



Analysis of the Knox County Schools' Personalized Learning Environment Initiative

Technical Report

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Overview

The 2014-2015 school year (SY1415) saw the continuation of the Personalized Learning Environment initiative (PLE). This initiative, formerly known as the School Technology Challenge, seeks to fully integrate technology within a subset of KCS schools (at a 1:1 student to device ratio). Though the name of the initiative was changed from SY1314, the overall goals of the program remain the same. The goals of the PLE are listed below.

- 1) Increase the individualization and differentiation of student-centered instruction.
- 2) Increase student affinity, motivation and engagement in the classroom.
- 3) Increase the effectiveness of teaching through the above while integrating technology-based education aids.

Eleven schools fully participated in the PLE in SY1415 and started full implementation in SY1314. These 11 schools, which formed the basis of this analysis, are listed below.

School	Level
Bonny Kate Elementary	Elementary
Corryton Elementary	Elementary
Halls Elementary	Elementary
Mooreland Heights Elementary	Elementary
Norwood Elementary	Elementary
Sterchi Elementary	Elementary
Holston Middle	Middle
West Valley Middle	Middle
Vine Middle	Middle
Bearden High	High
South-Doyle High	High

This analysis constitutes a continuation of the SY1314 evaluation of the School Technology Challenge in Knox County. The summative analysis of the initiative is expected at the end of SY1617.

Methodology

Participating schools were selected through a non-random application process. This non-randomized assignment of treatment (the PLE) required the use of quasi-experimental methods. As a result, a pool of control schools serves as the counter-factual to the PLE treatment.

Control schools were selected via partial least squares regression on SY1213 data. Fourteen independent variables were used to model multiple dependent variables (previous year mean TCAP Normal Curve Equivalents, mean EOC or SAT10 scaled scores and TVAAS effect sizes). Schools were then grouped using hierarchal clustering based on linear combinations of their independent variables. The nearest neighbor to a PLE school was chosen as its control school match because these schools demonstrated similar outcomes from similar inputs in SY1213. See the table below for a list of control schools.

School	Level
Ball Camp Elementary	Elementary
Carter Elementary	Elementary
Copper Ridge Elementary	Elementary
Dogwood Elementary	Elementary
Powell Elementary	Elementary
Spring Hill Elementary	Elementary
Carter Middle	Middle
Karns Middle	Middle
Northwest Middle	Middle
Hardin Valley Academy	High
West High School	High

Most of the PLE analyses will consider results from the entire grade level pool of PLE schools versus the entire grade level pool of control schools. Analysis of individual PLE schools versus their best-matched control school is difficult due to variation in unobservable characteristics, lower statistical power, and higher uncertainty in the school level data.

The PLE theory of action was intentionally broad and had potential impacts in many areas beyond the scope of traditional program evaluation. The positive or negative effects of the PLE in Knox County will therefore be determined through a preponderance of evidence rather than changes in a single metric.

Results 1: Teacher Focus Groups – Common Themes

Qualitative data were collected through interviews with teachers that were selected by the Director of Instructional Technology. Each interview contained teachers from common grade levels (Elementary, Middle, and High) but from multiple locations.

Many of the positive themes uncovered in the SY1314 qualitative study emerged again in the SY1415 interviews. The interviewees felt that student engagement, confidence, and collaboration continued to be positively impacted through the PLE. Participating teachers felt that email accounts and Canvas pages have helped to better connect teachers and students. Technology, Pedagogy and Content Knowledge (TPaCK) coaches continue to be well respected, with virtually all of the interviewees valuing the TPaCK position as much or more than a teaching position at their school. Additionally, most of the teachers who were interviewed felt strongly that the PLE would have positive impacts on student outcomes, particularly the academic growth of lower performing students.

Common complaints from SY1314 were encountered in SY1415 interviews as well. The participants were again critical of the professional development offerings related to the PLE. There was general consensus that there is a need for lesson modeling, as most teachers are still struggling with what a true PLE “looks like” in the classroom. The district has done nothing to change its strategy to facilitate collaboration beyond the TPaCK coaching network. There appears to be an opportunity to create a community of practitioners among teachers at the PLE schools. However, the interviewees remained unsure of how much time they would devote to such a network once they met their in-service requirements. Participants who were in their first year of teaching indicated that they often felt unsure of what the district expected of them, as well as desiring the same training the veteran teachers received regarding personalization.

The general themes of the SY1415 interviews revolved around the standardization of practices and increases in personalized learning. Most of the participants noted that gaps in technology usage, both how teachers used it and how often teachers used it, had closed considerably from SY1314. Interviewees stated that they felt that their usage of adaptive software was more directed at delivering core content rather than placing students on devices for the novelty of it. Participating teachers felt more comfortable as their position evolved from delivering content through classroom lecture to facilitating student-led instruction. The teachers who were interviewed also noted that they feel more comfortable using the output from adaptive software to help find the instructional level and skill gaps of their students.

Most of the participants also noted that the Response to Instruction and Intervention framework placed additional pressures on the PLE initiative. Participants felt that RTI² has demanded the same resources upon which they relied for PLE support. The time

commitments for RTI² has also served to constrain continued experimentation in their own classroom.

The interviews with the teachers provides evidence that PLE continues to be a work in progress in Knox County. Individual teachers at Mooreland Heights Elementary have been aggressive in using technology to change how content is delivered (notably through flipped classrooms and ability, rather than grade-level, grouping). This initiative must be heavily supported at all levels of the district if it is to fundamentally transform the services Knox County Schools provides to its students.

Results 2: Technology Integration and Personalization Rubrics

Data was collected via classroom walkthroughs on two separate rubrics. The Technology Integration Matrix (TIM) rubric measured the depth of device integration into the classroom in five domains; Active, Collaborative, Constructive, Authentic and Goal Directed. The Personalized Learning Environment (PLE) rubric covered four domains; Student Centered Instruction, Student Engagement; Assessment and Learning Environment. The rubric scores for the PLE data presented in the tables below only includes observations that occurred in the second semester in order to compare the results with data collected during the same timeframe in SY1314. Teachers were chosen at random in both control and PLE schools for TIM and PLE observations. Aggregate level results for the PLE schools are contained in the tables below. Maximum values in each row are shaded in orange.

School	Active						Collaboration						Constructive					
	Not Available	Entry	Adoption	Adaptation	Infusion	Transformation	Not Available	Entry	Adoption	Adaptation	Infusion	Transformation	Not Available	Entry	Adoption	Adaptation	Infusion	Transformation
All PLE	5%	41%	31%	11%	11%	0%	9%	45%	27%	10%	7%	2%	7%	36%	31%	16%	9%	0%
Elementary	4%	52%	29%	9%	4%	1%	11%	55%	23%	8%	1%	1%	9%	40%	30%	18%	2%	1%
Bonny Kate Elementary		47%	37%	16%			11%	42%	21%	26%				42%	26%	26%	5%	
Corryton	6%	33%	33%	6%	17%	6%	6%	44%	28%	11%	6%	6%	6%	28%	28%	28%	6%	6%
Halls Elementary	17%	67%		17%			67%	33%					67%		17%	17%		
Mooreland Heights	13%	50%	25%	6%	6%		19%	69%	13%				19%	50%	13%	19%		
Norwood Elementary		58%	33%	9%			3%	61%	33%	3%			3%	39%	48%	9%		
Sterchi Elementary		100%						100%						100%				
Middle	14%	26%	50%	10%			14%	21%	52%	10%	2%		10%	31%	48%	12%		
Holston Middle	4%	35%	52%	9%			4%	17%	65%	13%			4%	13%	65%	17%		
Vine Middle	19%	19%	50%	13%			19%	31%	44%	6%			13%	63%	19%	6%		
West Valley Middle	67%		33%				67%				33%		33%		67%			
High	2%	34%	22%	14%	28%		2%	44%	16%	14%	20%	5%	2%	34%	22%	16%	27%	
Bearden High	2%	34%	23%	13%	28%		2%	43%	15%	15%	21%	5%	2%	34%	23%	13%	28%	
South-Doyle High		33%		33%	33%			67%	33%					33%		67%		

School	Authentic						Goal Directed						N
	Not Available	Entry	Adoption	Adaptation	Infusion	Transformation	Not Available	Entry	Adoption	Adaptation	Infusion	Transformation	
All PLE	11%	39%	31%	10%	8%	1%	14%	43%	20%	10%	9%	3%	202
Elementary	18%	46%	28%	7%		1%	20%	59%	9%	5%	6%		96
Bonny Kate Elementary	5%	42%	42%	11%			5%	42%	32%	16%	5%		19
Corryton	6%	44%	28%	17%		6%	11%	61%	6%	11%	11%		18
Halls Elementary	67%		33%				50%	17%			33%		6
Mooreland Heights	19%	69%	13%				19%	69%	6%		6%		16
Norwood Elementary	24%	39%	30%	6%			30%	67%	3%				33
Sterchi Elementary		100%						100%					4
Middle	12%	24%	50%	12%		2%	19%	12%	45%	19%	2%	2%	42
Holston Middle	4%	9%	65%	22%			4%	4%	52%	30%	4%	4%	23
Vine Middle	19%	44%	38%				25%	25%	44%	6%			16
West Valley Middle	33%	33%				33%	100%						3
High	2%	39%	22%	13%	25%		3%	38%	19%	13%	19%	9%	64
Bearden High	2%	39%	20%	13%	26%		3%	36%	20%	13%	18%	10%	61
South-Doyle High		33%	67%					67%			33%		3

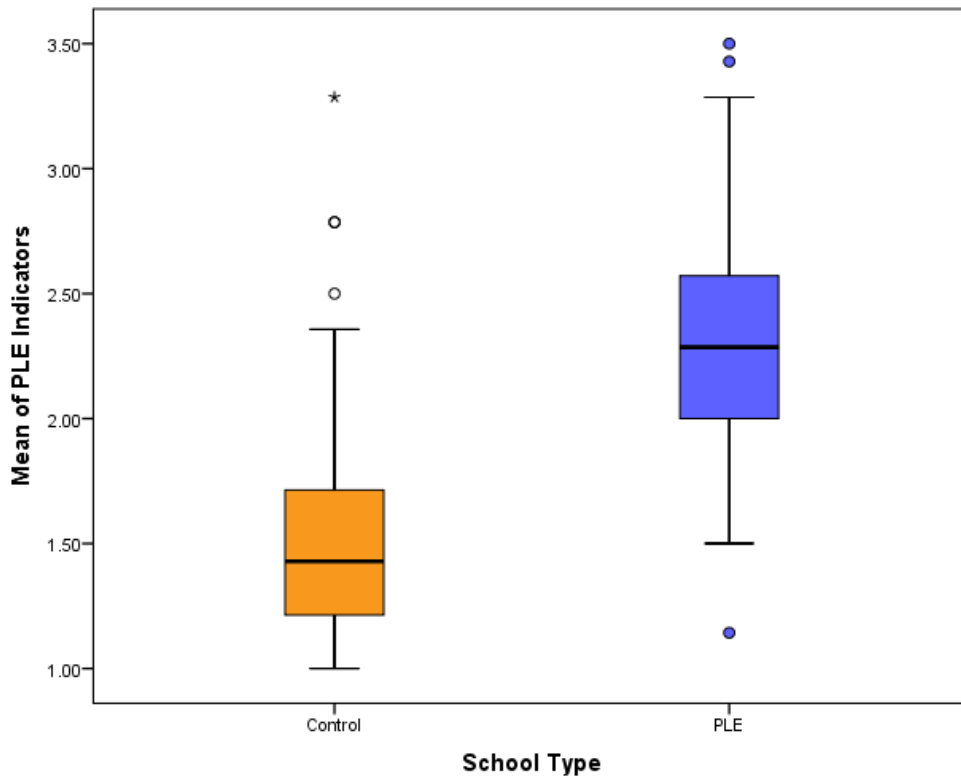
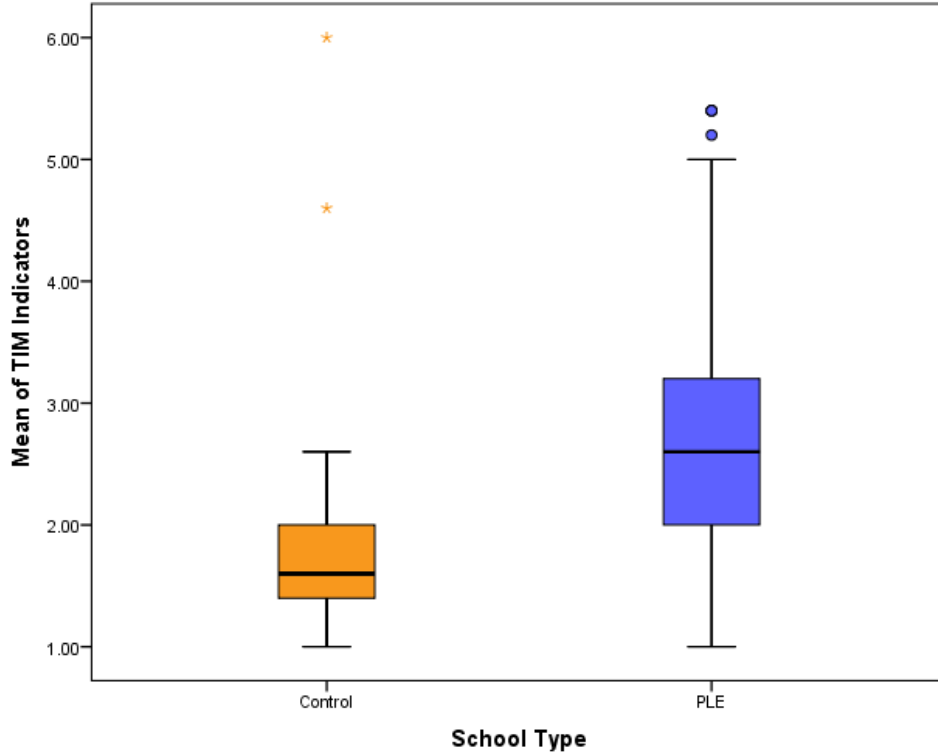
School	Student Centered Instruction				Student Engagement				N
	Not Evident	Emerging	Evident	Exemplary	Not Evident	Emerging	Evident	Exemplary	
All PLE	22%	53%	21%	4%	10%	35%	49%	6%	202
Elementary	19%	59%	18%	4%	10%	33%	49%	7%	96
Bonny Kate Elementary	16%	56%	28%	0%	0%	16%	76%	8%	19
Corryton	22%	51%	20%	7%	11%	33%	44%	11%	18
Halls Elementary	80%	20%	0%	0%	58%	17%	25%	0%	6
Mooreland Heights	29%	48%	11%	13%	16%	34%	34%	16%	16
Norwood Elementary	5%	75%	19%	1%	3%	47%	48%	2%	33
Sterchi Elementary	0%	85%	15%	0%	25%	25%	50%	0%	4
Middle	17%	44%	35%	3%	7%	50%	42%	1%	42
Holston Middle	0%	48%	46%	6%	0%	50%	48%	2%	23
Vine Middle	33%	41%	26%	0%	16%	50%	34%	0%	16
West Valley Middle	67%	33%	0%	0%	17%	50%	33%	0%	3
High	31%	48%	15%	6%	13%	28%	52%	8%	64
Bearden High	31%	48%	15%	6%	13%	28%	52%	7%	61
South-Doyle High	33%	53%	7%	7%	0%	33%	50%	17%	3

School	Assessment				Learning Environment				N
	Not Evident	Emerging	Evident	Exemplary	Not Evident	Emerging	Evident	Exemplary	
All PLE	37%	40%	19%	4%	19%	30%	46%	6%	202
Elementary	33%	43%	22%	2%	13%	26%	53%	8%	96
Bonny Kate Elementary	26%	61%	11%	2%	4%	14%	64%	17%	19
Corryton	46%	28%	26%	0%	14%	36%	42%	8%	18
Halls Elementary	83%	17%	0%	0%	92%	4%	0%	4%	6
Mooreland Heights	67%	13%	8%	13%	17%	25%	48%	9%	16
Norwood Elementary	8%	54%	38%	0%	0%	31%	66%	3%	33
Sterchi Elementary	0%	100%	0%	0%	25%	25%	50%	0%	4
Middle	22%	47%	25%	6%	15%	39%	42%	3%	42
Holston Middle	3%	59%	26%	12%	1%	48%	48%	3%	23
Vine Middle	35%	38%	27%	0%	30%	33%	36%	2%	16
West Valley Middle	100%	0%	0%	0%	50%	8%	33%	8%	3
High	52%	32%	12%	4%	29%	30%	37%	4%	64
Bearden High	52%	32%	13%	3%	30%	30%	37%	3%	61
South-Doyle High	44%	44%	0%	11%	25%	17%	33%	25%	3

TIM distributions exhibit a shifting of responses towards the higher end of technology integration (when compared to SY1314 results), but the most frequent responses still place the bulk of Knox County observations in the lower tiers of technology integration. This data supports the assertions from the focus group meetings. It does appear that more teachers were utilizing the technology at deeper levels of integration in their classroom, but all schools still had pockets of low utilization. Furthermore, the TIM scores provide some evidence that levels of technology integration may be higher in the PLE middle schools. There are some concerns over bias in the data because some schools conducted few second semester observation.

The PLE rubric results exhibit similar trends. The most frequently used classifications in the Student Engagement and Learning Environment domains is “evident”. The magnitude of the shift in the Student Engagement domain (when compared to SY1314 results) is some of the most encouraging data trends to come from either the PLE or TIM rubrics. However, the low second semester rubric return rates at some schools raise some concerns that the results of these rubrics may contain some bias.

The mean of the TIM and PLE indicator scores were calculated for teachers in both PLE and control schools. The boxplots of the distribution of mean scores are contained below. Rubric data for the control schools were only collected in April and May, therefore the comparison set of PLE data only includes rubric scores collected in the same time period.



Non-parametric testing (independent samples median tests) indicates that we can reject the null hypothesis that there was no difference in the median TIM and PLE scores between the samples ($p=0.000$ for both tests). Visual inspection indicates that the teachers at PLE schools in general had the higher scores on the PLE and TIM rubrics. This provides some evidence that the available training, resources, technology infrastructure, and ability of the teaching staff at PLE schools created deeper levels of technology integration and personalization as measured on the available rubrics.

Although there was a measurable difference in rubric scores for PLE schools, it is important to note that the level of personalization and technology integration may not yet be deep enough to impact the other indicators of success that are presented in this study. Readers are reminded that this is still a formative analysis of a long term study.

Results 3: Student Survey Data

In SY1415, the district made student school climate surveys optional. Some PLE schools opted not to participate in student climate surveys; therefore, there was no longer a longitudinal set of student perception data. All of the student perception data surrounding the PLE, therefore, came from a survey developed by the department of Research Evaluation and Assessment with collaboration from the Office Instructional Technology. Survey questions were crafted based on the goals of the PLE and as measured by the TIM and PLE rubrics. Responses are organized below by the main rubric to which they are associated.

Student Survey Data Related to the TIM rubric

Survey data was collected from approximately 3000 respondents. The survey questions were tied to the Active, Goal Directed, and Collaboration domains.

There were distinct differences between elementary and secondary respondents when asked about how active students are in checking grades and in using the device to message their teachers outside of school hours. It is possible that these differences were due to fundamental differences in how different age groups interact with their educational environment rather than deliberate actions around the PLE. Elementary students may be less likely to focus on grades and have a need to communicate with their teachers outside of the classroom.

Question	Grade Level	N Count	True	False
I check my grades using the computer.	Elementary	883	37.3%	62.7%
	Middle	1436	97.9%	2.1%
	High	701	96.4%	3.6%
	All PLE	3020	79.8%	20.2%
I email and/or message my teacher outside of school hours.	Elementary	880	13.4%	86.6%
	Middle	1433	60.4%	39.6%
	High	699	64.1%	35.9%
	All PLE	3012	47.5%	52.5%

The majority of students at all grade levels agreed or strongly agreed that they were comfortable using the devices, as well as knowing what they need to do to get a good grade. However, the majority of respondents did not agree or strongly agree that they got to help other students in their class learn. Overwhelmingly, students agreed or strongly agreed that they were glad to have the devices in their school.

Question	Grade Level	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Agree or Strongly Agree
I am comfortable using a computer.	Elementary	59.2%	30.4%	6.1%	2.6%	1.8%	89.6%
	Middle	65.5%	24.9%	7.6%	1.0%	1.1%	90.4%
	High	61.7%	27.7%	8.2%	1.1%	1.3%	89.4%
	All PLE	62.8%	27.1%	7.3%	1.5%	1.3%	89.9%
I know what I have to do to get a good grade in my classes.	Elementary	55.7%	32.3%	9.1%	1.6%	1.4%	88.0%
	Middle	48.7%	37.8%	10.4%	2.2%	0.8%	86.5%
	High	39.2%	46.2%	11.4%	0.9%	2.4%	85.3%
	All PLE	48.5%	38.1%	10.2%	1.7%	1.4%	86.7%
I get to help other students in my class learn.	Elementary	14.4%	28.0%	33.0%	17.2%	7.5%	42.4%
	Middle	12.2%	24.4%	37.0%	18.9%	7.5%	36.6%
	High	13.3%	31.2%	35.7%	13.8%	6.0%	44.5%
	All PLE	13.1%	27.0%	35.5%	17.2%	7.1%	40.1%
I am glad my school has a computer for me to use.	Elementary	68.4%	19.9%	7.4%	1.8%	2.5%	88.3%
	Middle	65.2%	19.0%	10.6%	1.9%	3.2%	84.3%
	High	58.2%	23.5%	14.3%	1.1%	2.9%	81.7%
	All PLE	64.5%	20.3%	10.5%	1.7%	2.9%	84.9%

Student Survey Data Related to the PLE rubric

Survey data was collected from approximately 3000 respondents. The survey questions were tied to the Student Centered Instruction, Student Engagement and Assessment domains.

The majority of respondents indicated that they had not helped their teacher design their own assessments this year. Results were mixed regarding student self-scoring.

Question	Grade Level	N Count	True	False
I have helped my teacher design a test or quiz in my classroom.	Elementary	883	12.6%	87.4%
	Middle	1424	13.2%	86.8%
	High	700	29.6%	70.4%
	All PLE	3007	16.8%	83.2%
I have graded myself on how well I know information.	Elementary	878	41.7%	58.3%
	Middle	1430	54.2%	45.8%
	High	700	52.7%	47.3%
	All PLE	3008	50.2%	49.8%

Students were also less likely to agree or strongly agree that their teachers were asking them how they learn best, and that they got a choice in how they learned in their classrooms. Respondents were slightly more favorable when indicating if they were able to learn at their own pace, but the responses were not overwhelmingly positive.

The respondents to the survey almost universally indicated that the computer did not increase their level of distraction, though there was a notable difference in the response patterns among high school students when compared to the middle and elementary students. The number of respondents that felt distracted has decreased in SY1415 (when an equivalency is created the percentage of students who responded “yes” to the question “Do you sometimes find yourself distracted in class because of your computer?” in SY1314 with the percentage of students who agreed or strongly agreed that they were more distracted in class because of the computer). There were mixed results when asked if respondents participate more often in class when the devices are in use, though there appears to be grade level trends in the data (the older the students, the more likely they are to agree or strongly agree that they participate more often). The majority of respondents agreed or strongly agreed that they were more interested in classes when they used their devices. However, the percentage of students who agreed or strongly agreed with this statement represents a sharp decline in positive responses to the same question in SY1314, when roughly 80% of respondents answered “yes” to the same questions. In a similar manner, there has been a decrease in the percentage of respondents who felt more responsible for their own work when compared to SY1314 results.

Question	Level	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Agree or Strongly Agree
My teachers ask me how I learn the best.	Elementary	15.4%	28.7%	35.0%	13.7%	7.2%	44.1%
	Middle	11.6%	28.6%	35.5%	15.9%	8.4%	40.2%
	High	13.7%	31.9%	33.1%	14.6%	6.7%	45.6%
	All PLE	13.2%	29.4%	34.8%	14.9%	7.7%	42.6%
I feel like I get to learn at my own pace.	Elementary	26.2%	32.1%	22.0%	13.7%	6.0%	58.3%
	Middle	18.4%	32.3%	30.2%	13.6%	5.5%	50.7%
	High	18.9%	29.5%	28.5%	15.9%	7.2%	48.4%
	All PLE	20.8%	31.6%	27.4%	14.2%	6.0%	52.4%
I am more interested in classes when I use my computer.	Elementary	34.4%	24.0%	24.1%	11.9%	5.5%	58.4%
	Middle	31.7%	27.1%	28.0%	9.0%	4.2%	58.8%
	High	29.0%	28.9%	31.2%	6.2%	4.7%	57.9%
	All PLE	31.9%	26.6%	27.6%	9.2%	4.7%	58.5%
The computer helps me feel more responsible for my school work.	Elementary	27.7%	27.8%	22.8%	14.2%	7.4%	55.6%
	Middle	29.0%	33.7%	23.7%	9.1%	4.5%	62.7%
	High	21.3%	37.4%	28.2%	8.0%	5.1%	58.6%
	All PLE	26.8%	32.8%	24.5%	10.3%	5.5%	59.7%
I am distracted in class because of the computer.	Elementary	4.1%	5.7%	9.4%	26.7%	54.1%	9.8%
	Middle	3.6%	5.5%	15.9%	33.8%	41.2%	9.1%
	High	4.0%	8.3%	26.4%	36.0%	25.3%	12.3%
	All PLE	3.8%	6.2%	16.4%	32.2%	41.3%	10.0%
I participate in class more often when the computers are used.	Elementary	19.8%	17.6%	28.5%	19.5%	14.6%	37.4%
	Middle	20.4%	27.5%	31.5%	13.6%	6.9%	47.9%
	High	18.5%	32.1%	33.8%	11.7%	4.0%	50.6%
	All PLE	19.8%	25.7%	31.2%	14.9%	8.5%	45.5%
I get a choice in how I learn.	Elementary	11.3%	20.1%	31.5%	18.8%	18.4%	31.4%
	Middle	11.3%	19.2%	33.4%	22.8%	13.3%	30.5%
	High	11.3%	23.8%	32.3%	19.1%	13.5%	35.0%
	All PLE	11.3%	20.5%	32.6%	20.8%	14.8%	31.8%

Themes from the free response questions.

2740 students provided information in the free response section of the survey. There were some common themes that emerged that could be used to help refine the PLE. Those themes are presented below.

- A large number of respondents provided very positive comments regarding the PLE. Comments such as “I love it”, “It makes school fun”, etc. were some of the most common responses.
- The devices allowed students to be more organized and better prepared for class because all of their assignments were stored on-line (in Canvas) or locally on their

machine. Students appreciated being able to access classroom materials whenever they wanted through Canvas.

- Students noted that typing was easier and a more efficient way to complete assignments and assessments when compared to writing by hand.
- There was a minority of students who felt that they learned best without the devices and feel that their learning style was not being supported in the personalized learning environment.
- Responses from high school students were more likely to mention an increase in the level of distraction in their classroom due to how fellow students were using the devices. High school students seemed more likely to voice frustration that their peers were using the devices for entertainment during classroom instruction.
- Responses seemed to indicate that the bulk of device usage involved on-line research (through web browsers and video providers) and playing education games.
- Students became very frustrated with system crashes, low battery charges, slow internet speeds and other infrastructure-based issues.
- Comments among secondary students still referenced the disparity between the frequency and effectiveness of device utilization across classrooms. Some teachers were still hesitant to integrate technology in the classroom.
- There were numerous comments among high school students that reference a tension from how students wanted to use the device and how teachers wanted their students to use the device.

Results 3: Teacher Survey Data

The teachers at PLE schools were provided the opportunity to complete an on-line survey regarding their experiences and perceptions regarding the PLE. Teachers were asked a series of questions to be answered via a Likert scale (strongly agree to strongly disagree), two true or false questions, and one opened ended question. The results from the PLE teacher survey are presented in the tables below. The category that corresponds to the most frequently used answer has been bolded for each specific grade level.

Effects on students

Overall, most survey respondents perceived that the personalized learning environment has had a positive impact on students. Notably, the majority of respondents agreed or strongly agreed that the PLE will improve student achievement, though perceptions were more divided concerning the ability of the PLE to close gaps in student achievement. The respondents at all grade levels mostly agreed or strongly agreed that the PLE helps students learn 21st century skills. The teacher survey data further corroborates the teacher perception data collected in the teacher focus groups.

Teacher perceptions were a little more divided in other areas. Most notably, high school respondents were most likely to strongly agree that the technology has led to increased distractions in the classroom, whereas elementary and middle school respondents were most likely to disagree with this assertion. High school respondents were also more likely to cite usage of digital platforms to facilitate classroom discussion. Conversely, elementary respondents were most likely to agree that the PLE increased student ownership of the learning process, and that the participation in classroom activities increased with the introduction of the devices. Middle and high school respondents were less likely to agree with these statements.

Question	Grade Level	N Count	Strongly Agree	Agree	Neutral/ No Opinion	Disagree	Strongly Disagree	Agree or Strongly Agree
Technology usage has led to increased distractions in my classroom.	Elementary	125	4.0%	20.8%	22.4%	45.6%	7.2%	24.8%
	Middle	96	15.6%	28.1%	20.8%	32.3%	3.1%	43.8%
	High	61	39.3%	32.8%	11.5%	13.1%	3.3%	72.1%
	All PLE	282	15.6%	25.9%	19.5%	34.0%	5.0%	41.5%
The PLE will improve student achievement.	Elementary	120	8.3%	60.0%	23.3%	6.7%	1.7%	68.3%
	Middle	94	7.4%	55.3%	23.4%	9.6%	4.3%	62.8%
	High	61	9.8%	42.6%	27.9%	18.0%	1.6%	52.5%
	All PLE	275	8.4%	54.5%	24.4%	10.2%	2.5%	62.9%
The PLE will help decrease performance gaps in student achievement.	Elementary	120	3.3%	50.8%	28.3%	15.0%	2.5%	54.2%
	Middle	94	5.3%	52.1%	26.6%	12.8%	3.2%	57.4%
	High	61	3.3%	31.1%	47.5%	16.4%	1.6%	34.4%
	All PLE	275	4.0%	46.9%	32.0%	14.5%	2.5%	50.9%
The PLE helps my students learn 21st century skills.	Elementary	119	30.3%	58.0%	9.2%	2.5%	0.0%	88.2%
	Middle	94	33.0%	53.2%	8.5%	3.2%	2.1%	86.2%
	High	61	32.8%	52.5%	9.8%	4.9%	0.0%	85.2%
	All PLE	274	31.8%	55.1%	9.1%	3.3%	0.7%	86.9%
Integrating technology into my classroom has increased student ownership of the learning process.	Elementary	119	10.1%	53.8%	23.5%	12.6%	0.0%	63.9%
	Middle	94	10.6%	46.8%	25.5%	13.8%	3.2%	57.4%
	High	62	11.3%	38.7%	19.4%	29.0%	1.6%	50.0%
	All PLE	275	10.5%	48.0%	23.3%	16.7%	1.5%	58.5%
Student participation has increased in my classroom with the introduction of the devices.	Elementary	120	15.0%	50.8%	22.5%	11.7%	0.0%	65.8%
	Middle	94	8.5%	45.7%	25.5%	18.1%	2.1%	54.3%
	High	62	9.7%	40.3%	17.7%	22.6%	9.7%	50.0%
	All PLE	276	11.6%	46.7%	22.5%	16.3%	2.9%	58.3%
Students are more likely to participate in discussions on Canvas or other digital platforms than in the traditional classroom.	Elementary	120	7.5%	34.2%	37.5%	17.5%	3.3%	41.7%
	Middle	94	9.6%	40.4%	33.0%	14.9%	2.1%	50.0%
	High	62	24.2%	41.9%	12.9%	17.7%	3.2%	66.1%
	All PLE	276	12.0%	38.0%	30.4%	16.7%	2.9%	50.0%

Effects on teachers

Teachers who responded to the survey were generally positive about the effects the PLE has had on their job responsibilities. The majority of respondents agreed or strongly agreed that the integration of technology in their classroom has improved their instructional practice. Respondents were also most likely to agree or strongly agree that the integration of technology has led to increases in personalization and allows for accommodation of different learning styles in their classroom.

Respondents at all levels were most likely to agree or strongly agree that the PLE has increased the amount of planning time required when preparing for a lesson. Of particular note is that 29% of high school respondents strongly agreed that the PLE required more planning time.

Question	Grade Level	N Count	Strongly Agree	Agree	Neutral/ No Opinion	Disagree	Strongly Disagree	Agree or Strongly Agree
The amount of personalized learning in my classroom has increased with my use of technology.	Elementary	124	19.4%	57.3%	14.5%	7.3%	1.6%	76.6%
	Middle	96	17.7%	65.6%	7.3%	8.3%	1.0%	83.3%
	High	63	27.0%	52.4%	12.7%	7.9%	0.0%	79.4%
	All PLE	283	20.5%	59.0%	11.7%	7.8%	1.1%	79.5%
The amount of time I spend preparing for a lesson has increased since the implementation of the personalized learning initiative	Elementary	124	15.3%	54.8%	15.3%	12.9%	1.6%	70.2%
	Middle	95	15.8%	42.1%	23.2%	14.7%	4.2%	57.9%
	High	62	29.0%	29.0%	27.4%	12.9%	1.6%	58.1%
	All PLE	281	18.5%	44.8%	20.6%	13.5%	2.5%	63.3%
Integrating technology into my classroom has improved my instructional practice.	Elementary	123	15.4%	56.1%	19.5%	7.3%	1.6%	71.5%
	Middle	96	17.7%	52.1%	18.8%	8.3%	3.1%	69.8%
	High	62	22.6%	40.3%	27.4%	8.1%	1.6%	62.9%
	All PLE	281	17.8%	51.2%	21.0%	7.8%	2.1%	69.0%
Technology in my classroom allows me to accommodate different learning styles.	Elementary	120	20.0%	61.7%	12.5%	5.0%	0.8%	81.7%
	Middle	92	20.7%	62.0%	12.0%	3.3%	2.2%	82.6%
	High	62	19.4%	64.5%	9.7%	6.5%	0.0%	83.9%
	All PLE	274	20.1%	62.4%	11.7%	4.7%	1.1%	82.5%

PLE supports and infrastructure

Overall, the majority of respondents had a positive view of the supports their school and the district provided as part of the PLE. Responding teachers were most likely to agree or strongly agree TPaCK coaches have helped to increase personalization through the PLE initiative, with the majority of high school respondents strongly agreeing with that statement. Responses at each grade level also seem to indicate that the technology (hardware, internet connections, etc.) used in the PLE was generally reliable.

Respondents generally indicated that they agreed or strongly agreed that they received effective professional development regarding personalized learning and technology integration during SY1415. However, this outcome contradicts some of the common themes of the free response survey questions and some of the feedback collected during teacher focus groups. The PLE directors should investigate this contradiction at a deeper level to try to understand what is driving the discrepancies between the survey responses and the survey comments.

Most of the respondents at each grade level seemed to indicate that the PLE schools (and perhaps the district) could do a better job of keeping parents of PLE students better informed about the goals and progress of the personalized learning environment. Respondents were divided when asked if parents were excited about having a child attend a PLE school. Perhaps targeting this group of stakeholders should be made a priority in SY1516.

Question	Grade Level	N Count	Strongly Agree	Agree	Neutral/ No Opinion	Disagree	Strongly Disagree	Agree or Strongly Agree
Parents have been satisfied with the amount of communications they receive about the PLE from the school.	Elementary	124	2.40%	25.00%	65.30%	6.50%	0.80%	27.40%
	Middle	95	3.20%	17.90%	70.50%	6.30%	2.10%	21.10%
	High	64	6.30%	21.90%	71.90%	0.00%	0.00%	28.10%
	All PLE	283	3.50%	21.90%	68.60%	4.90%	1.10%	25.40%
Overall, parents are excited to have children attending a PLE school.	Elementary	124	13.70%	45.20%	40.30%	0.80%	0.00%	58.90%
	Middle	96	9.40%	47.90%	36.50%	3.10%	3.10%	57.30%
	High	60	15.00%	41.70%	41.70%	1.70%	0.00%	56.70%
	All PLE	280	12.50%	45.40%	39.30%	1.80%	1.10%	57.90%
My Technology Pedagogy and Content Knowledge (TPaCK) coach has helped me to increase personalization of student learning.	Elementary	118	28.00%	55.10%	10.20%	5.10%	1.70%	83.10%
	Middle	94	27.70%	46.80%	20.20%	3.20%	2.10%	74.50%
	High	63	57.10%	30.20%	7.90%	4.80%	0.00%	87.30%
	All PLE	275	34.50%	46.50%	13.10%	4.40%	1.50%	81.10%
I can rely on the technology in my school (laptops, tablets, software, internet connections) to function properly.	Elementary	118	16.90%	68.60%	9.30%	5.10%	0.00%	85.60%
	Middle	94	23.40%	59.60%	11.70%	4.30%	1.10%	83.00%
	High	63	25.40%	61.90%	7.90%	3.20%	1.60%	87.30%
	All PLE	275	21.10%	64.00%	9.80%	4.40%	0.70%	85.10%
I have received effective professional development regarding personalized learning this school year (2014-2015).	Elementary	119	9.20%	59.70%	18.50%	11.80%	0.80%	68.90%
	Middle	94	5.30%	51.10%	20.20%	18.10%	5.30%	56.40%
	High	63	20.60%	60.30%	9.50%	9.50%	0.00%	81.00%
	All PLE	276	10.50%	56.90%	17.00%	13.40%	2.20%	67.40%
I have received effective professional development regarding integration of technology in my classroom this school	Elementary	119	8.40%	62.20%	15.10%	13.40%	0.80%	70.60%
	Middle	94	4.30%	53.20%	21.30%	14.90%	6.40%	57.40%
	High	63	27.00%	54.00%	9.50%	9.50%	0.00%	81.00%
	All PLE	276	11.20%	57.20%	15.90%	13.00%	2.50%	68.50%

Overall Impressions

Generally, respondents agreed that the effects of the PLE have been positive at their school and that they would choose to participate again in the PLE if they were given the choice.

Question	Grade Level	N Count	True	False
Overall, the effects of the PLE have been positive at my school.	Elementary	118	94.1%	6.3%
	Middle	94	88.3%	13.3%
	High	61	80.3%	24.5%
	All PLE	273	89.0%	12.3%
If I were given the option, I would choose to participate in the school technology challenge again.	Elementary	119	87.4%	14.4%
	Middle	90	84.4%	18.4%
	High	60	85.0%	17.6%
	All PLE	269	85.9%	16.5%

Themes from the free response questions.

84 teachers provided information in the free response section of the survey. There were some common themes that emerged that could be used to help refine the PLE. Those themes are presented below.

- Generally, PLE teachers were seeing increases in student participation, self-accountability, and ownership. Some high school teachers expressed concerns that student ownership extended beyond directing their own learning and extended to how the students want to use their devices. This has led to friction between students, who sometimes felt they should be able to watch or listen to whatever they want on their devices, and teachers, who were vying for the students' attention for instruction. Teachers also felt hamstrung in regards to consequenceing students for misuse of their device. Simply removing the device from the student led to some instructional difficulties in the larger personalized learning environment of the classroom.
- Trainings continued to be perceived as impractical to real classroom instruction and rooted in theory instead of practice. Similarly, although most teachers praised the work of the TPACK coach, they wished for more classroom-scaled modeling of lessons. There were still teachers who were struggling to understand how to implement PLE effectively in their classroom. Teachers also expressed a desire to spend professional development time with teachers from other PLE schools.
- There were concerns that using technology could help "bypass" some skills and lessons that the teachers view as foundational skills. PLE teachers must therefore remain diligent in trying to find balances between technology integration and instruction in fundamental skills.

- Teachers (mostly at the secondary level) expressed concerns that students view the device primarily as an entertainment device first, and an education device second.

Results 5: Teacher Observations

Previous studies conducted by the Department of Research Evaluation and Assessment have indicated that the variation in individual classroom observation indicators are less likely to correlate to student academic gains than a teacher’s overall evaluation score. Therefore, this evaluation of the PLE did not analyze trends within individual TEAM indicators, and instead focused on the overall observation scores for teachers.

An independent sample t-test was done to determine if the mean change in observation scores (baselined from SY1213, the year before the initial launch of the PLE initiative) were the same when comparing teachers at the PLE schools to the teachers at the control schools. Therefore, the data only included teachers that had been employed at their respective PLE or control school each of the last three years.

School	N	Mean Change in Observation Scores	Std. Deviation (Change in Observation Scores)	95% CI of the Difference		Sig. (2-tailed)
				Lower	Upper	
Control	374	0.26	0.35	0.03	0.14	0.004
PLE	266	0.18	0.37			

The results of the independent sample t-test indicated that we reject the null hypothesis that the mean change in observation scores are no different between teachers at PLE and control schools. Visual inspection of the data indicates that the mean change in observation score was larger at control schools than schools that participated in the PLE. The probability that a difference this large would occur by chance is 0.4%. The Pearson’s r for this effect is 0.112, indicating this is a small effect.

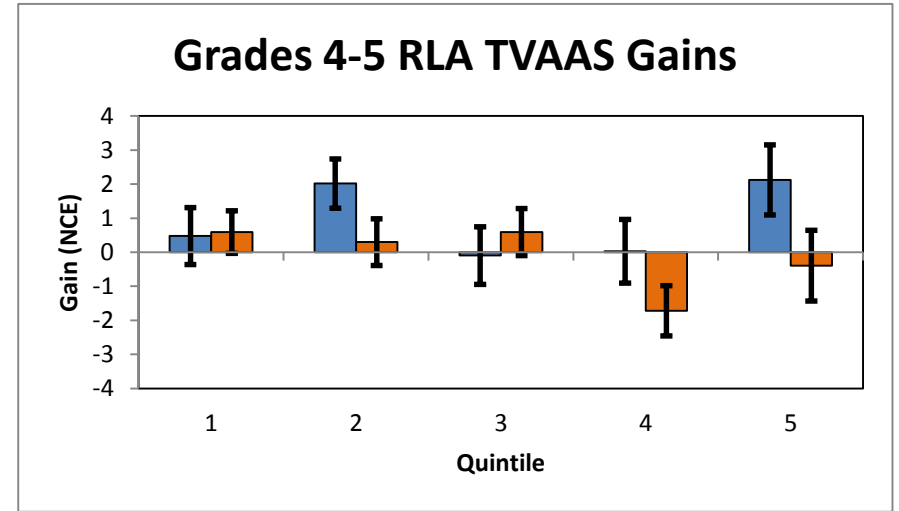
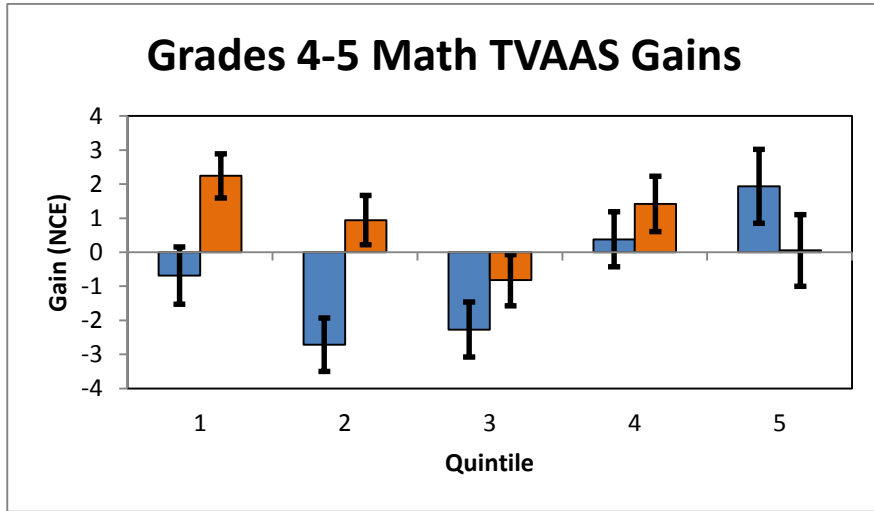
Results 6: Student Outcomes: TVAAS Data

The overarching goal of the PLE was to impact student outcome data through a deep level of individualization. Results of t-tests on the one-year mean TVAAS indices are contained below. TVAAS indices could be used in the analysis because the effect of school size on TVAAS index was controlled for in the creation of the control schools. Non-parametric testing was done to determine if the distribution of TVAAS indices and median TVAAS indices were the same when comparing PLE schools to control schools.

Subject Area	School Type	N	TVAAS Index		Is the median the same across groups?		Is the distribution of scores the same across groups?	
			Mean	Median	Result	Sig.*	Result	Sig.**
Literacy	Control	11	.9036	.5600	Yes	0.999	Yes	0.999
	PLE	11	1.1127	.6000				
Numeracy	Control	11	1.0464	-.2800	Yes	0.999	Yes	0.699
	PLE	11	.5009	.3100				
Literacy and Numeracy	Control	11	1.2464	.3700	Yes	0.999	Yes	0.999
	PLE	11	1.0982	.5200				
Overall	Control	11	1.9627	1.3100	Yes	0.999	Yes	0.652
	PLE	11	1.3927	.3100				

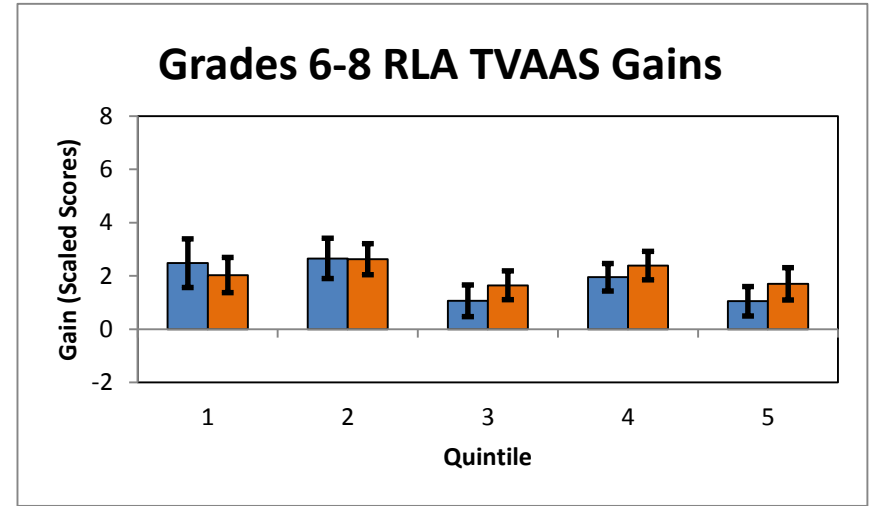
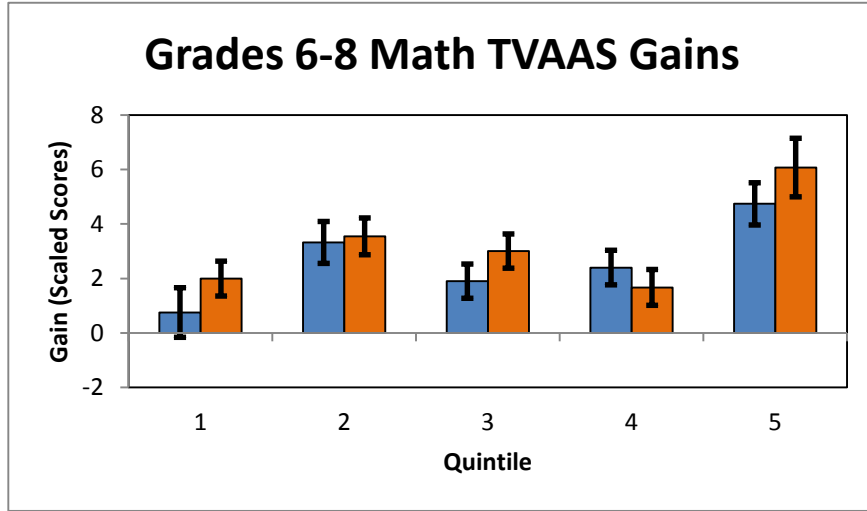
* Independent Samples Median Test, ** Independent Samples Mann-Whitney U Test

The PLE schools had directionally higher TVAAS indices in every subject area in SY1314 (though none of the differences were statistically significant). However, the SY1415 data shows that the PLE schools only had a directionally higher mean TVAAS index in Literacy. The results of the independent samples non-parametric testing indicates that the medians and distribution of TVAAS indices were the same between the two groups (control and PLE schools).



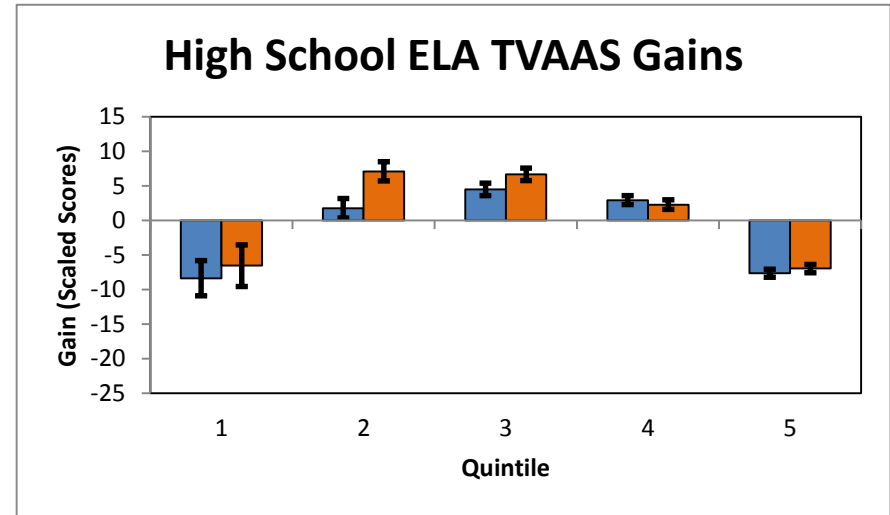
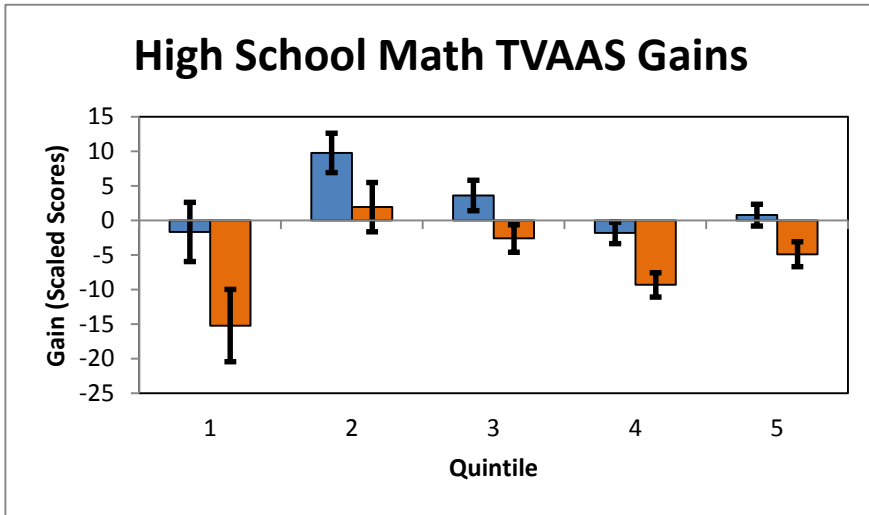
		Quintile				
		1 (Lowest)	2	3	4	5 (Highest)
Control	Avg Growth	2.24	0.94	-0.82	1.42	0.05
	Std Error	0.65	0.72	0.75	0.81	1.05
	Avg Growth	-0.69	-2.72	-2.27	0.38	1.94
PLE	Std Error	0.84	0.79	0.81	0.81	1.09

		Quintile				
		1 (Lowest)	2	3	4	5 (Highest)
Control	Avg Growth	0.59	0.30	0.59	-1.72	-0.40
	Std Error	0.63	0.69	0.69	0.74	1.04
	Avg Growth	0.48	2.02	-0.10	0.03	2.12
PLE	Std Error	0.84	0.73	0.85	0.93	1.03



		Quintile				
		1 (Lowest)	2	3	4	5 (Highest)
Control	Avg Growth	1.99	3.55	3.01	1.67	6.07
	Std Error	0.64	0.68	0.63	0.66	1.07
	Avg Growth	0.75	3.32	1.91	2.40	4.74
PLE	Std Error	0.91	0.77	0.63	0.64	0.78

		Quintile				
		1 (Lowest)	2	3	4	5 (Highest)
Control	Avg Growth	2.03	2.63	1.65	2.38	1.70
	Std Error	0.66	0.58	0.54	0.53	0.61
	Avg Growth	2.48	2.66	1.07	1.95	1.05
PLE	Std Error	0.91	0.75	0.60	0.52	0.55



		Quintile				
		1 (Lowest)	2	3	4	5 (Highest)
Control	Avg Growth	-15.20	1.95	-2.60	-9.30	-4.88
	Std Error	5.23	3.56	2.00	1.77	1.79
	Avg Growth	-1.67	9.77	3.63	-1.80	0.79
PLE	Std Error	4.28	2.85	2.21	1.55	1.57

		Quintile				
		1 (Lowest)	2	3	4	5 (Highest)
Control	Avg Growth	-6.53	7.11	6.67	2.30	-6.94
	Std Error	3.02	1.39	0.91	0.71	0.61
	Avg Growth	-8.36	1.76	4.51	2.95	-7.61
PLE	Std Error	2.54	1.41	0.91	0.66	0.59

Visual inspection of the TVAAS quintile plots above indicates that there was no systematic increase to TVAAS gains at PLE schools. The lack of systematic trends in the SY1415 quintile gains mirrors the results of the SY1314 study.

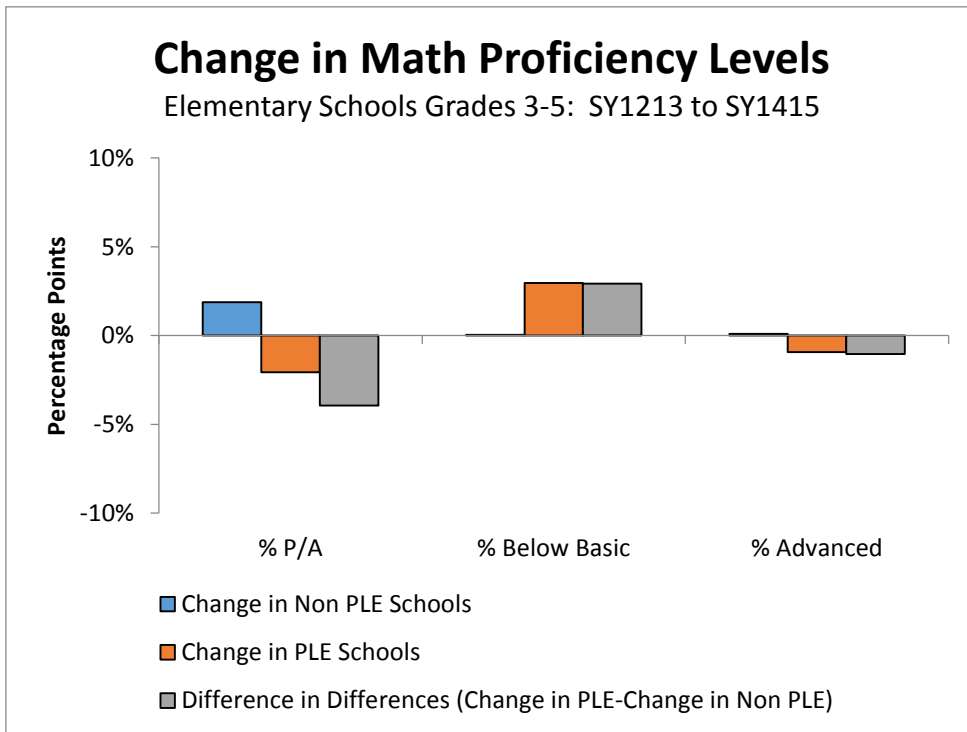
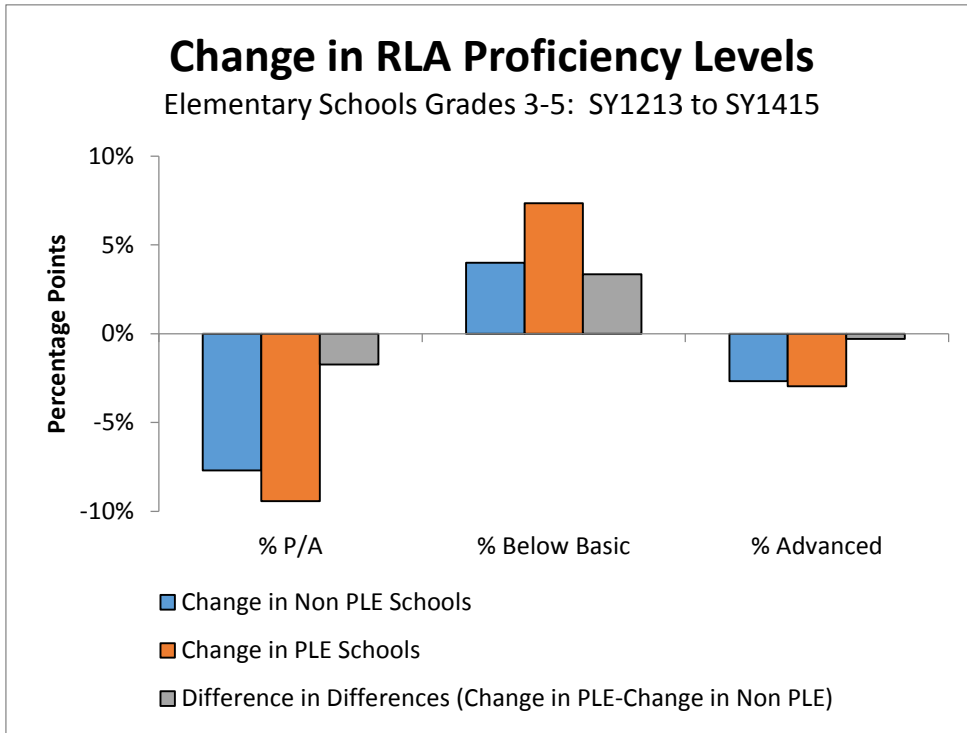
The upper quintiles in elementary RLA seemed to show some positive trends in the data that is only replicated in the highest quintile in the math data. Math and RLA data for the lowest quintile of students were either indistinguishable (for RLA) or trend in the opposite direction (for Math) than their control group peers.

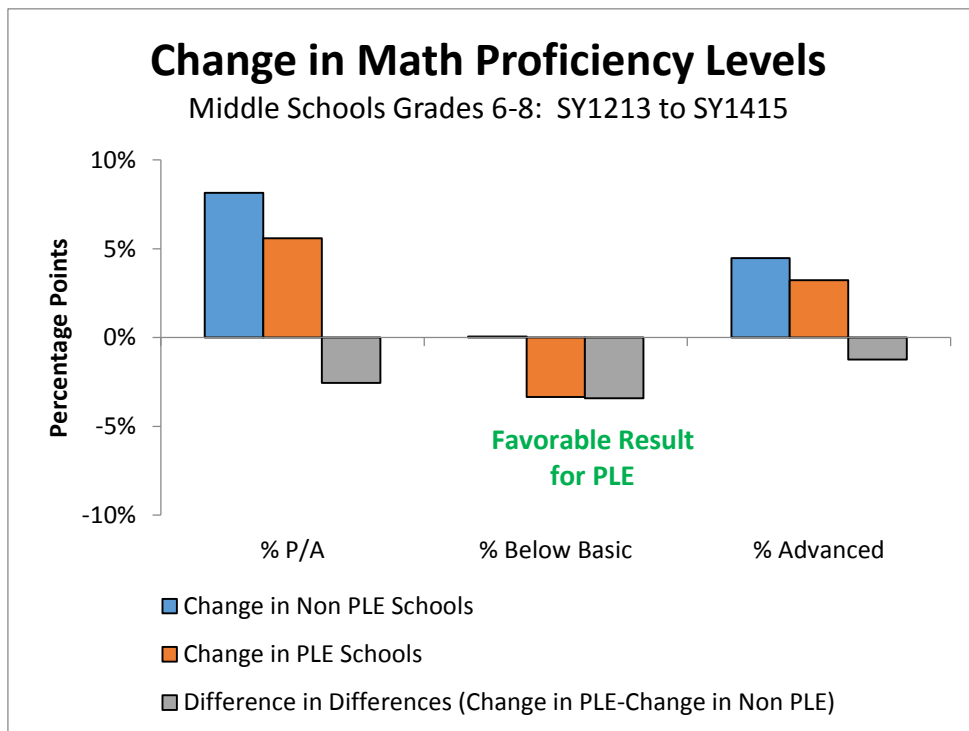
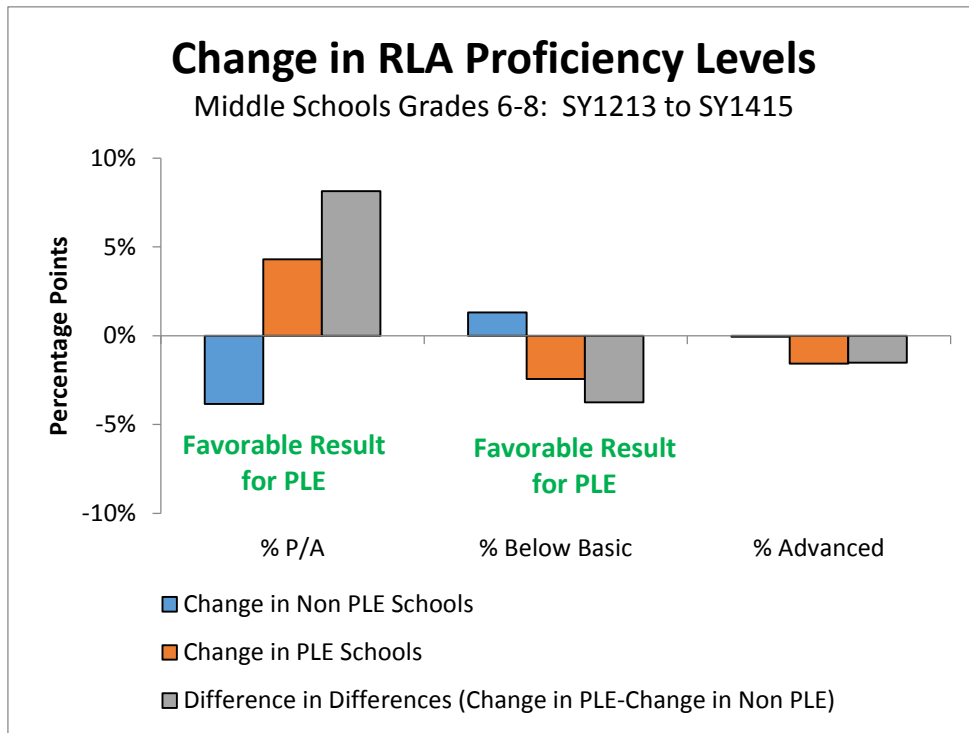
The middle school quintile growth data appeared to be consistent in the PLE and the control schools. There is very little indication that PLE schools are outperforming the control schools in any of the quintiles.

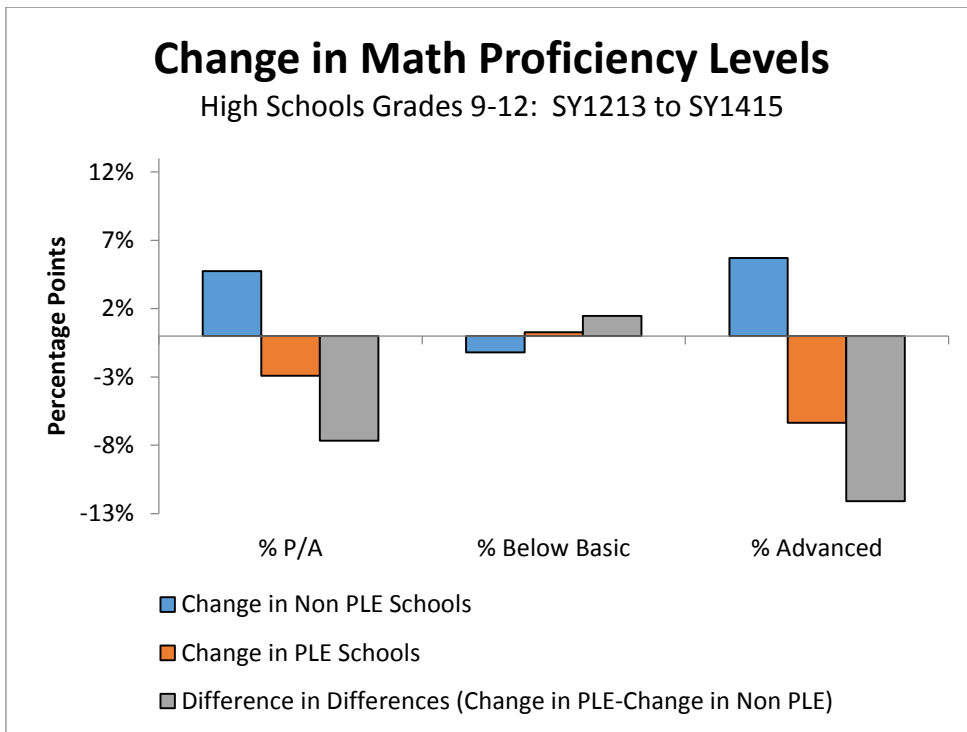
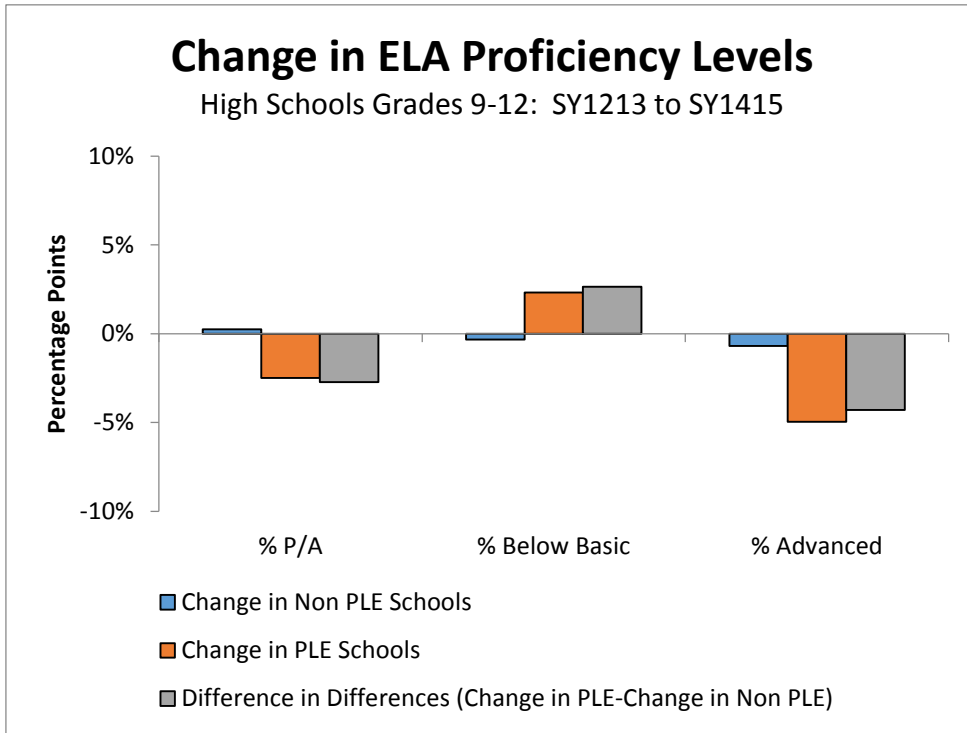
The high school data continues to show the same interesting trends that were evident in the SY1314 data. The PLE students continue to outperform the control students across each quintile in mathematics, though there is little to no discernable difference in ELA performance. It seems unlikely that the results would be replicated two years in a row due to chance alone.

Results 6: Student Outcomes: Achievement Data

A “difference in differences” model was used to analyze the proficiency level data from the SY1415 EOC and TCAP assessments. The “difference in differences” model uses the change in the data using SY1213 proficiency levels as the baseline. Results are grouped by subject and grade bands in the figures below. Favorable results at PLE schools cause the gray bar to be above the 0% line for the change in the percent of proficient or advanced students (% P/A) and the change in the percent of advanced students (% advanced). Favorable results for PLE schools cause the gray bar to be below the 0% line for the percent of students below basic (% Below Basic).







The difference in differences method illustrates that the only grade band that demonstrated positive changes in proficiency levels was the middle school band. Even within the middle school grade band, the subjects showed mixed results in terms of changes in proficiency. The proficiency data, therefore, does not yet exhibit the positive changes that were envisioned by the program architects. This results may not be surprising, considering the depth of personalization that was quantified on the PLE rubrics.

Conclusion and Considerations

The mixed results that came out of the second year of the personalized learning initiative serves to remind district leadership that the Knox County PLE is still a work in progress. There were encouraging shifts in terms of technology integration and personalization of learning, but it seems like the magnitude of those shifts had yet to be significant enough to impact all of the areas that the PLE targets. We were likely still not reaching levels of personalization that was required to drive fundamental changes in the district's outcome data.

Recommendations from last year included a more regular collection of TIM and PLE rubric data to place importance on the PLE. This appears to have not been universally completed. TIM and PLE rubrics are one of the few PLE metrics that could be considered a leading indicator of personalized learning. In the same vein, modeling work will continue with STAR Renaissance data to provide a mid-year feedback loop to the PLE schools regarding academic progress.

In addition, it was suggested in the SY1314 program evaluation that KCS should take a stronger role in building a community of collaboration between the teachers at the PLE schools. The favorable survey responses to questions related to professional development provide some evidence that the Office of Instructional Technology is generally offering high impact professional development, but there are still opportunities for improvements. The train-the-trainer model of learning (occurring through the TPaCK coach's network) may not provide the flexibility required to accommodate the learning styles of the all the teachers involved in the PLE. A common suggestion in both the focus group interviews and in survey responses was to provide more modeling of personalized lessons at the classroom scale. Focus group participants also expressed a desire for a collaborative community of PLE teachers through which they can exchange best practices and effective PLE strategies.

The second year of implementation of the PLE has illustrated that there were still some opportunities for improvement. Notably, student survey responses seemed to indicate that student-to-student collaborative learning and self-directed learning were still not universal in PLE schools. This was in direct conflict with the results for the PLE rubric (where gains in the student centered instruction domain were relatively large) and the teacher survey responses. This may mean that teachers and students have a fundamentally different view

of what student-driven instruction really means in practice. Personnel from the Office of Instruction Technology may wish to investigate the source of this disconnect, and make sure that the staff engaged in the PLE truly understand district expectations around the PLE.

Parent engagement is another opportunity for improvement, as evident from teacher survey responses. The district may want to leverage some resources targeting parent engagement and support directly related to the PLE.

The most concerning issue in the second year of the PLE involved how it was impacted by the roll out of Response to Instruction and Intervention (RTI²) framework at the elementary level. Resources that were previously dedicated to the implementation of the PLE at some elementary schools were being diverted to support the RTI² initiative. Some schools were forced to use their TPaCK coach for administrative duties associated with the paperwork and tracking of students that are required by the district's RTI² framework. This was not done to deliberately undermine the PLE, but was a necessity at some schools because of how their buildings and interventions were staffed. The district should determine what can be done to ensure that there are additional supports to complete the administrative overhead associated with RTI² so that PLE resources do not need to be cannibalized. This will become even more important as RTI² expands to the secondary schools.

The 2014-2015 school year did show some encouraging trends in the data. The increases in the depth of technology integration and the levels of personalized learning evident on the TIM and PLE rubrics were also reflected in survey comments. Some of the teachers that were slow to embrace the PLE in the first year of the initiative have started to implement the PLE more effectively in SY1415. Although academic outcome data has not shifted universally in the positive direction, there are still pockets of positive trends. For the second year in a row, all quintiles of high school math students outperformed their control school peers, elementary students exhibited some positive growth trends in their upper quintiles, and middle school students exhibited favorable gains in proficiency from their baseline year.

Finally, the vast majority of teachers and students were proud to be a part of the PLE. Participants continued to see the value in teaching and learning 21st century skills. The majority of students seemed to feel that their device had allowed them to take more ownership in their education, and had helped them to be more organized and prepared to learn. The participants remained largely convinced that the PLE was the key student success in the modern classroom.