professional development among teachers.
- **Digital Age Learning Culture:** District embraces cultural shift and views technology as positive.
- **Visible Leadership:** District leaders are actively involved and working with key communities to accomplish change.

- **Data Driven Improvement:** Current, relevant and high quality data from multiple sources are used to improve schools, instruction, professional development and other systems.
- **Funding & Budget:** District's budget repurposes resources and seeks outside funding to focus on promising practices and technology supports.
- **Strategic Planning:** District strategic plan reflects shared commitment to improving outcomes for students.
- **Engaged Communities & Partners:** Parents, stakeholders, community groups and others are actively and systemically involved in helping students develop, learn and achieve.

The TechSmart logic model includes short-term, intermediate, and long-term outcomes within each of these elements. This evaluation report assesses the short-term outcomes associated with each element of the framework. To assess these outcomes within each district, PRE and the MHCRC project manager worked with each district to develop an evaluation planning tool (see Appendix A). Table 1 shows when each district received its TechSmart grant funding and the project's area of focus.

Table 1. Grantee Funding Date and Focus Area

District	Year Funded	Grade	Focus Area
David Douglas	2014	K-3	Kindergarten Readiness; 3rd Grade Reading; ELL
Parkrose	2014	9-12	9th Grade Credit Attainment; High School Graduation; ELL
Reynolds	2015	7-9	8th Grade Math; ELL
Portland Public Schools	2015	K-3	3rd Grade Reading; ELL
Gresham-Barlow	2016	K-3	3rd Grade Reading; ELL
Centennial	TBD	TBD	TBD

Table 2 is a timeline for the TechSmart grant investments for each district. David Douglas and Parkrose were the first grantees in 2014–15 and will wrap up their initial grants at the end of the 2016–17 school year. Reynolds School District received its grant in 2015 and began implementation immediately. Portland Public Schools received a five-year grant in 2015 and used the 2015-16 school year as a planning year, with implementation starting in 2016–17. Gresham-Barlow School District will begin implementation in the 2016-17 school year and Centennial School District is currently in the final stages of grant development.

Table 2. Grant Timelines

District	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
David Douglas						
Parkrose						
Reynolds						
Portland Public		Planning				
Gresham-Barlow						
Centennial	**To be decided**					

This report describes evaluation results for the three districts that began implementing their grants by the beginning of the 2015–16 school year: David Douglas, Parkrose, and Reynolds. Project descriptions for each of these school districts are included below followed by the data collection methods used for the evaluation in each district during the 2015–16 school year, results specific to each district, and a summary of results across all grants. Each district's section of this report is organized by the Framework factors with corresponding evaluation questions and outcomes; each section describes the district's grant efforts as an introduction to the evaluation results.

Project Descriptions

David Douglas School District

David Douglas School District (DDSD) began implementation of its MHCRC TechSmart grant during the 2014–15 school year with K-3rd grade classes at Earl Boyles Elementary School. The grant assists in the creation of a technology-supported early learning program at Earl Boyles in two ways. First, the grant allows the purchase of equipment including iPads, Chromebooks, Smart Boards, translation headsets, and other hardware for students and teachers, along with the appropriate educational software needed to support learning. Second, the grant provides extensive professional development (PD) to support teachers and staff members in transitioning to and understanding effective uses of online digital content and resources that utilize technology to create engaging and supportive learning environments for all students. This has included formal PD workshops and informal support from an onsite technology integration coach. DDSD's grant focuses on academic outcomes of kindergarten readiness, 3rd grade reading, and English language learners' progress. DDSD completed its second year of implementation in 2015–16 and has made progress toward MHCRC TechSmart Initiative goals.

Parkrose School District

Parkrose School District's (PSD) MHCRC TechSmart grant provides technology infrastructure and teacher PD to support one-to-one student devices at Parkrose High School. The grant funded the creation of a reliable wireless network at Parkrose High School to support the implementation of all students using iPad Minis, which commenced in fall 2014, to seamlessly access content throughout the school. The TechSmart grant also funds PD to support high school teachers in transitioning to the use of online digital content and resources that take advantage of technology to create effective learning environments for students. PSD'd goal for these efforts is to improve the district's performance on the student success indicators of 9th grade credit attainment, English language learners progress, and high school graduation.

Reynolds School District

Reynolds School District's (RSD) MHCRC TechSmart grant focuses on improving student achievement in 8th grade math, 9th grade credit attainment, and English learners' progress. Reynolds chose to focus on these outcomes because in the 2013–14 school year, 44% of students in the district were English language learners. In addition, less than half of students completing their first year of high school were on track to graduate (earning six or more credits), and math was the most frequently failed course. RSD is using the grant for middle and high school math classroom technology and related teacher PD.

RSD completed its first year of project implementation in the 2015–16 school year. Administrators used a staggered rollout method to select a cohort of 13 math teachers from the three middle schools and Reynolds High School for the 2015-16 school year. The math teachers received teacher and student

technology devices including Microsoft Surface Pros (teachers), short throw projectors, Dell Venues (students), and 3D printers. In addition to receiving the devices, the math teacher cohort participated in PD sessions in the summer prior to the school year and throughout the year that focused on using technology to support math education and English language development.

Methods

Teacher Technology Surveys

Each district completed a teacher survey at one or two time points during the year depending on the district's preexisting teacher surveys. The teacher survey asked questions about PD activities, technology skill level, frequency and level of technology integration, most commonly used digital resources, and the culture of support for technology integration in the district (see Appendix B).

David Douglas School District: The district administers a teacher technology survey at three time points during the school year as part of its internal TechSmart project evaluation (beginning, middle, and end of year). PRE worked with the technology integration coach to add questions to these planned teacher surveys at the middle and end of the year and received access to the resulting data. Out of the 19 teachers involved in the project, 16 teachers completed the mid-year survey, and 13 completed the year-end survey.

Parkrose School District: PRE designed an online teacher survey in April 2016 that school administrators distributed via email to all High School teachers involved in the TechSmart grant; 27 out of 48 teachers completed this online survey.

Reynolds School District: PRE designed a survey that was administered online to teachers twice during the 2015–16 school year, in January and May of 2016. Teachers on special assignment (TOSAs) administered the surveys immediately after the PD sessions for the TechSmart project. All 13 teachers involved with the TechSmart project completed the mid-year survey in January, and six teachers completed the survey distributed in May.

Teacher Interviews

PRE conducted teacher interviews or focus groups with a sample of teachers from each district during the 2015–16 school year. Teacher interview questions focused on examples of enhanced instructional strategies, the usefulness of the PD activities, the culture of support for technology integration, and effects on student engagement and academic outcomes. See Appendix C for the complete interview protocol.

David Douglas School District: PRE conducted interviews with six teachers at Earl Boyles on May 27, 2016. The evaluation team utilized the teacher survey data and assistance from the Earl Boyles technology integration coach to select teachers with varying levels of technology integration.

Parkrose School District: PRE facilitated a focus group with five staff members (three teachers, one administrative assistant, and one librarian/iPad tech) who were involved in TechSmart grant implementation at Parkrose High School.

Reynolds School District: PRE facilitated a focus group with five teachers involved in the TechSmart grant in Reynolds School District. Teachers involved in the project volunteered to stay after a TechSmart PD session, and the district provided them with financial compensation for their time.

District Leader Interviews

PRE facilitated district leader interviews or focus groups in spring 2016 with school principals and administrators in each TechSmart district. Leaders discussed perceptions of teacher progress and student achievement outcomes related to the project, the district's strategic plan for technology including funding decisions, and how they were working to engage communities in their efforts. See Appendix D for the complete interview protocol.

David Douglas School District: In spring 2016 PRE conducted interviews with the director of curriculum and instruction, the director of technology and assessment, the Earl Boyles principal, and the technology coach.

Parkrose School District: In spring 2016 PRE conducted interviews with three district leaders from Parkrose High School: the director of technology, the school improvement director, and the high school principal.

Reynolds School District: PRE facilitated a focus group in spring 2016 with five leaders including school principals and assistant principals, and district staff members.

Student Surveys

For TechSmart projects targeting middle and high school students, a student survey was administered to answer questions on how technology in the classroom has affected student engagement and learning, and whether student opinions about the use of technology have changed as a result of the enhanced integration. Students provided examples of technologies that they would like to see more of in the classroom. The survey is in Appendix E.

Parkrose High School: The online student survey was distributed in May 2016 to all students and 500 students completed it, for a response rate of 45.3%. The number of students in each grade who completed the survey is shown in Table 3.

Table 3. Parkrose HS Student Survey Responses

Grade	n	% of total responses
9th	157	31.4%
10th	127	25.4%
11th	119	23.8%
12th	97	19.4%

Reynolds School District: Staff members administered the student survey online in June 2016. The survey was distributed to students who were participating in a class taught by one of the teachers in the TechSmart math cohort, and 308 students completed it. Table 4 shows the grade levels of students who completed the survey. One student did not report their grade level.

Table 4. Reynolds Student Survey Responses

Grade	n	% of total responses
6th	1	0.3%
7th	186	60.6%
8th	63	20.5%
9th	54	17.6%
10th	3	1.0%

Project Status Reports

Each district submits grant project status reports twice yearly through the MHCRC grants management system. PRE and MHCRC staff developed the report requirements to provide updates from each district on various elements of the logic model. Information from the status reports relevant to the TechSmart logic model is used by PRE in the evaluation of a district's progress on TechSmart goals.

Cohort Studies of Student Achievement

PRE is receiving student-level data from the Oregon Department of Education (ODE) and directly from the school districts, which will be used to analyze the relationship between TechSmart investments and key student outcomes. The key outcomes to be examined for students are included in Table 1. The 3rd grade reading and 8th grade math outcomes will be evaluated using data from the Smarter Balanced Assessment which is referenced many times throughout this report and described below. There is a one-year time lag in ODE data, and as a result, the student data provided in this report are for the two districts whose grants started in the 2014-15 school year as summarized below.

Smarter Balanced Assessment

Oregon is part of a team of states working together voluntarily to develop K-12 assessments in English language arts/literacy and mathematics aligned to Oregon's Common Core State Standards. These tests are called Smarter Balanced assessments. Delivered online, these tests include questions that adapt to each individual's performance and feature new "Performance Tasks" that mimic real world application of students' knowledge and skills.

David Douglas School District

The impact of the TechSmart grant investment at Earl Boyles will be examined through comparative analysis with a concurrent group of students as well as a historical comparison group. The planned historical cohort included students in kindergarten at Earl Boyles in the 2010-11 school year, followed through 3rd grade (2013-14). However, after working with DDSD, it was determined that no outcome data are available for students in the 2010-11 school year. For this reason, PRE has decided to shift the historical comparison cohort to start with Earl Boyles kindergartners in the 2011-12 school year and to follow these students through 3rd grade in the 2014-15 school year. This will require the request of the appropriate data from ODE, which will occur in the spring of 2017. Analyses with the historical cohort will be included in the 2018 annual report.

For the concurrent cohort analysis, the treatment group included students who were kindergarteners in 2014-15 at Earl Boyles during the first year of TechSmart funding, and the concurrent comparison group is a matched cohort of students created from all the 2014-15 kindergarteners in DDSD outside of Earl Boyles. Students were matched using case control matching on the following at-risk indicators: Limited

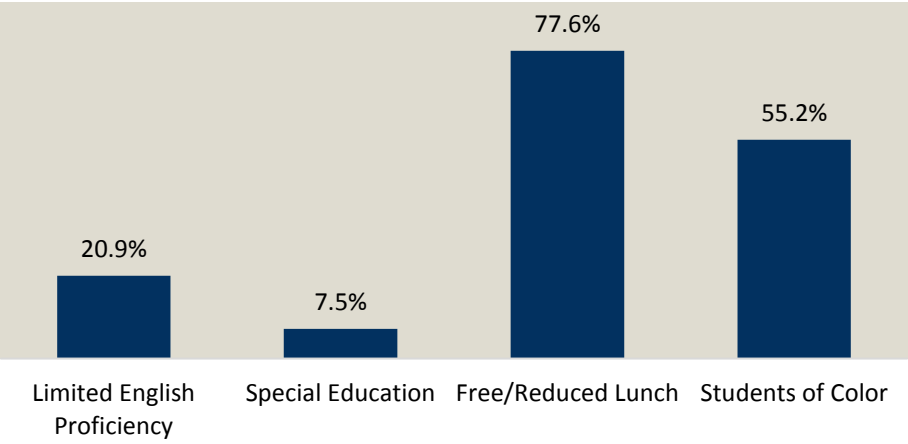
English Proficiency (LEP) status, Special Education status, free and reduced lunch status, and ethnicity. This resulted in 67 treatment students and 67 comparison students. These two groups will be followed throughout the grant implementation to assess the impact of the grant investment on student achievement outcomes. For the 2014-15 school year, outcomes include ELPA and EasyCBM scores for kindergarten students.

One of the longer-term outcomes of the TechSmart Initiative is to reduce the achievement gap by improving academic outcomes for LEP learners, Special Education students, and students of color. These are referred to as "student subgroups." The TechSmart Initiative Logic Model uses "Common Criteria" for identifying promising and effective instructional strategies and practices. The criteria include, among others:

- Promote progress for all student subgroups in achieving outcomes. (Promising)
- Indicate promise as a means of closing the achievement gap. (Promising)
- Correlate with measurable improvement for a student cohort in an AHR academic outcome area. (Effective)
- Be validated in multiple settings and with additional student cohorts. (Effective)
- Indicate evidence of reducing the achievement gap among student subgroups. (Effective)

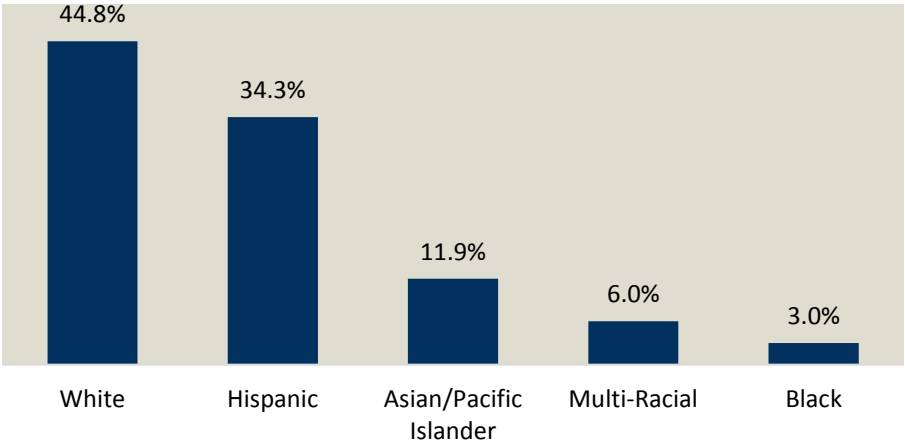
In order to assess progress toward reducing the achievement gap, student outcomes for each subgroup will be examined over time for treatment and comparison groups. Figure 1 shows the student subgroups for the treatment and concurrent comparison groups for 2014-15 DDSD kindergarteners. The cohorts of students for the treatment and comparison groups were matched on the at-risk indicators so that the percentage of students in these subgroups is the same for the treatment and comparison groups. Analysis of student data will be separated by these subgroups in later sections of this report.

Figure 1. David Douglas At-Risk Indicators
(n = 134)



The treatment and concurrent comparison groups in DDSD were also matched on variables of race/ethnicity. Therefore, the breakdown of race/ethnicity is provided for both groups in Figure 2. The percentage of American Indian/Alaskan Native students was zero.

Figure 2. David Douglas Race/Ethnicity
(n = 134)



Parkrose High School

In order to examine the impact of the TechSmart grant investment in Parkrose HS, comparative analyses will be conducted using a historical comparison group only. A concurrent comparison group was not created for Parkrose since the grant targets high school students and PSD has only one high school. The table below presents the number of students in our treatment and historical comparison groups by year. The results presented in this report compare 9th grade students from the 2014-15 school year to 9th grade students starting in the 2010-11 school year. The treatment group cohort of 247 students will be tracked throughout grant implementation in order to understand the grant investment impact on student achievement. The All Hands Raised outcomes of 9th grade credit attainment and ELPA test scores for the treatment and historical comparison groups are examined in later sections of this report.

Table 5. Treatment and Historical Comparison Group Sample Size

Treatment Group		Historical Comparison Group	
Year	**N**	**Year**	**N**
2014-15 (9th)	247	2010-11 (9th)	182
		2011-12 (10th)	182
		2012-13 (11th)	177
		2013-14 (12th)	179

Figure 3 below presents the at-risk indicators for the treatment and historical comparison group of students at Parkrose HS. Overall, there were a higher percentage of treatment group students identified as in Special Education and qualifying for free and reduced lunch, and a lower percentage of treatment group students with Limited English Proficiency (LEP) status as compared to the historical comparison group during Year 1. Specifically, Figure 3 shows that 10.4% of the historical comparison group students had LEP status at baseline compared to 6.5% of treatment group students. For Special Education status, 9.9% of the historical comparison group were identified as in Special Education or had an Individualized Education Plan (IEP) compared to 15.8% of the treatment group. Finally, a much higher percentage of treatment group students had free and reduced lunch status compared to the historical comparison group.

Figure 3. Parkrose At-Risk Indicators

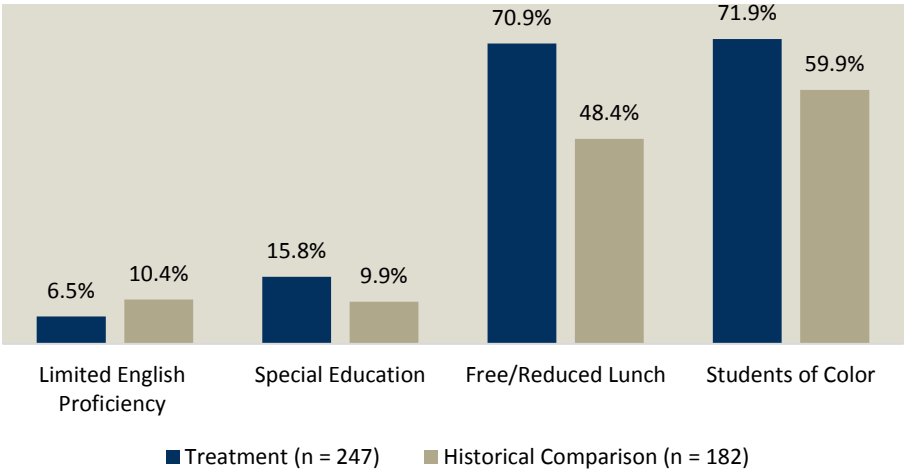
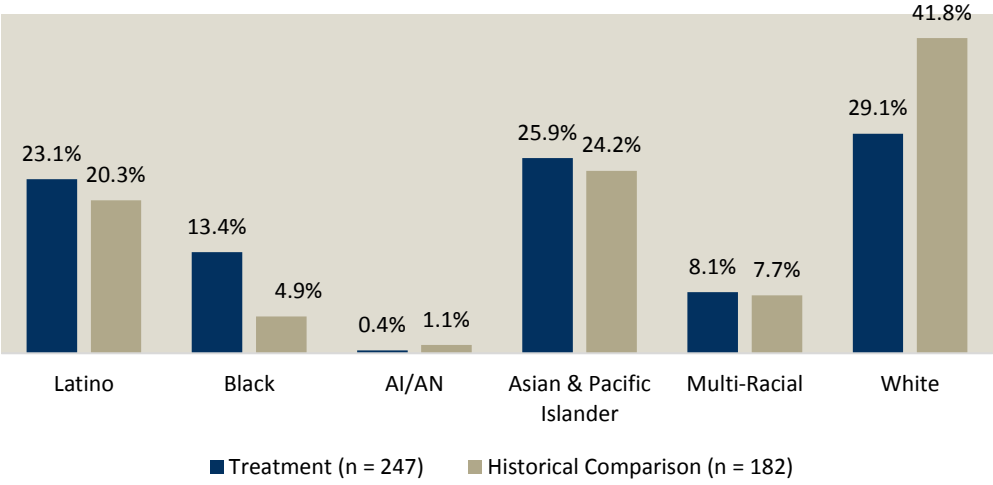


Figure 4 below provides a summary of the breakdown for students of color in the treatment and historical comparison groups and shows a higher proportion of white students in the historical comparison group relative to the treatment group.

Figure 4. Parkrose Race/Ethnicity



David Douglas School District

Project Summary

David Douglas School District (DDSD) began implementation of its MHCRC TechSmart grant during the 2014–15 school year with K-3rd grade classes at Earl Boyles Elementary School. The grant assists in the creation of a technology-supported early learning program at Earl Boyles in two ways. First, the grant allows the purchase of equipment including iPads, Chromebooks, Smart Boards, translation headsets, and other hardware for students and teachers, along with the appropriate educational software needed to support learning. Second, the grant provides extensive professional development (PD) to support teachers and staff members in transitioning to and understanding effective uses of online digital content and resources that utilize technology to create engaging and supportive learning environments for all students. This has included formal PD workshops and informal support from an onsite technology integration coach. DDSD's grant focuses on academic outcomes of kindergarten readiness, 3rd grade remiddading, and English language learners' progress. DDSD completed its second year of implementation in 2015–16 and has made significant progress toward MHCRC TechSmart Initiative goals. DDSD's progress is presented below in terms of the seven essential factors for effective transformation to a technology-rich teaching and learning environment.

Teaching Effectiveness

Evaluation Question: Do districts support regular, inclusive, and shared professional development among teachers?

Teachers and district leaders in DDSD described the PD provided through the TechSmart grant as a mix of formal and informal PD opportunities. Formal support occurred in Year 1 of the grant and focused on technical assistance for using new tools such as Smartboards, RedCats, and Chromebooks. Informal PD took the form of an onsite technology integration coach offering support throughout the year. Through this informal coaching, teachers received pedagogical development as they learned news ways of teaching using technology. As the Earl Boyles principal stated, "The formal professional development was introducing the tools and the informal was job embedded targeting the instructional change… having the coach onsite has been critical."

When rating the usefulness of the group PD versus the individualized PD, 100% of teachers rated the individualized PD as extremely useful, compared to 61.5% who rated the group PD as extremely useful. Teachers consistently commented on the support of the technology integration coach and said that he has been integral to the adoption of new instructional strategies. For example, one novice teacher described the informal coaching:

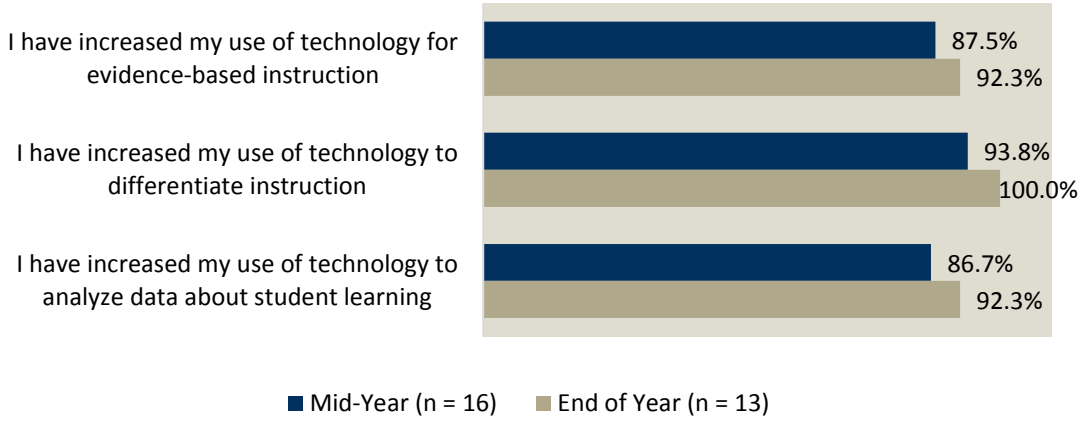
> "I think the one-on-one training is more helpful than the group training. Some of it was way over my head. I am one of the older teachers and I was not savvy. I got more one-on-one training than anyone else. Since this was in the technology coach's job description, I felt comfortable asking for help and that changed my whole world."

How is the professional development impacting teacher instruction?

PRE interviewed the Earl Boyles technology integration coach to assess the effects of coaching on teachers' instruction. The coach emphasized the importance the coach knowing both technology and pedagogy, and stated, "Pick the right person. Not only someone who knows technology, but a good teacher too. Someone who knows about instruction. I relate to the teacher and that breaks down the barrier."

All teachers who PRE interviewed said that they were using significantly more technology in their classroom as a result of the coaching. The technology integration coach at Earl Boyles is onsite full time and easily accessible when teachers need support. On the mid-year and year-end surveys, teachers described the extent to which the PD increased their use of technology for evidence-based instruction, differentiating instruction, and analyzing and using data about student learning. Figure 5 shows that by the middle of Year 2, the majority of teachers had increased their use of technology in each of these ways, and by the end of Year 2, between 90% and 100% of teachers were using these practices.

Figure 5. Earl Boyles ES Instructional Change Since Receiving Technology-Specific PD
(% Agree/Strongly Agree)



Teachers rated their technology skill level in the mid-year and year-end surveys, and data were also available for skill level from internal DDSD data collection at the beginning of the grant. The surveys asked teachers to rate themselves at one of the following five levels:

Level 1: I get someone else to do technology-based tasks for me.

Level 2: I accomplish assigned tasks, but I am more efficient when I don't use technology to do a job.

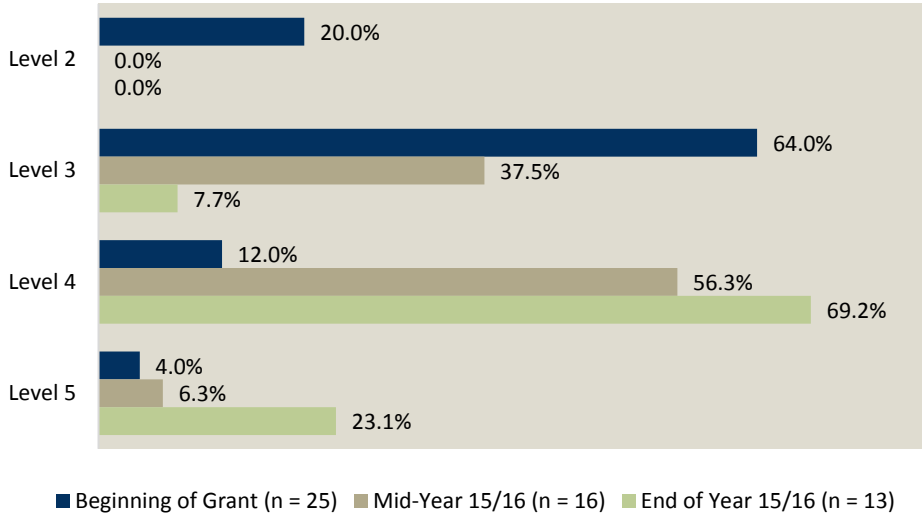
Level 3: I have enough skills to complete the management and communication tasks expected of me and occasionally will choose to use technology to accomplish something I choose.

Level 4: I use a variety of technology tools and I use them efficiently for all aspects of my job.

Level 5: I use technology efficiently, effectively, and in creative ways to accomplish my job.

As illustrated in Figure 6, a significant amount of change occurred in technology skill level during the last two years, with the majority of teachers moving from Level 3 to Level 4 or 5. By spring 2016, 92.3% of teachers rated themselves at Level 4 or 5. No teachers rated themselves at Level 1 for any of the three time points.

Figure 6. Earl Boyles ES Teacher Technology Skill Levels



Evidence of the increased skill levels of students can be seen in the type of requests for support being made by teachers. In the August, 2016 grant status report, the technology integration coach described this change. "Requests for coaching have changed. The teachers have moved from asking 'how' to asking, 'what do you think.' For example, earlier a teacher requested that I explain how Google Classroom works and how to push assignments to students. This has changed to teachers asking me what I think of a new unit that they created and assigned to students."

What new instructional strategies are teachers reporting?

The surveys asked teachers to provide examples of instructional strategies that have been particularly effective in their classrooms and to rate them on a scale of one to five. Teachers responded to this question by listing the technology supports that they were using to alter instruction. The most common tools reported are listed in Table 6, along with the average effectiveness rating.

Table 6. Earl Boyles ES New Technology Used for Instruction

Technology Supports	Effectiveness Rating Mid-Year	Effectiveness Rating End of Year
Smartboard	4.3 (n = 6)	4.3 (n = 3)
Online Resources such as Xtra Math, IXL, RAZ-Kids	5.0 (n = 5)	4.8 (n = 4)
Google Classroom	3.8 (n = 4)	4.4 (n = 5)
RedCat	5.0 (n = 3)	--
iPads	4.0 (n = 3)	4.0 (n = 2)
Chromebooks	3.5 (n = 2)	4.0 (n = 1)

The online resources that teachers are using as part of their instruction were rated by teachers as the most effective new tools adopted at Earl Boyles ES. One teacher described using online applications to facilitate small-group instruction:

> "I having been using IXL for math where kids can earn little prizes and they really enjoy that. For reading we use Raz-Kids which is different from other applications where stories are read in a robotic voice so it is not as engaging. Raz-Kids is more engaging. When I am working with a small group others are doing Raz-Kids. The technology coach has been really great at introducing us to things we can us in our classroom."

How are the new instructional strategies impacting student engagement?

Teachers at Earl Boyles provided several examples of how the new technology has impacted student engagement. A couple of teachers noted that RedCat has been a great tool for enhancing instruction and impacting student engagement because students can more easily hear the teacher and students can use the device when speaking in front of the class, which gives shyer students more confidence. One teacher said, "The RedCat technology has been amazing for kids who are shy and they wouldn't stand in front of the classroom and now they will. It gives more kids a voice." Students have also become more engaged through the use of Google Classroom. Teachers have redesigned assignments that previously used paper and pencil to be completed through Google Classroom, which has led to students being more excited about the projects. For example, one teacher adapted a student research assignment to be completed using Google Classroom for the first time:

> "Students are so much more engaged. In the past, for our animal research projects, students would write notecards and draw a picture to present to the class. This year we used Google slides through Google classroom. They could use pictures and bullet points on their slides. No one is complaining. They want to do their speech. They are so excited about it."

On the August, 2016 project status report, the technology integration coach provided an example of how Google Classroom is engaging students: "When assignments and projects are posted in Google Classroom, you give the control of learning to the student. They can go at their own pace and ask questions along the way. When teachers deliver instruction about content in front of students, there are some who understand and many who don't. Posting projects on Google Classroom gives the students the power to research on their own (or with help from parents at home) or repeat the videos if they did not comprehend. It's very powerful!"

Are the new instructional strategies showing promise for improving academic outcomes?

Teachers had mixed reports about whether new instructional practices were showing promise for improving academic outcomes, primarily because annual student assessment data were not yet available at the time the teacher data collection took place. DDSD leaders observed the potential for improving student outcomes, as the Earl Boyles technology integration coach confirmed: "Student already have shown positive reports. We just got our results for reading. It was a 10% jump on the Smarter Balanced...I think the instruction and standards are the steering wheel, and technology is the accelerator." The technology integration coach also commented on this in the August, 2016 status report: "We are seeing

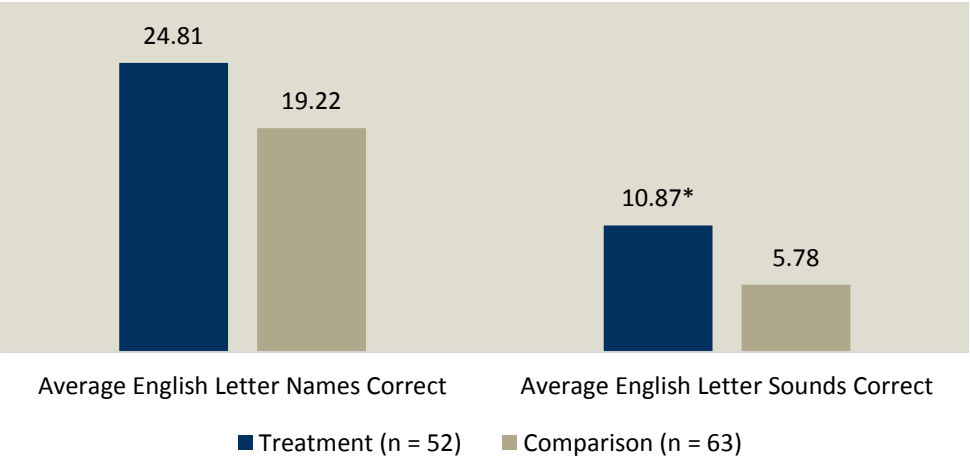
students now who are comfortable using technology. On the Smarter Balanced assessment, students are coming in with the skills because of using technology in their classes since kindergarten."

Preliminary comparative analyses were conducted to provide information about whether changes in instructional strategies are showing promise for improving student outcomes.

In order to provide context for treatment and comparison groups' academic outcomes at baseline for the comparative analyses, PRE examined Kindergarten Readiness Assessment results for each group. The Kindergarten Readiness Assessment is administered in the first six weeks of kindergarten and is designed to measure what students know upon entering kindergarten. The components of the Kindergarten Readiness Assessment include Early Literacy, Early Math, and Approaches to Learning. Kindergarten Readiness data were available for all 67 treatment group students, and 66 of the 67 comparison group students.

The Kindergarten Readiness Assessment measures Early Literacy in two ways: the number of correctly named letters, and the number of letter sounds correctly identified. Figure 7 shows that students in the treatment group scored higher on these assessments on average than students in the comparison group. An independent-samples t-test revealed these differences were significant for letter sounds, t (113) = -2.72, p <.05, but not for letter names, t (113) = -1.59, p =ns.

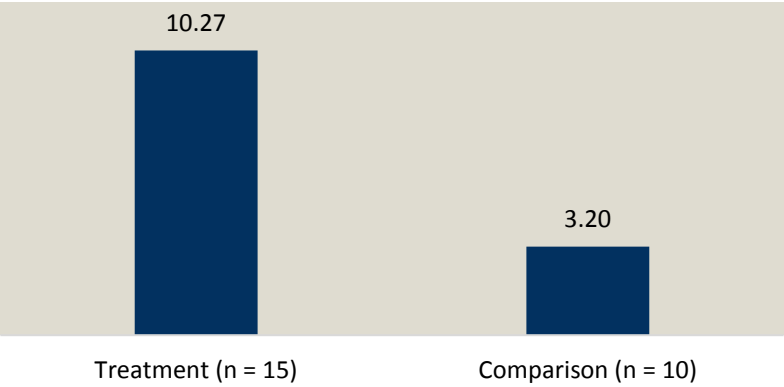
Figure 7. Average Early Literacy Scores



*Indicates a significant difference between groups

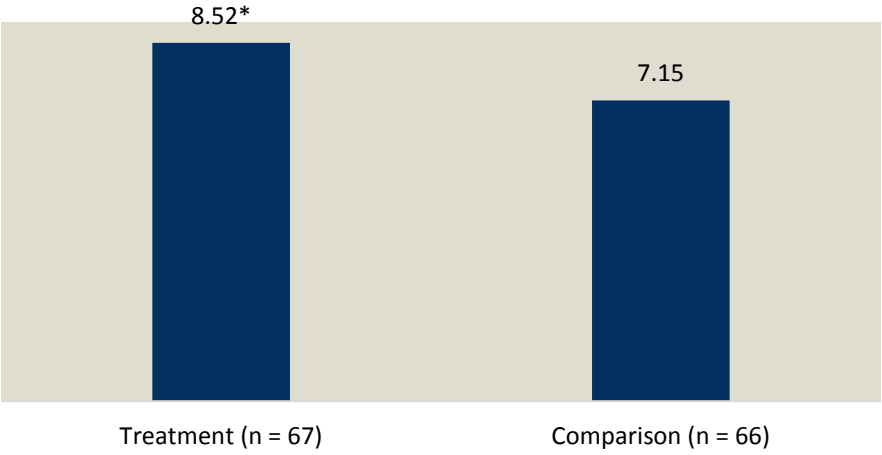
LEP Students whose home language is Spanish are given the opportunity to identify Spanish letter sounds, rather than English. Figure 8 shows that treatment group students identified more Spanish letter sounds than those in the comparison group. An independent-samples t-test revealed this difference was not significant, t (23) = -1.64, p =ns.

Figure 8. Average Spanish Letter Sounds Correct



The Early Numeracy section of the Assessment involves a test with 16 multiple-choice items related to number concepts and operations (counting the number of items, for example). As shown in Figure 9, treatment group students answered an average of 8.52 questions correctly, and comparison group students answered an average of 7.15 questions correctly. An independent-samples t-test revealed this difference was significant, t (131) = -2.63, $p < .05$.

Figure 9. Average Early Numeracy Items Correct



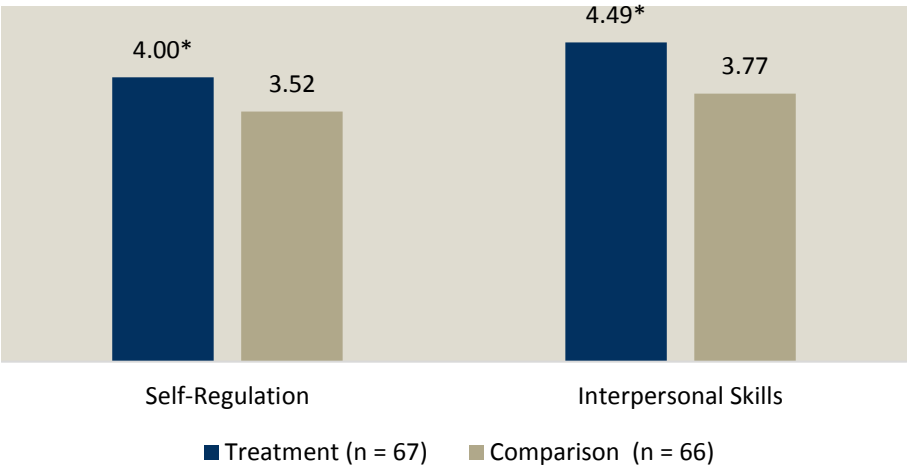
*Indicates a significant difference between groups

The Approaches to Learning section of the Assessment is completed by teachers for each student through observations. This section measures self-regulation and interpersonal skills. There are ten self-regulation items and five interpersonal skills items that are rated on the following scale:

1.	The child never exhibits the behavior described by the item.
2.	The child rarely exhibits the behavior described by the item.
3.	The child sometimes exhibits the behavior described by the item.
4.	The child frequently or usually exhibits the behavior described by the item.
5.	The child always exhibits the behavior described by the item.

Figure 10 presents average teacher ratings of students on self-regulation and interpersonal skills items. As shown, the treatment group scored higher than the comparison group on average for self-regulation, and an independent-samples t-test revealed this difference was significant, t (131) = -3.73, p <.01. In addition, an independent-samples t-test was conducted and showed Earl Boyles students scored significantly higher than comparison group students on interpersonal skills, t (131) = -4.97, p <.01.

Figure 10. Approaches to Learning Average Scores



*Indicates a significant difference between groups

Overall, results from this the Kindergarten Readiness Assessment showed that Earl Boyles' students entered into kindergarten slightly more "ready" in terms of Early Literacy, Early Math, and Approaches to Learning than the comparison group students. This places the treatment group students at a slight advantage in terms of achieving academic outcomes and this is taken into account when examining differences between these two groups in the sections below.

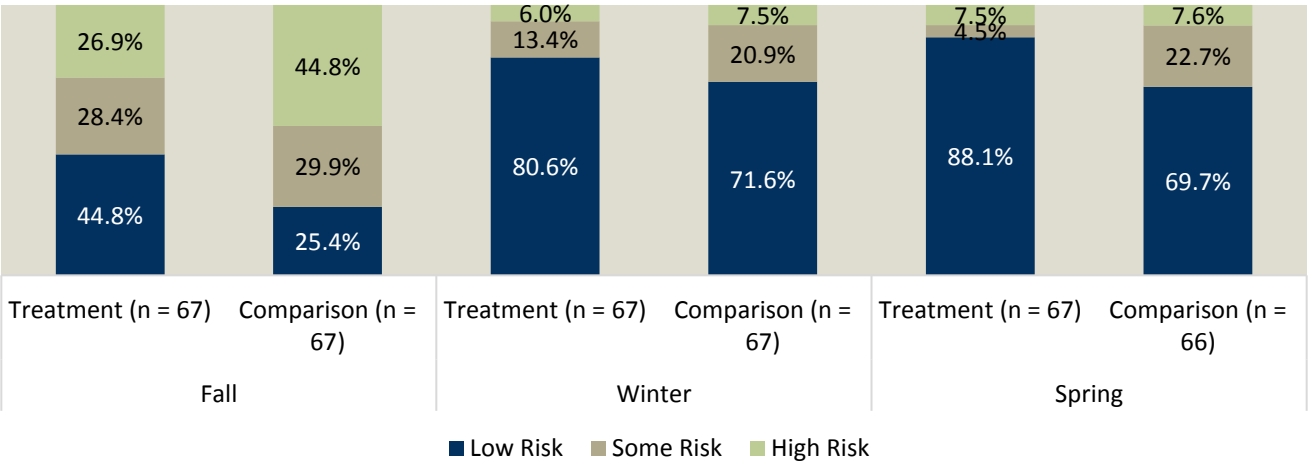
EasyCBM Scores

EasyCBM scores were examined during Year 1 of the grant to detect any preliminary impact of the TechSmart grant funding at Earl Boyles. The EasyCBM is a standardized test that Oregon students complete at three time points throughout the school year: fall, winter, and spring. Kindergarteners take a reading subject test. Results are presented for all students in the treatment and concurrent comparison groups, and broken down by the at-risk subgroups identified above.

Figure 11 shows that a higher percentage of the treatment group students started out in the low risk category on the EasyCBM assessment (44.8%) compared to the comparison group (25.4%) which is consistent with the Kindergarten Readiness Assessment results presented above. A chi-square test of independence was conducted and showed that the relationship between these variables was significant. X^2 (2, N = 134) = 6.62, p <.05, and that the treatment group had a significantly greater number of students starting out at low risk. By the end of the school year, the percentage of Earl Boyle's kindergarten students at low risk increased by 43.3% and the percentage of comparison group students at low-risk increased by 44.3%. By the spring time point, nearly 90% of treatment group students (88.1%) were

considered to be at a low risk and 70% of comparison group students (69.7%) were at a low risk for not meeting standards. A chi-square test of independence was conducted and showed that the relationship between these variables was significant at the spring time point as well. X^2 (2, N = 133) = 9.60, p <.01.

Figure 11. EasyCBM Scores for Treatment and Comparison Groups

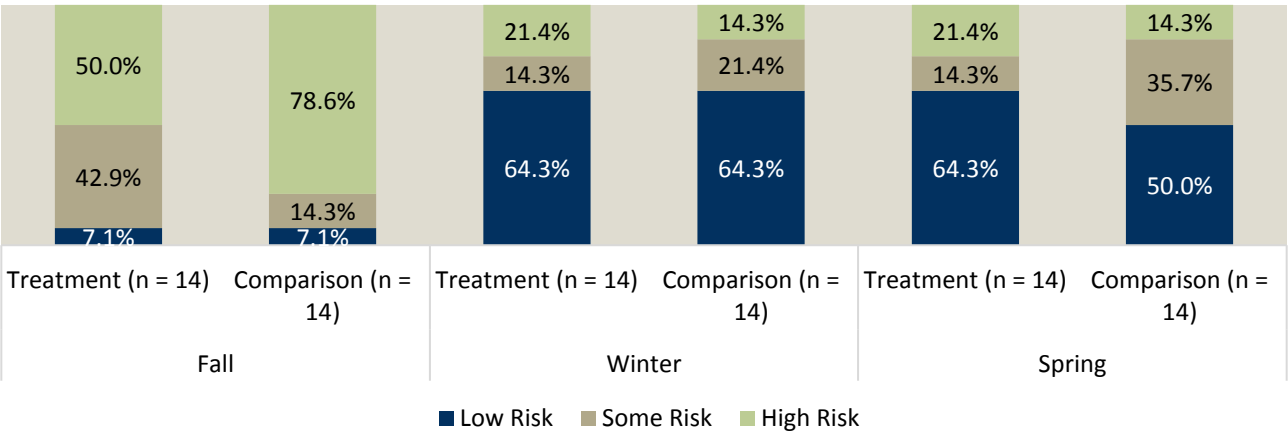


Instructional practices show promise for improving student academic outcomes with at-risk student subgroups (i.e., students of color, low SES, LEP, special education (or those with an IEP), and those not on track to meet academic standards).

In order to gain insight into whether instructional practices are showing promise for improving academic outcomes with at-risk student subgroups, EasyCBM scores were examined by subgroup for treatment and comparison group students.

EasyCBM scores for students with Limited English proficiency (LEP) were compared for the treatment and comparison groups, as shown in Figure 12. The percentage of LEP students at low risk was the same for treatment and comparison group students in the fall and winter. By spring, a slightly higher percentage of Earl Boyles LEP students were testing at low risk.

Figure 12. EasyCBM Scores for LEP Subgroup



In Figure 13, EasyCBM scores are presented for students identified as in Special Education (SPED). Sixty-percent of SPED students at Earl Boyles were at low risk for not meeting standards at the beginning of the year compared to 0% of the comparison group showing that Earl Boyles students in this subgroup had significantly less room for growth. Overall, the percentage of Earl Boyles SPED students at low risk in the spring was 100% which indicates a 40% gain. The percentage of comparison group SPED students at low risk in the spring was 60% corresponding to a 60% gain.

Figure 13. EasyCBM Scores for SPED Subgroup

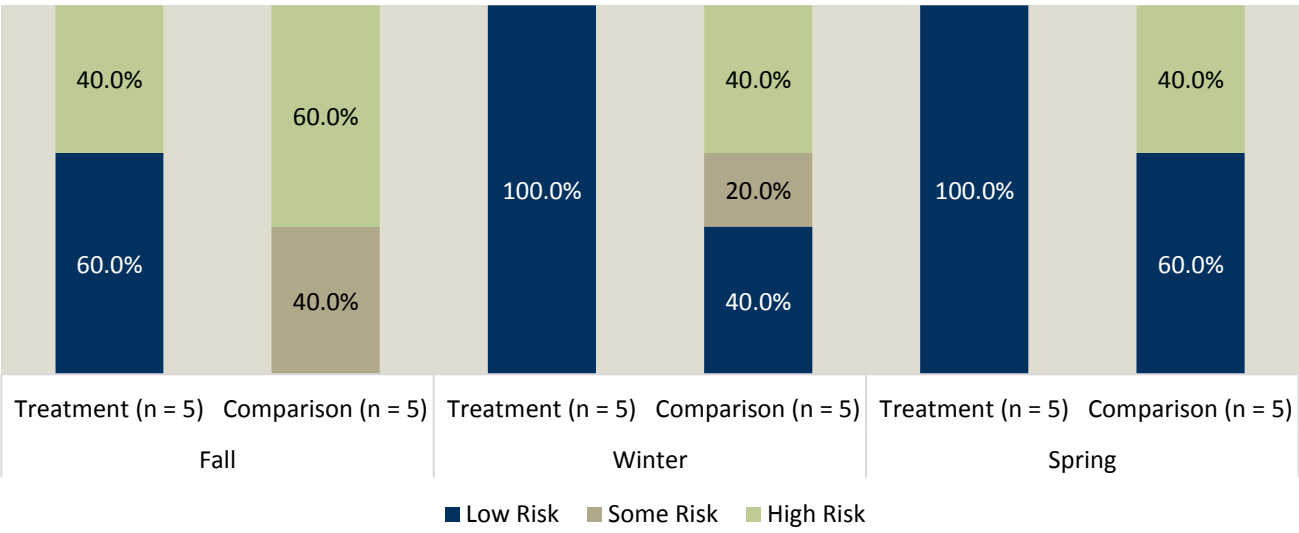
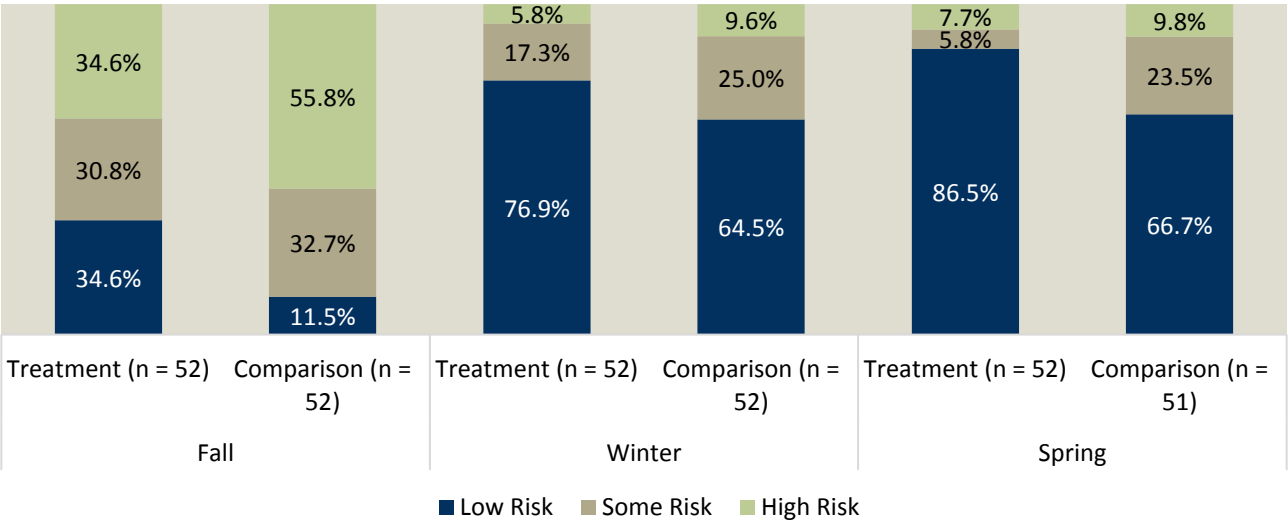


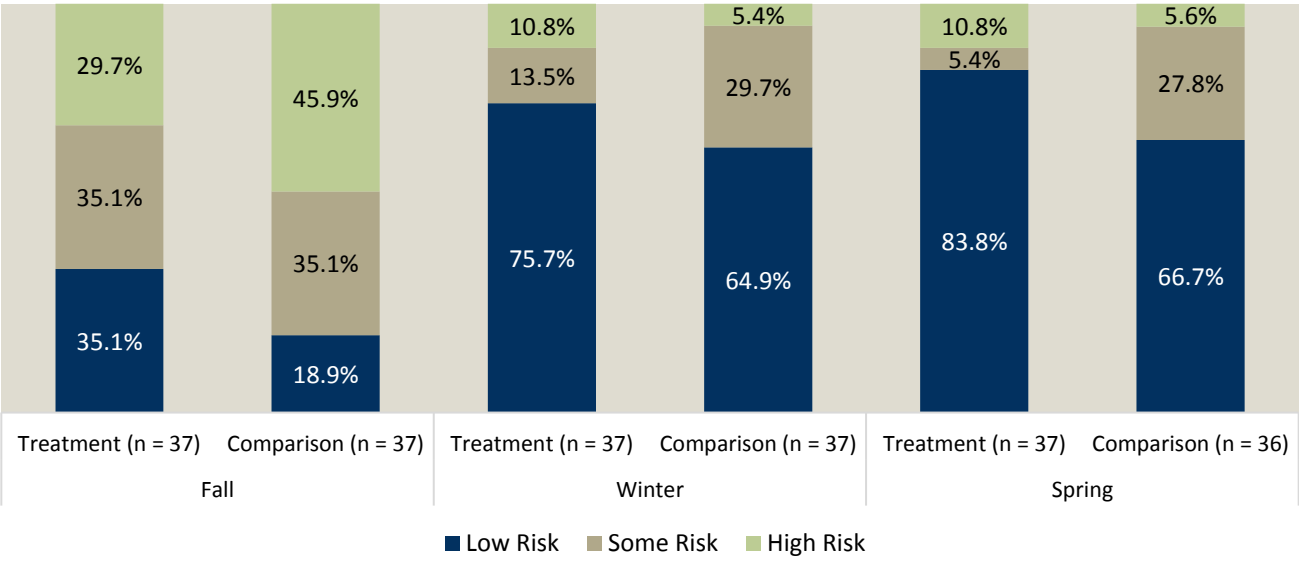
Figure 14 shows EasyCBM scores for those eligible for free or reduced lunch. The percentage of Earl Boyles students in the free/reduced lunch subgroup scoring at low risk was higher than comparison group students at all time points. This percentage at low risk increased 51.9% for Earl Boyles over the school year and the percentage of comparison group students at low risk increased 55.2% over the school year.

Figure 14. EasyCBM Scores for Free/Reduced Lunch Subgroup



Finally, Figure 15 shows EasyCBM scores for students of color. The percentage of treatment group students of color scoring at low risk in the fall was 35.1% compared to 18.9% for the comparison group. This percentage at low risk increased 48.7% for Earl Boyles treatment group students over the school year and the percentage of comparison group students at low risk increased 47.8% over the group year.

Figure 15. EasyCBM Scores for Students of Color



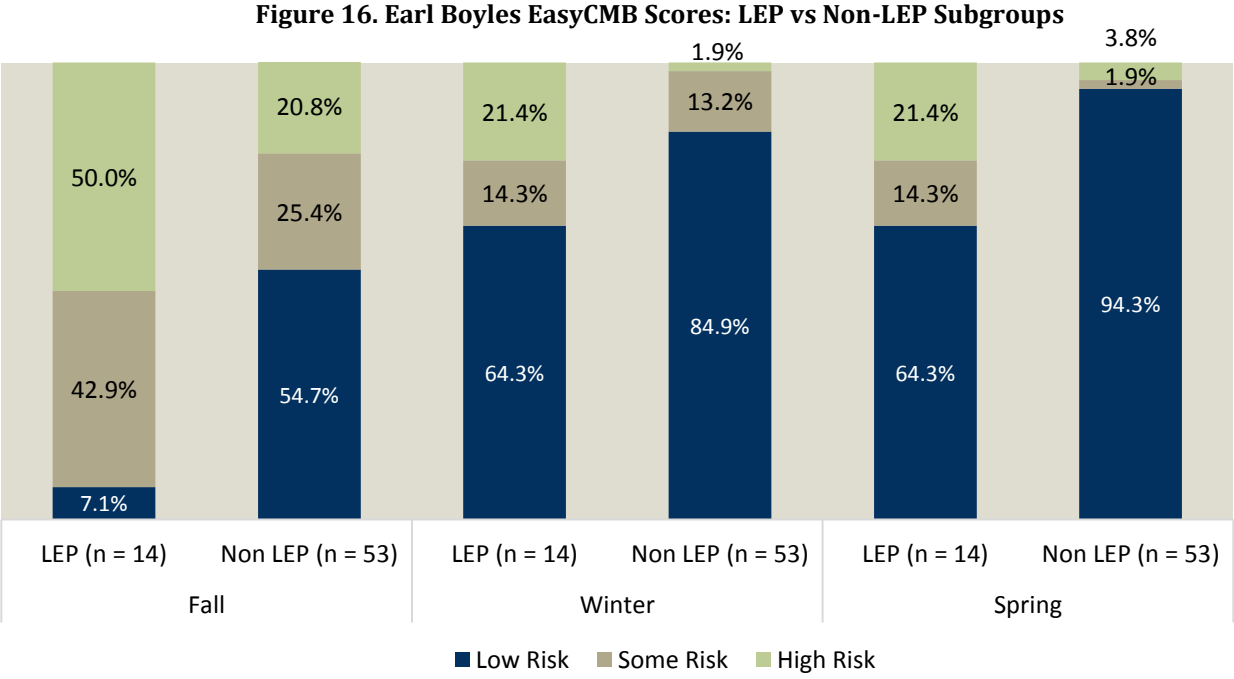
Upon examining EasyCBM scores for these four subgroups, there is not strong evidence at this point in time that the new instructional practices are improving academic outcomes for treatment group students over and above the instruction received by the comparison group of students.

Is the rate of student growth in one or more AHR outcome greatest for at-risk student subgroups ((i.e., students of color, low SES, LEP, special education (or those with an IEP), and those not on track to meet academic standards).

Due to the fact that EasyCBM scores are reported three times a year, PRE was able to examine how student progress may differ for at-risk subgroups as compared to non-at-risk subgroups within Earl Boyles.

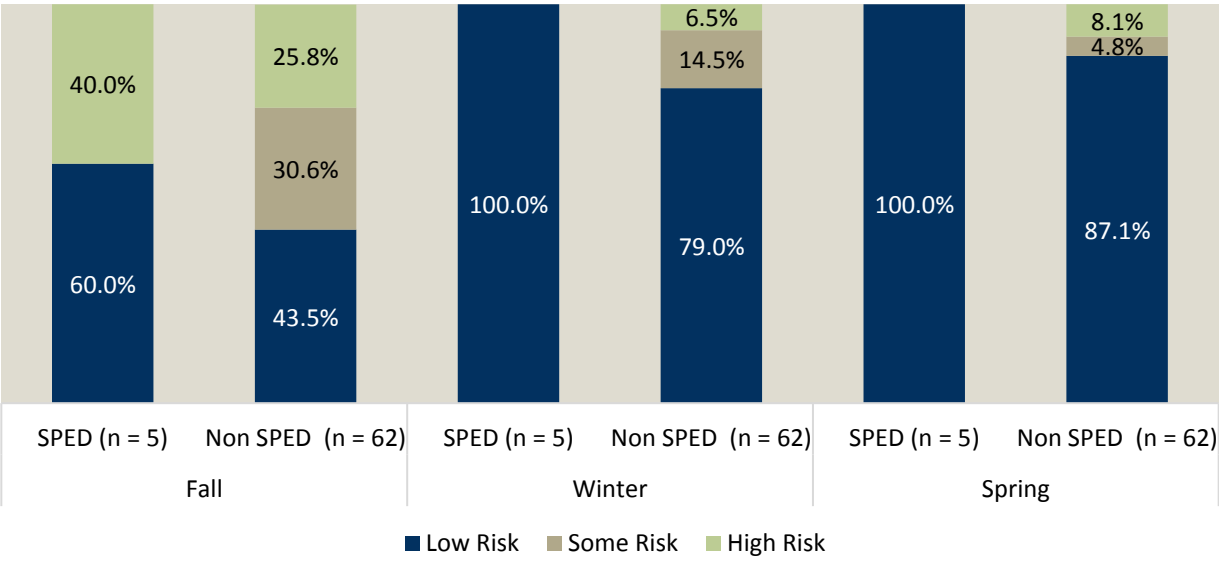
Within the treatment group LEP students were compared to non-LEP students. The percentage of LEP students identified as low-risk increased 57.2% from fall to spring and the percentage of non-LEP students increased 39.6%. These results provide support for the idea that instructional practices are showing promise for closing the achievement gap for LEP students.

Figure 16. Earl Boyles EasyCMB Scores: LEP vs Non-LEP Subgroups



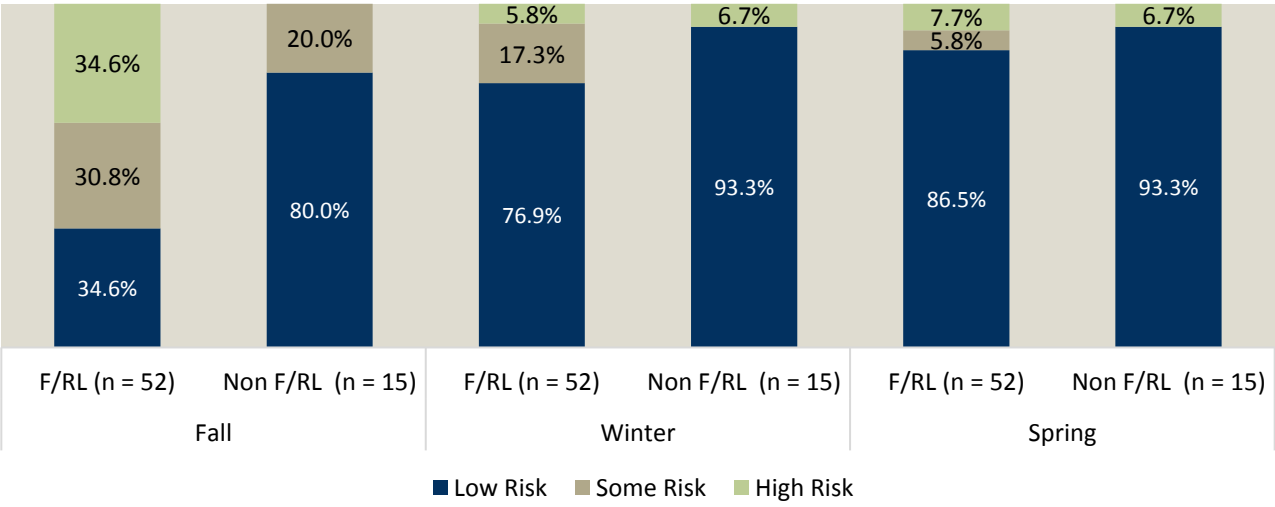
Within the treatment group, Special Education (SPED) students were compared to non-SPED students. The percentage of SPED students identified as low-risk increased 40% from fall to spring and the percentage of non-SPED students increased 43.6%. These results do not provide support for the idea that instructional practices are showing higher rates of growth for SPED students, but it should be noted that 100% of SPED students were identified as low-risk at both the winter and spring time points.

Figure 17. Earl Boyles EasyCMB Scores: SPED vs Non-SPED Subgroups



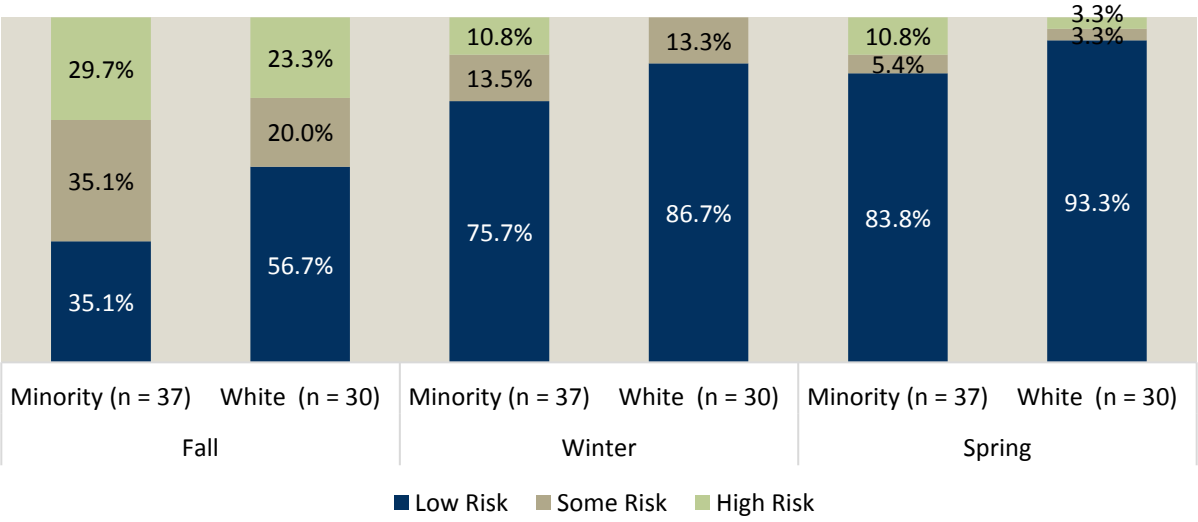
Within the treatment group, free/reduced lunch students were compared to students who do not qualify for free or reduced lunch. The percentage of free/reduced lunch students identified as low-risk increased 51% from fall to spring and the percentage of all other students increased 13.3%. These results provide support for the idea that instructional practices are showing promise for closing the achievement gap for free and reduced lunch students.

Figure 18. Earl Boyles EasyCMB Scores: Free/Reduced Lunch vs Non-Free/Reduced Lunch Subgroups



Within the treatment group, students of color were compared to Caucasian students. The percentage of minority students identified as low-risk increased 48.7% from fall to spring and the percentage of all other students increased 36.6%. These results provide support for the idea that instructional practices are showing promise for closing the achievement gap for students of color.

Figure 19. Earl Boyles EasyCMB Scores: Minority vs Non-Minority Subgroups



ELPA Test Scores

The English Language Proficiency Assessment, or ELPA, is one of the required Oregon state assessments. The No Child Left Behind Act (NCLB) mandates that English Language Learners in kindergarten through 12th grade are assessed annually to measure their level of English proficiency. The Oregon Department of Education developed the ELPA to meet this federal requirement and to provide a common assessment for all English learners in the state of Oregon. The table below details the five proficiency levels on the ELPA test for kindergarteners.

	Kindergarten ELPA Proficiency Level Descriptions
Beginning (Level 1)	Student proficiency is emerging. Students may be silent or respond in first language to an English prompt. Comprehension will depend upon high contextualization. English production will be to follow models and communicate with gestures. Oral responses may be one to two words. Beginning students… • Begin to identify letter names and sounds. Use visual references, highly contextualized words and phrases to increase understanding. • Able to copy words and letters. May use first language. Use visual prompts with sentence frames. Dictate thoughts using common words and basic vocabulary. • Interact with others on a very limited basis, with many grammatical and syntactical errors. Repeat, mimic, and use gestures to communicate basic information. May be silent. Use of first language and choral responses. • Demonstrate comprehension of basic information in highly context-embedded school-based social situations.
Early Intermediate (Level 2)	Students are able to express their wants and needs using simple words & phrases. They can comprehend and follow one-step oral academic instructions and can repeat simple sentences. Early Intermediate students… • Read some high-frequency words. Use context clues to increase comprehension. Begins to blend sounds and apply concepts of print. • Able to copy text. Use letter sounds to write words with some accuracy to express ideas. Continues to use sentence frames for support. • Interact with others using basic social language with frequent grammatical and syntactical errors. May combine first and new languages. • Demonstrate comprehension of basic information in some social situations and academic areas.
	Students are able to demonstrate comprehension of key grade-level information with some fluency through listening and reading. They are able to speak and write

Kindergarten ELPA Proficiency Level Descriptions	
Intermediate (Level 3)	using more social language with some accuracy and fluency. Academic language is emerging. Intermediate students… • Read most high-frequency words. Comprehend some grade-level text. Increase application of concepts of print. Begin to blend sounds into words. • Able to copy text, use letter sounds for words and sentence frames with increasing accuracy, use letter sounds to approximate words • Interact with others by emulation or using prescribed samples with some grammatical and syntactical errors in school-based social settings. • Demonstrate comprehension of more information in social situations and academic areas.
Early Advanced (Level 4)	Students are able to fluently demonstrate comprehension of key grade-level information through listening and reading. They are able to speak and write using more social and academic language with increased accuracy and fluency Early Advanced students… • Read and comprehend most grade level text. Frequently apply concepts of print. Fluently reads grade-level text with minimal support. • Able to use increasingly difficult language to express ideas. • Interact successfully in some academic and school-based social settings. Communicate with few grammatical and/or syntactical errors. • Demonstrate comprehension of most grade-level information, while learning academic vocabulary.
Advanced/Proficient (Level 5)	Students are able to consistently demonstrate comprehension of grade-level information through listening and reading. They are able to speak and write using grade-level academic language with accuracy and fluency. Advanced/Proficient students… • Read and comprehend grade-level text. Consistently apply concepts of print. Independently read grade-level text with fluency and accuracy. • Able to consistently express ideas, with basic grammatical and syntactical accuracy. • Interact successfully in most academic and school based settings. Use grammar and syntax to respond to ideas with grade-level academic language. • Demonstrate comprehension of key concepts in academic areas and social settings. Increase understanding of grade level academic language.

ELPA test scores were examined for those students in the treatment and concurrent comparison groups who took the ELPA assessment in kindergarten and the results are presented in Table 7 by ELPA levels of

proficiency. No students in either group scored above a Level 3. A larger percentage of treatment group students with limited English proficiency fell into Level 1 or Level 2 than comparison group students. However, this comparison provides little information, and will be more meaningful in future years when improvement over time can be assessed.

Table 7. ELPA Test Scores by Level of Proficiency

	Treatment (n = 14)	Concurrent Comparison (n = 14)
Level 1	42.9% (6)	14.3% (2)
Level 2	42.9% (6)	57.1% (8)
Level 3	14.3% (2)	28.6% (4)

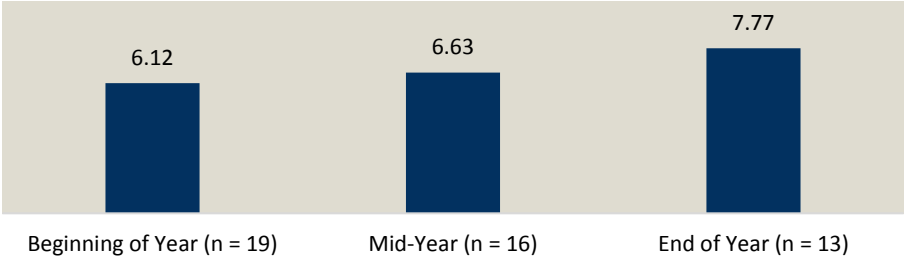
Digital Age Learning Culture

Evaluation Question: Do districts demonstrate a cultural shift such that technology is viewed more positively?

Has the use of technology to support instructional practices increased?

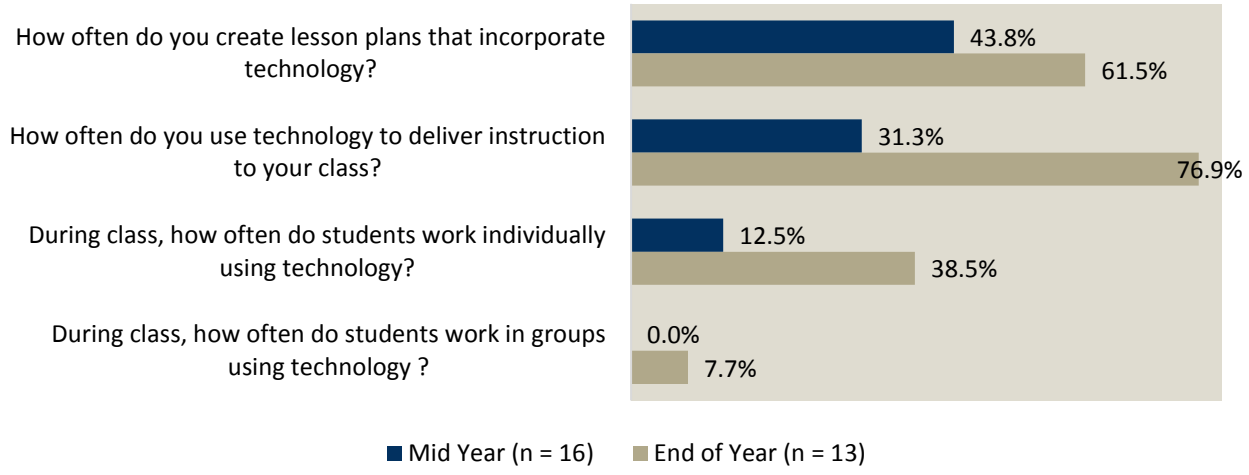
As noted in the previous section on teaching effectiveness, Earl Boyles teachers provided several examples of how they have increased their use of technology to support instructional practices. Teachers consistently mentioned using the Smartboard, Google Classroom, RedCat, iPads, and Chromebooks in their classroom instruction. Figure 20 shows the change in overall technology skill level during the 2015–16 school year. A rating of one corresponds to "New User: Have not used or integrated technology into the classroom" and a rating of 10 corresponds to "Expert: Have mastered all hardware and software systems and continually devise ways of integrating technology into the classroom."

Figure 20. Earl Boyles ES Overall Technology Skill Level



Compared to February, in May teachers reported higher technology skill levels and a significant increase in the frequency of integrating technology in the classroom (see Figure 21). The percentage of teachers who reported incorporating technology into lesson plans increased almost 20 percentage points. There was a 40 percentage point increase in the number of teachers who responded "a great deal" for how often they use technology to deliver instruction. Students were more frequently working individually using technology, and a few teachers had begun to have students work in groups using technology.

Figure 21. Frequency of Technology Integration Among Earl Boyles ES Teachers
(% responding "a great deal")



Is the learning management system useful for identifying effective instructional practices (more efficient, easier, data driven)?

Although DDSD does not have a formal learning management system, Earl Boyles is using Google Classroom for this purpose. The school has adopted Google Classroom, which was noted by many teachers as a useful tool for instruction, communication with students and families, and grading. Some teachers rated Google Classroom as one of their most effective instructional tools, and several teachers and district leaders highlighted its use in classroom. The Earl Boyles technology integration coach said teachers are transferring many of their assignments to Google Classroom, allowing them to differentiate instruction so that students can work at their own pace. A teacher commented on the flexibility of Google Classroom and how it helps with differentiating instruction:

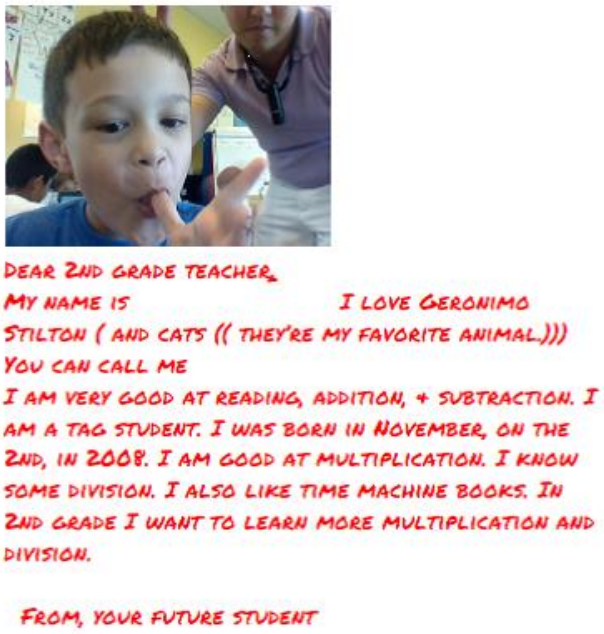
> "When I say go to Google Classroom, they know what to do. I can prioritize my Google Classroom in minutes. It is amazing. I can grade it easily. I can see who is done, who needs help, where they are going, the kids who are done quickly I can give them more to the assignment. Google Classroom is much more flexible."

Google Classroom allows teachers to provide quick feedback to their students and makes grading more efficient, as the Earl Boyles principal stated: "The teachers change grading by having Google Classroom. They are able to provide instant feedback to the student, make grading easier at times." One teacher reported using Google Classroom to more efficiently provide student feedback even when she is not in the classroom:

> "We do a lot of writing using Google Classroom and Google Docs. It is designed for classroom experience. I can read the students' work and comment on it electronically and we have conversations going back and forth. Before when it was paper and pencil I would have a long line of kids at my desk. I can easily work on it at home as well. One time I was out sick and I had sub and I started commenting on my students work through Google Classroom from home."

On the August, 2106 project status report, the technology integration coach described how Google Classroom was being used at various grade levels: "In 1st grade, teachers have assigned writing projects where the students had to write to next year's 2nd grade teacher and insert a selfie using the camera from their Chromebooks." See Image 1 below for an example of this writing project.

Image 1. Student Writing Sample



The technology integration coach also described how 2nd and 3rd grade classes have used Google Classroom to post projects for their students. "The teachers included videos, web links, and template presentations so their students can work on the projects." The August, 2016 project status report provided an example: "In a 4th grade class, the students answer book study questions that the teachers post on Google Classroom. The teachers can access the responses in real time and conference with a student."

Do teachers have increased access to and use of digital content and resources?

As emphasized in previous sections of this report, the TechSmart grant funding has provided Earl Boyles teachers with increased access to a variety of digital content and resources that they have been using to enhance their instruction. By the end of the 2015–16 school year, 69.2% of teachers who completed the year-end teacher survey (n = 13) reported that students have adequate access to technology resources in their classroom. In terms of increased use of digital content and resources in instruction, teachers reported a 4.8 percentage point increase from the middle of the year to the end of the year (see Figure 22).

Figure 22. Earl Boyles ES Teachers' Increased Use of Digital Content and Resources
(% Agree/Strongly Agree)

Examples of digital content and resources include online resources such as Xtra Math, IXL, and Raz-Kids. Table 8 provides an example of how various teachers use each of these.

Table 8. Earl Boyles ES Teachers' Use of Technology

Technology	Teachers' Application of the Technology
Smartboard	"The smartboard is really engaging for kids. I can put up a worksheet and everyone wants to come up and do it. We have had an overhead and doc cameras that I could use with paper and different colored pens, but with the smartboard you can erase if you make mistakes. It is more exciting for the kids."
Google Classroom	"I always want to be ahead of the curve. I want the opportunity to take the kids further from where they are. We are doing that with our Google Classroom. They love it. It differentiates so well, so it has been an amazing year this year."
RedCat	"That technology has been amazing for kids who are shy and they wouldn't stand in front of the classroom and now they will. It gives more kids a voice."
Online Resources or Applications	"I have used a lot of IXL math programs they can use on the iPad. They can work on their level and keep going up."
iPads	"We build iPad into their instruction. Differentiated in their small group time."
Chromebooks	"Well, they love using the Chromebooks. I have them reading on the Chromebooks."

Is there evidence of districtwide support for technology integration?

Earl Boyles teachers reported a strong technology culture by the end of the 2015–16 school year. Specifically, 100% of teachers who completed the survey reported a shared understanding among teachers about how technology is used to enhance instruction and learning and reported that administrators are supportive of technology integration efforts. The majority of teachers (84.6%) reported having no fear of learning about and using new technologies in their classes. Most teachers (92.3%) agreed that there is a

culture of continuous learning at the school. One teacher described how teachers supported one another: "Other teachers are supporting each other. Collaborating and seeing what works and doesn't."

Figure 23. Earl Boyles ES Teacher Perceptions of a Culture of Support for Technology Integration
(% Agree/Strongly Agree; n = 13)

In addition to teachers reporting a strong culture of support for technology, they noted a significant amount of support from district leadership, as presented in the next section. One teacher said:

> "Our principal is very supportive and any time I have my phone I can text our technology coach 'help' and he is right there to help me. He is an amazing mentor. I feel like even the teachers who have difficulty with change have stepped out of their comfort zone to do some of these things with all of us chatting about it. The teachers talking about the cool things."

Do parents have an increased understanding and utilization of districts' technology assets?

Teachers provided examples of how they are utilizing various instructional strategies to involve parents in student learning. For example, one teacher keeps a classroom blog for students that parents can view. This teacher records flipped lessons where she is video-recorded teaching a lesson and it is uploaded onto the blog. The students can then access the videos on the blog, which can be a source of extra help refreshing students' memories. This teacher said that having these lessons on the blog is useful for engaging parents as well: "We have flipped lessons on the blog. Parents can look at them too and understand different terminology we are using. For example, regrouping is the same for addition or subtraction. Parents can look at the blog and remember how to do it. It has been fun to do that." Another teacher discussed using the SeeSaw application to bring parents into students' learning. This application allows students to comment on each other's work and parents to comment on their child's work as well.

The district is also offering various parent engagement activities. The August, 2016 project status report described two parent engagement events with an average of 60 participants at each. One event was a Schools Uniting Neighborhoods (SUN) class for parents to complete resumes, look for employment, set up email, and learn tricks on Google. DDSD also offered a parent curriculum night that focused on what students were learning at school. This event featured a technology station for parents to preview the Smarter Balanced assessment and the technology coach explained digital tools and resources to parents such as IXL, MobyMax, and Xtra math. Finally, both the principal and the technology integration coach

have created Twitter accounts to inform parents and community members about the efforts at Earl Boyles ES.

Visible Leadership

Evaluation Question: To what extent is district leadership actively involved in supporting technology integration within and across districts?

Are districts identifying effective instructional practices and disseminating information and results to other districts?

Since Earl Boyles received its TechSmart grant in 2014, the school's administrators have shared information and results internally to other schools within the district and externally to other districts. Internally, DDSD has capitalized on the grant funded work to inform a districtwide program called Google Ninja. Teams will apply from every elementary school for the program, and as part of this program they will receive Chromebooks, commit to two days of training sessions, receive coaching, and try the new techniques throughout the year. The DDSD Director of Curriculum and Instruction said, "Teachers are really excited and we can use Earl Boyles as lab classrooms. We can pay for other teachers to come see what it looks like when it is used effectively." The Earl Boyles principal said the school has hosted site visits from schools within and outside of the district: "We have done 200 site visits. We point out the technology and talk about what is happening. We provide specifics around language, asking questions depending on the focus. We share lessons learned that way." The technology integration coach was also meeting with computer lab technicians from other schools within the district to explain various technology resources as part of the Google Ninja program, as a DDSD leader described: "The technology coach will work with computer lab assistants to spread any lessons learned so they can reach other kids. Google Ninja is a readiness piece for them to start implementing other skills we have learned." The technology integration coach has also worked with teachers across the district who reached out for help with integrating technology into their classrooms. An example was shared in the August, 2016 status report: "David Douglas installed Smartboards in schools that were using Imagine Learning. The technology coach came to those schools and trained the teachers on how to use them. They all saw the Smartboard being used during a training and decided to implement that in their buildings."

In terms of sharing results with other districts, the Director of Curriculum and Instruction described the close relationship between the east county districts and said that they meet monthly to informally discuss their project-related activities. DDSD has offered support to other east county districts involved in the TechSmart Initiative by creating a shared learning event in which representatives of other districts were invited to learn about Earl Boyles's implementation efforts and receive advice as they developed their TechSmart projects.

When asked what successes DDSD project staff members would share from their experience with the TechSmart grant, the technology coach provided several suggestions for other district participants. During multiple data collection activities, the PRE evaluation team repeatedly heard all of these recommendations, summarized as follows:

- Roll out a technology project on the site level and have an onsite coach to support the project.

- Ensure that the coach has multiple opportunities to learn and collaborate with other technology professionals. Although the coach already has a strong knowledge of technology and pedagogy, it is still important to be up to date on all the changes.
- Have funds set aside to experiment with newly released technologies. Some examples from Earl Boyles were Surface Pros, iPad Pros, OSMO, and other technology tools that were popular with teachers and students.
- Purchase Hapara so that teachers can have better control and/or monitoring of their students' Chromebooks.
- Staff members should be ready and able to learn and the principal should strongly support technology.

Do teachers feel increased support from district leaders regarding technology integration?

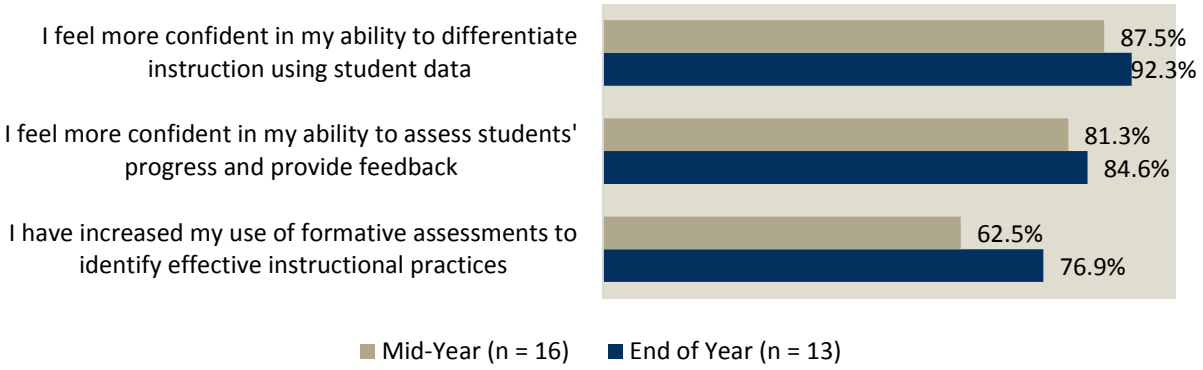
At the time of the evaluation, district leaders were providing support for technology integration at various levels. On the spring 2016 teacher survey, 100% of respondents (n = 13) indicated that administrators at Earl Boyles were generally supportive of technology integration efforts. The principal has been involved in the training sessions and technology integration efforts, modeling technology use for the teachers. The technology integration coach confirmed the principal's involvement: "What has helped a lot is that our principal is on this journey with us. She is piloting an iPad Pro. She can come in and observe someone [using] a Google form [to] send the feedback directly to the teacher. She has an openness and tries new things and does not want to get in our way." The coach also described the support of the DDSD Director of Technology and Assessment: "[He] has been awesome and is piloting an iPad and surface pro. We meet regularly and he is a great mentor. We have received nothing but support from them and that helps."

Data Driven Improvement

Evaluation Question: How are schools using data to improve instruction, professional development, and student performance?

As highlighted in the previous section on teaching effectiveness, Earl Boyles teachers have been increasing their use of data-driven instructional strategies. As Figure 1 in the teaching effectiveness section shows, by the end of the year, 100% of teachers participating in the survey increased their use of technology to differentiate instruction, and 92.3% increased their use of technology to analyze data about student learning. Figure 24 displays more information about data-driven improvement efforts at the school; the following subsections elaborate on these efforts.

Figure 24. Earl Boyles ES Data Driven Improvement
(% Agree/Strongly Agree)



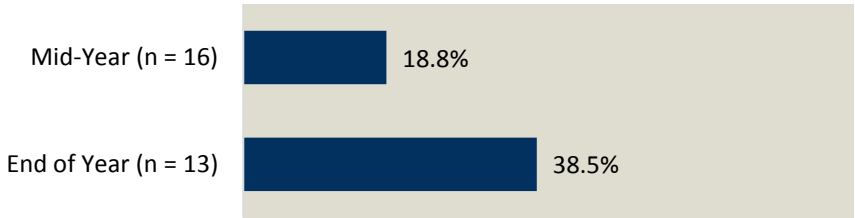
As shown in Figure 24, there was an increase of 14 percentage points from the mid-year to year-end surveys in teachers' responses to whether they are using more formative assessments to identify effective instructional practices. The August, 2016 project status report provided an example of how teachers had been using the online resource MobyMax to differentiate instruction:

> "Within MobyMax, teachers have instant data on what their students are working on in class. For example, the 2nd grade team worked on Place Value. They assigned the pre/post assessments, formatives, and lessons. They accessed the scores and MobyMax gives them a report on the number of students who are/aren't proficient. The teachers then worked with those students in small group math instruction time."

The same status report also noted that the school's coach for English language development had used the language portion of MobyMax to place students in the appropriate language groups.

Teachers identified a few barriers to using real-time data from the technology applications. For example, one kindergarten teacher said, "I don't use the iPad data. It isn't part of our core instruction." Another teacher said, "That is another time commitment. If you use those apps, knowing how to use the data and looking at the data takes time. It is hard to put it all together." By the end of the 2015–16 school year, 84.6% of teachers who completed the survey were more confident in their ability to assess students' progress and provide feedback, and 92.3% were more confident in their ability to differentiate instruction using student data. When asked how frequently they adapt an activity to students' individual needs using technology, 38.5% of teachers responded "a great deal" by the end of the year (see Figure 25). Although there is evidence of a higher level of differentiated instruction, there is room for growth in this area of instruction.

Figure 25. Earl Boyles ES Teacher Adaptation of Activities For Students' Needs Using Technology
(% responding "a great deal")



Funding & Budget

Evaluation Question: Do districts repurpose resources and seek outside funding to focus on promising practices and technology supports?

Have districts have identified at least one opportunity for repurposing resources to support technology integration?

The Director of Curriculum and Instruction and the Director of Technology and Assessment had examples of how the district is working toward repurposing resources to support technology integration. The Director of Technology and Assessment explained that the district has not directly repurposed funds but administrators have made strategic decisions that affect this goal: "A few years ago I traded in one of my FTE. I had a staff member leave and I chose not to rehire a position and chose to use those dollars to support classroom technology in the way of management for the iPads." The Director of Curriculum and Instruction discussed how the district was trying to be creative with funding sources to add technology to create 21st century classrooms. The district has been supporting a technology coach at the secondary level and will fund the current Earl Boyles technology coach in order to scale up the technology efforts in other elementary schools.

> "We are really big on coaching and we have learned the hard way that we can't expect change if we aren't supporting teachers in the implementation of that change. We are funding the technology coach for full time even though we only have grant for half time. He will still focus on Earl Boyles but his other half will be to scale. We really want this grant to change and be sustainable to how we approach teaching and learning."

Strategic Planning

Evaluation Question: Does the district strategic plan reflect shared commitment to improving outcomes for students?

Both the Director of Curriculum and Instruction and the Director of Technology and Assessment identified the district's STEAM initiative (Science, Technology, Engineering, Arts, and Math) as a part of the district's strategic plan and explained how technology is interwoven into the four main components of the strategic plan: "Yes, we are absolutely incorporating technology into our strategic plan. As we take a look at our district, student achievement is the overarching goal, and we have four main areas: multi-

tiered systems of support (RTI, PBIS, etc.), language, educator effectiveness, and STEAM. Technology is interwoven through the four main buckets of our plan."

The Earl Boyles technology integration coach gave examples of strategic work he is doing in the district: "I am working with the lab technicians at each building as they are the main technology educators for their buildings. I had them map out their year based on the standards listed for pre-K-12 and everyone is following that map." In the August, 2016 project status report, the Director of Curriculum and Assessment described the coach's involvement in the technology components of the strategic plans. "The technology coach meets with the Online Curriculum Coordinator and the STEM Coordinator once a month to share learnings and activities at Earl Boyles. They then discuss how the activities fall in the district technology scope and sequence."

Engaged Communities & Partners

Evaluation Question: Are parents, stakeholders, community groups and others are actively and systemically involved in helping students?

Do district leaders demonstrate increased communication with and among outside stakeholders regarding technology integration?

DDSD is taking steps toward engaging communities and partners through technology integration efforts. During interviews, teachers described how they are using technology to engage parents in student learning. Students can share their work with their parents through blogs and classroom websites, creating higher levels of student engagement, as described in the section on digital-age learning culture. One teacher discussed using the SeeSaw application with students:

> "I have been using Seesaw and it links the parent into the kids learning. Kids can comment on each other's work and parents can comment on their work. Instead of people presenting in front of the class, they can go look at each other's work online. They have reactions to their classmates and their parents seeing what they are doing. This is my first year and I am trying to push it out school wide. That has changed things quite a bit."

The Earl Boyles technology integration coach also mentioned the Seesaw program and said that many teachers have classroom blogs that are engaging parents: "One teacher has almost 800 page visits just for her classroom." The coach also worked with the principal to create a Twitter account to post technology events and strategies. District leaders repeatedly mentioned the district's efforts to engage parents in technology education. The district has parent technology days during which the adult classroom features laptops and parents can create an email address and become familiar with the technology used at Earl Boyles. District administrators described plans to hold a computer literacy course for parents as well.

Evaluation Insights at David Douglas School District

The 2016 evaluation at Earl Boyles ES produced the following insights:

- The informal training from the onsite technology integration coach is a key driver of technology integration with instructional practices. Teachers and administrators consistently emphasized the

importance of the coach in supporting teachers and making them feel comfortable and confident in their technology integration efforts. The coach minimizes the fear of technical difficulties because the coach can quickly assist in troubleshooting problems. The coach also minimizes the time and effort that teachers need to spend learning about how to integrate technology into their instruction by providing coaching on efficient integration strategies.

- Teachers most consistently referenced Google Classroom when discussing instructional changes, although they have made numerous changes to classroom instruction involving technology use. Teachers provided examples of how they have adapted existing assignments using Google Classroom, enhanced communication with students, and simplified grading. The technology coach's advice to other TechSmart districts included the statement that "Teachers use Google Classroom as a platform to push out assignments, announcements, polls, assessments, and many other things. This platform saves teachers' time because it gives teachers the ability to access all their students."

- For the third school year of this grant, there is still room for improvement in the area of data-driven instruction. The technology integration coach provided examples of how teachers are using student data through MobyMax to differentiate instruction, but teachers did not mention their use of MobyMax in the interviews or on the teacher survey. These results indicate a need for additional training on using MobyMax for differentiating instruction.

Changes to the evaluation for the third year of implementation at Earl Boyles include the following:

- Administration of the teacher survey and teacher interviews to 4th and 5th grade teachers who are part of the scaling up efforts taking place during the 2016-17 school year.

- All teachers that have been part of implementation will be surveyed a final time at the end of the 2016-17 school year.

- PRE will add questions to the teacher survey, teacher interviews, and leadership interviews to better understand how the TechSmart grant investments are impacting underserved populations.

- PRE and the MHCRC project manager are interested in developing a walk-through tool that captures instructional behavior change associated with the TechSmart grant investments. PRE will work closely with the Earl Boyles technology integration coach during the third year of implementation to conduct observations of highly successful teachers in order to aid in the development of this tool. Once developed, the intent would be for all districts to use the tool, or something similar, to capture change in instructional practices in addition to change in the utilization of digital tools.

Parkrose School District

Project Summary

Parkrose School District's (PSD) MHCRC TechSmart grant provides technology infrastructure and teacher professional development (PD) to support one-to-one student devices at Parkrose High School. The grant funded the creation of a reliable wireless network at Parkrose High School to support the implementation of all students using iPad Minis, which commenced in fall 2014, and to seamlessly access content throughout the school. The TechSmart grant also funds PD to support high school teachers in transitioning to the use of online digital content and resources that take advantage of technology to create effective learning environments for students. PSD's goal for these efforts is to improve the district's performance on the student success indicators of 9th grade credit attainment, English language learners progress, and high school graduation.

Teaching Effectiveness

Evaluation Question: Do districts support regular, inclusive and shared professional development among teachers?

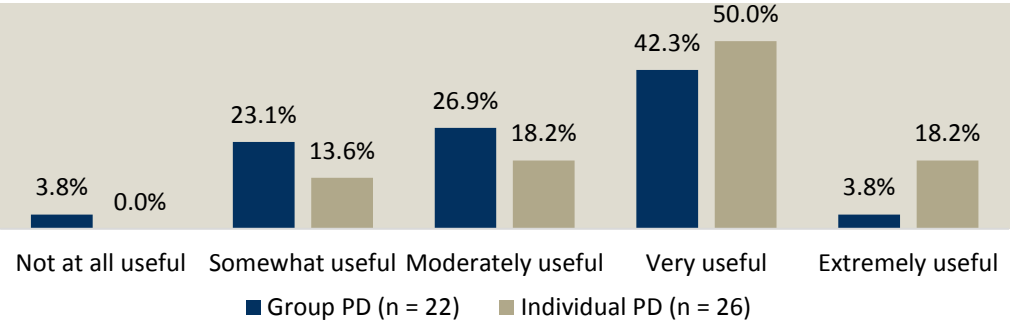
Teachers at Parkrose HS described the PD received through the TechSmart grant as primarily formal training that was offered during Year 1 of the grant. The group PD was provided to all teachers in the high school and focused on how to integrate the newly purchased iPads into the classroom. The teachers who participated in the PRE focus group reported that this was very useful training. One teacher said, "Teachers are still using the things that we learned last year. I see it all the time." District technology department staff has provided informal PD by visiting classrooms and helping teachers and students with certain aspects of technology. In the August, 2016 status report, this push-in PD was described as more successful than group PD sessions. "We were much more successful with the push-ins because they were held during the teachers' day and were within their own classrooms. It is a more taxing method on our staff as it is 1 teacher to 2-3 district staff but it seems to be much more of what they need. We did push-ins for five classrooms at the high school in the last six months." One focus group participant commented on the push-in PD, "I had tech come into my classroom last year and help me make the kids better at using a couple of the different applications. It was nice to have that push-in support." The technology department also offered after-school sessions called Technology Thursdays. The technology director acknowledged that the Technology Thursdays have not been as helpful as the push-in PD in the status report. "We still have trouble getting teachers to come to afterschool trainings. Because of this, we have moved away from Technology Thursdays entirely and put our energies into push-ins...." Table 9 summarizes the amount of formal and informal PD Parkrose High School teachers received this school year and shows that survey participants most commonly received between one and eight hours of group (53.3%) and individual PD (60%). Evaluation findings showed that more teachers could benefit from additional PD opportunities because only half of teachers were integrating technology in the classroom at the time of the evaluation.

Table 9. Parkrose HS Teachers' Hours of PD during 2015–16 School Year (n = 30)

Hours of PD	Group PD	Individual PD
0 hours	13.3%	26.7%
1-8 hours	53.3%	60.0%
9–16 hours	30.0%	10.0%
17–32 hours	3.3%	3.3%
33+ hours	0.0%	0.0%

Teachers found the individual PD to be more useful: 68.2% rated the individual PD as very or extremely useful, compared to 46.1% who rated the group PD as very or extremely useful (see Figure 26).

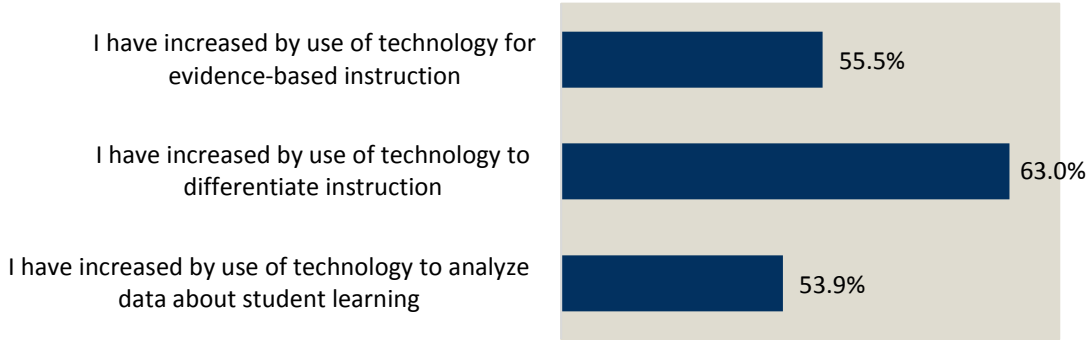
Figure 26. Parkrose HS Teachers' Ratings of PD Usefulness



How is the professional development impacting teacher instruction?

Of those completing the teacher survey, 55.5% reported an increased use of technology for evidence-based instruction since receiving the technology-specific PD. As shown in Figure 27, 63% of survey respondents increased their use of technology to differentiate instruction, and 53.9% increased their use of technology to analyze data about student learning.

Figure 27. Parkrose HS Instructional Change Since Receiving Technology-Specific PD
(% Agree/Strongly Agree; n = 26)



The August, 2016 grant status report elaborated on the applications that teachers are using to differentiate instruction in their classrooms:

"Some of the high school teachers are using tools like AssessmentVue, NearPod and Kahoot to get on-the-fly information about kids' understanding of the day's lesson. Kahoot and NearPod are used the most by social studies and science teachers to get immediate feedback. Kahoot is easy to use and fun for the kids because it is like a game show…AssessmentVue is slower going. The product is much more robust and a bit more complicated to learn….The goal is to get teams of teachers working on their formative and summative assessments using AssessmentVue."

In the survey, teachers assessed their technology skill level according to the following five levels:

Level 1: I get someone else to do technology-based tasks for me.

Level 2: I accomplish assigned tasks, but I am more efficient when I don't use technology to do a job.

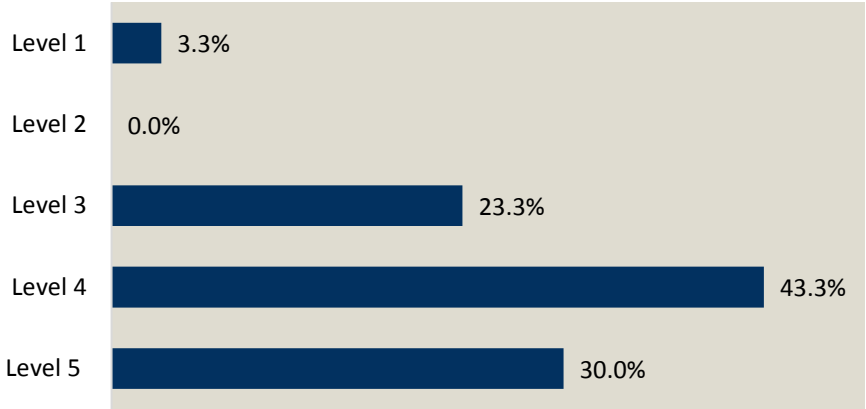
Level 3: I have enough skills to complete the management and communication tasks expected of me and occasionally will choose to use technology to accomplish something I choose.

Level 4: I use a variety of technology tools and I use them efficiently for all aspects of my job.

Level 5: I use technology efficiently, effectively, and in creative ways to accomplish my job.

As illustrated in Figure 28, by the end of the 2015–16 school year, 73.3% of teachers who completed the survey rated themselves at a Level 4 or 5 in terms of technology skill level.

Figure 28. Parkrose HS Teachers' Technology Skill Level
(n = 30)



PRE asked teachers in the focus group about their perceptions of other teachers' technology skill levels, and they said about half of teachers were regularly using technology. As one teacher said, "I would say half are using it regularly. There is a good portion of people who are using it fairly well, there are some who are still developing, and there are some who are resistant. People who are anti-technology are the smallest of the three groups."

What new instructional strategies are teachers reporting?

The high school teachers provided examples of instructional strategies that they consider to have been effective in their classrooms and rated them on a scale of one to five. Table 10 shows the technological applications that teachers have used to enhance instruction and the most common tools they have adopted, along with the average effectiveness rating.

Table 10. Parkrose HS New Technology Used for Instruction

Technology Supports	n	Effectiveness Rating
Google Applications (includes Google Forms, Google Slides, Google Classroom, Google Calendars, Google Docs, Google Sheets)	11	4.27
iPads	5	4.00
Online Content-Focused Resources (Raz-Kids; IXL for Math; Hooked on Phonics)	4	4.50
Notability	3	3.00
Classroom Tools (RedCat; SmartBoard; Document Camera)	3	3.33
Edmodo	2	4.00
Socrative	2	3.50

Google applications were the most commonly used technology support and online resources such as Raz-Kids and IXL were rated most effective for instruction. During the teacher focus group, the district's adoption of the Google interface was a key topic of discussion. One teacher said, "They are stopping support of Edmodo because they want everyone to use Google Classroom, so everything will be Google." Another teacher said, "There have been things that are getting worked out behind the scenes to try to move in that direction." When PRE researchers asked whether the teachers were supportive of the migration to Google Classroom, they responded positively.

> "For sure. There are a lot of cool things with Google Classroom and I have been playing around with it a lot. It interfaces so well with Google Calendar and Gmail. It is part of a better package. Plus, kids are so proficient with Google Docs and Presentations."

Teachers have also used Nearpod application for iPads to enhance instruction. Nearpod is an all-in-one presentation and polling application for classroom environments that allows users to upload presentations and create new ones. Adding interactive features, such as polling, surveys, and drawings, is straightforward, and the teacher's iPad controls the pacing of the presentation. Focus group teachers mentioned Nearpod several times as having significantly affected instructional practices. Teachers used Nearpod for presenting slides in the classroom, which allowed students to have them on their own iPads or phones. When students use Nearpod on the iPad, teachers can ensure that students are in the

application and not accessing other content on the device. One teacher described the benefits of using Nearpod for classroom presentations:

> "I really like Nearpod. All of my PowerPoints are in Nearpod. One great aspect is you can add quizzes where students can all participate and then you can share the results. For example, I can make a slide that says 'draw what you understand a convergent boundary to be.' Then I can pull up a student's drawing and discuss with the class. They can take a poll and say '63% of you think this.' That has really helped with breaking up the notes. After every few slides I can put in a quiz or something and it makes them think. Nearpod has been good for that."

Another tool that teachers discussed using frequently is Edmodo, a web-based platform that provides a secure, easy way for teachers and students to connect and collaborate, share content, and access homework, grades, and school notices. Edmodo is similar to Facebook, but it offers a controlled environment that is appropriate for school. Teachers can upload digital resources that students can access or download, create polls for students to vote online, write short summaries or lessons for students who were absent from class, and post homework information. One teacher described using Edmodo for absent students and for Smarter Balanced preparation:

> "If students were absent, my PowerPoint is on Edmodo with the assignment and any worksheets. I have kids who before they come back the next day have taken the notes and done the assignment and they are ready to go. The other thing I use Edmodo for is for uploading articles. For example, right now we are doing a Smarter Balanced prep in science so I can actually load the articles they are supposed to read and use for their sources into Edmodo, the kids can upload them to Notability. In Notability you can highlight, underline, type in margin notes, number paragraphs. Then they can turn it back in to Edmodo, so I never give them a paper copy. Then, I open it up quickly on my screen and if it is complete they get 10 points. It is all done through there."

Another focus group participant who often substitutes for teachers said that Edmodo is useful for teachers to prepare in advance for their students when they will be absent: "I help sub when teachers are absent and a lot of teachers use Edmodo. You will see in the lesson plan to subs: 'Have kids check Edmodo.' The teacher that is absent is able to put up the assignment and all the things the kids are supposed to do. The kids can check and see when things are due and what they should be working on for the day."

The Notability application for iPads also affected teachers' instruction in their classrooms. Notability users can create notes that integrate handwriting, typing, drawings, audio, and pictures. Notability can be used to create lecture notes and other classroom materials and to annotate PDF documents, such as student assignments and PDF forms. One teacher said, "Notability is great. Instead of having to buy paper copies of books, kids just download it to Notability. They can draw on it and write on it, so that has been really cool." The only barrier to Notability is that it cannot be accessed through students' phones because the district purchased it. Thus, using Notability for instruction requires every student to have an iPad.

Although teachers provided positive examples of using iPads in the classroom with Nearpod, Edmodo, and Notability, several barriers have been noted for using these applications at Parkrose HS. Some students do not have iPads or do not bring them to class, making it difficult for teachers to use them. One

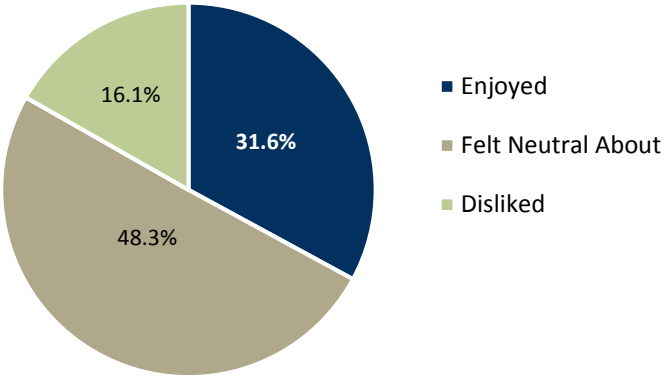
teacher said, “All the kids have an iPad. I think the biggest struggle has been not all the kids have theirs. Eighty-five percent of kids have them because they haven’t broken them or don’t owe fines, but the rest just don’t because of whatever reason. There is sort of a catch-22 between teachers not using them, so kids don’t bring them to class, but then kids don’t have them so teachers don’t use them.” Another teacher echoed this concern, “If you try to use them and half your class doesn’t have them, you have to plan a whole second lesson just in case. I have three backup iPads in my classroom, but sometimes that is not enough.” Teachers said that students will often use their smart phones to access the digital content when they do not have an iPad. “Kids have phones, and the iPhone 6+ is big enough to be an iPad Mini practically, so I have kids use their phones. I do something with technology every single day and half of my kids use their phone for it.”

Additional examples of how teachers are using technology in the classroom were shared in the August, 2016 status report: “Students use video to create presentations about body systems in Health class rather than human sized pieces of butcher paper like they used to. Teachers in science are using virtual dissection. Math classes have access to simulations and modeling sites that let them test and play out their hypotheses.”

How are the new instructional strategies impacting student engagement?

Students who completed the survey answered a series of questions about how the use of technology has affected their classroom engagement. As shown in Figure 29, 48.3% of students who completed the survey were neutral about using more technology in their classes.

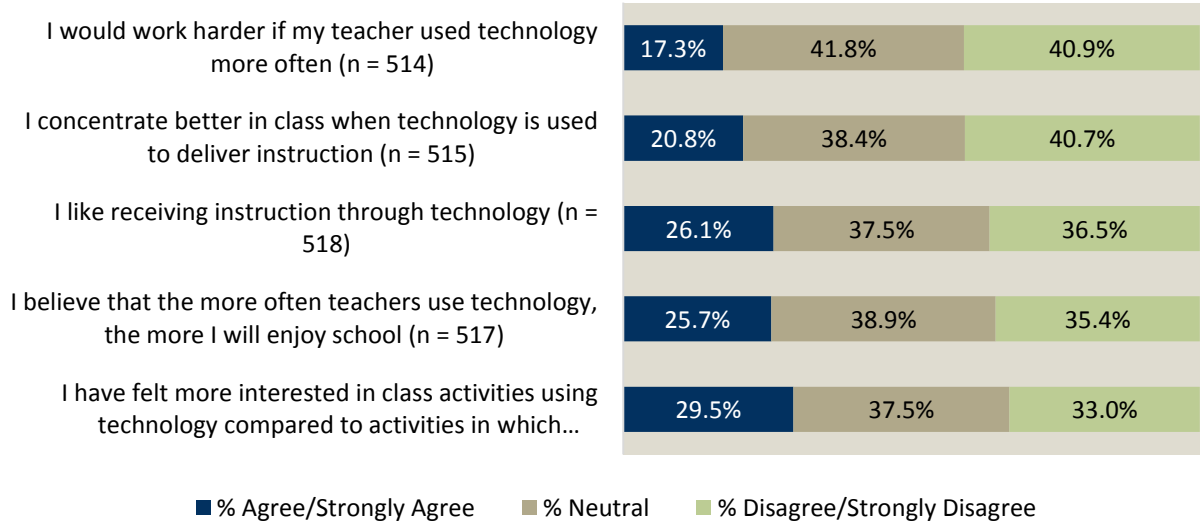
Figure 29. Parkrose HS Students' Feelings about Technology Use this Year
(n = 503)



> “Personally, in my classes, the use of technology has not drastically changed. To a certain extent, the amount of technology used has decreased. My opinion is the same as last year which is that technology use is a neutral aspect to a student's education. In some cases, it can help, but it depends on the student and the subject being taught.”
> —*Parkrose student*

Student opinions about the impact of technology on enjoyment and interest in classroom activities were mixed as well (see Figure 30). About a quarter of students reported that they liked receiving instruction through technology (26.1%), the use of technology affected how much they enjoy school (25.7%), and that they felt more interested in class activities using technology (29.5%). Overall, there is not strong evidence that the technology is being used to alter instruction in a way that affects student engagement.

Figure 30. Parkrose HS Student Engagement



Students' opinions about technology were mixed. Positive comments described how students have become more engaged through the use of technology, how technology makes classroom work easier, and how it provides easy access to classroom information. Table 11 provides a sample of comments related to these three themes.

Table 11. Parkrose HS Students' Positive Opinions of Technology Integration

Theme	Sample Quotes
Students are more engaged (n = 15)	• *I think that when they use technology I'm more engaged.* • *When including technology, I actually feel more engaged since all my knowledge is at my fingertips.* • *I enjoyed using technology in school because lessons can be more interesting when technology is involved.*
Makes work easier (n = 11)	• *Technology may help students access information more easily. They are able to work at their own pace rather than missing a lot of information that is given in class.* • *Since we started using technology, we can get work done more easily by researching photos for assignments, helping to write essays, etc., and it feels better than taking hours to think of things to draw.* • *Teachers who are using technology have made me feel more strongly about using it in class since it is easy to access information.*
Students enjoy technology (n = 9)	• *I like how teachers are starting to use better technology for their courses.* • *My opinions haven't really changed as I have always enjoyed actively applying new technology in the classroom.* • *When teachers use technology, they either use it fully or not at all. I like the use of it in the classes it's used in.*

Some students (n = 17) have not experienced any new technology in their classroom; as one student said, "I didn't have a chance to access the new technology." Neutral reactions from students related to the new technology not having affected them or changed their opinions about the use of technology in instruction. One student said, "I don't care about the use of technology. I just want to learn and do well on the work I complete in class." Some students had a negative perception and said that technology is distracting, makes learning more difficult, and teachers need additional training to use it. Table 12 provides a sample of comments related to these three themes.

Table 12. Parkrose HS Students' Negative Opinions of Technology Integration

Theme	Sample Quotes
Technology is Distracting (n = 21)	• *It hasn't helped. It is just a distraction and students tend to do off-task things on their [devices].* • *They make kids distracted, people will go onto other apps, or text people and stuff.* • *I do not like when technology is involved. I feel distracted.*
Technology makes learning more difficult (n = 12)	• *It can be confusing, unnecessary, and frustrating. More often than not, something goes wrong, I lose work, forget passwords, or just can't do something because I'm not "compatible." I have lost too many points due to technological inconveniences that could have been easily avoided by excluding the computers.* • *I don't have a problem with the technology being used, but the way we are using it is complicated for no reason. The websites are unhelpful because it takes 20 steps to get where you need to go.* • *Sometimes reading off a computer screen, compared to paper, can be difficult.*
More training is needed (n = 8)	• *I realize that technology can be good, but giving each kid an iPad of their own is not good. It causes trouble and kids are abusing them. At least keep all the iPads in the classroom. Teachers haven't figured out how to use them in a productive way. It just flat lines classes. I suggest teaching staff how to use the technology first in workshops.* • *My opinion that technology can significantly contribute to a good classroom experience has not changed, though I have realized that our teachers have not been adequately prepared to use the technology.* • *My opinions have not changed at all. I still think that most teachers don't have the knowledge of how to correctly incorporate technology into the classroom.*

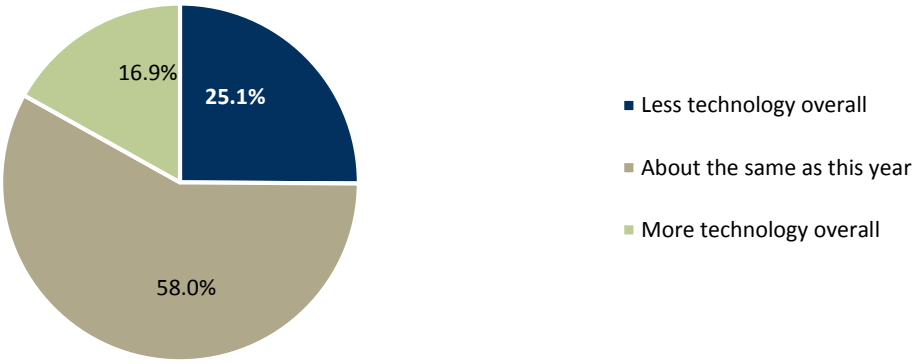
The August, 2016 status report acknowledged some of these barriers to the "bring your own device system" that Parkrose has in place. "We have had some difficulty with students not wanting an iPad because they do not want the potential fiscal liability, students who got iPads but do not bring them to class, and students who got iPads but lost or broke them and have not reconciled their debts." The technology director described how students are using personal devices like phones or personal tablets and

the inconsistency with devices has been difficult for teachers. "The unreliability for teachers of not being sure if they will have a class of students with the same device and the same applications has led some to drag their feet about changing instructional methods."

Teachers discussed how they are using Nearpod to keep students accountable, which in turn increases student engagement. One teacher said, "I think they are more engaged because they want to use their iPad. I give Nearpod points, so if they get out of the Nearpod app or they are not participating in the quizzes, they lose those points that they really want. That has helped. They are engaged because they are not thinking, 'what else can I be doing on my iPad". I think that has helped." Another teacher agreed that Nearpod has made students more accountable, "If they get out of the app or their iPad freezes or goes to sleep, then it gives me a notification. I can see who is red and slowly walk over and see what they are doing."

Although students reported that technology integration had a neutral effect on their engagement, 58% wanted their teacher to use about the same amount of technology as this year, and 16.9% would prefer to see more technology.

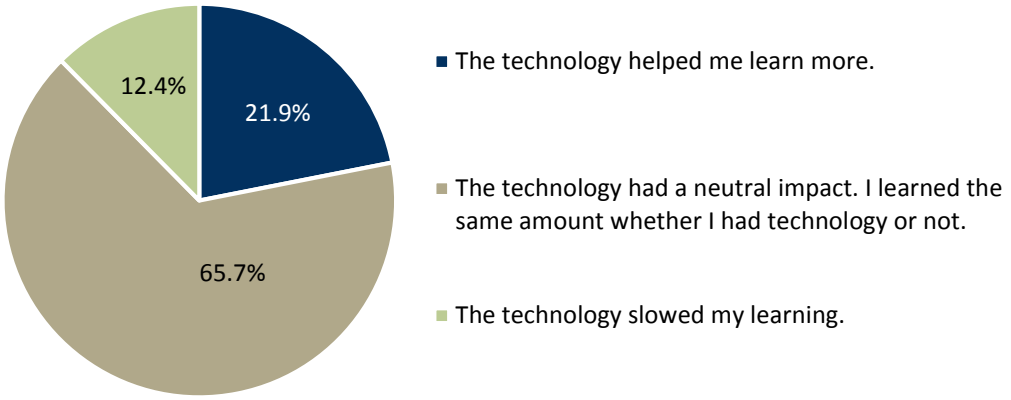
Figure 31. Parkrose HS Students' Desire for Technology Use Next Year
(n = 502)



Are the new instructional strategies showing promise for improving academic outcomes?

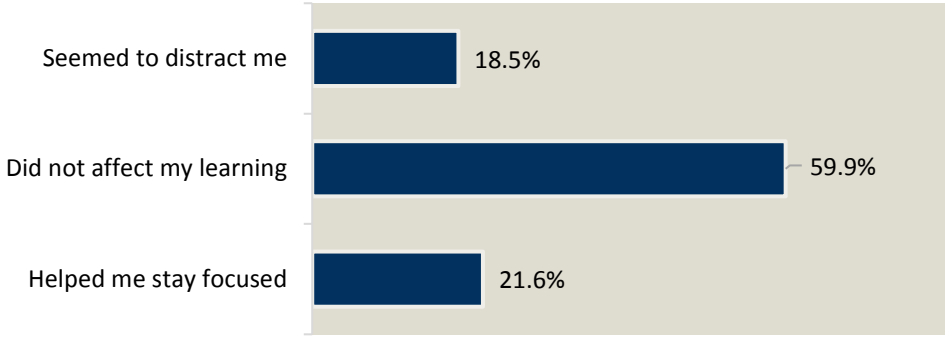
Students were asked a series of questions about how the use of technology in instruction affects their learning. Students generally had a neutral response to the impact of the technology on their learning: 65.7% of students who completed the survey indicated that they learned the same amount whether they had technology in their classes or not. About one-fifth of students (21.9%) believed that the technology helped them learn more.

Figure 32. Parkrose HS Students' Experience with Technology
(n = 516)



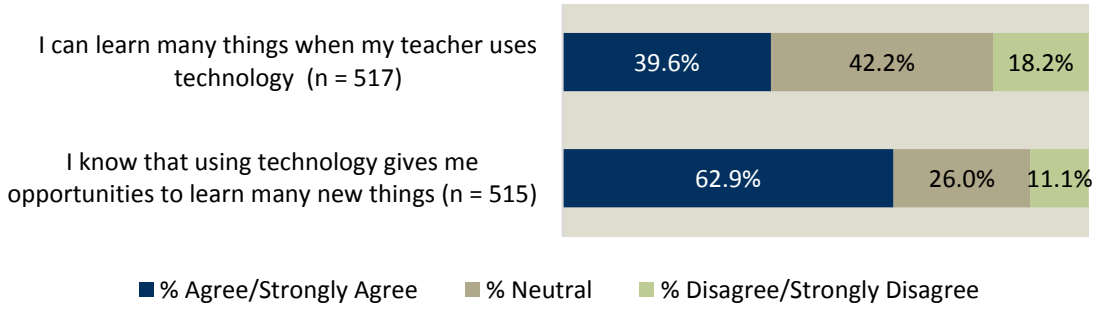
As shown in Figure 33, 59.9% of students reported that technology has not affected their learning, and 18.5% reported that the technology seemed to distract them.

Figure 33. Parkrose HS Effects of Technology on Learning
(n = 519)



Over half of the students indicated that technology provides opportunities to learn new things (62.9%), but only 39.6% reported that they can learn new information when their current teachers use technology (see Figure 34). These results mean that there is potential for improvement in how Parkrose HS teachers use technology to affect student learning. Many students recognized that technology can provide the opportunity to learn new things but fewer students reported that they can learn new things when technology is used by their current teachers. In the open-ended survey questions, some students commented that using technology enhances their learning. One student said, "It is a good system to learn, not only in the classroom but to be able to bring it home." Although some students provided positive comments about technology enhancing learning, significantly more students considered technology as a distraction. As one student stated, "Students still just use technology for games and distractions more than for actual learning. The teachers do try to use technology in class more, however, in my personal opinion some things are better done without technology."

Figure 34. Parkrose HS Students' Perceptions of Technology Use in Instruction



In the survey, students chose the top two classroom activities that they learned the most from during the last school year. The most commonly reported activities were traditional classroom instructional techniques including lectures, worksheets, posters, study guides, etc. Using computers and applications were close to the bottom of the list (see Table 13).

Table 13. Parkrose HS Activities Students Learned the Most From

Of the activities listed below, which two do you feel you learned the most from in class in the last year?	n	%
Lecture/presentation by teacher	226	44.8%
Completing worksheets, posters, study guides, textbooks, questions, etc.	193	38.2%
Reading or working by yourself	133	26.3%
Small group work	129	25.5%
Watching movies/films	104	20.6%
Using computers (typing, researching, creating presentations)	83	16.4%
Large group work	57	11.3%
Using applications (on iPads, Chromebooks, etc.)	55	10.9%

When teachers were asked whether new practices were showing promise for improving student academic outcomes, one teacher said that using technology in the classroom improves students' research skills. One teacher commented, "I have noticed a general increase in digital skills for kids. Research is a huge college focus and lots of kids go to college very bad at research. Our students go to college good at research because they have done a lot of it. If you don't have a device and you don't have a good network, you can't access the database, but all of our kids know how to do those things."

Another teacher said that using more technology in the classroom makes students more comfortable with it and prepares them for Smarter Balanced testing done on the computer:

"Having access to being comfortable with the format of the Smarter Balanced test has helped kids a lot. It is a lot less intimidating. If you only go on a computer twice a year and you go in for this test on a computer it is really scary, but if you are always doing digital stuff, working with a device, reading things on a screen, it has helped take some of the anxiety around the test away. We did much better than anticipated on the Language Arts test considering our student population and the expected outcomes."

The Parkrose TechSmart grant focused on 9th grade credit attainment and high school graduation. To explore whether instructional practices are showing promise for improving students' 9th grade credit attainment, PRE examined the treatment group and historical comparison group outcomes. Students are considered "on track to graduate" if they earn six or more credits in 9th grade. Table 14 shows that the historical comparison group had significantly higher average 9th grade credits than the treatment group t (400) = -6.82, p <.01, and a significantly higher percentage of 9th graders who were on track to graduate X2 (1, N = 402) = 7.23, p <.05.

Table 14. Treatment and Historical Comparison Group Credit Attainment

Average 9th Grade Credits		% on Track	
Treatment Group	**Historical Comparison Group**	**Treatment Group**	**Historical Comparison Group**
6.66 (n = 227)	7.87 (n = 175)*	76.2%	86.9%*

*Indicates a significant difference between groups

Do instructional practices show promise for improving student academic outcomes with at-risk student subgroups (i.e., students of color, low SES, LEP, special education (or those with an IEP), and those not on track to meet academic standards)?

In order to gain insight into whether instructional practices are showing promise for improving academic outcomes with at-risk student subgroups, 9th grade credit attainment and percent on track to graduate were examined by subgroup for treatment and comparison group students. The table below presents this data for all 9th grade students as well as the four at-risk subgroups for treatment and comparison group students. After one year of implementation, the treatment group is showing lower credit attainment across all subgroups than the historical comparison group. An independent samples t-test revealed that this difference was significant for the LEP subgroup, t (31) = -2.60, p <.05, the economically disadvantaged subgroup, t (242) = -4.45, p <.01 and the ethnic minority subgroup t (263) = -5.39, p <.01.

Table 15. 9th Grade Credit Attainment for Treatment and Comparison and At-Risk Subgroups

	Treatment Group		Historical Comparison Group	
	Average 9th Grade Credits	**% on Track**	**Average 9th Grade Credits**	**% on Track**
All Students	6.66 (n = 227)	76.2%	7.87 (n = 175)	86.9%
LEP Students	5.38 (n = 15)	60.0%	7.39 (n = 18)*	77.8%
SPED	5.41 (n = 34)	47.1%	6.44 (n = 18)	66.7%
Free/Reduced Lunch	6.39 (n = 157)	70.1%	7.51 (n = 87)*	80.5%
Students of Color	6.66 (n = 161)	77.6%	7.85 (n = 104)*	85.6%

*Indicates a significant difference between groups

The English Language Proficiency Assessment, or ELPA, is one of the required Oregon state assessments. The No Child Left Behind Act (NCLB) mandates that English learners in kindergarten through 12th grade are assessed annually to measure their level of English proficiency. The Oregon Department of Education developed the ELPA to meet this federal requirement and to provide a common assessment for all English learners in the state of Oregon. The table below details the five proficiency levels on the ELPA test for 9-12th graders.

Grades 9-12 ELPA Proficiency Level Descriptions	
Beginning Level (Level 1)	Students at the Beginning level are able to read and demonstrate comprehension of basic grade-level information with very limited fluency. They are able to speak and write using basic language with very limited accuracy and fluency. On the ELPA, they • listen to, demonstrate comprehension of, and respond to limited information in highly context-embedded school-based social situations. • orally express basic personal information and interact with others on a very limited basis and with multiple grammatical and syntactical errors. • use a very limited range of simple language and basic language conventions with very limited accuracy across subject areas. • decode and accurately identify letter-sound correspondence with very limited comprehension and use context clues to increase understanding. • Write using memorized vocabulary and simple phrases that include multiple grammatical and syntactical errors.
	Students at the Early Intermediate level are able to read and demonstrate comprehension of simple or highly contextualized information with limited fluency. They are able to speak and write using simple language with limited accuracy and fluency. On the ELPA, they

Grades 9-12 ELPA Proficiency Level Descriptions	
Early Intermediate Level (Level 2)	• listen to and demonstrate comprehension of simple information across a limited variety of social situations and subject areas in school–based situations. • use context clues to increase their comprehension and incorporate a very limited range of academic vocabulary. • orally express ideas and interact with others on a limited basis and with frequent grammatical and syntactical errors. • read a simple text by analyzing and recognizing words with a limited degree of fluency and demonstrate a literal understanding of text with reduced language complexity. • demonstrate understanding by interpreting ideas using high level thinking with reduced language complexity. Intermediate students are able to use a limited range of grammatical forms and writing conventions (i.e. using comparatives, correct word and verb forms, and forming questions).
Intermediate Level (Level 3)	Students at the Intermediate level require (considerable) ongoing instructional support in all content areas. They are able to read and demonstrate comprehension of limited grade-level information with significant support. They are able to speak using some complex language and write with simple academic language with some accuracy and fluency. On the ELPA, they • listen to and demonstrate comprehension of some information across a range of social situations and subject areas in school–based situations incorporating a range of academic vocabulary. • orally express ideas and interact with others by emulating others or using prescribed samples, although they do so with some grammatical and syntactical errors. • read approaching grade-level text with limited comprehension of key information on a variety of topics and locate information using increasingly complex language and simple inferences to perform a task. • use a range of simple academic language and writing conventions with increasing accuracy to express ideas across the subject areas in a limited number of clear sentences.
Early Advanced Level (Level 4)	Students at the Early Advanced level require additional instructional support. They are not yet independent at grade level but are able to read and demonstrate comprehension of some grade-level information with approaching grade- level fluency. They are able to speak with increasingly complex language, and write with some academic language with adequate accuracy and fluency. On the ELPA, they • listen to and demonstrate comprehension of most grade-level information across the subject areas and in school-based social settings, while learning a broad range of general academic vocabulary. • orally express ideas and interact successfully in some academic and most schoolbased social settings.

Grades 9-12 ELPA Proficiency Level Descriptions	
	• communicate orally with limited grammatical and syntactical inaccuracies which do not interfere with academic performance in whole-group and small-group activities. • read (with instructional support) approaching grade level text (1-2 years below grade level), demonstrating comprehension of most information in a variety of topics. They are able to locate information and infer meaning most of the time, while also interpreting meaning, and evaluating the purpose of text. • use complex language and writing conventions accurately to express ideas across the subject areas in several modes. • organize written information in clear sentences making connections and transitions with supporting details most of the time.
Advanced (Proficient) Level (Level 5)	Students at the Advanced (Proficient) level are able to read and demonstrate comprehension of a range of complex and abstract grade-level information. They are able to speak and write using an extensive range of complex language with level of accuracy and fluency that resembles native English speakers. On the ELPA, they • listen to and demonstrate comprehension of most complex abstract concepts and grade-level information in an extensive range of topics that include high-level academic vocabulary. • orally express ideas using complex grammar with minor errors that do not interfere with cohesive conversation. • communicate orally with few grammatical and syntactical errors. • read passages with complex language and academic vocabulary in a variety of topics and locate information, comprehend inferred meaning, and evaluate purpose of text. They are able to organize written information accurately using complex sentence structures, advanced grammar, and transitions.

ELPA test scores were examined for those students in the treatment and historical comparison groups who took the ELPA assessment in their 9th grade year, and the results are presented below by ELPA levels of attainment. The percentage of students scoring at a level four or level five was higher for the treatment group (53.3%) compared to the historical comparison group (23.6%).

Table 16. ELPA Test Scores by Level of Proficiency

	Treatment (n = 15)	Historical Comparison (n = 17)
Level 1	13.3% (2)	0.0%
Level 2	6.7% (1)	11.8% (2)
Level 3	26.7% (4)	64.7% (11)
Level 4	40.0% (6)	11.8% (2)
Level 5	13.3% (2)	11.8% (2)

PRE examined progress on the ELPA assessment for students with ELPA data available from the previous school year as shown in Table 17. Results showed that 63.6% of treatment group students moved up one or more proficiency level as compared to 50% of the historical comparison group.

Table 17. ELPA Test Advancements in Level of Proficiency

	Treatment (n = 11)	Historical Comparison (n = 14)
No Change	36.4% (4)	50.0% (7)
1 or more Level Change	63.6% (7)	50.0% (7)

In order to determine if the rate of student growth is greater for at-risk student subgroups over time, PRE will examine outcomes over the three school years of grant funding at Parkrose HS. Due to the one year lag in receiving data from ODE, student outcome data is only available for Year 1 of the grant (2014-15). Future evaluation reports will provide analysis on this evaluation question.

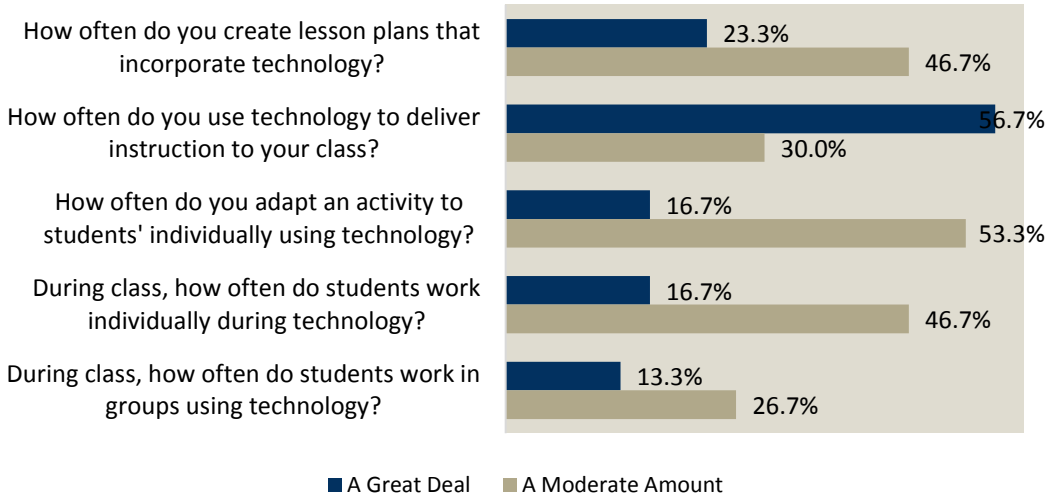
Digital Age Learning Culture

Evaluation Question: Do districts demonstrate a cultural shift such that technology is viewed more positively?

Has the use of technology to support instructional practices increased?

As noted in the previous section on teaching effectiveness, Parkrose HS teachers provided several examples of their increased use of technology to support instructional practices: Teachers consistently mentioned using iPads with Notability, Edmodo, and the Nearpod apps. When students were asked whether the use of technology in classroom instruction has increased since the last school year, 49.6% indicated that it had not increased, 24.9% reported an increase, and 25.7% were neutral. Figure 35 presents the frequency of technology integration reported by teachers. A majority of teachers who responded to the survey reported creating lesson plans that incorporated technology and using technology to deliver instruction to their class. Less than 20% of teachers responded "a great deal" when asked about adapting an activity using technology and about how often students worked individually or in groups using technology.

Figure 35. Frequency of Technology Integration Among Parkrose HS Teachers
(n = 30)



Is the learning management system useful for identifying effective instructional practices?

Parkrose HS does not currently have one schoolwide learning management system Teachers have been using a mix of Google Classroom, Edmodo, and Synergy. The August 2016 status report indicated that the district uses Google Classroom as an organizational system and district administrators are slowly rolling out AssessmentVue, which runs through Synergy. The report noted that AssessmentVue will enable the district to do more "on the fly" differentiation. During the focus group, teachers described the benefits of using Synergy, as in the following quote:

> "Access to be in charge of their own grades has been amazing. Teachers input all their information into Synergy; they take attendance, put the kids' records on there, and the kids can access it through StudentVue. Parents have ParentVue. Lots of kids have the app on their iPad and on their phone so they are always checking their phone. It has helped kids be more responsible for themselves in general. Even if they don't have an iPad, most of them have a device and they are accessing the Wi-Fi here and using the technology that is available and that is really cool."

Do teachers have increased access to and use of digital content and resources?

The primary function of the TechSmart grant at Parkrose HS has been to enhance the school's digital capacity, specifically through upgrading the school's wireless network and purchasing iPads. As noted in the most August, 2106 status report, "This is where we have grown by leaps and bounds because of the grant. Having the devices and the wireless has allowed teachers to access all kinds of things they could not before. Examples include Discovery Ed, StudentVue, AssessmentVue, Nearpod, PicCollage, and too many others to mention."

Of teachers who completed the teacher survey (n = 30), 43.3% reported that their students have adequate access to technology resources in their classrooms. Although this leaves room for improvement, 77.8% of teachers reported that they have increased their use of digital content and resources in their instruction since receiving technology-related PD, which shows that progress is being made toward a higher level of technology integration. The digital content and resources that teachers most commonly used were online resources or apps, Edmodo, Nearpod, Turnitin, and Notability. Table 18 provides an example of how teachers were using each of these resources and applications.

Table 18. Parkrose HS Teachers' Use of Digital Content

Digital Content	Teachers' Application of the Technology
Online Resources	"A large component of my class requires technology as I use an online math program. I also have used technology to keep Cornell notes and [mark] the text with Evernote."
Edmodo	"In Edmodo, you can post a little assignment like 'describe in one sentence what you learned today' right before you leave the room. You can check and see who got it, so you have an idea of where students are at with today's lesson."
Nearpod	"I use Nearpod to deliver notes. It has the capability to give students activities during the presentation and to look at that data."

Turnitin	"It has been really awesome as a science teacher because even though I know how to write, editing and figuring it out if they plagiarized is hard because I am not experienced at catching that."
Notability	"My class has used Notability for critical reading."

On the survey, students listed the technologies they wanted their teachers to use in the classroom. Students who provided responses to this question focused on applications, online resources, and devices. Table 19 provides a sample of student quotes for each of these three categories of digital resources. The feedback from students on the devices was that iPads and computers are helpful for different types of work. Students prefer writing papers and essays on computers, but they like the iPads for classroom presentations and quizzes. A theme of the students' responses is that the iPads would be more useful if they had more restrictions on them so that students could not access games or become distracted by websites and non-school-related apps. Students most commonly cited Edmodo as the app that they wanted teachers to use consistently. For online resources, students most commonly requested a learning management system in which teachers post assignments and students can keep track of this information even when they are absent from school.

Table 19. Parkrose HS Technology Students Want Teachers to Use

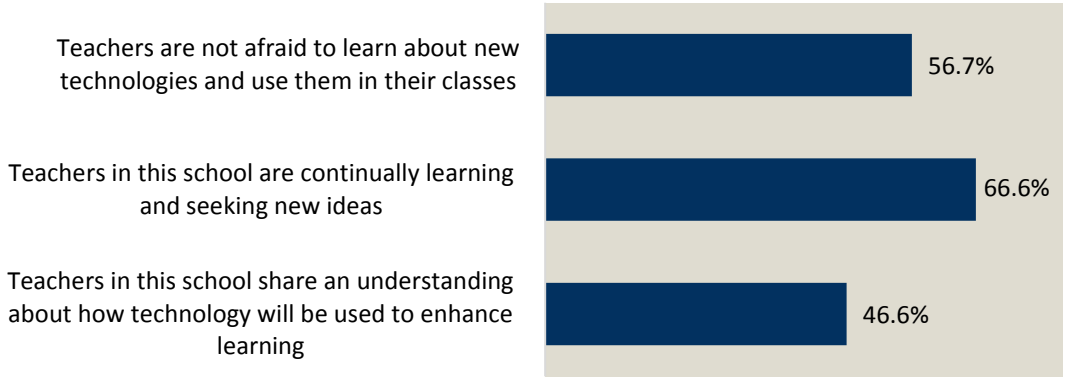
Theme	Sample Quotes
Devices (n = 113)	• *I wish that my teachers would use more of the iPads to work with students at their own pace.* • *I prefer the use of both the iPads and computers. iPads are good in a pinch or with assignments that use apps, while computers are preferred for typing things like essays or doing things that involve multiple pages.* • *I don't love using the iPads for most things, but going to the library computer lab is helpful.* • *I wish my school had gotten laptops instead of iPads because the school does not have enough computers for students to use. Laptops allow students to type their essays better than using an iPad.* • *Honestly, I'm fine with the technology we already have, but I feel it would be better if the iPads that we're given had more restrictions on what you can and cannot do.*
Apps (n = 29)	• *All teachers posting assignments and due dates on Edmodo so it is later accessible.* • *I wish teachers would use more trivia apps and quizzes. More students become engaged.* • *I wish they would use Nearpod more often because it helps keep up with lectures and notes.*

Online Resources (n = 16)	• *I think teachers should use Quizlet and Kahoot more because it makes learning more fun.* • *I believe that every teacher should have some sort of teacher website that has all of the assignments and tasks needed to be done throughout the year. By having a website, the students may keep track of when their work is due or make sure to schedule around future assignments.*

Is there evidence of district wide support for technology integration?

At this point, there does not appear to be a strong culture of support for technology integration at Parkrose HS but there is evidence of progress toward this goal. On the teacher survey, 46.6% of participants agreed that teachers in the school shared an understanding of how technology will be used to enhance learning, which indicates that there is potential for improvement in this area. A slightly higher percentage (56.7%) agreed that teachers at Parkrose HS were not afraid to learn about new technologies and use them in their classes, but it appears that a sizeable portion of teachers still need development in this area to increase confidence. One focus group teacher said, "There is support for teachers using technology, but I don't know if the teachers are supportive of using it themselves."

Figure 36. Parkrose HS Teachers Perceptions of a Culture of Support for Technology Integration
(% Agree/Strongly Agree; n = 30)



Parkrose HS had a change in Principal between the 2014–15 and 2015–16 school years, and some of the effort to integrate technology in the classroom might have slowed during the transition. Teachers in the focus group said that the change in administration during the school year affected the culture of support for technology. One teacher said, "We have a new administrator this year. Our administrator from last year was very tech all the time. He was the one doing a lot of the work to move the school to Google Classroom. We got a new administrator and it hasn't been brought back up. There have been other things to deal with." Another teacher said, "I think our new administrator wants technology, but it has not been first priority with being a new administrator."

The Director of Technology and Student Information commented on the district-wide efforts to support technology in the context of the TechSmart grant. "While the grant was specific to our high school, all of

the work we have been doing is universal, so all our teachers and administrators have the same set of expectations and tools to help move the students forward. This has been very important to help us maximize our resources, PD and curriculum decisions. It would be very difficult if one of our buildings were operating with different conditions than others, especially in the area of technology."

Do parents have an increased understanding and utilization of districts' technology assets?

District leaders described their efforts to educate parents about the districts' technology assets, including parent nights to explain the iPad logistics, parent options for restrictions, and students use in the classroom and at home. The parent nights also feature information on how parents can use the technology to track their children's academic progress. The Principal described communication with parents through newsletters to provide additional information about how iPads are used in the classroom. The School Improvement Director described the parent advisory council that discusses technology topics:

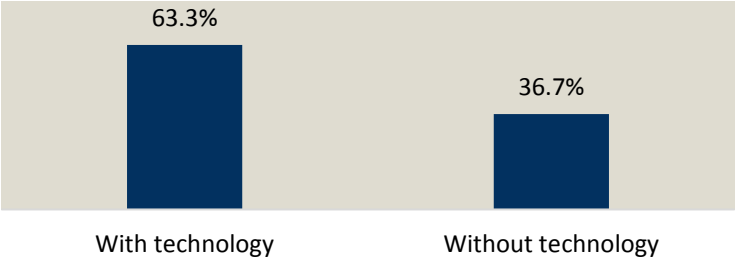
> "We have listened to worries of parents so we can understand anxiety and we want parents to see how devices work in their lives. We have shown examples of how integrative tech used at school can change how the kids learn. The next step is for us to be more specific when we share work and allow parents to see the things kids are doing digitally. This is starting to happen. We have heard comments about 'I can't believe what my kid is able to do.'"

The Director of Technology and Student Information also participated in a SUN (Schools Uniting Neighborhoods) meeting that provided instruction to parents on how to use iPads. "The SUN meeting was especially nice because it was translated to non-English speaking parents who were able to access the information. The SUN folks had been getting questions about the iPad programs, ParentVue and general instructional technology in the district so they invited me to come and present and answer questions at one of their parent nights."

Are an increased number of students utilizing and engaging with new technology?

As emphasized in previous sections, Parkrose HS has an opportunity for improvement in terms of utilizing new technology in the classroom and engaging students. Only half of students surveyed (49.6%) said the use of technology in their classes has increased since last year, but 63.3% of students would prefer to complete an assignment using technology rather than without (see Figure 37).

Figure 37. Parkrose HS Students' Preference for Completing Assignments
(n = 479)



Students selected the two classroom activities that most held their interest in the 2015–16 school year (see Table 20). Students most commonly indicated that watching movies and doing small group work were the most interesting classroom activities. This feedback from students in noteworthy given that the highest percentage of students (45%) reported learning the most from lecture or presentation (see Table 13). Students are acknowledging that they learn the most from lecture but that is not necessarily what they find the most interesting. Twenty percent (19.4%) of students responded that using computers kept their interest the most and 12.7% reported that using applications held their interest. Student interest in using applications in the classroom was likely low due to lack of implementation in the HS. It is expected that once teachers start using the technology in the classroom, the percentage of students identifying the use of computers and apps as most interesting will increase.

Table 20. Parkrose HS Activities that Interested Students

Of the activities listed below, which TWO kept your INTEREST most in class in the last year? (n = 505)	n	%
Watching movies/films	168	33.3%
Small group work	154	30.3%
Reading or working by yourself	140	27.7%
Completing worksheets, posters, study guides, textbooks, questions, etc.	140	27.7%
Lecture/presentation by teacher	137	27.1%
Using computers (typing, researching, creating presentations)	98	19.4%
Large group work	83	16.4%
Using applications (on iPads, Chromebooks, etc.)	64	12.7%

Visible Leadership

Evaluation Question: To what extent is district leadership actively involved in supporting technology integration within and across districts?

Are districts identifying effective instructional practices and disseminating information and results to other districts?

Parkrose HS has made efforts to share information about its technology integration efforts with other districts. The Direct of Technology and Student Information gave examples of working with other districts in East County to share knowledge about aspects of technology integration that are working or need improvement across districts. She said, "I am deeply embedded with East County. We are all interested in the same things around what devices are being used, what training is being provided, what is not working, and how is money being spent. We talk about it all the time." She also gave a specific example in the August, 2016 status report about troubleshooting a technology issue with the support of other districts.

> "A concrete example I am dealing with right now is that I have to get a new MDM to manage my iPads because of the change to the iOS. I have talked to all of my counterparts (Multnomah County and non) and we have collectively worked through the pros and cons of various possible MDMs including possibly a lead on a free version."

The School Improvement Director reported sharing lessons learned about transitioning to one-to-one devices and learning from other districts about the coaching model because this is not a focus of PSD's TechSmart grant.

> "We have spent a lot of time with districts talking about integrating tech. We've shared things we are doing and connected with school districts that are going to one-to-one devices. We don't have a teacher on special assignment, so we have been curious about the coaching model and connected with districts about this. We think literacy coaches should be able to help with this. Our coaches need to have integration of technology as a skill."

Do teachers feel increased support from district leaders regarding technology integration?

PSD leaders have been providing support for technology integration at various levels. On the teacher survey, 83.3% of respondents (n = 30) indicated that administrators at Parkrose HS have been generally supportive of technology integration efforts. The Principal and the Director of School Improvement noted the importance of differentiating the support provided to teachers. The Principal said district leadership has provided support by modeling technology. "They do a good job differentiating and not doing blanket PD. They are supporting us where we need support and for the teachers, it is the same. Admin are modeling it and other admin are learning quite a bit but they are working with people at their own level." The Director of Technology and Student Information said they are encouraging other administrators to become technologically savvy and conversant with digital resources, such as Google Classroom and Notability, and they are using these tools at administrative meetings, with the expectation for administrators to use the same skills as teachers. The Director of Technology and Student Information identified a barrier to providing support at the high school stemming from the complexity of the curriculum: "The high school is harder than other schools because curriculum is more complex. Next year we will be doing less asking and more telling. Our goal is to work on content and just happen to be using technology." The Director of School Improvement said, "We are recognizing that the support has to be more differentiated. Not many people have the same skills or devices."

When describing the culture of support, teachers said that administrators had been available to come into classrooms and coach them on specific needs. One teacher said, "I had tech come into my classroom last year and help me make the kids better at using a couple of the different apps. That was nice to have that push-in support." As reported previously, teachers said that the change in administration has affected the culture of support. The new administrator is very supportive of technology but does not advocate as much for its use as the previous administrator did. One teacher said that more support is needed: "Our administrator last year was really techy and he was able to trouble shoot for people. Some people need the extra time to hear it from someone who can guide them step by step. Some people need to be given the direction. Bringing in someone who can teach and give people that time would be big."

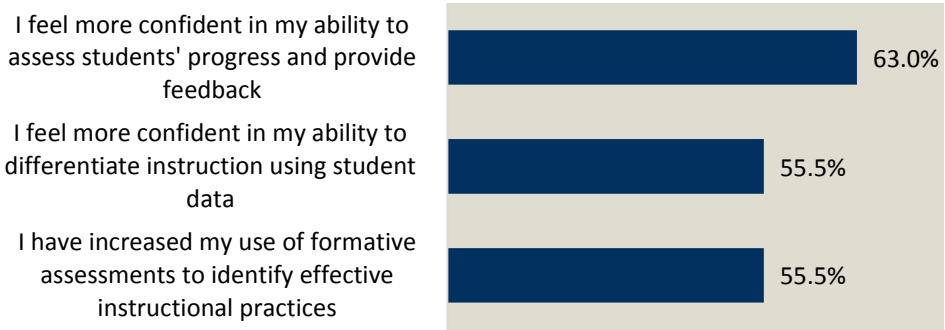
Data Driven Improvement

Evaluation Question: How are schools using data to improve instruction, professional development and student performance?

As highlighted in the previous section on teaching effectiveness, Parkrose HS teachers are increasing their use of data-driven instructional strategies. Figure 10 in the teaching effectiveness section shows that by

the end of the year, 63% of teachers participating in the survey reported increasing their use of technology to differentiate instruction, and 54% have increased their use of technology to analyze data about student learning. Figure 38 displays more information about data-driven improvement efforts at Parkrose HS which are described in the subsections below.

Figure 38. Parkrose HS Data Driven Improvement
(n = 30)



As shown in Figure 38, by the end of the year, 63% of teachers were more confident in their ability to assess students' progress and provide feedback. About half of the teachers surveyed (55.5%) were more confident in their ability to differentiate instruction using student data and have increased their use of formative assessments to identify instructional practices. Focus group participants did not have many examples of how they used real-time data from the technology applications, but one teacher said, "In Edmodo, you can post a little assignment like 'describe in one sentence what you learned today' right before you leave the room. You can check and see who got it."

When asked how frequently they adapt an activity to students' individual needs using technology, 70% of teachers responded "a great deal" (16.7%) or "a moderate amount" (53.3%) by the end of the year. Although there is evidence of increases in differentiated instruction, more progress could be made in this area of instruction.

Funding & Budget

Evaluation Question: Do districts repurpose resources and seeks outside funding to focus on promising practices and technology supports?

Have districts have identified at least one opportunity for repurposing resources to support technology integration?

The Director of Technology and Student Information described repurposing the librarian position to be the iPad support specialist, although this position is partially funded by the TechSmart grant. Specifically, a half-time middle school librarian was move to a fulltime technology support specialist and was charged with supporting the iPad technology and teachers at both the middle and high school. The TechSmart grant paid for part of the time (6 hours per day) for the position at the high school. Focus group participants valued this position, as one teacher said: "Thank goodness for Elizabeth because whenever I have a kid with an issue with their iPad I send them down and she fixes it for them." In the most recent progress report, the Director of Technology and Student Information reported that this idea will be

expanded to the middle school. “We have devoted more money to tech in terms of increasing the middle school librarian to full time so she can help manage iPads.” She commented in the August, 2016 status report about how increased funding has been devoted to the middle school librarian to help manage the iPads. She noted, “One key learning we have had is that secondary schools require a full-time staff on site to deal with the myriad of issues that come up around managing iPads.”

The Director of School Improvement said repurposing resources to focus on promising practices and technology support is an ongoing discussion within the district:

> “We had to shift resources to provide technical support. To be honest that is an ongoing conversation. Device management. It is changing the paradigm of the tech budget. When we are adopting curriculum we have to consider what the tech resources are. We would just have been talking about books two years ago. Now, if we do something more tech based that involves a different level of training, we have to invest further in the training or coaching that would be needed to support it.”

In the August, 2016 progress report, the Director of Technology and Student Information reported that the district has “devoted $50K of district money to a MDM (mobile device management) to manage our devices.”

Strategic Planning

Evaluation Question: Does the district strategic plan reflect shared commitment to improving outcomes for students?

In terms of the district’s strategic plan, the Director of School Improvement said integration of technology is one of the district’s five focus areas and emphasized the importance of modeling the technology in everything they do as district leaders. “The instructional strategies, we are learning to do them electronically. The upper administration has to constantly model and share how we integrate technology. If we don’t do it here, it will not have as big an impact with asking our teachers to integrate.” The high school Principal also commented on the district’s strategic direction, “I know over the past two years, we have really worked on embedding tech and created structural goals around tech. As far as strategy, we have shown teachers how to use technology to support and enhance. This is also included in the teacher evaluation process.”

Engaged Communities & Partners

Evaluation Question: Are parents, stakeholders, community groups and others are actively and systemically involved in helping students?

Do district leaders demonstrate increased communication with and among outside stakeholders regarding technology integration?

PSD is taking steps toward engaging communities and partners through technology integration efforts. As highlighted in the section on digital-age learning culture, the district has started to engage parents in the logistical elements of technology and administrators have worked with the parent technology advisory board. The Director of School Improvement described the support that the district has received from the

community in the form of bond money. “We receive support from our community that allows us to provide the technology. More importantly, how the money has been managed through the bond has helped us to create long-term plans about how we will maintain and replace devices.”

Evaluation Insights at Parkrose High School

The 2016 evaluation for the Parkrose HS TechSmart grant investment pointed to a few areas for improvement and suggestions for future technology integration efforts. Data collection at all levels (administrators, teachers, students) revealed the difficulties that Parkrose HS has had with schoolwide technology integration efforts.

- Barriers to using the iPads for instruction were identified by administrators, teachers, and students. One barrier is that not all students have iPads in class, which could stem from financial issues, students forgetting to bring them to class, iPads being broken, etc. Because students often don’t have the device in class, many teachers have chosen not to use them. When teachers do not use the iPads for instruction, students do not bring them to class, reinforcing the cycle. Students reported other barriers to using the iPad: they are not easy to use for writing and are distracting because many students use them for other activities. This points to a need for additional controls on applications and websites that can be accessed through the school’s internet.

- The evaluation revealed the theme of teachers not feeling adequately prepared to integrate technology into their classrooms. The training received at the beginning of the grant was not enough to sustain over the years, and although the technology department was available for support, teachers did not ask for it. Students reinforced this theme with many comments about how teachers needed to learn more before using technology in the classroom. More training efforts are needed at Parkrose HS if teachers are expected to change instruction.

- Teachers who had adopted new instructional strategies as a result of the training highlighted the use of Edmodo, which is being utilized as a learning management system in the district. They also commented on the use of Google Classroom, which is being used in a similar way. Thus, the use of a learning management system is a promising practice that is emerging from the grant efforts. The PRE evaluation team is aware that efforts are being made to adopt Google Classroom schoolwide, and evaluation results show that this is desired by both teachers and students. Google Classroom could be a good area to concentrate on in the coming years because it seems that integration efforts have been too diffuse, resulting in less progress.

- From the perspective of the evaluators who have studied the TechSmart grant investments in three districts thus far, the difficulties at Parkrose HS could stem from an attempt to create change within too large a group of teachers and students with not enough PD and training resources attached to the effort. Targeting specific grades or smaller cohorts of teachers has emerged as a best practice from the David Douglas and Reynolds projects and would be a model for PSD to consider in the future

Changes to the evaluation for the final year of implementation at Parkrose include the following:

- PRE will request a list of all teacher emails for administration of the teacher survey with a goal of increasing the response rate.
- PRE will conduct teacher interviews rather than a focus group this year in order to collect more in depth qualitative data. PRE can recruit teachers for these groups if provided with contact information.
- PRE will add questions to the teacher survey, teacher interviews, and leadership interviews to better understand how the TechSmart grant investments are impacting underserved populations.
- Observation data will be a required part of the evaluation this year. If the district collects walk-through data related to technology integration, PRE will request access to the tool in winter 2017 and to the data in spring 2017. If the district is no longer collecting this information, PRE will provide the administration with a classroom observation rubric and a minimum number of teachers it should be utilized with. The goal of this data collection will be to capture behavioral change in instructional practices rather than change in the utilization of digital tools.

Reynolds School District

Project Summary

Reynolds School District's (RSD) MHCRC TechSmart grant focuses on improving student achievement in 8th grade math, 9th grade credit attainment, and English learners' progress. RSD chose to focus on these outcomes because in the 2013–14 school year, 44% of its students were English language learners. In addition, less than half of students completing their first year of high school were on track to graduate (earning six or more credits), and math was the course most frequently failed. RSD is using the TechSmart grant for middle and high school math classroom technology and related teacher professional development (PD).

District administrators are implementing a staggered-rollout strategy where they will onboard a cohort of math teachers every school year for the first three years of the grant so that by Year 4, the district will have full implementation of technology-rich math curriculum across all middle schools and the high school. In addition, RSD's grant also helps fund technology for the Project Lead the Way curriculum, a STEM-based, nationwide education program being offered to 7th through 9th grade students as an elective course to increase student engagement in math and science.

RSD completed its first year of project implementation in the 2015–16 school year. Administrators selected a cohort of 13 math teachers from the three middle schools and Reynolds High School for the 2015-16 school year. The math teachers received teacher and student technology devices including Microsoft Surface Pros (teachers), short throw projectors, Dell Venues (students), and 3D printers. In addition to receiving the devices, the math teacher cohort participated in PD sessions in the summer prior to the school year and throughout the year that focused on using technology to support math education and English language development.

Teaching Effectiveness

Evaluation Question: Do districts support regular, inclusive and shared professional development among teachers?

The PD provided for the math teacher cohort had three primary components. First, the cohort (13 middle school and 9th grade math teachers) met for two days of instructional lab cycles (one each in February and April) led by the two half time instructional technology coaches assigned to this project. Within these full day lab cycles, teachers collaborated to develop a math lesson that incorporated student use of technology and nurtured English language learning, in addition to the math content. The teachers observed one teacher deliver the co-constructed lesson and convened afterwards to reflect on its effectiveness. In the second PD component, the math cohort met during district early release sessions that took place once a month between February and May. These meetings were less structured and built on the lesson work of the lab cycles, but focused more on the nuts and bolts of technology implementation in their instruction. Teachers shared what was working when using technology in their lesson plans, including the learning management system, formative assessments, educational applications, Office365, and other functions and processes. Finally, each teacher met a minimum of two times with a Teacher On Special Assignment (TOSA) for one-on-one mentoring sessions. These were utilized as demonstration sessions for the TOSA to guide the teacher into deeper application of the concepts reviewed in the early

release PD sessions, including the modeling of lessons utilizing the technology. This PD method has been effective, as noted in the August, 2016 grant status report, "This model has proven very effective, as teachers who received this training model have stated that they intend to conduct the lesson in the fall on their own."

One component of the PD was language development for Limited English Proficiency (LEP) students. Focus group participants described this as an unexpected element of the PD. The combined objectives of both math and English language in the PD proved challenging for teachers at times, as one teacher said: "To be honest, some of us weren't aware of the English language development component when we signed on last year. It was a surprise to us we were looking at language learning targets and math targets at the same time, and technology. It feels kind of overwhelming sometimes." District leaders discussed how this training objective of English language development provided teachers with skills in a new area:

> "Part of our program design incorporates intentional language development through the utilization of this technology, so we are getting math content and language development simultaneously through the professional development associated with the project. We have math teachers now teaching language, which might not have been an area of expertise coming into this year."

District leaders said that the administration supported the grant and PD, but teachers planned the project and led the training. A district leader stated, "This is a teacher-driven endeavor, from the onset of the idea, to the development of the proposal, and through implementation this year. The district leaders are engaged, but the professional development is led by teachers for other teachers and doesn't require the traditional administrative oversight." A key piece of the Reynolds PD model is the fact that it is "teacher led" and they are relying on teachers to train other teachers. This includes the coaching by the TOSA as well as the informal coaching that takes placed between teachers.

Table 21 and Table 22 summarize the amount of group and individual PD that teachers received at the middle and end of the school year. By year end, survey participants most commonly reported receiving between one and eight hours of individual PD (66.7%), and all participants reported receiving over 33 hours of group PD.

Table 21. Reynolds School District Hours of Group PD

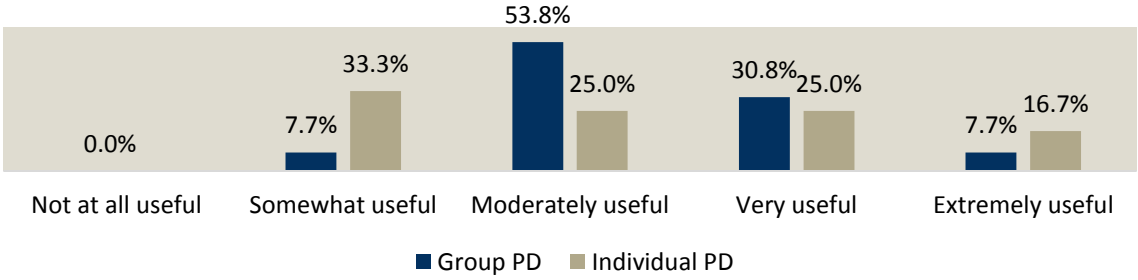
Hours of Group PD	Mid-Year Survey	End of Year Survey
0 hours	0.0%	0.0%
1-8 hours	0.0%	0.0%
9-16 hours	0.0%	0.0%
17-32 hours	7.7%	0.0%
33+ hours	92.3%	100.0%

Table 22. Reynolds School District Hours of Individual PD

Hours of Individual PD	Mid-Year Survey	End of Year Survey
0 hours	7.7%	0.0%
1-8 hours	38.5%	66.7%
9-16 hours	30.8%	16.7%
17-32 hours	15.4%	0.0%
33+ hours	7.7%	16.7%

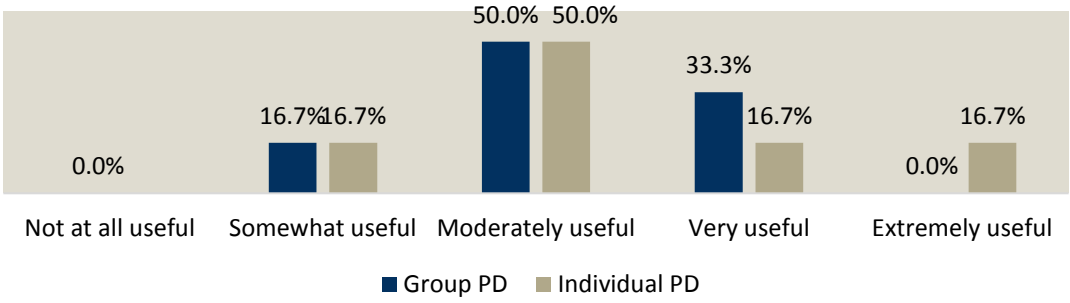
On the mid-year and year-end surveys, teachers rated the usefulness of the group and individual PD. Figure 39 shows that the majority of teachers rated group PD as moderately useful at the middle of the year (53.8%), whereas individual PD was rated as slightly less useful.

Figure 39. Reynolds School District Mid-Year Teacher Ratings of PD Usefulness
(n = 13)



At the end of the school year, half of the teachers (50%) rated both group and individual PD as moderately useful (see Figure 40).

Figure 40. Reynolds School District End of Year Teacher Ratings of PD Usefulness
(n = 6)

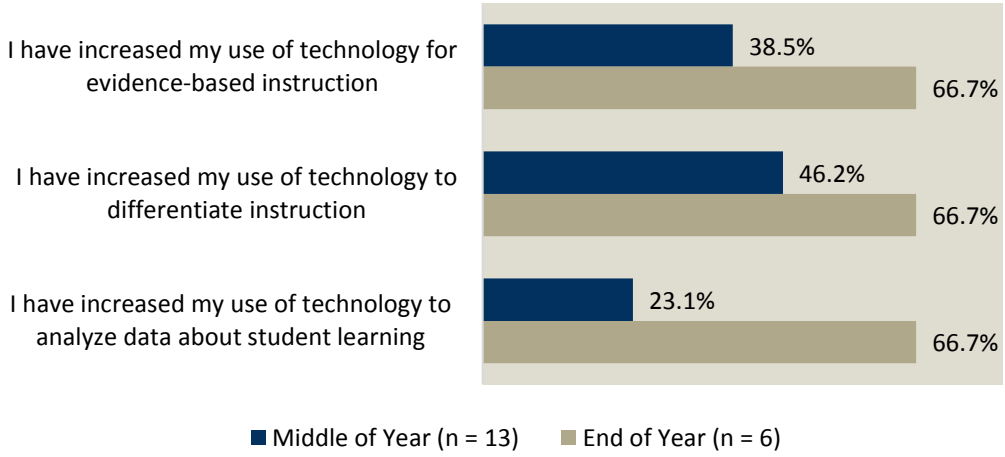


How is the professional development impacting teacher instruction?

Teachers in the focus group said that they have been incorporating more technology into their instruction than in previous years. As one teacher said, "You can't use it when you don't have it. We have it now." On the mid-year and year-end surveys, teachers reported the extent to which they had increased their use of technology, since participating in the PD, for evidence-based instruction, differentiating instruction,

and analyzing and using data about student learning. As shown in Figure 41, there was an increase in the percentage of teachers agreeing with each statement, and by the end of the 2015-16 school year, approximately two thirds of respondents (66.7%) had increased their use of each of these practices.

Figure 41. Reynolds School District Instructional Change Since Receiving Technology-Specific PD
(% Agree/Strongly Agree)



The August, 2016 project status report provided an example of how teachers are using technology to analyze student data and differentiate learning:

> "An 8th grade teacher taught a unit on arithmetic sequences. After four daily lessons of instruction, he recorded a lecture for review and uploaded it into OneNote and shared it into the learning management system for student access. Students previewed the video before coming to class and then completed an assessment task. Given and scored online, students and teacher received immediately feedback on their work. Depending on their performance students either proceeded onto additional preloaded teacher lectures and performance tasks on their own. Conversely, the students who did not meet the performance standards worked independently or in small groups with the teacher for concept remediation during class."

Teachers assessed their technology skill level on the mid-year and year-end surveys at one of the five levels listed below.

Level 1: I get someone else to do technology-based tasks for me.

Level 2: I accomplish assigned tasks, but I am more efficient when I don't use technology to do a job.

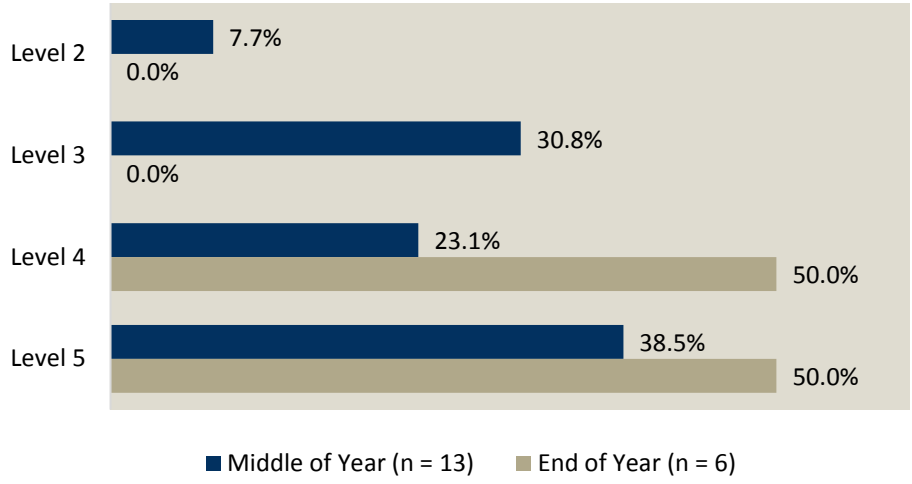
Level 3: I have enough skills to complete the management and communication tasks expected of me and occasionally will choose to use technology to accomplish something I choose.

Level 4: I use a variety of technology tools and I use them efficiently for all aspects of my job.

Level 5: I use technology efficiently, effectively, and in creative ways to accomplish my job.

Figure 42 illustrates teachers' self-ratings of their technology skill levels. By year-end, all survey participants rated their technology skills as a Level 4 or 5, showing a large improvement from the mid-year survey on which almost half of the teachers rated their skills as a Level 2 or 3. No teachers rated their skills as a Level 1 at either time point.

Figure 42. Reynolds School District Teachers' Technology Skill Levels



What new instructional strategies are teachers reporting?

Math cohort teachers provided examples of instructional strategies that they believed had been effective in their classroom instruction and rated the strategies on a scale of one to five, with five being the most effective. Teachers also listed the technology resources they have used to enhance instruction since receiving the TechSmart grant funding. The most common tools teachers used are listed in Table 23, along with the average effectiveness rating of each tool at mid-year and year end.

Table 23. Reynolds School District New Technology Used for Instruction

Technology Supports	Effectiveness Rating Mid-Year	Effectiveness Rating End of Year
Schoology	4.3 (n = 4)	4.0 (n = 3)
Dell Venues	3.3 (n = 4)	3.7 (n = 3)
OneNote	4.3 (n = 4)	3.0 (n = 1)
Kahoot	4.7 (n = 3)	4.0 (n = 1)
IXL	3.5 (n = 2)	3.5 (n = 2)
Desmos	4.0 (n = 2)	4.0 (n = 1)

The most commonly noted new tools were Schoology and online resources such as Kahoot. Schoology is the learning management system adopted by RSD districtwide in conjunction with Year 1 of grant implementation. The grant assists the math cohort and instructional technology coach to receive specific training on Schoology for math instruction. Teachers reported using Schoology for assessing student progress, submitting student work, and giving students access to content. For example, one teacher discussed utilizing Schoology to give students access to notes on the classroom material. This provided all students with access to an additional resource, and also enabled the teacher to meet the needs of

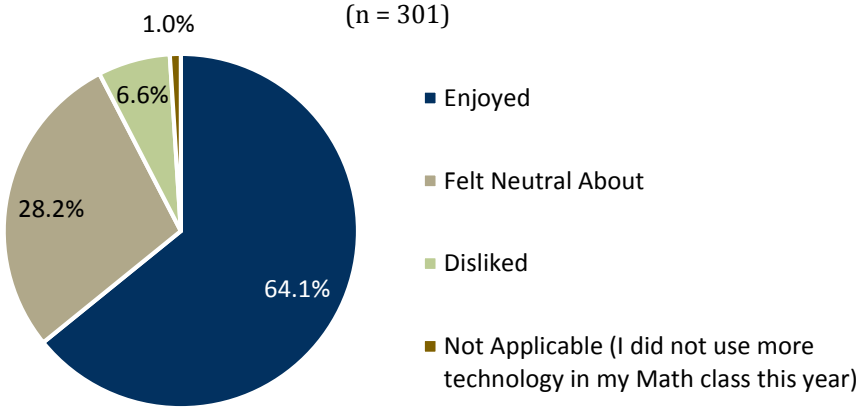
students with individualized education plans (IEP). During the focus group, one teacher discussed how the use of Schoology has enabled students to connect with school resources when they are absent: "With Schoology, I am able to give students an update and say what we are doing in class. If they are sick and not at school, they can see what we are doing because they have access to the resources we are using in class."

Another digital tool that teachers discussed is OneNote, an app that allows students to work individually on handouts and assignments, and accommodates collaboration among students. Teachers reported using this tool to give students daily assignments and deliver instruction. One teacher described how this tool has been useful in the classroom: "I have been able to use OneNote to create a different environment in my classroom. It has allowed me to walk around the classroom and be more present for my students." Another teacher said, "With OneNote, I can look in the students' notebooks right away and notice if they are on task and doing what they are supposed to be doing."

How are the new instructional strategies impacting student engagement?

In the survey, students rated the effect of technology on their classroom engagement. Figure 43 illustrates that the majority of students (64.1%) enjoyed using more technology in their math class in the 2015-16 school year.

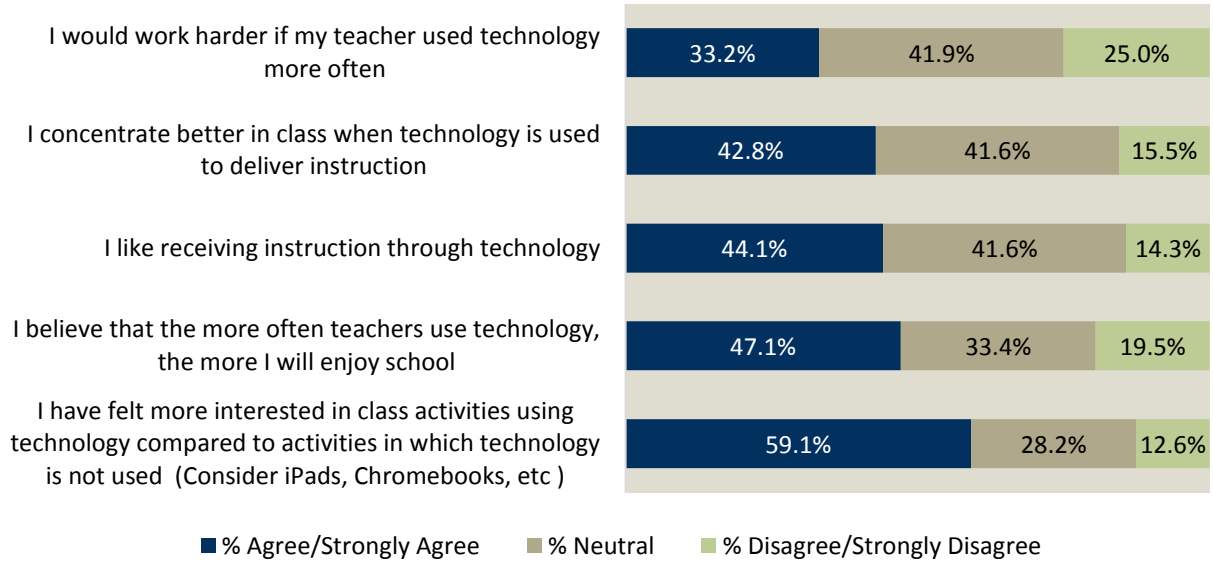
Figure 43. Reynolds School District Students' Feelings about Technology Use this Year
(n = 301)



"I have gotten used to having technology in class and I would like to keep it that way because I like technology."
-Reynolds Student

For the most part, students were either positive or neutral about the impact of technology on their enjoyment and interest in classroom activities, as shown in Figure 44. Approximately half of survey respondents reported that the more technology was used, the more they enjoyed school (47.1%), and 59.1% indicated that they have felt more interested in class activities using technology.

Figure 44. Reynolds School District Student Engagement
(n = 308)



Students' comments about how their opinions have changed regarding the use of technology varied, but were mostly positive. Positive feedback included comments about how technology enhances student learning, how technology is fun for students to use, and how technology helps students stay focused. Sample quotes illustrating these themes are shown in Table 24.

Table 24. Reynolds School District Students' Positive Opinions of Technology Integration

Theme	Sample Quotes
Technology enhances student learning (n = 20)	• *I have always enjoyed when they use technology in my learning because I learn better that way.* • *I feel like I get the same level of education in my class as my peers and that I get more one-on-one time with my teacher with my questions. My math grades have been much better.* • *I like the technology because when you get a question wrong, it will instantly acknowledge you, and you can correct your mistake the next time you have a question like that.*
Students enjoy technology/technology is fun (n = 13)	• *The class became more fun and interesting.* • *I really liked it because the teachers got to project the work we had to do in the class onto the screen and we could work on the school work on the laptops and it's really FUN!!!!* • *The technology didn't really make a difference in my learning, but it was more fun to work with.*
Technology helps students focus (n = 6)	• *It helped a lot having technology because it keeps us more focused than a lecture or a long assignment that we feel like we can't finish.*

Theme	Sample Quotes
	• *I think using more technology in class is a good because I pay more attention. I had an F before my class used technology and now I think I have a neutral grade.*

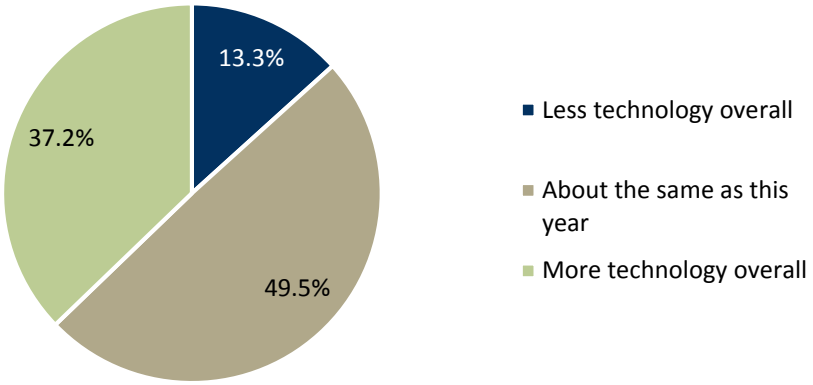
One-third of students were neutral about technology in the classroom; an example of a neutral comment is, "Neutral is about the best way I can describe my opinions. There are pros and cons, but overall it doesn't matter how much technology is incorporated, what matters is how the teacher explains the lesson." Less frequently, students provided negative feedback on technology use, indicating that they prefer to learn using non-technological methods, that technology makes learning more difficult, and that they would prefer less technology overall. Sample comments from these themes are included in Table 25.

Table 25. Reynolds School District Students' Negative Opinions of Technology Integration

Theme	Sample Quotes
Prefer non-technology learning methods (n = 9)	• *I would prefer less technology because I like doing things by hand on paper.* • *I generally dislike working on math lessons on a computer because I can't really focus unless I'm physically writing something down on paper I can easily look at to remember.*
Technology makes learning more difficult (n = 6)	• *I have trouble with learning and understanding the concepts. I liked it better when we had no technology and we would go through a lesson step by step with the teacher.* • *I really don't like it. It is honestly making things more confusing for me. I prefer for the teachers to just write it on the boards instead, that helps me way more.*
Prefer less technology (n = 5)	• *I like using technology sometimes, but I really wish we could use a little less and at least have a few assignments in class with paper.* • *I would like if we used less technology.*

About half the students wanted their teachers to use about the same amount of technology as this year (49.5%), and 37.2% hope to see more technology, which points to a positive reaction to technology integration in math classes. Several students wanted the technology to be integrated into more of their classes in the future; for instance, one student said, "The computers in the school have improved many emotional states and hands-on learning habits. Many of my friends say that they have received better learning from the technology that we use. I would strongly agree that we should buy more of the computers for more classrooms."

Figure 45. Reynolds School District Students' Desire for Technology Use Next Year
(n = 301)



Student engagement was one of the most significant areas of impact that teachers and district leaders identified. One member of the district leadership team said, "The thing that jumps out at me is the level of engagement of the kids who are getting the opportunity to participate in this. It has been really cool to see. There is more of an ownership of their learning that you see. Kids are so engaged in technology that it feeds upon itself." Several teachers and leaders noted that the new technology has been especially valuable for students who were unengaged in the classes in the past. One teacher said, "I have noticed that students who would normally not be engaged will try to enter in when we have laptops. It is reaching those kids." Another teacher said that one of the ways the new technology has accomplished this is through eliminating barriers to completing work:

> "Some of the reluctant students and students who have previously been failing are very good at hiding from work, but they can't do that anymore. They don't know how to because it is all there. You can't lose it; you don't need a pencil. That piece has upped the level of student engagement for students who have a history of struggling. They are willing to try a little bit, so that is what I've had huge success with."

Are the new instructional strategies showing promise for improving academic outcomes?

In general, students reported that technology had a positive impact on their learning. Over half the students reported that technology helped them learn more (52.9%), and 40.9% believed that the technology had a neutral effect on their learning.

Figure 46. Reynolds School District Effects of Technology on Learning
(n = 308)

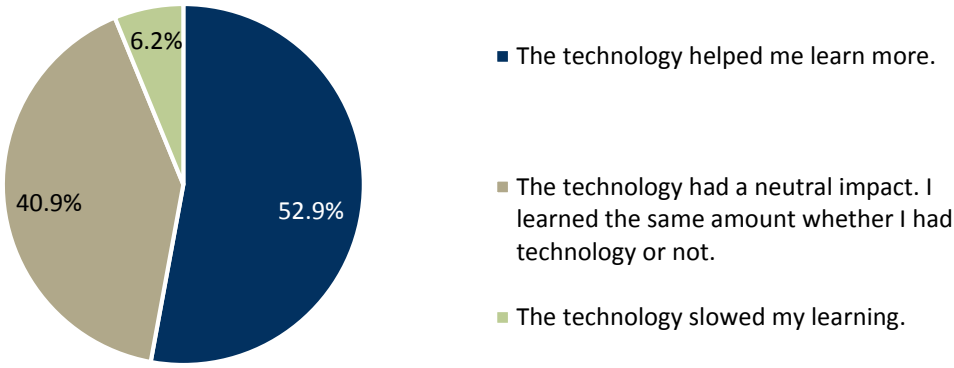
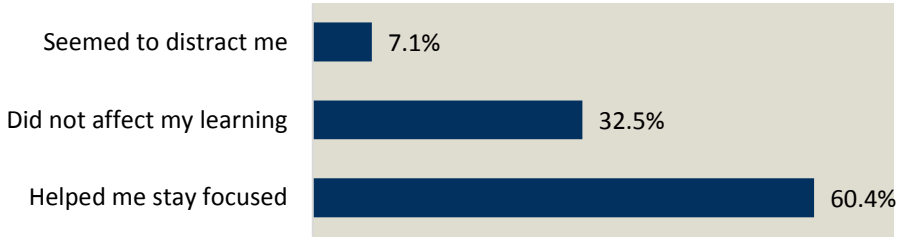


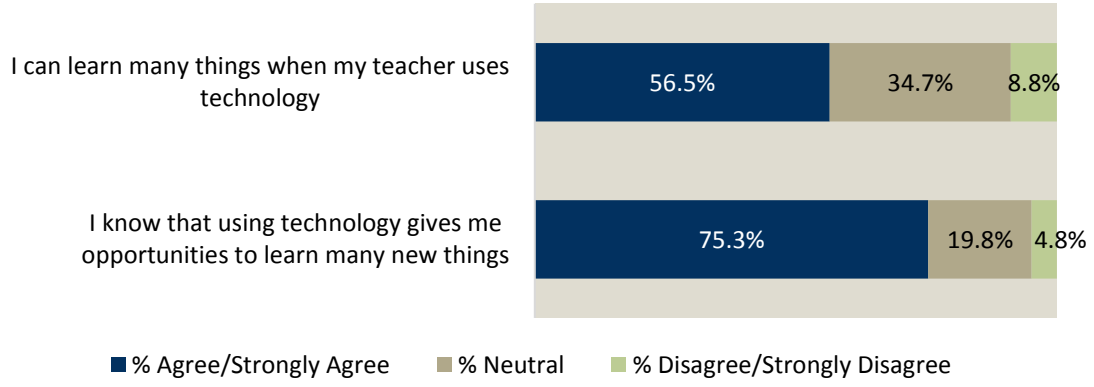
Figure 47 displays student responses to their experience with new technology in the classroom in Year 1 of the grant and shows that 60.4% of students believed that technology positively affected their learning by helping them stay focused. Less than 10% of students reported that the technology seemed to distract them (7.1%). This is congruent with student comments (Table 24) that technology in the classroom has helped them stay focused.

Figure 47. Reynolds School District Impact of Technology on Classroom Focus
(n = 308)



Over half the students reported that they can learn new things when their teachers use technology (56.5%). Additionally, 75.3% of students reported knowing that using technology provides opportunities to learn new things. A small percentage of students (less than 10%) disagreed with each of these statements.

Figure 48. Reynolds School District Students' Perceptions of Technology Use in Instruction
(n = 308)



Students chose the top two classroom activities that they learned the most from during the school year. The most common activity (34.7%) was using computers for activities such as typing, researching, and creating presentations. Other common responses included small group work and completing worksheets, posters, and study guides. Using apps was close to the bottom of the list: only 18.2% of students indicated that they learned the most from this activity (see Table 26).

Table 26. Reynolds School District Activities Students Learned the Most From

Of the activities listed below, which TWO do you feel you LEARNED the most from in class in the last year?	n	%
Using computers (typing, researching, creating presentations)	105	34.7%
Small group work	99	32.7%
Completing worksheets, posters, study guides, textbooks, questions, etc.	90	29.7%
Lecture/presentation by teacher	78	25.7%
Reading or working by yourself	68	22.4%
Large group work	57	18.8%
Using applications (on iPads, Chromebooks, etc.)	55	18.2%
Watching movies/films	45	14.9%

Many teachers expressed hope that the new instructional strategies would improve student outcomes, but knew that these improvements would not be measurable for several years. One teacher said, "We haven't done enough testing to truly see results. We might not know real results for two or three years." Anecdotally, several teachers described improvements in student outcomes such as engagement, attendance, and

> "Through formative assessments, my kids are doing better than in previous years. I feel like kids are attending more, they are more engaged in topics, they are learning more, and it is transferring to the tests I am giving them. It is not just gains, but it is gains from kids you wouldn't expect gains from."
>
> *-Reynolds Teacher*

academic performance. One teacher said, “My attendance rate is super high. That’s a start.”

District leaders also identified an increase in student engagement in classrooms where the new technology is being implemented. Teacher interaction with students has also increased. A district leader said, “It seems like the teachers are constantly interacting with the kids. Every kid is getting feedback and participating.” In addition, one middle school principal reported an improvement in Smarter Balanced scores, indicating promise for improving student outcomes: “Our Smarter Balanced data is showing a significant jump in math. It is only a handful of teachers that are part of the grant, but we are seeing significant growth.”

The August, 2016 project status report provided some preliminary evidence of the TechSmart grant’s positive effect on student outcomes, specifically 9th grade credit attainment. Math has historically been the most frequently failed class in the first year of high school, so it can have a significant impact on 9th grade credit attainment, which in turn is predictive of high school graduation. As the report noted, a large increase in the percentage of 9th grade students on track for graduation can, in part, be attributed to the TechSmart grant because it increased the number of students who passed 9th grade math:

> “Preliminary data suggests 74% of the class of 9th graders just completing their freshman year are on track to graduate. There are a number of factors that impact student learning which make it difficult to isolate any single indicator as the cause of impact. Yet, building administrators are confident a leading factor for the 12% increase is because of proportional increase of passing math grades in part attributable to the instructional improvements from the TechSmart Initiative available to over 300 9th graders engaged in this project.”

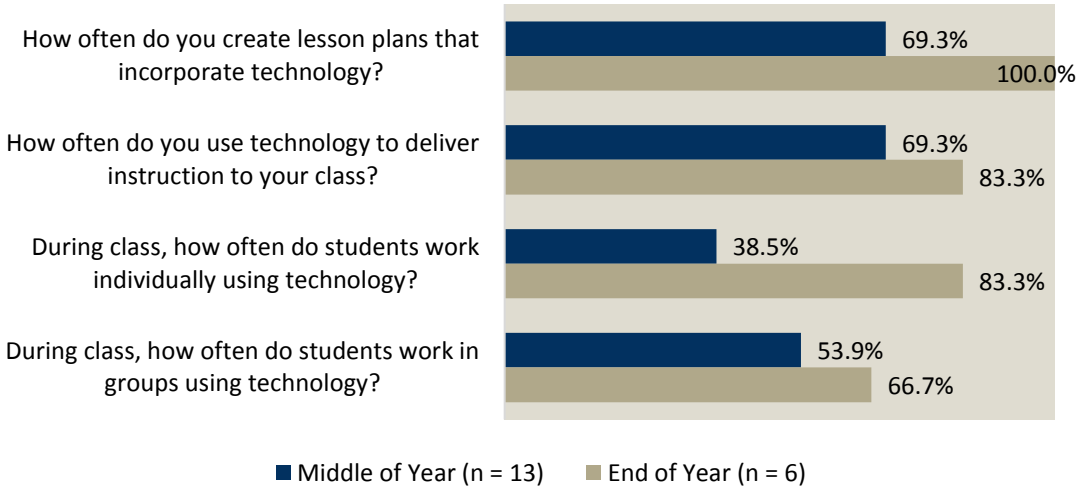
Digital Age Learning Culture

Evaluation Question: Do districts demonstrate a cultural shift such that technology is viewed more positively?

Has the use of technology to support instructional practices increased?

Figure 49 illustrates the frequency of technology integration at the middle and end of the school year. The percentage of teachers reporting that students worked individually using technology “a moderate amount” or “a great deal” increased from 38.5% to 83.3% at year end. In addition, a higher percentage of teachers reported using technology to deliver instruction “a moderate amount” or “a great deal” at the end of the year (83.3%). The frequency of teachers incorporating technology into lesson plans and students working in groups using technology decreased from the middle to year end, which shows that there is still room for improvement in these areas. In terms of teachers using technology to support instruction, one teacher said, “We have gone from completely analog to 100% digital over the course of the year.” The vast majority of students also noted that the use of technology in their math class had increased since the last school year (81.5%). Less than 5% of students disagreed that the use of technology had increased.

Figure 49. Frequency of Technology Integration Among Reynolds School District Teachers
(% responding "a moderate amount" or "a great deal")



Is the learning management system useful for identifying effective instructional practices (more efficient, easier, data driven)?

Before the implementation of the grant, RSD piloted a free, limited version of Schoology and adopted it districtwide starting in the 2015-16 school year. District leaders said that math cohort teachers have been using Schoology more than before. One district leader said, "I see more use of the learning management system to manage discussions in the classroom, to manage assessments, and to house assignments and resources for students." Data from the August, 2016 status report confirm that the math cohort has been using the learning management system more. Of the 46,000 assignments that were submitted districtwide on Schoology during the 2015–16 school year, almost half (more than 19,000) were submitted by students of the 13 teachers in the math cohort. On the teacher survey and in focus groups, teachers reported multiple ways in which the learning management system was useful: assessments, submitting student work, and giving students access to content. These uses of the learning management system were discussed in the previous section on teaching effectiveness.

Do teachers have increased access to and use of digital content and resources?

Math cohort teachers reported an increase in access to and use of digital content and resources in their instruction. By 2015–16 school year end, 83.3% of teachers had increased the use of digital content and resources in their instruction, which is a 20 percentage point increase from the mid-year survey (see Figure 50). As one teacher said, "You can't use it when you don't have it. We have it now."

Figure 50. Reynolds School District Teachers' Use of Digital Content
(% Agree/Strongly Agree)

In terms of access to technology resources, Figure 51 shows that 100% of teachers at year end reported that students have adequate access to these resources in their classrooms. A district leader confirmed: "There is more technology in the hands of students. There are 100 kids at any one time that are being impacted."

Figure 51. Reynolds School District Students Have Adequate Access to Technology Resources in my Classroom
(% True of me/Very true of me)

Teachers provided examples of digital content and resources that they have access to because of the TechSmart grant, including document projectors, online resources, OneNote, Schoology, and 3D printers. Table 27 provides an example of how teachers are using each of the various resources.

Table 27. Reynolds School District Teachers' Use of Digital Content

Digital Content	Teachers' Application of the Technology
Document Projectors	"The main thing I love about the projectors is the Bluetooth to project so you're not tied to the projector anymore. That opens the room up and allows you to move and completely flips the dynamic of any classroom."
Desmos	"Desmos is an online graphing calculator, but it is so much more than that. You can manipulate an equation. It is a huge interactive piece."

Digital Content	Teachers' Application of the Technology
OneNote	"I have been able to use OneNote to create a different environment in my classroom. It has allowed me to walk around the classroom and be more present for my students."
Other Online Resources	"We use many online resources including Kahoot, PearsonSuccessNet, IXL, and Khan Academy."
3D Printers	"We do 3D rendering software to interface with the 3D printers. They are getting a group of kids together to design something that has multiple, interlocking parts. If you don't have the same measurements as the person next to you it's not going to work in the real world. It's really reinforcing mathematical abilities and strengths using real world examples."
Schoology	"I have kids use Schoology for exploration and assessments."

Students discussed technologies that they wanted their teachers to use in the classroom, and a large portion of responses focused on the use of devices such as computers, iPads, Chromebooks, phones, and SmartBoards. Students appreciated the capabilities of these devices and wanted teachers to use them more. In terms of online resources, students said that websites like Khan Academy and Kahoot were fun and aided with understanding concepts. Students did not mention any specific apps, but said they would enjoy it if teachers used them more, especially for playing math-related games. Table 28 shows a sample of quotes from each of these themes.

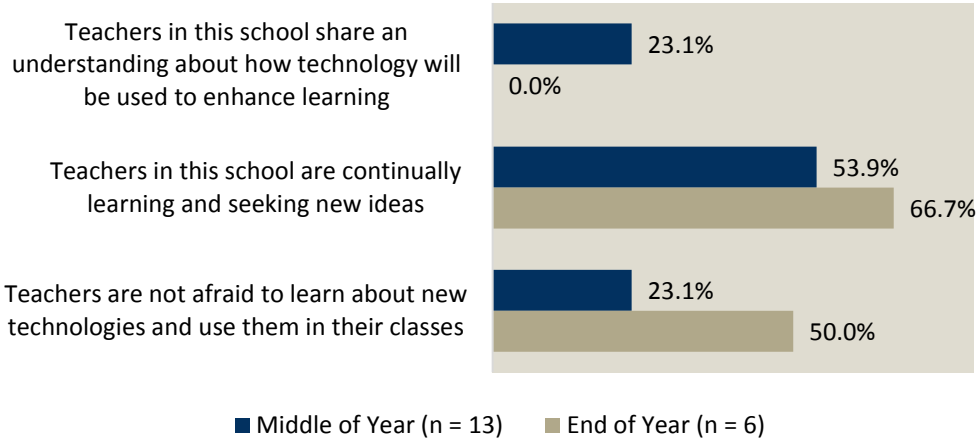
Table 28. Reynolds School District Technology Students Want Teachers to Use

Theme	Sample Quotes
Devices (n = 154)	• *I wish that teachers would let us use the computers more often. It gives us students a better and more detailed way to learn and understand the material here and at home.* • *I wish teachers would use smart whiteboards more because it would help a lot!* • *I wish they would use iPads or Chromebooks. It would help me like school more and want to learn more.* • *Venue because we can take notes faster and have more time to do our homework in class.*
Online Resources (n = 17)	• *More Kahoot. It made work more fun.* • *I think that I want more teachers to incorporate more technology and experiment with new ideas using Google.* • *I wish my teacher used Khan Academy for our class to help us understand what math we're doing and help us remember how to do the math so he will not have to show us more than once.*
Apps (n = 5)	• *I wish teachers would use apps that will help me learn more.* • *It would be nice to use apps, like games or puzzles, to help with our math.*

Is there evidence of district wide support for technology integration?

Teachers reported on their perceptions regarding the culture of support for technology integration in their school, and there was significant room for improvement. At year end, no teachers agreed or strongly agreed that there is a shared understanding among teachers about how technology is used to enhance learning. The percentage of teachers who reported that teachers are unafraid to learn about and use new technologies increased by more than 25 percentage points to 50% from middle to year end, but still left room for progress. It is possible that this perceived lack of culture of support for technology integration is related to the small number of teachers involved with the first math cohort (13 out of 39 total sixth through 9th grade math teachers).

Figure 52. Reynolds School District Teacher Perceptions of a Culture of Support for Technology Integration
(% Agree/Strongly Agree)



In terms of the teachers in the math cohort supporting one another's technology integration efforts, one teacher said, "We're trying to be very encouraging because not everybody is going to be in exactly the same spot. If somebody finds something that works a little better for them, then that is something we are understanding of. Then we pool our resources and you get great ideas." Teachers voiced concerns about future grant years and the level of support that will be provided as the number of teachers implementing the new practices increases: "We have two TOSAs for our cohort, but when we double we aren't getting four TOSAs. At that point, each teacher is getting less TOSA." In addition, the teachers believed that their cohort was most interested in technology integration because they had volunteered to be in the first cohort, and later cohorts might need additional support. As one said, "We are becoming more independent, but we are going to need more time. In order for us to bring those folks along, we are going to need time with them."

District leadership has taken advantage of the limited opportunities they have had to share knowledge from the 2015-16 school year. There have been several opportunities for teachers not involved with the grant to learn from teachers in the first cohort. For example, teachers were required to spend time shadowing one another, and as one district leader said, "You can imagine that when you go into a math classroom where this is happening it is jaw dropping in a very powerful way." In addition, the math cohort teachers shared new practices during a monthly meeting to educate other teachers on the new

strategies and resources that the grant has enabled them to use. The August, 2016 project status report stated that teachers in other content areas have begun to implement some of the online tools as a result of these shared learnings.

Do parents have an increased understanding and utilization of districts' technology assets?

The TechSmart grant has allowed parents to become more involved in students' learning. For example, Schoology, the learning management system, has a parent access portal that enables parents to communicate with teachers. The digitization of all the assignments makes it easy for teachers to show parents examples of their children's work, as one district leader said: "Any time parents are engaging with a teacher, it is an easy conversation because you can pull up the assignments, rather than digging through a binder that isn't organized. Teachers have been able to have real conversations with parents through that." During parent-teacher conferences, several math cohort teachers shared with parents the new technology students were using in the classroom, as reported on the August, 2016 project status report:

> "A number of math teachers from the TechSmart cohort decided to present student-led conferences to convey the new structure of their classes. Students presented their work, utilizing the devices, with both the teacher, parent and if needed, language translators, present. This served to provide a direct demonstration for parents as to how their children were learning as well as sought to find ways for parents to support through school to home connections."

Finally, parents are learning about the TechSmart project through communication with school principals, as noted in the August, 2016 project status report: "The parent community is continuously updated to the assets brought by TechSmart through ongoing Principal communication (parent newsletters, updates at coffee chats, site council, and PTA meetings)."

Are an increased number of students utilizing and engaging with new technology?

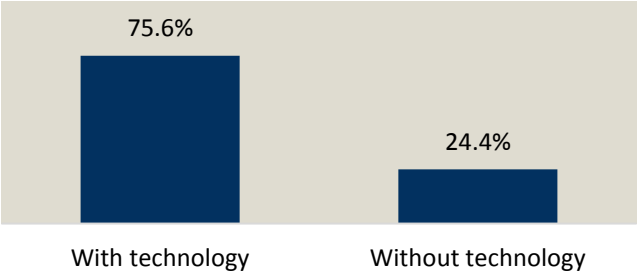
As mentioned in previous sections, student engagement has increased because of the new technology. As shown in Table 29, students reported that using computers in math classes was one of the top activities that held their interest. Using apps was toward the middle of the list of activities that kept students' interest.

Table 29. Reynolds School District Activities that Interested Students

Of the activities listed below, which TWO kept your INTEREST most in class in the last year?	n	%
Small group work	133	43.9%
Using computers (typing, researching, creating presentation)	112	37.0%
Watching movies/films	74	24.4%
Large group work	65	21.5%
Using applications (on iPads, Chromebooks, etc.)	59	19.5%
Completing worksheets, posters, study guides, textbooks, questions, etc.	56	18.5%
Reading or working by yourself	49	16.2%
Lecture/presentation by teacher	45	14.9%

Figure 53 shows that three quarters of the students would prefer to complete an assignment with technology rather than without, reinforcing the finding that students are interested in and engaging with classroom activities that involve the new technology.

Figure 53. Reynolds School District Student Preferences for Completing Assignments
(n = 295)



Visible Leadership

Evaluation Question: To what extent is district leadership actively involved in supporting technology integration within and across districts?

Are districts identifying effective instructional practices and disseminating information and results to other districts?

District leaders have not had many opportunities to share information with other schools within the district or externally with other districts, because RSD began implementing its TechSmart grant during the 2015–2016 school year. In terms of sharing results outside of the district, the TOSA presented to Gonzaga University about the benefits of technology-based learning:

> "An example of where we have been sharing outside of our community is our tech TOSA who has been leading the technology side of this was invited to present to Gonzaga University. He met with their faculty around the benefits for student engagement at a post-secondary level. The model would be altered but the principals of online or tech-based learning was something he shared with them."

Do teachers feel increased support from district leaders regarding technology integration?

Math cohort teachers' agreement that administrators supported technology integration efforts increased from approximately 70% on the mid-year survey to almost 90% at year end. This suggests that teachers have experienced a high level of support from district leaders for technology integration. Yet, the feedback from the teachers' focus group somewhat contradicted this finding, in that focus group participants said they have been supporting themselves, rather than receiving support from the district. This response is synonymous with feedback from district leaders who said that the project has been teacher-led. Teachers identified ways in which they could use extra support from the district, including improved communication from the IT department and additional time to work together to plan lessons. One teacher said, "Our biggest thing is that we want more time together in an open environment, with no

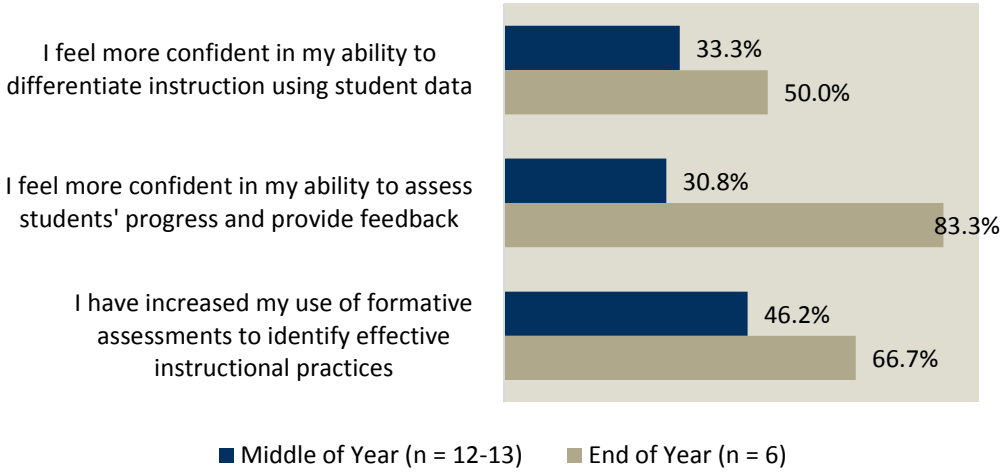
pressure, to get some stuff done. That's always our biggest desire, and we're not provided a lot of that at this point and when we are away from our classes."

Data Driven Improvement

Evaluation Question: How are schools using data to improve instruction, professional development and student performance?

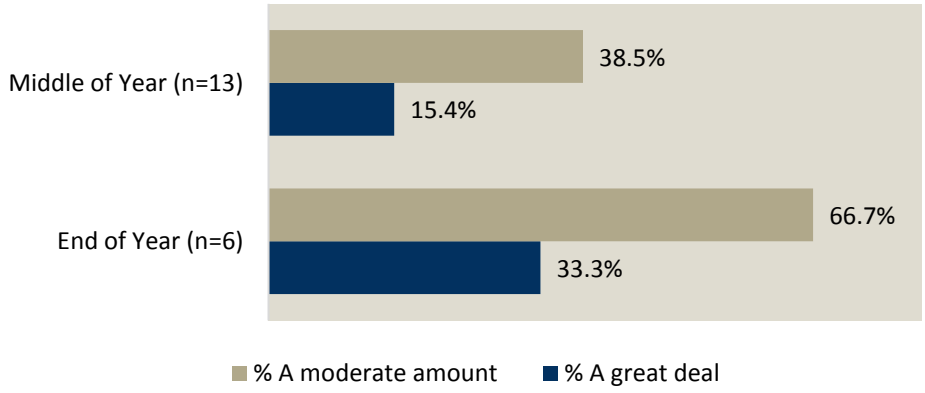
As highlighted in the previous section on teaching effectiveness, math cohort teachers have been increasing their use of data-driven instructional strategies. Figure 54 shows that from the middle to year end, teachers felt more confident in their ability to assess students' progress and provide feedback and to differentiate instruction using student data. Teachers had also increased their use of formative assessments to identify instructional practices. At year end, 50% of teachers agreed or strongly agreed that they were confident in their ability to differentiate instruction using student data, and 66.7% had increased their use of formative assessments to identify instructional practices.

Figure 54. Reynolds School District Data Driven Improvement
(% Agree/Strongly Agree)



On the year-end survey, all teachers reported using technology to adapt an activity for individual students "a moderate amount" or "a great deal" (see Figure 55), which is an improvement from the mid-year survey. As discussed in the teaching effectiveness section, student engagement has increased, and in the focus group, a teacher said this is partly because of the increase in differentiated instruction: "For me, being able to meet the kids specifically where they're at with individualized teaching from 1st to 6th grade has increased engagement because they are getting the stuff they actually need, not the stuff that is way above their head or they've already learned. It's helped even the playing field."

Figure 55. Reynolds School District Teacher Adaptation of Activities For Students' Needs Using Technology



Funding & Budget

Evaluation Question: Do districts repurpose resources and seeks outside funding to focus on promising practices and technology supports?

Have districts identified at least one opportunity for repurposing resources to support technology integration?

RSD leaders provided several examples of how the district has repurposed funds to support technology integration. First, district leaders said that they have shifted several roles within schools to work more with the new technology:

> "The media specialist used to be in charge of all the books, but now they are in charge of all the computers. The media specialist is the first line of defense with any kind of IT issues. We also use the testing coordinator for support on MHCRC computers and run updates. We are using people who are predisposed to working with technology. More of their time now goes to working with technology."

In addition, the district has been able to restructure its current technology budget to provide additional technology resources for students not being served by the grant. For example, the grant has allowed the purchase of iPads for all core 6th grade teachers with the district's technology funds (outside of the grant). This was possible because the technology of middle and 9th grade math students were already being met by the grant. Another way in which the district has repurposed resources to support technology integration was to set aside funding for summer interns to assist in maintenance of the new technology devices. As one member of the leadership team said, "Our IT director budgeted for interns for the summer this year, acknowledging the volume of devices that will come through his office as a consequence of this investment. He made a direct investment in additional labor to be able to receive and service the influx of machines." A math cohort teacher petitioned to create a new course because of the technology involved in the grant. The teacher proposed a computer skills class in which students will be taught how to use the new devices outside of math classes. Two sections of this course will be taught in 9th grade starting in the 2016–2017 school year.

Strategic Planning

Evaluation Question: Does the district strategic plan reflect shared commitment to improving outcomes for students?

Leadership team members discussed how the grant addresses the student engagement aspect of their strategic plan. "Part of the strategic plan is around student outcomes and part of that is engagement, so it definitely supports in that area." Here, district leaders are pointing out that the grant is supporting the IT department's work to increase capacity of teachers to use technology which will then impact student engagement.

Engaged Communities & Partners

Evaluation Question: Are parents, stakeholders, community groups and others are actively and systemically involved in helping students?

Do district leaders demonstrate increased communication with and among outside stakeholders regarding technology integration?

In the focus group, district leaders discussed the ways in which RSD had been working to increase communication with outside stakeholders. The TechSmart grant has enabled greater communication with parents as a major stakeholder group. As previously mentioned in the digital-age learning culture section, one of the ways in which communication with parents has increased is through the use of the learning management system, Schoology. A district leader said, "Virtually all of our core teachers are using Schoology. Parents are becoming bought into it. It is revolutionary to see because this hasn't happened before in public education. That [Schoology] is a vehicle for communication." The technology has aided teachers in using assessments and assignments in conversations with parents, as previously discussed.

Evaluation Insights at Reynolds School District

PRE offers the following insights to assess the effectiveness of instructional practices that use technology in RSD:

- Evaluation data show that RSD's TechSmart project has been using technology to improve students' engagement in the classroom, especially for students who have not typically been engaged. Students, teachers, and district leaders all reported that student engagement has increased with the implementation of the new technology. Increased student engagement shows promise for improving other student outcomes such as attendance and ultimately academic outcomes.

- RSD used a PD cohort model for its TechSmart grant. There are benefits to this model including camaraderie among teachers, the ability to try strategies and devices before larger implementation, and teachers serving as examples and mentors for other teachers. However, there are some drawbacks: teachers' agreement with statements regarding a culture of support at their school was low. This may be due to the fact that the grant that is targeting a specific curriculum within the 7th -9th grade band. The changes are being made across school rather than targeting an entire school.

- To fully evaluate RSD's TechSmart grant investment, the district and teachers need to increase support for the third-party data collection. The low response rate on the year-end teacher survey (n = 6) resulted in difficulty interpreting and comparing the data to a time period earlier in the school year, especially because such a small group was involved initially. Participation is vital from all teachers involved in this project to provide enough data to effectively assess the effectiveness of instructional practices that use technology. To accomplish this, the PRE evaluation team recommends having teachers complete surveys during PD sessions, rather than after the session. In addition, PRE's evaluation plan included conducting several teacher interviews. The evaluation team accommodated the district's request to hold one teacher focus group rather than conducting individual teacher interviews, but in the future, we request the privilege of conducting interviews rather than a focus group because the data will be more beneficial to the evaluation. For example, PRE scheduled and conducted interviews lasting only 10 to 15 minutes with six teachers from DDSD, which provided more valuable information about the instruction.

Changes to the second year of implementation in RSD include the following:

- The district will administer the teacher survey during the PD sessions to increase the response rate.
- PRE will conduct teacher interviews rather than a focus group in order to collect more in depth qualitative data. PRE can recruit teachers for these interviews if provided with contact information.
- PRE will add questions to the teacher survey, teacher interviews, and leadership interviews to better understand how the TechSmart grant investments are impacting underserved populations.
- PRE will conduct leadership interviews rather than a focus group this year in order to collect more in depth qualitative data. PRE can schedule these interviews if provided with contact information.
- Observation data of classroom instruction will be a required part of the evaluation. PRE will review the current RSD walkthrough tool and will work with district leadership to ensure the tool is capturing instructional behavior change associated with the TechSmart grant investments. PRE will request access to the data quarterly. The goal of this data collection will be to capture change in instructional practices rather than change in the utilization of digital tools.

Year 1 Evaluation Findings

Although the initial TechSmart grant investments took place during the 2014-15 school year, formal program evaluation did not begin until the summer of 2015 when PRE was contracted by MHCRC to lead this evaluation. The evaluation has revealed promising results but with only one year of data collection, it is too early to identify any effective instructional practices or make specific recommendations for future TechSmart grant investments. The findings summarized below include emerging themes from this first year of evaluation followed by insights for Year 2 of the evaluation.

Teaching Effectiveness

Teaching effectiveness is characterized by a district that supports regular, inclusive, and shared professional development (PD) among teachers. PD for teachers was a key aspect of project implementation for each of the three districts included in the Year 1 evaluation. The format of this PD varied across districts as described below.

The PD provided in David Douglas was described as a mixture of formal and informal PD opportunities. Formal support occurred in the 2014-15 school year and focused on technical assistance for using new tools such as Smartboards, RedCats, and Chromebooks. Informal PD took the form of an onsite technology coach offering support throughout the year. Through this informal coaching, teachers received pedagogical development as they learned news ways of using technology for instruction. As the principal at Earl Boyles ES stated, "The formal PD was introducing the tools and the informal was job embedded and targeting the instructional change…having the coach onsite has been critical."

Teachers at Parkrose HS described the PD received through the TechSmart grant as primarily formal training that was offered during the 2014-15 school year. This training was provided to all teachers in the high school and focused on how to integrate the newly purchased iPads into the classroom. In addition, district technology department staff members have offered informal push-in support by visiting classrooms and helping teachers and students with certain aspects of technology upon a teacher's request. The Year 1 evaluation revealed that Parkrose HS teachers do not feel adequately prepared to integrate technology into their classrooms. The training received at the beginning of the grant was not sufficient to sustain longer-term change, and although the technology department was available for support, teachers are not asking for it. Students reinforced this theme with comments about how teachers need more training before using technology in the classroom.

The PD provided in Reynolds School District (RSD) had three primary components. First, teachers met for two days of instructional lab cycles led by the instructional coaches assigned to this project during the 2015-16 school year. Within this full day lab cycle process, teachers collaborated to develop a math lesson that incorporates student use of technology, and nurtures students' learning of the English language. The teachers observed one another deliver the co-constructed lesson and convened afterwards to reflect on its effectiveness. In the second component, teachers met during early release PD sessions that took place once a month between February and May. These meetings were less structured and built on the features of the lab cycle process. Teachers focused more on the nuts and bolts of implementation of the technology in their instruction. Teachers shared what worked well from the learning management system, formative assessments they created, learning applications, Office365, and other functions and processes when using technology in their lesson plans. Finally, each teacher met a minimum of two times with an

instructional coach for one-on-one mentoring sessions. These were utilized as demonstration sessions for the coaches to guide the teachers into deeper application of the concepts reviewed in the early release PD sessions.

An emerging theme from the first year of evaluation around PD is the importance of providing individualized PD. In all districts, teachers rated individualized PD as considerably more useful than group PD. The presence of the dedicated coach at Earl Boyles ES was noted by teachers and administrators as a key driver of technology integration and the adoption of new instructional practices among teachers who had significantly increased their use of technology for instruction by the end of the 2015-16 school year. Although RSD teachers reported that the individualized PD was more useful than the group sessions, they did not directly reference the technology coaches; thus, the PD model in RSD requires further examination in subsequent years. Finally, Parkrose HS teachers commented on the push-in support from the IT department being useful when taken advantage of but that few teachers were actually making the request for this individualized type of support. Overall, the evaluation results are pointing to the importance of individualized PD, but additional data are needed to gain a more thorough understanding of the amount and type of coaching needed to create instructional change. PRE plans to add questions to the teacher data collection in Year 2 of the evaluation in order to dig deeper into the PD models within each district. We anticipate the PD model will be a key program element for the MHCRC to consider in funding future grant investments.

Digital Age Learning Culture

Digital age learning culture is defined as districts who are embracing a cultural shift and view technology as positive. The general theme from this first year of evaluation is that a digital culture is beginning to emerge in districts as evidenced by teachers' reports of increased use of technology in the classroom. In all three districts, this is appearing through the adoption of new digital tools. Teachers across districts provided examples of digital tools they are using in their classrooms such as Smartboards, Google Classroom, iPad applications, and online applications like IXL or RAZ-Kids. Many teachers are still testing out various tools and still have progress to make in terms of identifying effective instructional behaviors that result from this technology integration. It is clear from the evaluation that Earl Boyles ES has made the most progress towards creating a digital age learning culture because all K-3 teachers have been part of the implementation for the last two years. They are able to share best practices and new ideas with one another and provide support to one another around technology needs. In RSD, those teachers involved in the grant are creating digital culture within their classrooms, but given the small cohort size and the fact that teachers are spread across multiple schools, this has not become a school-wide or district-wide culture. Future years of evaluation in RSD will help answer the question about whether a school-wide digital age learning culture is a necessary element for technology implementation. Finally, due to the inconsistent technology integration at Parkrose HS, the school is making progress towards a digital age learning culture but many teachers have not adopted tools or increased technology integration in their classrooms. This suggests that projects targeting smaller, close-knit groups of teachers (as has been done at Earl Boyles ES) may be more successful in creating a digital age learning culture than projects targeting large groups of teachers (like at Parkrose HS) or teachers who are spread over multiple schools (like in RSD). Additional data will be gathered to examine this hypothesis in future years of the evaluation.

Visible Leadership

Visible leadership exists when district leaders are actively involved and working with key communities to accomplish change. When leaders were asked about working within the community as part of their TechSmart grant investments, they provided examples of working with other TechSmart districts to share best practices around grant implementation, but they had minimal experiences working in the community to accomplish change. Parkrose HS noted that their district had received support from the community in the form of bond money to support technology but this was the only example provided across districts. All three districts are making efforts to engage parents in the technology integration efforts. Examples of this include enhanced communication through newsletters as well as the use of learning management systems to communicate and keep parents engaged in the work of their students. Earl Boyles ES has offered parent engagement activities where technology is made available to parents for job search, resume building, setting up email accounts, and other training to familiarize parents with the digital resources that their students are using in the classroom.

PRE researchers also collected data regarding the level of leadership support within districts to learn more about the effect of visible leadership on technology implementation efforts. In the three TechSmart districts included in the Year 1 evaluation, the level of involvement from leadership varied and did not seem to greatly affect the progress of implementation. Specifically, it is worth noting that the models of support are very different between Earl Boyles ES and RSD which were the two districts with the highest levels of technology integration reported by teachers. The support from leadership has been emphasized more in Earl Boyles ES than it has in RSD where the initiative has been more "teacher led".

Evaluation results showed that 100% of the teachers at Earl Boyles ES rated their administrators as supportive of technology integration efforts and commented on how the principal has been involved in the training and has set a great example for the teachers. One teacher said: "What has helped a lot is that our principal is on this journey with us. She is piloting an iPad Pro. She can come in and observe someone [using] a Google form [to] send the feedback directly to the teacher. She has an openness and tries new things and does not want to get in our way." Although 90% of RSD year-end survey respondents reported that administrators were supportive of technology integration efforts, both teachers and administrators stressed that their project was designed to be teacher led. Teachers in the focus group said they have been supporting themselves, rather than receiving support from the district. One teacher noted, "As far as tools that are working well, we have built a lot of the resources on our own." They recognize that the support they are receiving from the TOSA has been valuable, but expressed concern for his capacity to support all teachers when the cohort size doubles in the 2016-17 school year. This response is consistent with feedback from district leaders who said: "This is a teacher-driven endeavor, from the onset of the idea to the development of the proposal, and through implementation this year. The leadership is engaged, but the PD is led by teachers for other teachers and doesn't require the traditional administrative oversight."

It is important to note the difference in the type of leadership support in these two districts where teachers are reporting similar levels of integration and implementation of new instructional practices. The Year 2 data collection will provide further insight into this component of the framework, and with two new school districts beginning implementation of their TechSmart grants in 2016-17, will provide additional leadership models to examine.

Data Driven Improvement

Districts engage in data driven improvement efforts when current, relevant, and high quality data from multiple sources are used to improve schools, instruction, PD and other systems. TechSmart funded districts are beginning to show evidence of data driven improvement as teachers in all three districts reported increased confidence in their ability to differentiate instruction using student data. When asked about the use of formative assessments to identify effective instructional practices, agreement rates showed room for improvement. Although using data to differentiate instruction is something that teachers are becoming more comfortable with and seems to be emerging as a standard practice in the classroom, some teachers reported that the time and effort required to access real-time student data through technology to differentiate instruction is a barrier to data driven improvement. For example, one teacher said, "It is another time commitment. If you use those apps, knowing how to use the data and looking at the data takes time. It is hard to put it all together." Overall, evaluation results show that teachers are becoming more confident in their use of data to differentiate instruction but with many teachers still adapting to the technology itself, significant evidence of data driven improvement may take more time to emerge.

In terms of data driven improvement for grant activities, all districts have been engaged with the evaluation efforts that PRE has executed as part of the overall grant evaluation, and are enthusiastic about using this information for data driven improvement efforts within their PD models and grant implementation moving forward.

Funding & Budget

This element of successful technology implementation is characterized by a district that repurposes budget resources and seeks outside funding to focus on promising practices and technology supports. All three districts were able to provide examples of how their district is repurposing funds in order to support technology. For example, RSD has shifted roles that traditionally did not work with technology to be technology centered. One district leader commented, "The media specialist used to be in charge of all the books, but now they are in charge of all of the computers. The media specialist is the first line of defense with any kind of IT issues." Parkrose HS has made a similar shift in a part-time librarian role to be a full-time technology support specialist in charge of supporting the iPad technology and teachers at both the middle and high school. The TechSmart grant paid for part of the time (6 hours per week) for the position at the high school. Districts did not provide specific examples of how they are pursuing outside funding to focus on promising practices, and this element should be a focus of the Year 2 evaluation data collection efforts.

Strategic Planning

Strategic planning refers to the idea that a district's strategic plan reflects shared commitment to improvement of outcomes for students. PRE asked leaders in each district to talk about this in relation to technology efforts. Leaders across all three districts were able to provide examples of how technology is part of their strategic plan. For example, RSD leadership commented on their focus on student engagement as a key element of the strategic plan, and indicated that they see technology integration efforts as a driver of this student engagement. Similarly, David Douglas School District (DDSD) leadership emphasized that technology is interwoven in the four main components of their strategic plan which include multi-tiered systems of support, language, educator effectiveness, and STEAM (Science,

Technology, Engineering, Arts, & Math). Finally, Parkrose School District (PSD) commented on the district's efforts to create structural goals related to technology, and have made it part of their teacher evaluation process.

Engaged Communities & Partners

As mentioned above in the section on visible leadership, the districts have not provided much evidence of work towards engaging communities and partners but they have made efforts to engage parents in technology implementation. DDSD provided an example of how students can share work with their parents through blogs and classroom websites: "One teacher has almost 800 page visits just for her classroom." Similarly, RSD has been engaging parents through increased communication using the new learning management system, Schoology. One district leader said, "Virtually all of our core teachers are using Schoology. Parents are becoming bought into it. It is revolutionary to see because this hasn't happened before in public education. Schoology is a vehicle for communication." The technology coach at Earl Boyles ES also worked with the principle to create a Twitter account where she posts technology events and strategies. Finally, as mentioned previously, Parkrose HS has received support from the community in the form of bond money to support the purchase of technology. These examples provide evidence that districts are working to engage communities and partners in their efforts, but more evidence is necessary to understand whether this is a critical element for technology implementation.

Additional Considerations

After the first year of evaluation, PRE has learned about the different models for rolling out technology implementation efforts across districts and whether these models have made progress towards the MHCRC goal to develop effective instructional practices through technology integration efforts. Thus far, we have closely evaluated grants in one district focused on a small group of K-3 teachers within a single elementary school, one district focused on a large group of high school teachers from an entire high school, and one district targeting teachers within a specific content area across multiple schools, including both middle and high schools.

One question to consider is whether any of these implementation models have been more effective than others. Evaluation results from Year 1 suggest that efforts at Parkrose HS may have been less effective due to the large number of teachers and students targeted for the change efforts. The administration at Parkrose HS commented that it has been more difficult to influence technology integration in the higher grades as compared to other efforts that are being made in the middle and elementary schools within the district. In DDSD, we have seen high levels of technology integration and promising instructional practices emerging. It is in the 2016-17 school year that we would hope to see effective instructional strategies validated at Earl Boyles ES, and collecting data related to this will be a key element of the evaluation. The next year of evaluation will also focus on DDSD's efforts to scale up the work at Earl Boyles ES to grades 4 and 5, and also to expand implementation to other schools within the district. Data collected regarding the outcome of these efforts to scale up will be useful to MHCRC as they make grant investment decisions moving forward. Finally, RSD's model of providing digital tools and trainings to teachers within specific content areas will also be important to examine as implementation expands to additional math teachers in the 2016-17 school year. For example, one question to consider during the 2016-17 school year is whether students are effected by receiving inconsistent exposure to technology across classes such that it is being utilized in a math classroom but not in a language arts classroom.

Another consideration will be teacher reactions to being included or excluded from technology implementation efforts based on content area. RSD's evaluation will provide a useful case study to answer these types of questions and inform future MHCRC investment decisions.

Evaluation Insights for Year 2

The first year of evaluation revealed several content areas that PRE would like to explore further in the next year of evaluation. Examples of these noted above include additional data collection regarding PD models, grant implementation models, and whether districts are pursuing outside funding as part of their technology implementation efforts.

PRE also intends to incorporate additional questions into our Year 2 data collection regarding the impact of grant investments on underserved populations. Although we plan to analyze student outcome data by subgroup in order to answer questions about how instructional practices are impacting achievement for at-risk groups, we would also like to gather contextual data from teachers and administrators about how technology implementation is reaching these subgroups. Questions on this topic will be added to the teacher survey and interviews, as well as the leadership interviews.

A new requirement for the evaluation in Year 2 will be that every district collect teacher observation data. This data collection may be pre-existing as part of district efforts to evaluate their technology implementation; alternatively, districts can work with PRE in the development of an observation tool. Since DDSD leadership has attested to seeing instructional changes in the classroom, PRE will work closely with this grantee to develop a data collection tool that can capture these teacher behaviors. This will allow us to synthesize data that we have collected this year regarding increased use of digital tools with data about the instructional practices emerging as a result of technology integration. We are interested in distinguishing between increased use of digital tools and instructional change.

Preliminary student outcome data were examined for DDSD and PSD to answer the evaluation questions related to whether instructional practices are showing promise for improve student academic outcomes with at-risk student subgroups and whether the rate of growth in academic outcomes is greatest for at-risk student subgroups. In DDSD, results of the comparison group analysis did not provide strong evidence at this point in time that the new instructional practices are improving academic outcomes over and above the instruction received by the comparison group of students. Results, however, did provide preliminary support for the idea that instructional practices are showing higher rates of growth for ELL, economically disadvantaged, and student of color within Earl Boyles ES. In PSD, results of the comparison group analysis did not provide any evidence that new instructional practices are improving academic outcomes over and above the instruction received by the comparison group of students. As noted previously, it is not possible to fully evaluate the impact of these grants on student academic outcomes with only one year of student data. Future evaluation reports will include multiple years of data. Finally, due to the delay in data being requested from ODE for the student outcome analysis, Year 2 of the evaluation will be the first year that we are able to examine student outcomes by teacher level of integration. It is our hope that this analysis will lead to greater understanding of instructional strategies that have been more or less effective for teachers in impacting student achievement.

Appendix A. Evaluation Planning Tool

The following planning tool includes the TechSmart Initiative logic model, evaluation plan, and timeline. The logic model and evaluation plan have been designed to align with the MHCRC Framework for Successful Technology Implementation as described below. Pacific Research and Evaluation will work with MHCRC and each district to create a district specific program evaluation plan utilizing the tools in this document. The goal of utilizing this model is to provide consistency in the evaluation of projects across the TechSmart Initiative.

MHCRC Framework for Successful Technology Implementation: The framework includes seven factors that have been identified as essential to effective transformations to technology rich teaching and learning environments. As you can see, the components do not stand in isolation from each other; many components are linked and substantially overlap.

- Teaching Effectiveness: District supports regular, inclusive and shared professional development among teachers.
- Digital Age Learning Culture: District embraces cultural shift and views technology as positive.
- Visible Leadership: District leadership actively involved and working with key communities to accomplish change.
- Data Driven Improvement: Current, relevant and high quality data from multiple sources are used to improve schools, instruction, professional development and other systems.
- Funding & Budget: District's budget repurposes resources and seeks outside funding to focus on promising practices and technology supports.
- Strategic Planning: District strategic plan reflects shared commitment to improving outcomes for students.
- Engaged Communities & Partners: Parents, stakeholders, community groups and others are actively and systemically involved in helping students develop, learn and achieve.

GOAL 1: School districts funded by MHCRC grant investments will understand and implement effective instructional strategies and practices that use technology to foster improvement in academic outcomes for all students.				
GOAL 2: The MHCRC and school districts will validate and disseminate effective instructional strategies and practices that use technology to foster improvement in academic outcomes for all students.				
ACTIVITIES	OUTPUTS	SHORT TERM OUTCOMES – Y1-2 (TEACHING OUTCOMES)	INTERMEDIATE OUTCOMES – Y3-5 (STUDENT OUTCOMES)	LONG TERM OUTCOMES --Y6+
What are the key elements of the districts' project plans?	*What are the direct results of our activities?*	*What changes do we expect to occur within the short term?*	*What changes do we want to occur within the scope of the project?*	*What changes do we hope will occur over time?*
Teaching Effectiveness • Districts create a systemic PD plan, which includes technological, content and pedagogical knowledge. • Districts offer relationship based PD that includes the following components: a) Using technology effectively, b) implementing evidence-based instructional strategies. • Teacher PD familiarize teachers with the MHCRC Common Criteria*. • Districts provide technology support on-site for teachers.	• Number of teachers who participate in PD annually. • Number and type of shared learning opportunities for teachers and administrators. • Number and type of project-related district learning cohorts (horizontal and vertical). • Number of students in student cohorts. • Number of cohort students representing targeted student	• PD has helped teachers increase the use of technology for evidence-based instructional practices. • PD has helped teachers use technology to analyze and use data about student learning. • PD has helped teachers use technology to differentiate instruction. • The use of technology has increased teachers' ability to engage students and improve teaching of Common Core standards.	• Student achievement has increased in one or more AHR outcome, as measured by student growth over time. • The rate of student growth in one or more AHR outcome is greatest for at-risk student subgroups (i.e., ethnic minorities, low SES, ELL's, SWD's, and those not on track to meet academic standards). • There is a positive correlation between teacher implementation of instructional practices and student AHR academic outcomes.	• Instructional practices are transferable to varied classrooms or academic settings. • Longitudinal data show sustained and/or ongoing progress in relevant AHR outcomes.

• MHCRC and districts identify and evaluate effective instructional practices using the Common Criteria*.	subgroups (i.e., ethnic minorities, low SES, ELL's and SWD's).	• Instructional practices show promise for improving student academic outcomes.	• The positive correlation between teacher implementation of instructional practices and improvement in AHR academic outcomes has been replicated in multiple academic settings.	
Digital Age Learning Culture • Districts conduct an assessment of physical technology assets and how assets are being used. • Districts use a learning management system to provide data about student achievement. • Districts use learning management systems to identify and validate effective practices. • Districts have a system to provide digital content and resources across a district. • Districts provide trainings for parents to understand technology integration.	• Number of technology assets being used. • Number of teachers and administrators using the learning management system. • Number of parent trainings offered. • Number and percentage of parents attending training.	• The use of technology to support instructional practices has increased. • The learning management system is useful for identifying effective instructional practices (more efficient, easier, data driven). • Teachers have increased access to and use of digital content and resources. • There is district wide support for technology integration/innovation. • Parents increase understanding and utilization of districts' technology assets.	• An increased number of students are utilizing and engaging with new technology.	• Technology integration is seen as a shared responsibility among teachers, district leaders, and parents.
Visible Leadership				• Districts actively exchange data and information about

• Districts participate in cross-project networking to share effective instructional practices. • Leaders provide clear communication about the district's vision for instructional technology.		• Each district identifies one or more effective instructional practices and disseminates information and results to other districts. • Teachers feel increased support from district leaders regarding technology integration.		effective instructional practices, so that those practices can be implemented and validated in new settings.
<u>Data Driven Improvement</u> • Districts use formative assessments for studying the effectiveness of instructional practices. • Teacher PD includes techniques to use student learning data and differentiate instruction. • Districts evaluate projects in relationship to their project-specific logic models and continuously adjust project activities based on evaluation data.	• Percentage of teachers using formative assessments.	• Teachers increase their use of formative assessments to identify effective instructional practices. • Teachers have increased ability to assess students' progress and provide feedback. • Teachers have increased ability to differentiate instruction using student data.	• Differentiated instruction improves student learning outcomes.	
<u>Funding and Budget</u> • Districts allocate adequate funding for technology transitions.	• Number and percentage of students with access to technology.	• Districts have identified at least one opportunity for repurposing resources to support technology integration.	• Student learning outcomes provide evidence to support continued funding in order to sustain technology integration.	• District resources sustain and enhance technology based instructional practices.

• Districts seek funding for sustaining technology integration.				
<u>Strategic Planning</u> • Districts' strategic plans prominently include technology as well as mechanisms for scaling programs. • Districts identify long range plans to fund technology and PD supports.		• Diverse stakeholders are involved in developing the technology components of strategic plans.	• Evaluation data inform active strategic planning over time.	
<u>Engaged Communities & Partners</u> • District leaders maintain effective communication with outside stakeholders regarding technology integration. • Districts create structures to support communication among stakeholders (e.g. website, community meetings).		• District leaders demonstrate increased communication with and among outside stakeholders regarding technology integration.		

***Evaluation Plan**: Pacific Research and Evaluation will work with each district to tailor the following table to create a district specific TechSmart evaluation plan.*

OUTCOMES	Measures
Short Term Outcomes (STO): *What changes do we expect to occur within the short term?* Intermediate Outcomes (IO): *What changes do we want to occur within the scope of the project?* Long Term Outcomes (LTO): *What changes do we hope will occur over time?*	*How and when will data be collected and analyzed?*
Teaching Effectiveness	
PD has helped teachers increase the use of technology for evidence-based instructional practices (STO).	Teacher Data Collection (Survey & Interviews)
PD has helped teachers use technology to analyze and use data about student learning (STO).	Teacher Survey
PD has helped teachers use technology to differentiate instruction (STO).	Teacher Survey
The use of technology has increased teachers' ability to engage students and improve teaching of Common Core standards (STO).	Teacher Data Collection (Survey & Interviews) Student Data Collection (if applicable) Observations (if applicable)
Instructional practices show promise for improving student academic outcomes (STO).	Teacher Interviews District Leader Interviews
Student achievement has increased in one or more AHR outcome, as measured by student growth over time (IO).	Cohort Studies of Student Achievement (PSU)
The rate of student growth in one or more AHR outcome is greatest for at-risk student subgroups (i.e., ethnic minorities, low SES, ELL's, SWD's, those not on track) (IO).	Cohort Studies of Student Achievement (PSU)
There is a positive correlation between teacher implementation of instructional practices and student AHR academic outcomes (IO).	Cohort Studies of Student Achievement (PSU)

The positive correlation between teacher implementation of instructional practices and improvement in AHR academic outcomes has been replicated in multiple academic settings (IO).	Cohort Studies of Student Achievement (PSU)
Instructional practices are transferable to varied classrooms or academic settings (LTO).	Project Status Reports
Longitudinal data show sustained and/or ongoing progress in relevant AHR outcomes (LTO).	Cohort Studies of Student Achievement (PSU)
Digital Age Learning Culture	
The use of technology to support instructional practices has increased (STO).	Teacher Survey Observations (if applicable) Project Status Reports
The learning management system is useful for identifying effective instructional practices (more efficient, easier, data driven) (STO).	Teacher Interviews Project Status Reports
Teachers have increased access to and use of digital content and resources (STO).	Teacher Survey Project Status Reports
There is district wide support for technology integration/innovation (STO).	Teacher Interviews District Leader Interviews
Parents increase understanding and utilization of districts' technology assets (STO).	Teacher Data Collection (Survey & Interviews) Project Status Reports
An increased number of students are utilizing and engaging with new technology (IO).	Teacher Survey Student Data Collection (If applicable) Project Status Reports
Technology integration is seen as a shared responsibility among teachers, district leaders, and parents (LTO).	Project Status Reports
Visible Leadership	
Each district identifies one or more effective instructional practices and disseminates information and results to other districts (STO).	District Leader Interviews Project Status Reports
Teachers feel increased support from district leaders regarding technology integration (STO).	Teacher Survey

Districts actively exchange data and information about effective instructional practices, so that those practices can be implemented and validated in new settings (LTO).	Project Status Reports
Data Driven Improvement	
Teachers increase their use of formative assessments to identify effective instructional practices (STO).	Teacher Survey
Teachers have increased ability to assess students' progress and provide feedback (STO).	Teacher Survey
Teachers have increased ability to differentiate instruction using student data (STO).	Teacher Survey Observations (if applicable)
Differentiated instruction improves student learning outcomes (IO)	Project Status Reports Teacher Surveys Cohort Studies of Student Achievement (PSU)
Funding and Budget	
Districts have identified at least one opportunity for repurposing resources to support technology integration. (STO)	District Leader Interviews Project Status Reports
Student learning outcomes provide evidence to support continued funding in order to sustain technology integration (IO).	District Leader Interviews Cohort Studies of Student Achievement (PSU)
District resources sustain and enhance technology based instructional practices (LTO).	Project Status Reports
Strategic Planning	
Diverse stakeholders are involved in developing the technology components of strategic plans (STO).	District Leader Interviews Project Status Reports
Evaluation data inform strategic planning over time (IO)	Project Status Reports
Engaged Communities and Partners	
District leaders demonstrate increased communication with and among outside stakeholders regarding technology integration (STO).	District Leader Interviews

Data Collection Tools

- Teacher Data Collection: Various elements of the logic model will be evaluated through teacher data collection which will include teacher survey items and teacher interviews or focus groups.

    - Teacher Survey: This survey will address the use of technology and the impact of the teacher professional development on abilities to differentiate and individualize learning, engage students, assess students' progress, and improve teaching of the Common Core skills. In addition, teachers will be asked to provide subjective data regarding the impact that the practice is having on student achievement. PRE will work with the school district to determine the best method for teacher data collection. Options include: 1) Adding evaluation items to pre-existing district or training evaluation survey or 2) Administering a survey specific to the TechSmart project.

    - Teacher Interviews/Focus Groups: PRE will conduct interviews or a focus group with a sample of teachers involved in the TechSmart project. Content of the interviews will include any unanswered questions from teacher surveys as well as questions about how the technology may be sustained within existing school resources.

- District Leader Interviews: Interviews with a sample of district leaders will provide information about the extent to which districts are actively exchanging data and information about effective practices so that they may be implemented and validated in new settings. Leaders will be asked to discuss perceptions of teacher success and student achievement outcomes related to the project and provide data on sustainability of the technology.

- Student Data Collection: Student data collection will depend on the age level of students targeted for the TechSmart project. If students are middle school age or older, a student survey will be administered. Similar to the teacher survey, options for the student survey include: 1) Adding evaluation items to pre-existing district survey, or 2) Administering a survey specific to the TechSmart project. This survey could be online or paper-pencil.

- Observation Tool: If this district is utilizing an observation tool for evaluating their TechSmart project, PRE will work with the team to add items relevant to the overall TechSmart evaluation and access corresponding data. This data will allow us to answer questions about the transfer of training to the classroom.

- MHCRC Project Status Reports: Districts will be asked to provide updates on various elements of the logic model using the MHCRC Grants Management System.

- Cohort Studies of Student Achievement: MHCRC is contracting with Portland State University to provide analysis of student level data in order to understand the relationship between initiative investments in teaching models and key student outcomes.

Appendix B. Teacher Survey

Background Questions

1. **Please indicate your ID**
2. **What grade level(s) do you currently teach? (Mark all that apply)**
   - *Response options for this item will be tailored to the targeted grades for each project*

3. **How many years have you taught at the K-12 level?**
   - 0-2 years; 3-5 years; 6-10 years; 11-20 years; 21-30+ years

Professional Development Dose

4. Indicate the number of hours spent in technology-related group professional development (PD) over the past school year. (0 hours; 1-8 hours; 9-16 hours; 17-32 hours; 33 hours or more)
   - Please rate the extent to which this group PD was useful for integrating technology into your classroom (1 = Not at all useful; 5 = Extremely Useful)

5. Indicate the number of hours spent in technology-related professional development (PD) in the form of individualized training/coaching over the past school year. (0 hours; 1-8 hours; 9-16 hours; 17-32 hours; 33 hours or more)
   - Please rate the extent to which this individualized PD was useful for integrating technology into your classroom (1 = Not at all useful; 5 = Extremely Useful)

Technology Skill Level

6. **Choose the statement that best describes the level of your technology skills. Please choose *only one* of the following:**
   - I get someone else to do technology-based tasks for me. (1)
   - I accomplish assigned tasks, but I am more efficient when I don't use technology to do a job. (2)
   - I have enough skills to complete the management and communication tasks expected of me and occasionally will choose to use technology to accomplish something I choose. (3)
   - I use a variety of technology tools and I use them efficiently for all aspects of my job. (4)
   - I use technology efficiently, effectively and in creative ways to accomplish my job. (5)

Technology Integration (• 1 – Very untrue of me • 2 – Untrue of me • 3 – Somewhat untrue of me • 4 – Neutral • 5 – Somewhat true of me • 6 – True of me • 7 – Very true of me)

7. I alter my instructional use of classroom technology based upon the newest applications and research on teaching, learning, and standards-based curriculum.
8. I integrate the most current research on teaching and learning when using the classroom technology.
9. I plan technology-related activities in my classroom that will improve my students' basic skills (e.g., reading, writing, math computation).
10. I seek out activities that promote increased problem-solving and critical thinking using classroom technology
11. Students have adequate access to technology resources in my classroom (e.g., iPads, Chromebooks)

Teacher Support (Innovative Culture): (1 = Strongly Disagree; 5 = Strongly Agree)

Please indicate the extent of your agreement with each of the following statements. 5-point agreement scale

12. Teachers in this school share an understanding about how technology will be used to enhance learning.
13. Teachers in this school are continually learning and seeking new ideas.
14. Teachers are not afraid to learn about new technologies and use them with their classes
15. Administrators in this school are generally supportive of technology integration efforts.

Frequency of Technology Use (1 – Never, 2 – Rarely, 3 – Occasionally, 4 – A moderate amount, 5 – A great deal)

16. How often do you create lesson plans that incorporate technology?
17. How often do you use technology to deliver instruction to your class?
18. How often do you adapt an activity to students' individual needs using technology?
19. During class, how often do students work individually using technology?
20. During class, how often do students work in groups using technology ?

Logic Model Outcomes

Please rate your agreement on the following items (1 = Strongly Disagree; 5 = Strongly Agree)

Since receiving technology specific professional development at your school….

21. I feel more confident in my ability to assess students' progress and provide feedback
22. I am integrating more technology into my instruction
23. I feel more confident in my ability to differentiate instruction using student data
24. I have identified effective instructional practices that use technology
- Please provide an example of an instructional practice utilized in your classroom.

Since receiving technology specific professional development at your school….

I have increased my use of…

25. … technology for evidence-based instruction
26. … technology to differentiate instruction
27. … formative assessments to identify effective instructional practices
28. … technology to analyze data about student learning
29. … digital content and resources in my instruction

Please list and rate the effectiveness of new technology related instructional practices that you have integrated into your classroom this year. (List up to three practices)

_____	**1**	**2**	**3**	**4**	**5**
_____	**1**	**2**	**3**	**4**	**5**
_____	**1**	**2**	**3**	**4**	**5**

Appendix C. Teacher Interview Questions

1. Can you start by telling us a little about the professional development you have attended as part of the TechSmart grant this year or last?
    a. Technology focus? Instruction?
2. How has this professional development impacted/changed your classroom instruction?
    a. Has technology been part of this change?
    b. Are you using more technology in your instruction? Less?
3. Can you give examples of technology related instructional strategies that have been particularly effective in your classroom?
    a. How is the use/availability of the technology being used to enhance your instruction?
    b. How have you started to use technology in your instruction?
    c. Have any strategies been less effective?
4. Have you experienced any barriers to integrating technology into your classroom instruction?
5. How has your use of technology in the classroom impacted student engagement?
6. Have you adopted any new practices that show promise for improving student academic outcomes?
    a. How do you know it is improving? Real time data, etc.?
7. What type of support have you received at the district level for technology integration?
    a. Is there a culture of support around technology in your school?
8. Do you have any other comments about your PD experience or technology integration?

Appendix D. District Leader Interview Protocol

1. What are the primary ways that you have seen the TechSmart grant funding impact your district?

2. How do you think the grant funding has impacted teachers' instructional strategies?
    a. Have you seen or heard about new instructional strategies being implemented?
    b. Do you think these instructional practices show promise for improving student academic outcomes?

3. How is the district leadership providing support for technology integration/innovation?

4. Have you shared with other districts' what you are doing with your TechSmart grant?
    a. If yes, what type of information have you shared?
    b. If not, do you have plans to share successes with other schools/districts?

5. Has your district or school(s) repurposed resources to support technology integration in classroom learning over the past school year? For example, has the district or a school changed a current staff position role, shifted budget expenditures, changed PD schedules or types in order to support technology integration?

6. Are there technology components as part of your districts' strategic plan?
    a. Who has been involved in developing these components?

7. In the districts' work to enhance instructional practices through technology integration, have you worked with any stakeholders outside of your district?
    a. Has this collaboration/communication increased with the grant?

8. Do you have any other comments about the TechSmart grant and the impact within your district?

Appendix E. Student Survey

1. What grade are you in?
    - *Tailored for relevant grades*

2. Rate the following items from Strongly Disagree to Strongly Agree
    - The use of technology in my classes has increased since last school year.
    - I have felt more interested in class activities using technology compared to activities in which technology is not used. (Consider iPads, etc.)
    - I like receiving instruction through technology.
    - I concentrate better in class when technology is used to deliver instruction.
    - I would work harder if my teacher used technology more often.
    - I know that using technology gives me opportunities to learn many new things.
    - I can learn many things when my teacher uses technology.
    - I believe that the more often teachers use technology, the more I will enjoy school.

3. The use of technology in my class this year…
    - Helped me stay focused.
    - Did not affect my learning.
    - Seemed to distract me.

4. When it comes to your learning, which of the following generally describes your experience with new technology tried in class this school year.
    - The technology helped me learn more.
    - Technology had a neutral impact; I learned the same amount whether I had technology or not.
    - The technology slowed my learning.

5. Of the activities listed below, which TWO kept your INTEREST most in class in the last year? (Mark 2 choices)
    - Lecture/presentation by teacher
    - Large group work
    - Small group work
    - Reading/working by yourself
    - Completing worksheets, posters, study guides, textbooks, questions, etc.
    - Using apps (on iPads, Chromebooks, etc.)
    - Using computers (typing, researching, creating presentation)
    - Watching movies/films

6. Of the activities listed below, which TWO do you feel you LEARNED the most from in class in the last year? (Mark 2 choices)
    - Lecture/presentation by teacher
    - Large group work

- Small group work
- Reading/working by yourself
- Completing worksheets, posters, study guides, textbooks, questions, etc.
- Using apps (on iPads, Chromebooks, etc.)
- Using computers (typing, researching, creating presentation)
- Watching movies/films

7. I generally _____ using more technology in my classes this school year.
- Enjoyed
- Felt neutral about
- Disliked

8. After using more technology in my classes lately, I hope my teachers next year use…
- Less technology overall
- About the same amount as this year
- More technology overall

9. If you were given the choice to complete the same assignment with or without the use of technology, which would you generally choose?
- With technology
- Without technology

10. I generally _____ learning in class when technology is incorporated.
- Enjoy
- Feel neutral about
- Dislike

11. What technology do you wish your teachers would use? How would this help you to learn or make school more meaningful for you?

12. After trying some new technologies in my classes in the last year, how, if at all, have your opinions changed about teachers incorporating more technology into lessons? Explain.