FCPSOn Phase One Evaluation Report

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EXECUTIVE SUMMARY:
FCPSOn Phase One Evaluation Report

The purpose of the present study was to gather formative data on the FCPSOn initiative during its first year of implementation in the 2016-17 school year within Fairfax County Public Schools. Key components of FCPSOn, as reflected in the evaluation model (See Figure 1 in the main report), include professional development (PD) and the resulting impact on intermediary outcomes relating to the goals of improving students' content area knowledge and *Portrait of a Graduate* skills.

Professional Development

Data from surveys and interviews indicated that through professional development experiences, principals and teachers overall had acquired a solid foundation for implementing FCPSOn. Principals, in fact, conveyed during focus groups that their role during this first year of the initiative was to provide a strong focus on PD. Chantily Pyramid (CP) principals in particular described collaboration with their peers to ensure consistency between schools. Not surprisingly, survey results revealed that overall, CP and eLB teachers felt successful in their role as Phase One schools and that the culture within their schools supports technology-enhanced instruction. Further, roughly two-thirds of teachers conveyed they had received sufficient PD to support blended learning. Given that some teachers felt more prepared than others to properly integrate technology in order to fully leverage tech affordances, future PD may focus on more detailed specifics of blended learning with concrete examples of curriculum support, as well as increasing the understanding of technology integration into teaching practice. Teachers' positive perceptions regarding peer-to-peer learning and collaboration further suggests the benefits of incorporating such opportunities in future PD offerings. Both district-wide and school-based PD operate conjointly to provide a consistent, broad vision of the initiative as well as site-based adaptations to individual teachers' and school needs.

Intermediary Outcomes

A variety of impacts on teaching practices, technology integration, and virtual and physical learning environments were offered by participants. These impacts alluded to changes in teaching practices to support a blended learning approach, particularly in terms of the instruction delivered to students. Teachers were viewed as becoming more facilitators of student learning and with the increased use of technology, students were strengthening their skills in using technology as a learning tool, such as increased problem solving and improving their communication skills.

Successes included teachers designing learning experiences with technology in order to allow students to work at their own pace or access content outside of the classroom, whether to prepare for the next day's lesson or for review. Students also conveyed appreciation for these changes in approaches to support their learning, such as improved efficiency, access, and communication opportunities. There were, though, areas of opportunities within teaching practices to support a blended learning approach. Not surprisingly, given the the newness of the

initiative, teachers conveyed interest in more focused PD on blended learning and curriculum support to more fully implement this model.

Most participants viewed a positive impact on student engagement due to the integration of technology. Students were viewed as taking more ownership of their learning and were more engaged due to the variety of options available to them. As teachers and students adjust to increased technology integration and device usage in classes, future professional development and support may focus on strategies for controlling off-task device use.

Portrait of a Graduate Skills

While an impact on *Portrait of a Graduate* skills would not be expected during the first year of FCPSOn implementation, participants frequently observed improvements in students as communicators, critical thinkers, and collaborators. These skills were viewed as improving as a result of the integration of technology, such as using various tools to communicate with peers in other classrooms or even to facilitate collaboration within the classroom amongst students.

Perceptions

Overall, stakeholders viewed the FCPSOn initiative favorably, particularly in terms of the improvement in instructional practices, increased student collaboration, and the positive impact on student engagement and learning. Both parents and students felt the FCPSOn was beneficial in terms of improving access to technology and facilitating student learning.

Though all participant groups agreed the FCPSOn initiative has positively affected the classroom, they did offer valuable recommendations for program improvement: (a) professional development specific to teachers' needs and technological competencies, (b) student training on device use and digital citizenship, (c) example blended learning lessons, and (d) increased communication with parents.

Summary

During the first year of FCPSOn implementation, study findings indicate clear progress in teachers beginning to integrate technology to support a blended learning approach which has, in turn, helped to improve student engagement, and *Portrait of a Graduate* skills. As noted above, based on the reactions of teachers, principals, and other stakeholders, suggestions for future professional development offerings and program enhancements were offered in areas such as blended learning focus, curriculum support, student device training, and parent communications. Overall, a solid foundation for continued and enhanced program implementation appears to have been established in the first year.

FCPSOn Phase One Evaluation Report

The purpose of the present study was to gather data on the FCPSOn initiative as implemented during the 2016-17 school year in a subset of Fairfax County Public Schools (FCPS). The 1:1 initiative in FCPS supports the *Portrait of a Graduate* adopted by the FCPS school board in the fall of 2014. The *Portrait of a Graduate*, while still focusing on academic

achievement, allows FCPS to move beyond high stakes testing and develop student skills that employers are seeking. Graduating students will be effective communicators and collaborators, ethical and global citizens, creative and critical thinkers, and goal-directed and resilient individuals.

Current and long-term rollout plans will encompass all FCPS schools in the next three to five years. The current evaluation examines components of the initiative such as professional development offered to administrators and teachers and the resulting impact on intermediary outcomes (teacher practice, access to and use of technology, physical and virtual environment, student engagement) and long-term outcomes including *Portrait of a Graduate* skills and student achievement (see Figure 1).

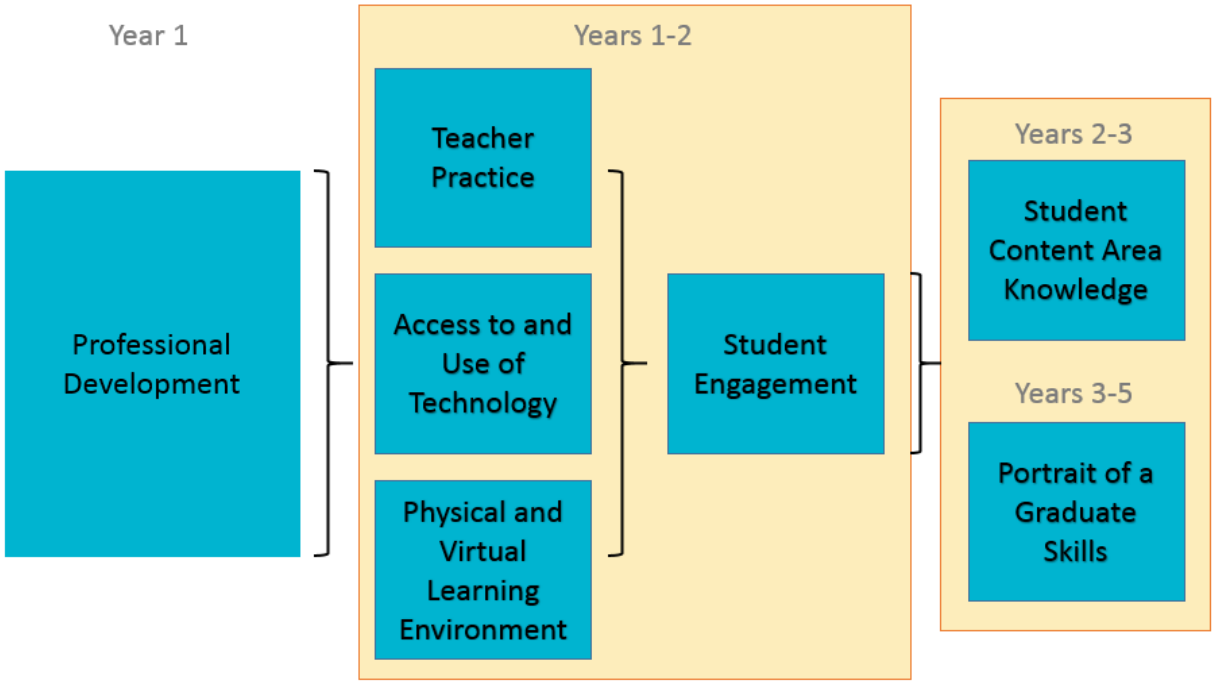

Figure 1. FCPSOn evaluation model.

Based on the perceptions of key participant groups (teachers, students, parents, and district administrators/leaders), the following evaluation questions were identified as focuses for the study:

1. What are the impacts and best practices of district-wide and site-based professional development?
2. To what degree and how are instructional practices changing?
3. To what degree are students demonstrating *Portrait of a Graduate* skills such as collaboration, critical thinking, self-efficacy, ethical behavior, and global awareness?
4. What is the fidelity of implementation of the program?
5. What are the experiences and activities of key stakeholders and participants?

Method

Design

A mixed-methods evaluation design, including qualitative and quantitative data, was employed. Because the FCPSOn initiative is a developing program, being initiated with a select group of 15 schools comprised of elementary, middle, and high schools during the first year (2016-17), the evaluation was designed to address formative needs of providing evidence and recommendations for program improvement.

Participants

Participants in the study were Fairfax County Public School teachers, students, parents, principals, district administrators, and librarians/coaches involved in the initiative. FCPS is a large suburban district serving more than 188,000 students in 222 schools, including 141 elementary schools, 23 middle schools, 28 high schools, and 3 alternative/adult high schools. Just over a quarter (28%) of students are eligible for free and reduced-price meals, and approximately 17% receive English for speakers of other languages (ESOL) services. The predominant race in FCPS is White (40%), followed by Hispanic (24%), Asian American (19%), Black (10%), and multiracial (5%).

FCPS is divided into five regions; each region is comprised of four or five high school pyramids and their feeder elementary and middle schools. The evaluation included schools in the Chantilly Pyramid and schools participating in the Virginia Department of Education eLearning Backpack Grant that were spread across regions. These two groups are further discussed below.

Chantilly Pyramid (CP) schools consisted of elementary (n = 6) schools, middle (n = 2) schools, and one high school. Demographics for these nine schools are presented in Table 1.

Table 1.
Chantilly Pyramid school demographics (2015-16)

		Race/Ethnicity						
School Name	Enrollment	White %	Black %	Hispanic %	Other [1] %	Free/Reduced Price Meals %	English Language Learners %	Special Education %
Brookfield El	850	19.29	11.65	40.24	28.82	56.35	41.76	14.35
Greenbriar East El.	993	39.07	8.46	17.72	34.75	23.56	23.67	13.49
Greenbriar West El.	1,011	24.23	4.45	9.40	61.92	11.97	11.37	8.11
Lees Corner El	768	44.14	3.91	10.68	41.27	12.76	20.70	13.02
Oak Hill El	905	45.41	2.65	5.75	46.19	3.98	6.08	12.04
Poplar Tree El	659	49.92	3.64	8.65	37.79	7.89	7.89	15.93
Franklin Middle	871	52.12	5.86	10.68	31.34	15.04	5.63	16.99
Rocky Run Middle	1,163	37.83	4.73	10.32	47.12	11.18	4.73	7.65
Chantilly High	2,667	44.32	6.79	13.69	35.20	17.55	6.30	15.67

[1] "Other" includes the following race/ethnicity categories: American Indian/Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and Two or More Races.
Data retrieved from http://schoolprofiles.fcps.edu/schlprfl/f?p=108:8

eLearning Backpack (eLB) schools included six high schools in FCPS. Demographics for these schools are presented in Table 2. One eLB school serves students across all regions and the remaining are located in Region 2 (n = 3) and Region 3 (n = 2).

Table 2.
eLearning Backpack school demographics (2015-16).

School Name	Enrollment	Race/Ethnicity				Free/Reduced Price Meals %	English Language Learners %	Special Education %
		White %	Black %	Hispanic %	Other [1] %			
Annandale HS	2,148	16.85	16.95	43.44	22.76	58.33	22.95	13.64
Fairfax Adult HS	372	9.14	11.29	63.17	16.40	17.74	67.20	0.00
Falls Church HS	1,880	19.68	7.02	48.09	25.21	55.90	26.44	16.06
J E B Stuart HS	2,007	22.97	10.26	50.67	1+.10	64.47	32.29	12.81
Lee HS	1,773	18.27	14.27	40.10	27.36	56.85	24.31	13.14
Mt. Vernon HS	1,960	19.59	27.60	41.68	11.13	54.39	18.88	16.94

[1] "Other" includes the following race/ethnicity categories: American Indian/Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and Two or More Races.

Measures

Data sources included 13 focus groups with classroom teachers, SBTS/Librarians, principals, students, parents, and district administrators. In addition, a survey was administered to all classroom teachers. The instruments are further discussed below.

Student focus groups. Elementary, middle, and high school students whose parents returned agreements to participate were randomly selected to participate in one of three focus groups. Each focus group included three to four students. The focus group protocol (see Appendix A) solicited students' reactions to technology for learning and changes in teaching and learning practices.

Parent focus groups. Parents of elementary, middle, and high school students who returned agreements to participate were selected to participate in two focus groups. One parent focus group was conducted with three participants representing elementary and high school students. A second parent focus group was scheduled, but there were no attendees. The focus group protocol (see Appendix B) solicited parents' descriptions of their familiarity with the initiative's purposes and objectives, their overall impressions of the initiative, and their perceptions of how the initiative is impacting their child(ren)'s experience(s) at school.

Teacher focus groups. Four teacher focus groups with two to six participants each were conducted with teachers representing elementary, middle, and high schools. One teacher was interviewed individually by telephone due to a scheduling conflict. The interview protocol (see Appendix C) solicited teachers' descriptions of and reactions to professional development (PD) offered prior to and during FCPSOn implementation, teaching practices, and perceived impacts on student outcomes.

SBTS/librarian focus groups. Two focus groups were conducted with SBTS and school librarians from eLB and CP schools. These focus groups had four to five participants each. The interview protocol (see Appendix D) solicited participants' perceptions regarding the impact on *Portrait of a Graduate* on teaching and learning, acquisition of 21st century skills, student interest and engagement, advantages and challenges of technology infusion, etc.

Principal focus groups. Two principal focus groups, one with CP principals (n = 7) and one with eLB principals (n = 4), were conducted with participants representing elementary, middle, and high schools. One principal was interviewed individually by telephone due to a scheduling conflict. The focus group protocol (see Appendix E) solicited participants' perceptions regarding the initiative including teacher practices, past and future teacher preparation and PD, student impact, and the participants' own roles in supporting their schools in the initiative.

District administrator focus group. One virtual focus group was conducted with three district administrators. Questions (see Appendix F) solicited participants' descriptions of the initiative's vision and goals, professional development, implementation, and early outcomes.

Center for Research and Reform in Education (CRRE) Teacher Survey. The CRRE Teacher Survey (see Appendix G) was co-developed by CRRE and FCPS. The survey consisted of 23 Likert-type items focusing on preparation and professional development, teacher practices, technology integration, and perceived student impacts. In addition, two open-ended items asked participants' successes and challenges with the FCPSOn initiative. The survey was administered to 612 CP classroom teachers with a completion rate of 88.40% and to 486 eLB classroom teachers with a completion rate of 44.44%. Completion by group is presented in Table 3. Descriptive statistics and frequencies are presented in Appendix H.

Table 3.
Classroom teacher survey completion.

	Administered	Completed	Completion Rate
	n	*n*	%
Chantilly Pyramid	612	541	88.40
Elementary	301	264	87.71
Middle	130	111	85.38
High	181	166	91.71
eLearning Backpack	486	216	44.44

Results

Background

According to district administrators, FCPS developed a learning model with the infusion of technology to support student learning. The intiative (FCPSOn) was designed to help teachers support the new learning model and help teachers to leverage digital resources. The district's vision for FCPSOn implementation included changes in the environment and changes in teaching practices. First, the district sought for teachers to shift their role from a more traditional, direct instruction approach to a facilitator role. They also intended for a change in the physical environment, including having different areas of a classroom for different instructional and learning approaches, and determining how students may best use those areas. Once the physical environment was shifted, there was a "greater consideration of a virtual environment that

supports students without the teacher being right beside them." One goal is for students to take ownership of their learning and "technology serves as an amplifier of student learning."

The second area of change centered on teacher practices. FCPSOn focused on teachers thinking about a "workshop model" where small groups of students worked together. The change in teacher practices would also include increased student choice such as where students sought to sit in the classroom, virtual assets they might use (e.g., lessons with videos, articles), and how students might demonstrate their learning, whether through writing a paper, creating a presentation, or building a virtual notebook.

A primary goal of the FCPSOn initiative was to implement a blended learning model. According to district administrators, they followed the Christensen Institute's definition of blended learning which is described as students learning:

> *at least in part through online learning, with some element of student control over time, place, path and/or pace; at least in part in a supervised brick-and-mortar location away from home; and the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience.*[1]

During their focus group, CP parents described the initiative as providing 1:1 devices to students. Two stated that they did not have a lot of background regarding the initiative but viewed the initiative as an opportunity to promote independent thinking, for students to use technology in school, and for students to prepare for jobs of the future. The third parent had attended a PTA meeting where a move toward blended learning was discussed, and she was also familiar with the plan for greater independent learning, as compared with direct instruction and the use of resources such as Google Classroom. While this parent learned of the initiative during a PTA meeting, one spoke of receiving mass emails on the subject from their principal and others. The third learned of the initiative due to their child's excitement about getting the device. One parent commented, "I feel in the past we were a bit behind the digital age, and I feel this year we've really caught up."

Preparation and Support

District administrators noted that professional development for schools participating in Phase One of the initiative began in the summer prior to the first year of implementation. During the first year, the district conducted quarterly meetings of leadership teams (principal or assistant principal, SBTS, and teacher leaders) from each school in the CP. The leadership teams from CP schools first met in June 2016 and the district led them through "the culture for change and what the new modern learning environment looks like." In August 2016, some schools brought in a team of teacher leaders to "discuss the pedagogy they wanted teachers to use, the physical and virtual environment, and the tools [digital resources] to support that." The next month, the leadership teams met and established school-level goals and how they planned to measure progress. They then later met four additional times during the year to "determine how things were going, how they were monitoring progress, and where they were with regard to milestones." An additional PD mentioned was when the district worked with 10 cohorts of

[1] https://www.christenseninstitute.org/blended-learning-definitions-and-models/

teachers who learned about blended learning, wrote blended learning lessons, then shared with one another.

In addition to the PD mentioned above, the district has provided ongoing support for Phase One schools. Such support included learning walks where teachers visit peer classrooms, monthly meetings of SBTS to discuss progress and school needs, assignment of a "critical friend" from instructional services, and regular meetings of CP principals to share experiences. In addition, each school has created an "Instructional Transformation Team" (ITT) for communicating the vision of the project. Last, some schools chose to take the ITT to the Virginia Society for Technology in Education conference as a learning experience.

District administrators did note that all of the PD offered to CP schools had also been provided to eLB schools, but the eLB schools "have taken less advantage of what has been provided." District administrators conveyed that, whereas CP principals began meeting regularly very early in the initiative, "eLB principals are now meeting periodically as well." As mentioned by district administrators, principals were key to implementing the initiative within their school. During focus groups, CP principals described their role as the leader of the initiative, working with the other CP principals to take the basic program template from the county and "we made it retrofit to our school as appropriate." They further described their role as a listener, to "manage the initiative for each of our schools," and described a strong collaboration with the other CP principals. As one principal described, "We attended all the training together and implemented it at the same time." Further, they felt they "had to have a unified systematic PD to roll out to create buy-in". The principals felt that they were tasked with leading the initiative, along with the support from the district. For example, one principal commented that the initiative was "at the grassroots level and behind us is Fairfax County. There are so many departments involved… it has been a super supported initiative."

eLB principals also described a role of supporting the initiative with a focus on professional development. For example, one eLB principal described working with the instructional council (department chairs) and the instructional support team to identify areas of focus for professional development for the year. Similarly, another principal commented that, "professional development became a big part of my role" and as another described, "The biggest thing is getting people trained and comfortable using technology in the classroom." In addition to professional development, principals mentioned that they also focused on ensuring adequate technical support, whether through paying for an additional 0.5 technology specialist, acquiring additional laptops, or having "a dedicated person there, available all day long to solve laptop problems."

Classroom teachers in CP and eLB schools were asked a series of survey items related to their preparation and support during the first year of the FCPSOn initiative (see Figure 2).

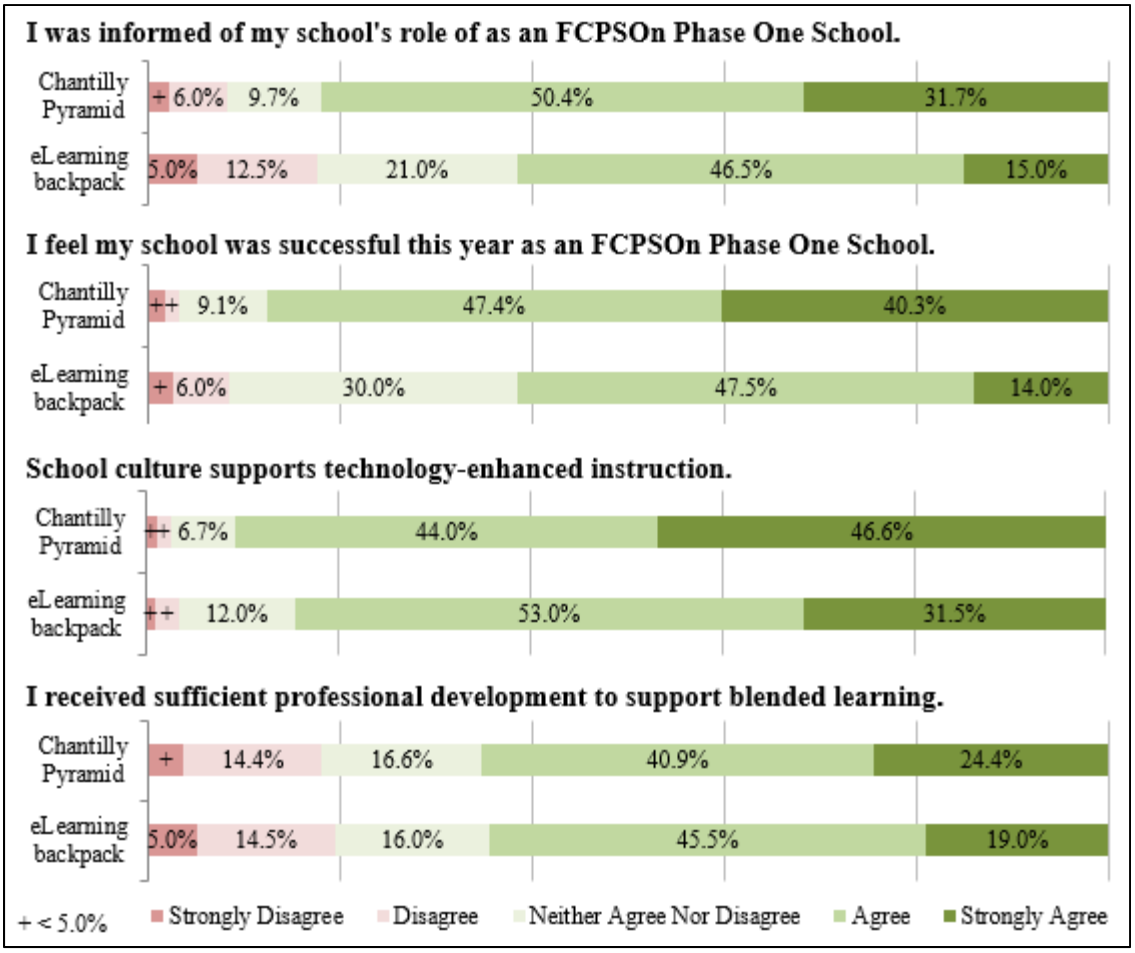

Figure 2. Classroom teachers' survey responses regarding support and preparation.

Teachers were generally in agreement regarding the preparation and support received. CP school teachers were more positive overall than eLB teachers.

- ***Expected role.*** CP teachers tended to agree (82.1% at least agreed) that they were informed of the expected role of their school as an FCPSOn Phase One school. They were somewhat more in agreement with this statement than eLB teachers (61.5%). Within CP schools, high school teachers were significantly more likely to agree than elementary school teachers ($p < .05$).
- ***Success.*** CP teachers (87.7%) tended to agree that they felt their school was successful in fulfilling its role as an FCPSOn Phase One school. eLB teachers were less likely to agree (61.5%) that they were successful in their role. There was not a statistically significant difference between grade-level teachers within CP schools.
- ***Culture.*** Survey responses showed that both CP teachers (90.7%) and eLB teachers (84.5%) were in relatively close agreement when asked if the culture of their school supports the use of technology-enhanced instruction to support personalized student learning. CP school teachers were similar in their responses across grade levels.

- ***Professional development.*** Classroom teachers conveyed mixed perceptions regarding whether or not they had received sufficient professional development to support blended learning in their classrooms. Just under two-thirds of CP teachers (65.3%) and eLB teachers (64.5%) indicated agreement. Though not significantly different, middle school teachers were more in agreement (72.7% at least agreed) as compared with high school (66.1%) and elementary school (61.7%) teachers.

During focus groups, teachers in CP and eLB schools were asked to describe the PD they received in preparation to serve as FCPSOn Phase One schools, for technology integration, and for blended learning. In addition, they were asked to comment on whether the PD had been effective. All focus group participants noted that PD had taken place at different times throughout the year and in different formats, though perceptions varied regarding effectiveness. Elementary school CP teachers described several different PD opportunities. One teacher referenced a blended learning academy course that spanned five weeks early in the school year. While this teacher explained that the course "started with a lot of theory, not really what we needed," the teacher later explained that the course provided practical shifts teachers "could make to doing things online and on devices." The teacher noted that the course was "early enough that it's become a part of what we're doing." This district-wide PD defined "blended learning as not just using DreamBox or MyON or tool use," but "technology as a method to support what is already happening. Support what you're already doing as opposed to kids sitting quietly on the computer."

Another elementary school teacher described reading the book, *Power Up*. Teachers then participated in mandatory 15-minute sessions periodically. The tone that was set in these sessions was "feel free to make mistakes" as teachers incorporated new practices. Another elementary school teacher referenced this book and how teachers had questions and discussion around the book, which led the SBTS staff to lead discussions every third team meeting. This teacher explained that they "had to respond via a Google doc to give feedback on these trainings and what our needs and questions are." Now, the teacher explained, "We've moved into specific trainings about what works within a certain grade level."

Elementary CP school teachers noted that they received PD on effective use of technology after students had received devices. They observed that it has taken time to learn how to more effectively integrate technology beyond using technology to substitute for a traditional form of learning. One teacher commented that their school has established "Wednesday Wonder," a two-part training held twice a month where programs and tools are explained the first week and application is reviewed the second week. As this teacher noted, "They offer multiple ones every month in order to meet the needs of the grade level." The focus of technology integration in elementary schools, as one teacher conveyed, is "What are some of the activities you already do that can be spun differently to use technology?"

Two other elementary school teachers described training offered by the district where the principal would send teachers to attend for a short time before or after school. These teachers would then bring back what they had learned to share with their peers. During these trainings, a teacher could share about a tool they are familiar with, like Quizlet or Google Classroom. One teacher conveyed that, unfortunately, "the people who hadn't gone have gotten a few tidbits but

the teachers who've gone to the meetings don't tend to relay much information." Within this school, the teacher has "been learning on the go" with less formal instruction on effective technology use in the classroom.

While some PD was viewed as structured and beneficial, other school-based PD was perceived as lacking. For example, an elementary CP teacher described "PD on Thursday mornings geared toward different technology, but nothing structured." Another noted that while she attended a PD training as part of a summer development session that provided a lot of great basic information "it really lacked in presenting teachers ways to effectively implement the program in a classroom." This teacher explained that, "I left my first PD not knowing how to implement in my own classroom."

Middle school CP teachers conveyed that they had high levels of anxiety and were stressed at the start of the school year once informed that "big changes were coming" but were not provided with advanced preparation. These CP teachers referenced PD at the start of the year, such as using the week before school starts for PD and "it was overload." These teachers conveyed that the concept of blended learning was presented, but "lost in the anxiety and size of the change." One middle school teacher noted that the first week of PD centered on presenting technology possibilities, but was more overwhelming than helpful, and not targeted to individuals at different levels of aptitude.

Similar to elementary school teachers, one middle school teacher also referenced the *Power Up* book and described it as a helpful introduction to technology integration. Another teacher described a 'Share Fair' at the beginning of the year: "That was such a short thing, right at the beginning of the year. I presented, but I felt rushed and that I couldn't help people who were struggling." Despite some early concerns, a middle school CP teacher mentioned that a content area retreat held recently was productive and was a benefit to work with content area teachers. During this PD, teachers were shown the potential for how blended learning can be fully implemented in their classrooms. As this teacher explained, "That retreat was the best thing we did all year, and that was just a couple of weeks ago." Another middle school teacher referenced a countywide blended learning cohort but noted, "I don't feel like it was super productive this year."

CP high school teachers described a variety of PD that they received. For example, these teachers were offered 10 different options from which each teacher could choose. In addition, the teachers described sharing amongst themselves and working together to learn and implement blended learning and technology integration. As one teacher commented, "the PD has evolved. It's very hands on and done on computers." For example, one PD session was on Google Classroom. During this session, "We learned how to create forms, docs, and quizzes online. We worked hands on, making products together. It was easily and quickly applicable."

CP high school teachers noted that they also have blended learning cohorts. All were given a blended learning text and "many didn't realize we were already doing this." As a teacher commented, "We're big into project-based learning and computers have only enhanced that opportunity." These teachers conveyed already possessing familiarity and a level of comfort with blended learning. One teacher noted, "The PD was more of an enhancement, because we were

already on the blended learning and project-based learning process. We didn't have to be brought up to speed."

Overall, CP high school teachers were highly positive about the PD received. First, these teachers referenced that the principal in their school set the tone for the year asking the teachers "to try 'just one thing'" which they noted relieved stress and pressure, and allowed teachers to explore their options. These teachers noted that they have had a high level of input into the PD they receive, with one teacher stating, "We have been able to say what we need and have it provided for us." These teachers commented that they received individualized training, likely tailored to each individual's skillset with technology. Overall, teachers conveyed that they received "very hands on learning when it came to using the devices" and "It's been transformative as far as the PD." One teacher commented their experience has been "absolutely outstanding! I can't imagine a project of this dimension being put through as seamlessly as it was. It required an immense amount of preparation, and we were prepared."

eLB teachers noted that the year before the devices were received, a community of teachers planned a "kind of user manual for using the computers" and also "did teachers helping teachers." Those experienced with technology helped to plan and teach those who were preparing to integrate technology. In addition, teachers attended a Google seminar and during professional development sessions, studied Google Classroom. At the school level, teachers mentioned that PD was mostly teacher led focusing on Google Classroom, exit tickets, and warmups. At the district level, teachers were invited to be a part of a blended learning cohort, extending and experimenting with student-centered learning activities. Teachers also mentioned attending "Teaching Screenagers", a county-wide training that was viewed as an introduction to electronic tools.

eLB teachers commented that there had been no specific training on blended learning in the past two years other than in cohort presentations. One teacher noted, "I haven't been a part of any other ones besides the cohort." A second comment was made that "With the help of the School Based Technology Specialists we try to make what we get from the blended learning cohort more content specific." Another noted that they were now "more focused on integration," there was "lots of interest in blended learning content" and that "there are some really neat tricks out there."

Principals. During focus groups, CP principals indicated that their teachers were prepared to integrate technology and implement a blended learning environment due to staff development at the end of the prior school year or over the summer. In addition, "We read over the summer and prepared with the book, *Power Up*. That helped prepare us with what was coming."

They did, though, note challenges with implementing the initiative. As one CP principal explained, "Some teachers were more prepared than other teachers. It's ok to be where you are but you just can't stay there." Further, another commented, "There are opportunities but we have done a lot of good things" while another stated, "We didn't have all of the knowledge and we're figuring it out now."

eLB principals provided mixed perceptions regarding the preparation of teachers to integrate technology and blended learning. Principals conveyed that they did believe their teachers were prepared to integrate technology as they "did a lot of prep last year to get them ready" and "Yes, since we rolled out slowly." However, teachers were much less prepared to implement blended learning in their classrooms. For example, one principal commented, "No, we weren't ready. It's a work in progress" though she also mentioned that "Some people are not willing to take a leap." Another principal had a similar observation between teachers willing to incorporate blended learning and those more resistant:

> *My staff struggled with models of blended learning; it's hard for some people. I have young teachers who embrace technology who struggle. Even the younger teachers don't see blended learning as learning. It's not an age-related matter. I think we need some more specific models of blended learning. I said 'try them all and see what works.' Even the best people always want one more rehearsal. We spend a lot of time learning how to swim.*

SBTS/librarians. When queried whether teachers were adequately prepared to integrate technology in the classroom, SBTS/librarians had a number of comments. Two specialists stated they could see the impact of PD on teacher preparation. One noted they had "conducted a 'most likely to succeed' session and that really lit the fire under a lot of people." Another SBTS/librarian felt like there was basic training for teachers to figure out how to use Google Classroom, and more advanced training for those who were ready. A third SBTS/librarian commented that "Learning walks in four other classrooms over the course of the year have helped teachers frame the question of 'what can you take away?'" A fourth SBTS/librarian felt that they "had started with a good group . . . before the big shift, and after others saw it in action, it made it so much easier to convince people." Finally, a fifth SBTS/librarian noted that although PD may not have been exactly as teachers "envisioned, there's still value there and you will grow."

Needed professional development. Teachers, principals, and SBTS/librarians were asked what PD was needed to more fully implement the FCPSOn initiative in their schools.

Teachers. When queried during focus groups as to what additional PD, if any, teachers would need to receive to further support them regarding FCPSOn, both CP and eLB teacher responses shared some commonalities. In every focus group, receiving meaningful PD that was relevant, appropriate, time efficient, content specific, and immediately useful for individual teacher needs was cited. In addition, some teachers commented on the need for procedures and communication from the district.

Relevant. In terms of relevance, teachers in all groups had a variety of comments. One CP teacher commented that PD was needed on "how something can be used, what exactly it IS, and how it can be incorporated in different classrooms." A second CP teacher's comments were even more specific stating she: "would really benefit from seeing some hands-on activities that have been proven to work in a class of 26 kids with ADHD & IEPs, rather than an idealized classroom with 15 students and a teacher's aide to help." She went further explaining it was difficult to always be in a position where she had to extensively modify everything to fit the reality of her

classroom situation where she is the only teacher present. Conversely, teachers from eLBs viewed the existing training as highly relevant. One teacher commented, “The workshops were amazing. I’m by no means an expert, but with what little bit you know, they really take your hand and take you way up.”

Appropriate. Appropriate PD was another common theme in all focus groups. Two CP teachers noted that online PD made it difficult to learn hands-on techniques and was thus the least beneficial type of training for them. A second teacher in a different focus group made a similar comment stating, “I do not like online tutorials. I always ask for live help to show me how to interact with the technology.” A third CP teacher reported that certain training did not seem suitable for her needs. She stated: “One training was about eCart and the other about Google Classroom, but we’d rather just be able to create what we need to create because it takes just as long to sort and find something appropriate”. A fourth teacher noted that some teachers were “substituting technology tools but not looking at effectiveness” and this should be addressed. An additional concern dealt with the level of training provided. A CP teacher remarked that they would often go into training not knowing whether “it was beginner, intermediate, or advanced.” A second CP teacher supported this comment stating, “Share Fair should have been leveled for different skill levels with technology.” Further, “It would be helpful if our administrators gave us PD in the same way we expect our students to learn.”

Time. An additional concern that participants noted was having time for PD and effectively utilizing it. One CP teacher remarked that “to continue to invent, or be asked to, is exhausting compounded with regular duties.” A second CP teacher commented that there was a need for “infrastructure around what, for whom, and how” and a third made the wish “to not have to create so much for every lesson in every topic.” An eLB teacher spoke to the need for processing what had been learned through PD stating, “Everybody who went to one of these sessions wrote notes in a Google doc that we still need to sit down and unpack as a group.”

Content specific and immediately useful. Training that was specific to teacher needs was noted by several participants. An eLB teacher commented what was needed was “more content specific PDs, really demonstrating relevant tools that can be taken and used right away” This was supported by a CP teacher who made a similar comment that she needed PD that was: “content specific, that’s immediate and what I can go and use in my room. Even if there are two or three procedures, techniques or programs they want us to use, just give it to us there.” Another CP teacher noted, “The frustration is that you KNOW there’s stuff there, we just don’t know where to find it.” Finally, one CP teacher summed up teachers’ needs regarding PD by stating: “It’s definitely not a one size fits all. It’s not an age thing or gender thing. Some people just learn different ways. I need a pace that can be ordered for my neurons and receptors to get it.”

Communications. Several comments dealt with communication and streamlining district procedures. These comments dealt with (a) appropriate methods for sharing lessons, (b) knowing what apps could be used based on district policies, and (b) seeking approval for new applications to use. One CP teacher commented that training was “needed on how to share lessons and resources in a more streamlined” manner. Another CP teacher noted that perhaps “more cross-school communication” would “eliminate redundancy”. A third CP teacher suggested building “over time some sort of streamlined database of resources.” Utilizing new types of technologies,

particularly apps, were another issue teachers felt could be better addressed through PD. As one respondent noted: “We’re finding out the hard way which apps we are actually allowed to use, because we will waste time creating lessons we can’t use.” Another CP teacher commented that there were “crossed wires about what’s shared [between teachers] and what’s allowed [in the county].” Several other CP focus group teachers also noted that the process for app approval had in the past been slow, and although districts were working on making it quicker, this still provided a barrier for teachers that needed to be “streamlined” with “better communication provided.”

Principals. In terms of future PD, two CP principals expressed the importance of teachers learning from their peers. As one explained, “They need observation time and collaboration time. Seeing each other’s work is the biggest benefit” while another commented that, “Teachers don’t want to hear from you or me, they want to hear from their colleagues.” In addition, they have conveyed the importance of continued development. As one stated, “What you’re doing is ok for year one but I expect you all to become more proficient with blended learning.” As one principal commented, “We’re using the SAMR model to help develop their skills along the continuum. Some are still using substitution.” eLB principals were more general, noting the need for additional professional development on blended learning in the classroom.

SBTS/librarians. SBTS/librarians noted that blended learning is still a work in progress and teachers need additional PD. Several comments were made regarding this process. One specialist commented, “I feel we're doing the first step, were doing procedures” but felt those using the program needed to know “where we go next.” Three SBTS/librarians expressed the belief that teachers were “still using tools as opposed to project-based learning,” and were not integrating technology “into one experience.” A second SBTS/librarian seconded this view stating, “If you frame it right they'll [teachers will] use the tool, so I can see the impact out, but we are still using tools instead of PBL." A third SBTS/librarian articulated the same view but noted that only using tools “limited the staff.” SBTS/librarians did note throughout the interviews that blended learning was occurring; one commented, students showed more “engagement and connection to what they are doing.” Another SBTS/librarian commented that blended learning cohorts had helped teachers. “I've seen a lot of work that has been done in cohorts filter down and it is very powerful,” but all focus groups indicated that more time and PD were needed to fully implement.

Future FCPSOn school preparation. Principals and SBTS/librarians were asked to describe what additional preparation future FCPSOn schools may need. The CP principals noted the importance of establishing teacher practices before introducing technology. As one observed,

> *It’s almost unfortunate that blended learning needs to come at the same time as the device since it’s easy to focus on the device. We need more preparation on what is blended learning; learn how to do blended learning or personalized learning without the device. It’s so awesome to bring computers in later to enhance… it’s easy to get hyper focused on the device.*

There also may be confusion on what blended learning looks like. As one CP principal noted, “There are many definitions of blended learning.” But, one principal described

preparation for this practice: “We had an academy course simultaneous with devices and it was a huge help to have that course to help define and give guidance on what we’re talking about with blended learning.”

One eLB principal described the importance of establishing and communicating a vision for the initiative. This principal commented,

> *We would like the big picture of where we, as a division, are going – that the Phase One schools had. It would anchor us back to something. It’s being organic, and growing was nice but the piece that we missed was the overall vision within the division. It lets teachers know why something was really important and is for the long haul.*

Similarly, a principal commented on the differences between eLB schools and CP schools in terms of the initiative:

> *The challenges eLB schools face in student achievement in general and things that impact our accreditation are ones that other high schools [Chantilly] don’t. How do you strike that balance of assuring teachers that it’s ok to take risks and let go a little bit knowing that at the end of the day we may be in trouble with the Assistant Superintendent? Teachers feel that pressure of the test scores and want to revert to what has worked for them in the past. They want to see the data that shows this new system will work and there isn’t very much to show them.*

SBTS/librarians had a number of recommendations for additional preparation for future FCPSOn schools. Two SBTS/librarians expressed the belief that first teachers need to have a thorough understanding of “the ‘why’; why are we doing this for our kids?” The specialist went further explaining that all teachers want their students to be successful, but teachers need to understand why schools are making this change and huge shift in order to get to student achievement. Another comment was made that "choice is important in the PD we provide for teachers. " Another SBTS/librarian felt that the focus of training may need to change explaining, “I feel that one of the big differences is that we're so focused on the tool . . . I think it limits staff what they can envision and where they can go; only showing one tool at a time.” This specialist felt that framing tools with strategies for subjects might be of more help to teachers.

Summary. Professional development opportunities were offered at the district and school level, and perceptions of PD effectiveness varied widely. The vision for the FCPSOn implementation was two-pronged with changes in the teaching environment and changes in teaching practices. An overwhelming majority of CP teachers indicated that they were adequately informed of their school’s role as an FCPSOn school and believed that their school had succeeded in fulfilling that role – more so than reported by eLB teachers. Further, this discrepancy varied by grade level; in terms of professional development, middle school teachers viewed these opportunities most favorably compared to those teaching at the elementary and high school grade levels. This finding might be explained further by examining the quality of the PD. Simply offering opportunities for professional development may not ensure effectiveness, as evidenced by teacher responses. Much of the PD was viewed as being unstructured, misguided, or lacking practical application. Other factors, including relevance, appropriateness, lack of time,

and lack of content specificity, also may have contributed to the views of PD that some teachers expressed. To combat this, principals and SBTS/librarians stressed the importance of a strong peer learning network and of emphasizing the pedagogy over the technology.

Teacher Practice

Teachers, principals, SBTS/librarians, parents, and students were asked to comment during focus groups on what changes they had made or observed in teaching practices this year. Elementary, middle, and high school teachers offered a variety of changes, as did principals and SBTS/librarians.

Teachers. The elementary school CP teachers indicated that the presence of technology helped to create differentiated instruction, as well as to facilitate feedback, collaboration, and communication. For example, one teacher commented on using HyperDocs for science and social studies, another noted using interactive Google slides where students collaborate to answer questions. A third teacher indicated she used Google Classroom for collaboration on writing activities and project-based learning. A fourth teacher created a "portfolio Google doc that contains all of their feedback, a living feedback document that really tracks their goals, feedback, and progress." Last, elementary school CP teachers noted that all content is housed online, allowing students to access anywhere and anytime, as well as reducing the amount of copying needed.

Middle school CP teachers noted that their teaching practices had changed by now facilitating instruction and offering differentiation. For example, one teacher commented "I have become a more student-centered teacher because I've had access to these materials and had this opportunity." This teacher creates HyperDocs for students to review before holiday break and is able to generate discussion topics for students. Another teacher noted the ability to facilitate students working at their own pace and that one can assign differentiated instruction based on students' needs.

Middle school CP teachers did note, though, that they had to adapt classroom management practices and establish classroom expectations with the presence of devices. For example, two teachers commented that they had to arrange the classroom desks in a manner to be able to monitor device use during instruction. One other teacher stated that "there are so many ways to be dishonest," and teachers explained that they had to develop protocols so as to avoid students sharing assessments between classes. As a teacher commented, "They are becoming very sneaky, and it's hard to stay one step ahead of them because they are always two steps ahead of us with how to use technology."

High school CP teachers also described changes to their instruction. For example, one teacher commented that she was able to create "new units I never would have thought of" due to technological affordances. Teachers indicated more discussion between students online or after hours and increased research opportunities.

eLB teachers specifically mentioned implementing a flipped classroom approach. As one eLB teacher described, students access "virtual labs and simulations; we work with EdPuzzle.

We're getting them used to the flipped classroom idea while we're in the class to prepare for the next step. It's been phenomenal." Another teacher conveyed that this approach "forces them (students) to take ownership and learn at their own pace, making me more a facilitator." A third indicated that they have moved from warmups and exits during the first half of class to "being completely student-centered, inquiry based with teacher-centered at the end."

Principals. During focus groups**,** CP principals described seeing a "mindset shift" in their teachers this year, who were willing to "take risks" and "try new things." As one principal observed, "There is huge engagement from them [teachers] to their learning, a huge increase in the opportunities to learn how to become more proficient with digital use." Another principal noted, "Veteran teachers that were reluctant to embrace technology in the past are now going after school to other teachers and asking them to show them how to [use technology]." There has been, though, a focus on the instruction before technology. A third principal stated, "it's not about the technology, it's about the lesson design." Similarly, a principal offered that one of her teachers talks about "when she first got the laptop, she tried to work all of her lessons around having technology. Her thinking then shifted to all about lesson levels, changing the design of her lesson and then using technology to enhance them."

In terms of specific changes, CP principals described a difference in the classroom environment as well as the teacher's role during instruction. For example, one principal commented that she's "seen a difference in the classroom environment, the set up. It's not the parochial role of desks in rows – you see collaboration." Another commented that teachers "are letting them [students] sit wherever they want," and another observed that "teachers are removed and not the center of the stage." In addition, principals mentioned writing activities. Specifically, one principal stated, "I was in a first grade classroom and students were writing letters in Google Live to first graders in another school's classroom." Another mentioned that "teachers are talking about how in writing it has been much easier to converse with kids through Google Docs. Kids are working at their desks and the teacher is providing feedback without calling them over."

eLB principals also described changes in teaching practices to reflect a blended learning model. For example, one principal observed that there is "more risk taking" and another commented that "we've really been working hard on the blended model. Some teachers have taken this and run with it." Another noted "The blended learning training that they have been able to go to has been phenomenal and they feel they've hit their stride." Another principal commented that teachers "can give assignments, tutorials, and it allows teachers to work with students on certain topics." Further, this principal commented that "kids seem excited because teachers are trying to incorporate them (the laptops) as more of an instructional tool."

SBTS/librarians. SBTS/librarians observed a number of changes in teacher practices this year as compared with last year. First, specialists agreed that having school-wide expectations was easier when the entire school was involved in the initiative. SBTS/librarians also noted that by "removing the accessibility barrier . . . teachers are more willing to try new things and experiment." A second SBTS/librarian went further stating, "I also think they're willing to try things that are less traditional, and that comes from permission given to them to try and struggle, and figure it out, and do better next time."

SBTS/librarians noted that having the freedom to make mistakes had empowered teachers. One noted, “This is the first year and we know that things are not going to be perfect and this took a lot of the pressure off.” Another commented that even teachers who were nervous about trying new things or very set in their instructional practices were willing to “take risks,” and “try less traditional things.” The specialist explained that these teachers “started with just one little thing and then maybe another, and that has been awesome." A third stated, "I feel that people have just jumped in and are willing to try." This has led to greater teacher collaboration and networking as teachers “now see each other as experts they can learn from across departments.” Consequently, teachers are more comfortable with collaborating not only with peers, but also in demonstrating to students how to effectively collaborate.

Parents. The parent participants expressed mixed feelings regarding the changes in learning and instructional practices associated with the initiative. One stated “I’ve seen a great improvement in my son, but I feel more disconnected as a parent because there’s more back and forth between the teacher and parent on the computer, and I see fewer papers coming home.” Another, the parent of children with language-based learning differences, voiced some concern by saying, “Not having the direct instruction has not been good for either of my [children].” Other points shared by participants included that their school was responsive to their concerns, but the lack of verbal instruction could be difficult, and that, “Having a multi-sensory approach to learning across the board is very important.”

Students. CP students described seeing several changes in their teachers’ approaches to instruction and interaction with students during this first year of the FCPSOn initiative. These changes included a general increase in the use of technology across classes and more specifically, an increase in the use of learning platforms such as DreamBox and Kahoot. Students noted that the use of technology varies across content and across assignment type. One student commented, “Most of my classes use the computers. My science class uses Google classroom but in English we use a notebook.” Another student noted that their teachers now use much more interactive testing than they did previously. eLB students were in agreement with their Chantilly counterparts with regard to the increase in technology use by their teachers. They appreciated the ease and time-saving advantages of having more of their work and course information available in a digital format, “Even if we’re absent we can go to school and we’re not missing anything.”

Summary. In sum, FCPSOn positively impacted teaching practices directly for CP and eLB teachers. The program implementation resulted in observable changes such as a more student-centered pedagogy, student collaboration, and improved communication. Teachers, students, principals, and SBTS/librarians viewed this shift in teaching practices favorably. Some parents, however, expressed reservations with regards to the changes in learning and instructional practices, citing a trade-off of verbal instruction for a more technology-based model.

Access to and Use of Technology

The second logic model components examines the degree to which students and teachers access and use technology. This section first presents the use of technology by teachers in their

classroom, then presents the perceptions regarding the impact on students' use of technology as a learning tool.

Survey responses indicated that classroom teachers were generally in agreement regarding their abilities to use technology to facilitate learning. Most Chantilly Pyramid teachers (84.6%) and eLearning Backpack teachers (75.0%) tended to agree that they were able to use technology to personalize the time, place, and pace of student learning. Similarly, most Chantilly Pyramid teachers (79.5%) and eLearning Backpack teachers (73.0%) agreed that they were able to use technology to engage their students in higher-order learning.

Technology and teaching and learning practices. The next series of survey items asked teachers to indicate the extent to which they used technology to support various types of teaching practices (see Figure 3).

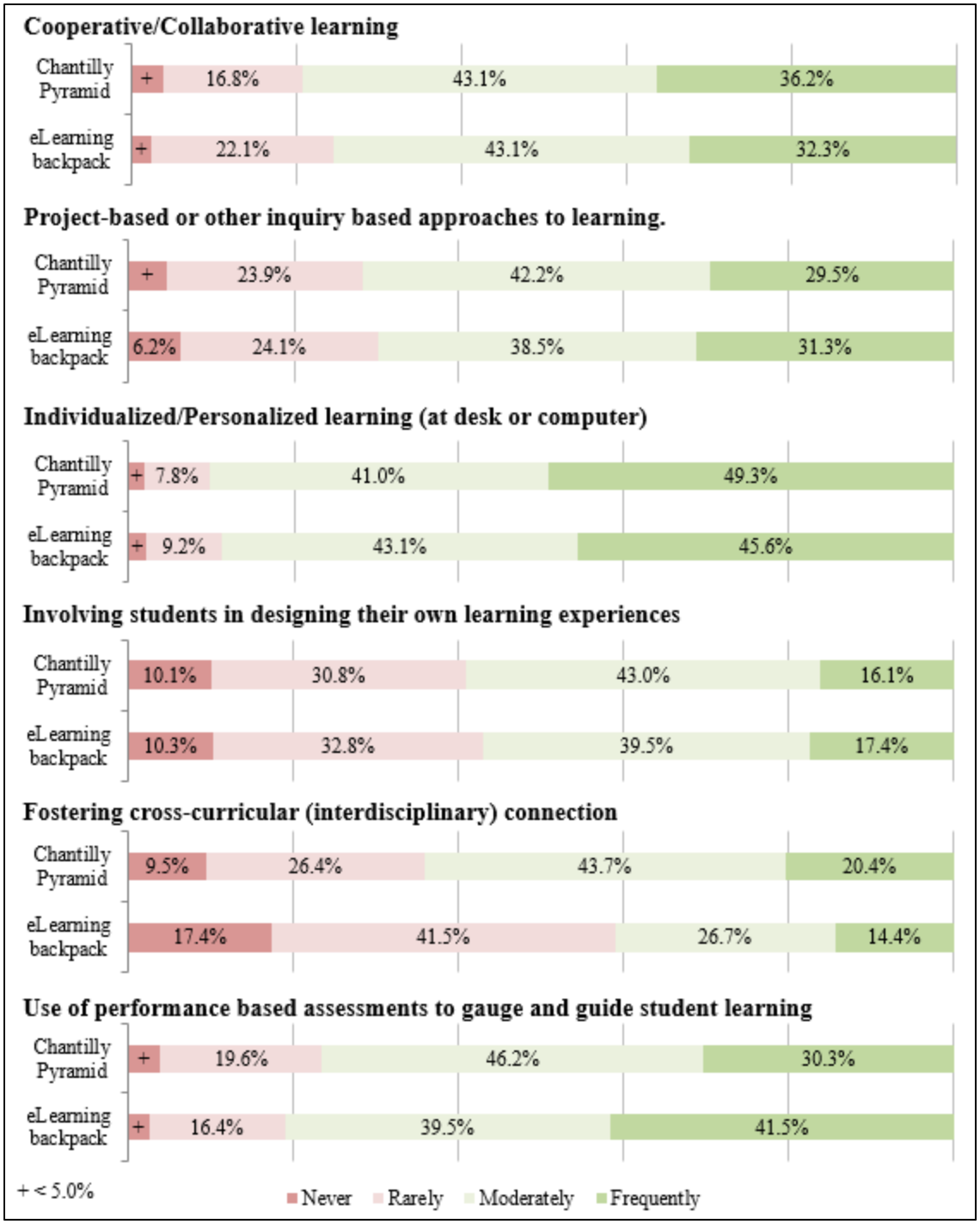

Figure 3. Classroom teachers' reported use of technology for teaching practices.

Practices were fairly similar between CP and eLB teachers:

- ***Cooperative/collaborative learning***. Roughly three quarters of teachers from CP (79.3%) and eLB (75.4%) schools at least a moderate use of technology for cooperative or

collaborative learning. There were not significant differences between CP school teachers at different grade levels.

- ***Inquiry-based***. CP teachers (71.6%) and eLB teachers (69.7%) provided similar views regarding the extent that they used technology to support inquiry-based approaches to learning. There was not a statistically significant difference between grade-level teachers within CP schools.
- ***Individualized/personalized learning***. Both teacher groups reported relatively frequent us of technology for individualized/personalized learning (CP teachers: 90.3%; eLB teachers: 88.7%). In terms of grade-level differences of CP teachers, elementary school teachers indicated a significantly more frequent use of technology for individualized/personalized learning than high school teachers ($p < .05$).
- ***Student designed learning***. Teachers expressed less frequent use of technology to involve students in designing their own learning experiences according to personal goals, needs, and interests, with similar use reported by CP teachers (59.1%) and eLB teachers (56.9%). There was not a statistically significant difference between grade-level teachers within CP schools.
- ***Cross-curricular connections***. CP teachers (64.1%) were more likely to indicate at least a moderate use of technology to foster cross-curricular connections as compared with eLB teachers (41.0%). In terms of grade-level differences of CP teachers, elementary school teachers were significantly more likely to agree than high school or middle school teachers ($p < .001$). A potential explanation for this difference is that it may be easier for elementary school teachers to design lessons across content areas since they teach all content areas to their students. In contrast, middle and high school teachers would need to work together to design such activities due to specialization in a particular content area.
- ***Performance-based assessments***. eLB teachers (81.0%) and CP teachers (76.4%) reported relatively frequent use of technology to foster use of performance based assessments to gauge and guide student performance. CP school teachers were similar in their responses across grade levels.

The final group of survey questions relating to teacher practices revolved around the degree to which technology was an integral part of teaching and learning practices (see Figure 4).

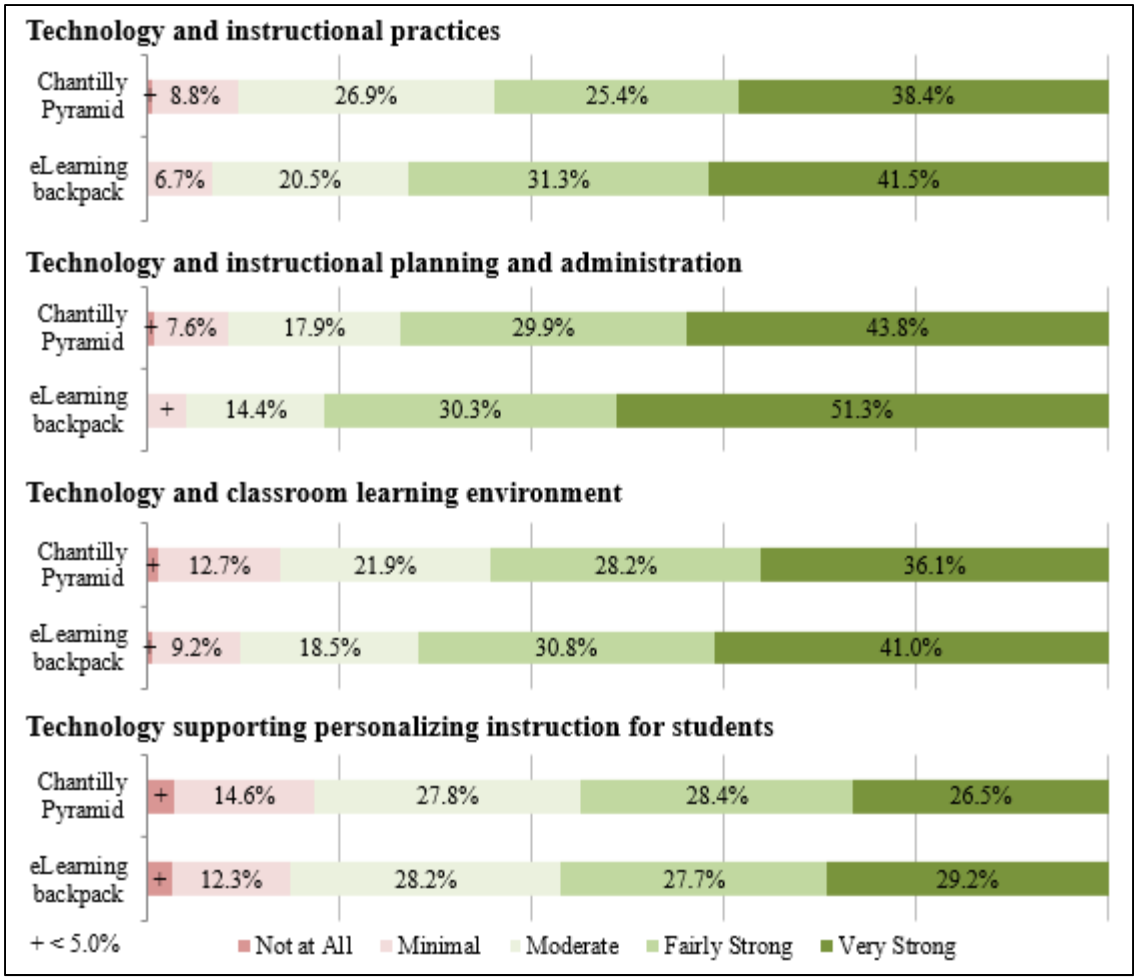

Figure 4. Classroom teachers' reported role of technology for teaching and planning.

Overall, teachers in CP and eLB schools reported fairly similar roles of technology, with very similar responses between teachers in CP schools.

- ***Instructional practices***. The majority of classroom teachers in both CP and eLB schools indicated at least a moderate role of technology in their instructional practices (91.6% and 93.33% respectively).
- ***Instructional planning***. Similarly, the majority of eLB teachers indicated at least a moderate role of technology in instructional planning (95.9%) as did CP teachers (91.6%).
- ***Classroom learning environment***. Most eLB teachers and CP teachers indicated at least a moderate role (90.3% and 86.2% respectively) of technology in the classroom learning environment (e.g., online resources, document management, student collaboration sites, etc.).
- ***Personalizing instruction***. Most eLB teachers (85.1%) and CP teachers (82.6%) indicated at least a moderate role of technology in personalizing the time, place, path, and pace of instruction for students.

Teachers elaborated during focus groups on how they had used technology with students this year, as well as how it was used for administrative/planning activities. Elementary CP teachers indicated integrating various programs for student use, such as Type to Learn, Google Classroom, myON, and DreamBox. One teacher indicating using video clips for students to watch at home, which is "very useful for students who didn't understand something the first time or who missed a day of school." Another elementary school CP teacher indicated using HyperDocs, both for student collaboration as well as for teacher planning, commenting "We do collaborative work via HyperDocs. It's allowed us to all be in different places and still share."

Elementary school CP teachers also referenced a variety of successes with technology integration this year. One teacher explained that her greatest success was the general progress both she and her students have made with using technology for learning. Another elementary teacher referenced an increase in collaboration and communication, noting "They talk to each other about their work." A third teacher referenced an increase in problem solving, stating that "They are problem solving with it. Hurdles I might stop at they push through, find a way around and help each other. They are innovating, things I haven't seen from kids in other years."

Middle school CP teachers referenced some similar programs as elementary school CP teachers, including Google Classroom. These teachers indicated using the program to post answer keys so students can check their completed homework. Two others discussed using Google Slides. One teacher uses the program for geometry, commenting "I still mostly lecture the same way I used to, but I've integrated some Google Slides for drill." Another teacher also used the program for learning and practice, as well as NearPod and PearDeck to share resources, peer sharing of work, discussion, and collaboration. A third middle school CP teacher described using EdPuzzle for blended learning. The teacher conducted a pre-assessment and created mini lessons for those weak skills. Then, the mini lessons on EdPuzzle were assigned to students that needed them most. The mini lessons incorporated readings with stopping points for discussion questions, along with audio recordings. As this teacher commented, "There's really a lot of things you can do once you have that creative tool. EdPuzzle and NearPod will replace 90% of my PowerPoints because the kids are on it and it's engaging."

Similar to an elementary school CP teacher, two middle school teachers also referenced the improvement in collaboration as a success with technology integration. For example, a teacher commented that she can implement discussion groups online:

> *Their writing is so much better. This is their world. Everything to them is on a screen. I had great success working with them on shared documents. I can run discussion groups online and have five (discussions) going on in one room.*

High school CP teachers noted the use of programs for science and writing. As one teacher explained, "Science has a lot of labs that can't always be done live, but virtual labs have allowed students to see things and have experiences, putting concepts into concrete terms." Another teacher noted that some teachers are piloting the use of Google Writing Portfolio. As a teacher explained, "We used to keep writing folders, but now we have kids store their work online and we can have their portfolio for assessment."

An important success with technology integration for high school CP teachers included allowing students to work at their own pace. One teacher noted a success with "being able to have students go at their own pace. I feel that I'm leaving fewer students behind… students can take more time with what they need. More are getting what they need."

eLB teachers described using virtual Google folders for planning and administrative activities, such as team schedules and notes. In addition, one teacher indicated using Google Forms and electronic messaging. Similar to high school CP teachers, eLB teachers also referenced a success with students learning at their own pace. For example, one teacher commented:

> *Having the kids learn at their own pace. They can stop videos and simulations. The pause button is golden. You can go to different kids and help them. It has changed student behavior… as we've changed the format, the students have gotten so quiet and involved.*

The flipped classroom approach that eLB teachers described was also a noted success. As one teacher commented, "Having my ESL students have a little information beforehand by doing an online learning activity gives them more confidence."

Principals. Principals described their successes with technology integration. One noted "motivation, enthusiasm, and engaging learning" while another commented on "authentic learning." Importantly, one principal described "equal access. It's leveled the playing field in my Title I school. They [students] all have computers now. Parents have wifi if they didn't have internet at home before."

Some principals also noted the collaboration between CP principals and amongst teachers. As one principal commented, "My teachers are now following people on Twitter, emailing other teachers from other schools. Before, it was hard to get teachers to collaborate across schools." Through this collaboration, a principal explained that "there is consistency and alignment with what we're sharing."

An eLearning Backpack principal described increased student collaboration as a notable success with technology integration. As the principal commented,

> *I went into a biology classroom that was working on a circulatory system unit. This class was a mixed bag: ESOL, special education, and general education. I couldn't tell you what bucket the kids fell into. They worked together. I couldn't tell you which kids they were. The amount of support the kids gave to one another in that unit was inspiring.*

Another principal described the increased use of Google tools, such as the "English 9 team created a Google portfolio for each student. Every writing assignment they do will be saved there for all four years, and you'll be able to see the growth as students go through high school." Another principal was more general, noting the "increased learner access to content and curriculum on their own time, on their own hours creates a great deal of flexibility. We're seeing an uptick in completion rates for those courses that have embraced this model."

SBTS/librarians. SBTS/librarians were in agreement that technology integration was in place and successful at their schools. Two SBTS/librarians commented about the prevalence of integration. One summarized this stating, “It's hard thing to pinpoint an exact example because it's everywhere. It's like the air in our classroom.” SBTS/librarians also noted a number of specific observances regarding integration and successes. One commented that because students had their own devices, and knew how to use technology, many of the tech barriers they had faced in the past had been eliminated. Two SBTS/librarians noted students were more engaged and involved in taking responsibility for their own learning and research. One commented, “It’s crazy, they're doing more than just typing a paper. It's really happening across the board." The second SBTS/librarian noted that, “Now because they have their laptops, they come to work WITH us.” A third commented, “For students who would not have been included in anything project-based before, it has really set the stage for them.”

Collaboration has also become more prevalent in schools. One SBTS/librarian commented, “In before and after school programs you see students doing study groups and collaborating on learning in the library as the space has changed. It’s cool to watch students actively engaged.”

SBTS/Librarians also described how the program had integrated across departments and had significant impact. One SBTS/librarian explained:

> *It's been really neat to watch it (the program) sort of spread too. English and social studies started a lot of the work, and it spread to science, then to special education, and then spread to everywhere else. It's been neat to see it sort of take root that way.*

SBTS/librarians in both groups noted the impact for English, as a Second Language (ESL), Special Education (SPED), as well as Advanced Placement (AP) and International Baccalaureate (IB) students had been particularly dramatic. A number of comments were made as to the impact of the program for these areas within SBTS/librarians’ schools. For example, one specialist stated, "I've seen a very significant impact on the ESL population." Several SBTS/librarians expounded on this notion. One explained that ESL classes had the greatest transitions explaining that now student and teachers are using Google Classrooms and resources. Another specialist observed laptops were being used to make and practice reading programs. The SBTS/librarian also noted that even though teachers may be bilingual, because of the variety of language needs, Google Client Translator was a “huge” asset to students and teachers.

The program also had a positive impact on SPED. One specialist noted that some SPED teachers were a little hesitant to integrate technology, because they were tied to kinesthetic learning. Focus group SBTS/librarians felt that the program had a positive impact on SPED learning and had fostered not only teacher, but also student confidence. The SBTS/librarian remarked that students could show the teacher, “I can do this and I can show you how to do this”, and taking responsibility for their learning and advocating for their learning which is “very important for students with disabilities.” Another specialist commented that, “It has made them more confident in taking ownership of their learning and advocating for themselves. That has been a really cool change with our special education population.”

In terms of AP and IB students, integration was seen to be occurring and successful. For AP one specialist noted "It's really cool to see how our AP students and teachers have used the tool this year" and that students were becoming less dependent on learning based solely on a rigid rubric to becoming "more comfortable and creative" and collaborating more. Another SBTS/librarian explained:

> *AP has changed from large swaths of reading to more of a jigsaw project, assigning parts of the reading and knowledge as projects to different groups, but it's all still available to that student who wants to go over all the material himself or herself.*

Another specialist noted IB teachers were also coming on board by making some transition from "Socratic seminars" to "research-based projects." Finally, one specialist summed up how integration successfully impacted schools stating: "It felt like the future of education was giving kids experiences as opposed to giving content."

Technology as a learning tool. Teachers were asked to indicate through the survey the degree to which the use of technology has impacted students. Overall, they were in agreement that their students have improved in their use of technology as a learning tool (CP teachers: 83.4%, eLB teachers: 76.8%). CP elementary and middle school teachers were both more likely to agree to an improvement in student use of technology as a learning tool than CP high school teachers ($p < .01$).

During focus groups, teachers also expressed the belief that students improved in their use of technology as a learning tool this year. Teacher's comments varied such as an eLB teacher's comment of "quite a bit" to a CP teacher statement of "a huge amount." A CP teacher noted that students' "use of hardware is much improved, they find numerous shortcuts, they can get in and out of the device and software quickly . . . They are solving problems with the technology." Another CP teacher commented that, "Kids are really extending concepts, getting deeper into subjects, creating slide shows, making up word problems, etc." An eLB teacher stated that students had "learned collaboration skills quite a bit. They are learning troubleshooting . . . and some time management."

CP teachers also noted students were working more independently. Three comments were made regarding this. One teacher remarked,

> *If they don't know an answer, we tell them to 'Google it' . . . They are able to find answers. We are facilitators. We're there to help them. But they are able to take charge of their learning a little better than they used to. They have more control.*

A second CP teacher stated: "We are facilitators now, we can help, but they are able to do the work on their own." A third teacher stated that students are "more proactive. I get e-mails from kids rather than parents about attendance, etc. They ask questions about how to do things online even if they are at home."

Principals. CP principals also described an improvement in their students' use of technology as a learning tool. As one observed, "They know so much more than us. They're teaching the teachers." Another noted that FCPSOn is "taking them beyond logging on and playing a game" while another elaborated, describing increased reflection including "reflection on Google Docs, reflection with the teacher and students." An eLB principal noted "tremendous improvement" in using technology as a learning tool, commenting that "we're developing some literacy with technology that we didn't have before. They have a device and it's in their hands and they're using it."

SBTS/Librarians. According to SBTS/librarians in both focus groups, students had improved their use of technology as a learning tool this year, and in some unexpected ways. One specialist made the comment that last year they saw "a little bit" of improvement." This year it was felt growth had been "tremendous." This may be due in part to the fact that, for many of these students, this is the first time they have had their own device. This has provided "access and equity" for students. One SBTS noted:

> *A lot of our families have Wi-Fi at home but no computer ever. That is incredible to us. We've seen a number of students not having Wi-Fi, but we have had a few that we've been able to provide hotspots to. So now they have Wi-Fi and a computer. It's really neat to see the things they're able to do because of it. It's just very cool.*

Although several SBTS/librarians noted that initially there were some concerns, these had been alleviated as program implementation occurred. One SBTS/librarian commented: "I think people (teachers) were worried about them (students) forgetting the devices. They don't forget because they like having them." Another SBTS/librarian pointed out that if expectations were set, students lived up to these. She explained that if teachers made it necessary for students to bring their devices, they will bring them, "and they really have come through for us." A third specialist noted that they had opted to not provide loaner devices to students and, with time, students stopped forgetting to bring their device to school.

Both focus groups felt students were more responsible and becoming better self-advocates. Comments were made in both groups that, "the kids are pretty incredible at advocating; they'll send out an e-mail and ask for help" and "These kids are 'adulting' better than a lot of adults I know." SBTS/librarians noted that the level of student responsibility had also increased. One explained:

> *One teacher created a way for kids to review for the big standardized tests. She found that her kids liked it so much that there were adding their friends from other classes. So at the end, she had something like 48 kids that weren't on her teaching load and they were kids from all over and a whole variety of other teachers.*

Librarians also specifically noted improvement. One commented, "I get a lot of kids saying, 'I'm so sorry; I accidently left the library with this book, or something else. But I'm going to bring it back'. We definitely get a lot more emails." A second librarian further explained:

> *We've been able to e-mail kids about overdue library books instead of their parents, and they'll e-mail back, and manage their accounts asking what they owe, and letting us know when we'll have it back.*

Two other SBTS/librarians noted that the flexibility of devices worked well for students to self-pace. One explained, "If you are a night person, when you're up at three in the morning, you can still get to the database. I get that. Sometimes I check the stats and they are on at three in the morning."

SBTS/librarians also felt that students were becoming better problem solvers and critical thinkers. Three specialists noted, "If they don't know how to do something they figure it out," "If they are interested in doing something they will find out how;" and "They learn to access whatever resource they think is important, quickly and efficiently."

ESL students also showed students also showed an improvement and increase in technology use. One SBTS commented:

> *With Tech Literacy we have registered at least five new ninth graders every week. [Students] are trying to graduate in four years, and learn a language. Tech Literacy is one place where they can do well without learning the language. They learn to do well and access resources they see as important. They can access grades, classes, cause and effect. This is also a chance for them to succeed within ESL class. One kid served as a model, and went around and helped everyone.*

A second SBTS noted that this "really levels the playing field for those kids."

Finally, several SBTS/librarians remarked on how tech use had improved overall. One stated: "The empowerment over their learning is really incredible," while another commented, "Students have more of a voice with their teachers now."

Students. During focus groups, students indicated that technology has made their schoolwork easier. CP students cited examples such as being able to type their notes more efficiently as compared with having to hand write them and they felt that they were better organized due to having digital files. Some felt that the devices helped them to learn, with a student noting "(the computers) help me learn – but other kids, not so much." One CP student mentioned that some students take advantage of the devices to play games and surf the net and know how to prevent their teachers from seeing they are off task.

CP students indicated that students who did not have a home computer were the ones who really felt a big difference when it came to having use of technology outside of the classroom. Some noted benefits for all students included being able to use free school periods to complete homework, being able to use spare time in one class to do work for another, and being able to work with others without having to all cluster around one screen.

CP students also described how using technology as a learning tool has evolved over the course of the year. Many felt that learning had become easier. It was easier for their parents to

access information, easier for students to stay organized as they had fewer papers to keep track of, and easier to complete homework. One student said that they thought the impact varied depending on the student since the devices can be a distraction noting, “It’s so easy to get sucked into something else because it’s only a few clicks away.” Another student shared that their teacher had taken the advice of student input and had utilized several of the learning platforms that they recommended to him/her in the fall, such as Quizlet Live and Kahoot.

eLB students stated that the devices make it easier for them to access information and, citing their varied cultural backgrounds, noted that the devices made it easier for them to connect with other people. eLB students spoke of their being more efficient in their studies due to the ease of access to content. One student stated, “We’re more successful. Before I had many books but had to keep them in school…with the computer we (can) go back to the units and it was really helpful.” eLB students appreciated the access to information at home, on holidays, and when absent. They felt that the access to technology allowed them to complete their work faster.

Summary. The FCPSOn initiative has had an impact on teachers’ and students’ access to and use of technology. Teachers conveyed using technology most frequently for individualized or personalized learning and less often for students designing their own learning experiences and for collaborative learning. The latter two may take more time for teachers to incorporate given their early experience with technology integration and the challenge of designing such lessons. Overall, CP and eLB teachers were comparable in their reported use of technology. In addition, teachers indicated that technology had become fairly integral with teaching practices and for planning and administration.

Successes during this first year of implementation included using various programs for instruction and for collaboration, as well as teachers’ ability to design learning experiences so as to allow students to work at their own pace, or access content for review. or for preparation for the next day’s lesson. Further, all participants conveyed an improvement in students’ use of technology as a learning tool. Improvements included students being able to problem solve, locate answers to questions independently, and being able to provide assistance to peers when challenges arise. Importantly, students indicated improved efficiency and access as important benefits of using technology for learning both in the classroom and outside of school.

Physical and Virtual Learning Environment

Focus group participants were asked to describe the progress made in changing the learning environment during this first year, particularly in terms of blended learning. In addition, they were asked to comment on what work still needed to be done in terms of implementing a fully blended learning environment. Teachers, principals, and SBTS/librarians all acknowledged that progress had been made and noted some areas of improvement needed for next year.

Teachers. When teachers were asked whether they had made progress in creating blended learning experiences for students this year, every focus group responded affirmatively; lessons had been learned, and mindsets were changing. An eLB teacher participant made a comment regarding FCPSOn stating, “It’s a work in progress, but it’s getting better every day,” and this reflected other participant remarks. A CP teacher responded, “You get out of it what you

put into it. If you make time to make thoughtful lessons, you'll get thoughtful learning from the kids." Another CP teacher remarked that creating blended learning experiences was still very fluid: "Sometimes I'm the student's hurdle because I am worried about what they can manage; I have special needs classes, but I'm constantly impressed with how much they can handle."

Teacher's remarks also reflected how their mindsets were evolving. One CP teacher commented: "It was hard to grasp the concept. Before this year I thought that blended learning was referring to tech vs. paper/pencil. Now I see that it's the students taking the lead in their own learning and managing their time more." Three other CP teachers commented that they were "excited," "had grown," and were open to "learning from students." Teachers from CP schools also commented they were using more problem-based learning (PBL) (2), multiple platforms and resources (1), and online textbooks (2) to help build blended learning experiences.

Teachers in all groups cited a number of areas they would like to improve upon regarding technology integration and blended learning for next year. These areas included professional development, technology issues, and parental involvement.

- ***Professional development.*** Teachers in all groups cited PD most often as an area that would help improve their efforts for the coming year, although responses were varied regarding the amount of PD, appropriateness for grade and developmental levels, better methods of preparing students, and more instruction on blended learning. One CP teacher commented, "You can never have too much PD. Almost wish there was a AP or eight-week class where you really work all together - an academy course – on tech use and integration for teachers." However, it was also noted by other CP teachers that PD should be planned with teacher convenience, needs, and locations in mind as "lots of teachers turn these down if they are too far away," and although the "County does a good job of offerings, accessibility could be improved."

  Another issue that three CP teachers noted was the need for PD to make instruction developmentally appropriate. One teacher commented that students "can shut down with frustration if they aren't developmentally ready for dealing with technology." A second teacher stated: "My concern is forgetting developmental stages . . . do we need to make sure students have some basic skills before we introduce too much technology, rather than having kindergarteners ready for one-on-one with iPads?"

  There were also several other needs commented upon for PD. One eLB teacher mentioned that they wished there "were better ways and more options for sharing lesson plans and things that are working," while a CP teacher felt she needed more training in programs for math and PBL to help her better integrate technology. She stated: "Math is a struggle. Google drawing helps but doing it on paper can still be faster. How do I make it more blended rather than just throwing out videos and then assigning work? I'm trying to really blend the PBL working in math . . . but haven't achieved that yet."

- ***Better methods of preparing students.*** Teachers also noted that along with the need for PD, students needed better preparation. One eLB teacher stated, "I would love if a

student took a technology class before they came to us" so we "don't have to do that as well as integrating." A CP teacher commented "If key skills are missing, you notice it later," particularly for kindergarten and lower grades.

- ***Technology issues.*** Teachers from CP schools noted several concerns that impeded their progress to improve technology integration and blended learning. First and foremost was the infrastructure for school bandwidth, which teachers viewed as insufficient. As one teacher conveyed, "If they are thinking of expanding this to the whole county it's [the infrastructure] something they definitely need to address because we don't have enough bandwidth." Another CP instructor in a different focus group expressed the same frustration stating: "Bandwidth/network needs some improvement. The servers go down. Some parts of the school have severe tech/connection issues/dead zones that make the technology use clunky and frustrating." A third CP teacher noted the need for better infrastructure within the classroom for receptacle use commenting,

  > *I want to be free of charger wires that are all over my room, to find a solution for these messes where students have to plug in all across a room. I need to get kids to come with their units charged.*

  A fourth CP teacher mentioned a recurring theme in earlier question responses in regard to accessibility for different apps and tools. This teacher mentioned the system needed to "free up a lot of the apps and tools. They are using an overabundance of caution for privacy and security". In addition to these concerns, an eLB teacher also noted that the "E-Cart is supposed to be a repository, but not very user friendly."

- ***Parental involvement.*** A third area of improvement discussed by CP teachers regarding blended learning for next year dealt with parental involvement. Although this was only one comment, increased parental involvement was noted in earlier question responses. A teacher stated she "would like to get parents on board with the use of technology more. They miss seeing the paper assignments coming home." She sees getting the parents to come around to this new idea as a real challenge and in the future, hopes to communicate better with them about her expectations as well as those of the school and County.

Principals. In terms of blended learning, one CP principal commented that "homework is more intentional because they're (students) previewing things or looking at more short video clips at home rather than taking sheets home and doing the drill." Relatedly, two principals described a higher level of involvement by parents. One noted, "we're showing parents more about what students are learning. When students do work on a HyperDoc, the teacher is explaining how to do math problems and it's great for a parent to see how we're teaching. It pulls parents in a little bit more with what's going on in the classroom." Another described more frequent meetings with parents where "we introduce this [blended learning] to them and they're amazed." Principals did stress that "students are not glued to the screen," there's "balance" and that "pace and path to me are the most critical. There are a variety of modalities to get to where they need to get to as far as standards and benchmarks.

Two CP principals described the importance of developing skills with new staff, such as when one principal commented "bringing them up to speed, even if they're coming from within the county." Others described the importance of "sustaining the level of interested and desire for teachers to continue to learn" and "how to keep it fresh… we've done a lot but there are more great things out there."

eLB principals described progress in blended learning, although they did note that the shift will take time. For example, one principal commented, "I think we've made progress, but I think we have a long way to go" and another principal stated that they are "starting very slowly, there's growth in it, but there's a lot to do – teachers are willing to try different things. They can't teach the same way they used to. I see it growing yes, very slowly, and I'm ok with that."

eLB principals described the challenge of implementing the initiative in specific grades, rather than school-wide as in CP schools. For example, a principal commented, "I was excited to start slow and recognize the strength in that, but also think that going all grade levels at once might have been better." Similarly, another commented, "Chantilly has been able to overcome some issues by rolling out to everyone at once. All of the teachers would like to be using the technology all the time but are limited by the grades that have access." Two principals conveyed improvement in implementation in the future, with one noting that "it's the gradual growth over time. I would expect a more enhanced implementation next year with our new people joining next year." Another offered, "I think professional development is the key for us as well and how to individualize learning more."

SBTS/librarians. SBTS/librarians noted some progress in creating blended learning experiences for students this year. One specialist commented that they have an Instructional Transformation Team to support integration of tools, and this team had talked about PD to make teacher acceptance and learning concerning blended learning more fluid. The feedback from both focus groups received was that teachers "lamented" having PD "where they didn't walk away with a product." In order to address this:

> *We decided to have blended learning retreats for each collaborative team in the building, so we've been doing those this quarter. Each team is given half a day to create a blended learning session, so they're leaving with a product they're actually going to use.*

SBTS/librarians noted these retreats had "been really successful" and they were planning (at the time of the focus groups) "Share Fairs" for teachers to discuss what had worked for them in terms of planning and strategies, as well as resources others could use. For example, one SBTS/librarian cited:

> *Our biology team, is working on their blended learning strategy… it is helpful for the team because two of the members are part of county cohort… They got to work with a content specialist and brought back (information) to the team so that was very helpful and impactful. Teachers can have planning days a couple of times because takes a lot of time to redesign the lessons.*

SBTS/librarians did note pushback in some areas for retreats, such as chemistry, because teachers felt being out of their classes on these days would make students "fall too far behind." Focus group members cited several examples of successful blended learning activities including lessons in biology and world languages.

SBTS/librarians listed areas they would like their school to improve upon in terms of technology integration and blended learning for next year. One SBTS/librarian commented, "I'd just love to see how we can we connect to real world examples." A second noted, "I would like to see more teachers believe they have time to try project based learning; there is hesitation." Two SBTS/Librarians expressed the desire for "more teachers to connect vertically and out from other schools" Further, two other SBTS/Librarians continued this train of thought, with one stating:

> *There is much that high school teachers can learn from other levels, and other levels can learn from high school as well. We want to liberate teachers to go to conferences and really grow. The ones that go and come back are so enthusiastic it's overwhelming. But we keep hearing 'I can't be away from my class.'*

Summary. Although there is room for improvement, the majority of stakeholders found that progress has been made towards achieving a blended learning environment and that a shift in instructional practices has resulted. Feedback from teachers in focus groups indicated that blended learning activities are still very "fluid" but that technology integration has expanded their repertoire of classroom and homework activities. Principals expressed that teachers vary in their comfort levels with blended learning techniques, but that technology integration fosters an immediate environment for parental inclusiveness at home. Each group (teachers, principals, and SBTS/librarians) stressed a desire for continued improvement in the integration of the blended learning model, citing weaknesses in school infrastructure, and a need for ongoing professional development as impediments to truly successful implementation.

Student Engagement

The fourth logic model component examined the impact on student engagement. Teachers, principals, and SBTS/librarians described the perceived impact on student engagement in CP and eLB schools during this first year of FCPSOn implementation.

Teachers. Teacher survey responses revealed that just under three quarters (72.9%) of CP teachers agreed that there had been an improvement in student engagement this year, with fewer eLB teachers (67.0%) in agreement. In addition, CP elementary teachers were significantly more likely to agree than CP high school teachers ($p < .05$).

During focus groups, teachers indicated that engagement, for the most part, had improved. eLB teacher statements were mainly positive. Comments were made such as "there are things that have gone better than others. It's experimental," "improved overall," and "mostly improved." Teachers from CP schools also made affirmative statements such as "Kids are getting instruction; they're getting engagement," as well as "Students are engaged. They can go at their

own pace, be done when they're done, if they need more time they can take it." Two CP teachers noted there was a "definite difference" or that students "were very engaged in their learning."

Four CP teachers observed specific areas where engagement had improved. One stated, "I don't have that many students off task anymore," while two others noted their students were more "self-motivated", and there were "fewer excuses around document and work loss." Two other teachers commented on computer use keeping students engaged through physical activity observing, "It's more difficult to tune out when you have to be typing." The second stated, "It's much harder to fall asleep when you have to be using a computer and have to be using your hands." An unexpected benefit one teacher noted was that when students were using the laptops, and then switched to paper/pencil, they were more engaged in those activities as well, because they aren't doing them all day long anymore. "Using paper/pencil has a novelty of its own now."

eLB teachers also spoke to changes they foresaw for the coming year. One eLB teacher stated, "We started the blended learning more like halfway through the year, so next year they'll know more regarding what's expected of them." A second eLB teacher commented, "Now that students have experienced it, and altered their expectations, it should run more smoothly."

Although teachers participating in focus groups saw improvement, they also felt there were issues that still impeded engagement. The majority of respondents cited distraction as a real concern in all groups. One CP teacher observed there were still "some challenges with keeping students on-task. We had to adapt to and develop protocols to communicate when we use the devices and when we don't."

Five CP teachers also discussed "some ethical dilemmas and opportunities for digital citizenship development that need to be worked through" (e.g. cheating, video game play, tabs open to sites that were not being used in class, or hacking one another). One teacher commented she wished "we had their screen in front of us."

However, as teachers become more experienced one CP teacher noted most concerns "can be fixed by classroom management . . . but there will always be those outliers. Classroom management is big." An eLB teacher also commented, "Being distracted by other things is a problem, but on the other hand, with Google Docs, I can look and see whether someone has typed something or not in Google classroom, so there are pros and cons for management."

Finally, eLB teachers noted three other concerns. The first dealt with students using devices as leverage to not engage in class (e.g., not bringing them, teachers having to track down devices). The second dealt with "pushback complaints about video watching, with student comments such as 'You're the teacher, you're supposed to teach me' . . . They are pushing back against self-directed learning." Participants expressed the wish that there was a way to "ingrain in middle and elementary grades that students are going to have times where they have to teach themselves," noting that students "have to learn how to learn." A final issue impeding engagement dealt with in appropriate use. One teacher stated, "Our W4 (study hall period) and Lunch Period bandwidth drops due to YouTube or Netflix use."

Principals. CP principals described a positive impact on student engagement. As one noted, “Work is more engaging because you’re not doing worksheets. They like the collaborating piece and it prevents them from doing a log of gossiping.” In addition, a principal noted that “When you go to kids when they’re working, and ask them a question they’re able, for the most part, to tell someone what they’re doing. It taps into critical thinking and engagement. They can really tell you what they’re working on.”’ They also described specific programs that have positively impacted student engagement, both during an outside of school such as Quizlet lab, Kaoot, and DreamBox. Another principal commented on the positive impact for ADHD students: “When talking about engagement with ADHD, it’s not engaging to be confined to one area – don’t touch this, stay in this area. I’ve seen that as a huge thing, the movement piece and even laying on the floor typing.”

eLB principals commented on increases in student engagement, although they appeared more skeptical than CP principals. For example, one principal noted that “Students are excited about using the technology. Is it the newness? Hopefully it won’t wear off. With more teachers using it, hopefully students will be more engaged.” Another principal offered that there appeared to be fewer referrals in classrooms “where the teachers are really utilizing the device. Engagement seems to be greater.”

SBTS/librarians. SBTS/librarians noticed several changes in the level of student engagement this year. One commented, "I would say 95% of the time it is absolutely increased engagement. It's pretty cool." SBTS/librarians observed that student engagement had increased in research. One commented, “I've been working with students . . . not wanting to participate with this stuff . . . and now they're into it.” The SBTS/librarian explained that students showed greater competence with research in terms of looking things up, working with databases, and figuring out what to do and share. It was also noticed that students actively help solve “problems for each other both in terms of research and class content as well as helping come up with strategies for technology use.” Similarly, another SBTS/librarian observed that, “students are using peer pressure to get each other to focus because they want to complete their projects. Teachers don’t have to intervene.” The SBTS/librarian explained that,

> *When somebody is not on task it’s quite interesting . . . I had one student tell her partner ‘You know what? I’m tired of you doing this. Get out of that; this is what we’re doing. We’re getting this done, THEN you can look at that,’ and the teacher never had to move.*

The attitude with students has become “Come on guys, we’ve got to focus.”

Some challenges SBTS/librarians observed regarding engagement centered on devices making distractions readily available. It was noted that although engagement has improved, if a teacher struggles to create engaging learning, maintaining a traditional lecture style, students often feel they can watch a video on it later and play a game now. One specialist stated, “I think our struggles come in when teachers are having the struggle of letting go."

Portrait of a Graduate Skills

Teachers, principals, and SBTS/librarians were asked to comment on the impact of the FCPSOn initiative on *Portrait of a Graduate* skills. These skills include students as a communicator, collaborator, ethical and global citizen, creative thinker, and goal-directed and resilient individuals.

Teachers. The final series of items on the survey asked classroom teachers the degree to which they felt that technology had impacted their students' *Portrait of a Graduate* skills (see Figure 5).

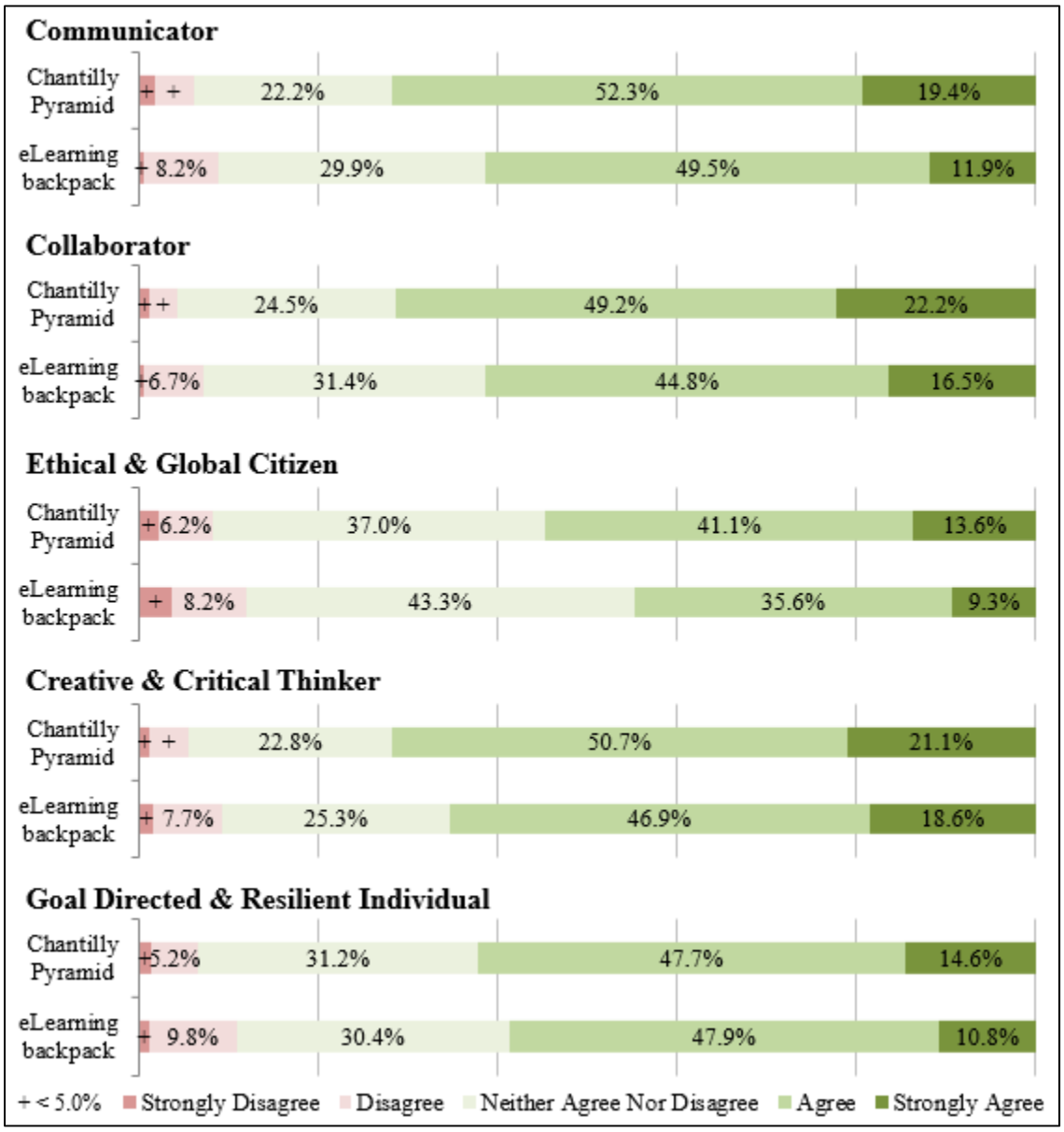

Figure 5. Classroom teachers' perceptions of students' *Portrait of a Graduate* skills.

Overall, CP teachers were more likely to agree with specific impacts regarding *Portrait of a Graduate* skills than eLB teachers. Overall, the teachers were more likely to perceive an impact on communication, collaboration, and creative and critical thinking during this first year.

- **Communicator.** Just under three quarters of CP teachers (71.8%) agreed to a perceived impact on students' communication skills, with fewer eLB teachers (61.3%) in agreement. CP elementary teachers were significantly more likely to agree than CP high school teachers ($p < .05$).
- **Collaborator.** Similar to perceptions of improvements in communication, CP teachers (71.4% at least agreed) were more likely to agree than eLB teachers (61.3%) that students had improved as collaborators. CP school teachers expressed comparably responses across grade levels.
- **Ethical and Global Citizen.** CP teachers (54.8%) and eLB teachers (44.8%) were less in agreement that there had been an improvement in students' skills as ethical and global citizens. There was not a statistically significant difference between grade-level teachers within CP schools.
- **Creative and Critical Thinker.** Teachers were more in agreement regarding an improvement in creative and critical thinking skills (CP teachers: 71.8%; eLB: 65.5%). CP elementary teachers were significantly more likely to agree to an improvement than CP high school teachers ($p < .01$).
- **Goal Directed Individual.** Teachers were less likely to indicate agreement that there had been an impact in students' skills at being goal directed and resilient individuals (CP teachers: 62.2%; eLB teachers: 58.8%). CP school teachers were similar in their responses across grade levels.

During focus groups, teachers elaborated on the perceived impact of the initiative on *Portrait of a Graduate* skills. Both elementary and high school CP teachers commented on improved communication between students, and between students and teachers. As one elementary school CP teacher commented, "My students give each other feedback online and talk to one another online." A high school CP teacher commented, "Students are communicating. It benefits them when they might be intimidated by an authority figure." This teacher went on to note that "Their ability to send an email ameliorates their social anxiety" and noted, "I get 6-10 emails a day."

Elementary, middle, and high school CP teachers commented on increased collaboration. An elementary school teacher offered, "Collaboration is huge. I saw students choosing to do projects together online with kids they had to be physically separated from at the beginning of the year." A middle school CP teacher noted the visible collaboration on Google Classroom, stating, "You can see them collaborating on their writing and being creative together." Similarly, a high school CP teacher stated, "I require my kids to collaborate on labs. I call them out on whether or not they are contributing and collaborating because I can see that on a HyperDoc." Another high school CP teacher noted that "It's much easier for the students to collaborate with one another, especially when students are sick."

All three levels of CP teachers also described improved skills related to being goal directed individuals. For example, an elementary school teacher commented on problem solving skills, stating:

> *How they go about problem solving… one group created a table, one used an emoji keyboard, another group used Google Draw and inserted shapes that way. They are beginiing to know themselves and identifying strategies that help them solve the problem.*

A middle school teacher also noted that students have taken more ownership of their learning because they have the resources available to them, such as going back to review content or reviewing a video explaining a lesson. A high school CP teacher indicated that students have become more proactive when not in class, such as emailing her when at home sick to identify how they can keep up with missed lessons.

Teachers indicated a lesser impact on critical thinking. Elementary school CP teachers noted that critical thinking was less evident in the lower grade levels. One participant stated it was "hard to see critical thinking in younger students." Another noted, "There is less critical thinking there, it's something to keep working on." A high school CP teacher, though, stated, "Every Wednesday we have critical thinking tips of the week - it's there for the taking."

Similar to CP school teachers, eLB teachers noted an impact on collaboration, communication, and students taking ownership of their learning. In terms of communication, eLB teachers noted that students "are talking to each other while they are going through the activities and collaborating." Another commented that a benefit is that students "know they have a way to reach out to you, knowing there are resources for them to answer whatever questions they have." This ability to communicate readily when issues are encountered is "teaching them self-advocacy skills." In addition, students are able to actively monitor their grades and assignment completion to ensure they are making progress.

Principals. When asked what impact principals may have seen on *Portrait of a Graduate* skills, one CP principal commented "There's an impact on all of them." Others mentioned specific skills, such as collaboration: "kids always collaborate with each other." In terms of communication, a principal noted that with technology, "They don't have to yell across the room but can communicate down the hall, to another school, or across the world." Creativity was also specifically mentioned such as in math students who are "using programs like geometric design programs and manipulatives. They're creating websites."

eLB principals mentioned an increase in collaboration. For example, one principal commented that "I think the collaboration piece is easiest to confirm… you see kids working in groups, looking at laptops, even at lunch." Another principal stated that "There seems to be a different camaraderie around" while a third principal stated, "In some of the classrooms I've seen, there are a lot of shared documents, students working on things together. Collaboration is there for sure on research projects and in labs. It's much easier to do now with the 1:1 devices."

SBTS/librarians. SBTS/librarians made several observations on students as communicators, collaborators, and critical thinkers this year. SBTS/librarians in both focus

groups felt that all three skills were being touched upon effectively. One specialist commented that students "have to use all of those skills in every lesson." Both groups also voiced the benefit of the program in helping teachers to achieve success in *Portrait of a Graduate* skills. One noted, "We've benefited from FCPSOn as it relates to *POG*. There are so many lessons available and it's really hitting on every aspect of *POG*." SBTS/librarians explained that FCPSOn had also helped clear misconceptions about one-to-one learning in that there was peer communication occurring. One specialist commented:

> *People were afraid of seeing kids just staring at screens, but you walk around, and you see how all the students are talking to each other, and talking about what it on the screen. They are on task and on target, and it's the first comment we get from visitors.*

SBTS/librarians in both groups also commented upon students becoming leaders as a result of FCPSOn in "managing the whole system." One explained that some students participate in an elective internship class to repair devices. This librarian noted that as a result of the experience, "their problem-solving skills are incredible."

Summary. The impact of FCPSOn on students in terms of technology use and engagement has been generally positive, according to stakeholders. CP and eLB teachers agreed that students improved their use of technology as a learning tool, pointing to their students being particularly adept in their refinement of problem-solving and device troubleshooting skills. Likewise, principals and SBTS/librarians saw an unexpected improvement in student technology literacies, independent learning, and personal responsibilities with devices, which helped to redefine teacher roles as facilitators in the classroom. Students felt that technology integration has created an ownership of their learning, improved their ability to communicate with others, and streamlined their workload. In terms of student engagement, all groups saw a marked increase, but qualified this with some concerns. Teachers and SBTS/librarians cautioned that devices can easily be distracting for students, though this can be mitigated with clear objectives and instructional direction, whereas principals expressed a concern regarding the novelty effect of technology. Regardless, all groups value technology integration on a whole, agreeing that it makes for better communicators, collaborators, citizens, thinkers, and individuals.

FCPSOn Perceptions

Participants were asked to describe strengths, challenges, and recommendations for improvement regarding the FCPSOn initiative during its first year.

Strengths. Teachers were asked to comment on the most positive aspects of the FCPSOn imitative through an open-ended survey item, and also described positive aspects during focus groups. Principals, SBTS/librarians, students, parents, and district administrators discussed the benefits of the initiative during focus groups.

Teachers. Overwhelmingly, teachers in both CP and eLB schools viewed the FCPSOn initiative favorably, and survey and focus group themes primarily centered on access, positive student impacts, and improvements in instructional practices. An additional focus group theme was teacher revitalization.

- ***Access.*** A noted benefit of the initiative that teachers mentioned was the equitable access to technology that is now provided to students. For example, they noted that individual devices negated the need to schedule time in the computer lab and students are granted additional time to engage with technology for instructional purposes. As one CP elementary teacher commented, "Access to technology. We have it on hand whenever we need/want it. We don't have to wait for a computer lab slot to open. We can use computers multiple times a day for long or short periods. The flexibility is fantastic." Similarly, a CP high school teacher commented, "the accessibility of computers in the classroom is great for projects and individual learning. No more booking the library for computers or the inconvenient computer carts." A CP elementary school teacher noted,

  Students have more time on an electronic device -- a laptop or an iPad. Since I teach kindergarten there is more opportunity for children to learn how to log on to their devices, navigate websites, use Google Classroom and become more proficient so they are ready for the next step in first grade! It's really fabulous how much they've progressed already!

  eLB teachers also commented on the improved access. One noted, "we don't have adequate laptop carts so it has been nice for many of my students to have laptops," while another commented, "All students have the opportunity to have a computer to use at home and school." Further the access has provided students to "the best technology-based resources" and teachers' "ability to provide easily accessibly classroom resources that students can use both in and outside of class."

- ***Student impact.*** Teachers named multiple ways that the access provided by a 1:1 technology ratio benefited their students such as improved student engagement, independence with learning, and improved technological skills. First, many CP teachers mentioned improved student engagement as a noted benefit of FCPSOn. For example, an elementary school teacher commented that "The ability to incorporate technology into the classroom for every subject area has greatly increased student engagement and my planning as a teacher! The positive aspects have truly been endless! I am so thankful for this opportunity!" Similarly, another elementary teacher noted, "Student engagement, by far, is the most positive aspect. I feel as if students are more inquisitive, engaged, and interested in what they are doing when they are able to access the technology." Another offered that student engagement "has increased threefold" and a high school teacher commented that students "are even more engaged than in previous years."

eLB teachers echoed the student engagement impact. As one teacher observed, "More students are more engaged through digital activities." Another noted, "The integrated use of Google tools provides many opportunities for learning resources and student engagement." A third stated, "My students are working constantly and are much more engaged and active learners with the laptops. The backpack program has been a huge success and it has changed my teaching positively. I LOVE IT."

Second, the initiative has encouraged students to take more ownership of their learning. For example, a CP teacher noted "The access to computers has expanded the opportunities for my students to become more self-sufficient and grow as life-long learners." Another commented, "I really enjoy the responsibility and independence technology allows the students to have and develop within the classroom. Students are able to work at their own individualized pace, while exploring more challenging and real-world situations across the curriculum."

Third, CP elementary school teachers and eLB teachers described the positive impact on the acquisition of students' 21st century skills. As one CP elementary school teacher stated, "My class have become amazingly tech savvy for first graders." Another elementary school teacher commented, "my students have become much more technologically adept and enjoy helping/explaining things to each other." An eLB teacher commented:

I teach ESOL and my students have traditionally been reluctant writers and readers and when I could get them access to computers, most of my time was spent on teaching basic computer skills. Now, my students are able to use computers efficiently and we use Google Classroom every day. It is amazing to see them engaged in both reading and writing.

Another eLB teacher described similar skill advancement in students:

The group of students I teach typically have not used computers for learning in the past, and often have barely ever used one even for internet or email. By year's end, they are experts at Word, Google Classroom, proficient at PowerPoint, and knowledgeable about many online applications for learning. To see the difference this program makes on students' learning is the most positive aspect.

- ***Instructional approach.*** Teachers described the changes in their instructional approach as a noted benefit of the initiative. For example, many elementary, middle, and high school CP teachers described being able to leverage technology to create more effective lessons and share content that students could access outside of the classroom. As one elementary school teacher commented,

Having technology at our disposal 24/7 has allowed me and my team to design and implement lessons that go far beyond rote memorization or lectures. We engage the students in learning and they are SO excited to learn about new things - from curriculum to new apps, they are 100% engaged in learning.

A middle school teacher stated, "They have access to so many more ways to learn and access to more information. It makes teaching possible whether the student is in school or not. It has been a great hands-on tool and communication tool." Another middle school teacher offered:

Having at-the-ready technology to do any activity at any time has been a fantastic resource for students to be able to have access to information and interactive online tools such as Quizlet. They have also been able to better access primary and secondary sources and conduct thoughtful, thorough and appropriate research on a variety of topics. They are able to take their learning into their own hands. They are able to find resources, identify problems, working with each other and learn at their own pace (within the structure of curriculum and pacing).

Also, a high school CP teacher noted,

I am able to employ the use of exciting textbook online software for students to practice, and I have seen am improved rate of learning/understanding especially with large lists of verbs (world language classroom). I can have students learn vocabulary at online vocabulary-learning sites. I can also send out their homework to them electronically, and if students do not have a mobile phone, they can get the assignments via email.

Teachers also commented on their ability to more easily differentiate instruction to students with the presence of technology. For example, a middle school CP teacher commented:

As a math teacher, I was a bit skeptical in the beginning of the year about using computers and technology for notes and instruction. About halfway through the year, I started using Google classroom to present my notes in a more blended learning format that has allowed students to work and learn at their own pace. It has offered me the opportunity to work one-on-one with more students during one class period than I ever had, and has made students accountable for their own learning. I absolutely love it and being one-on-one is necessary for this process to work.

Similarly, a middle school teacher noted she appreciated "regular and reliable student access to technology for daily technology-assisted lessons. I enjoy designing lessons that are student-paced, provide immediate feedback and are

differentiated." Another noted, "Individualized instruction! Differentiation! Students have been able to work at their own pace and advance as quickly as they need to, or can have remediation and review available immediately."

Many eLB teachers also referenced the benefit of being able to change their instructional approach and leverage technology, particularly in terms of blended learning. As one teacher noted, "The online resources with the Google Classroom and Docs suite makes blended learning realistic" whereas another stated, "It increases the possibility of offering a blended learning environment and to offer choices to students on how they approach their learning." Last, a third teacher commented, "Blended learning is possible on a wider scale because the students have guaranteed access to the technological tools necessary."

- ***Teacher revitalization***. Interestingly, one of the areas participants discussed the most in focus groups was how the program had revitalized them as instructors. One CP teacher noted: "It's as though we as teachers have been dropped into THEIR world. They were tech savvy anyway. I feel that I got dropped into their world where I can secretly teach them things where they barely notice what's going on." Another CP teacher noted that they: "Can't imagine not having it. It's that transformative. Now that it's started, it's got to continue." Finally, one CPS teacher commented that "Day to day, it's just easier."

  Teachers from eLB schools also conveyed a sense of revitalization. One teacher noted, "It's been good for people (teachers) who have always done the same old thing. They are reaching out and trying to do new things that will hopefully stimulate engagement and test scores," and "It's been nice seeing teachers trying new things." Teachers also felt supported. One teacher noted, "Some people who are more resistant are able to get support and are treated with a growth model in mind, rather than authoritarian forced change."

Principals. CP principals described the strengths of the initiative as first and foremost positively impacting students through "collaboration and student engagement," "authentic learning," and "developing children to prepare for the 21st century." In addition, principals recognized the positive impact on their staff in that "teachers are constantly being learners and that's huge. It's raised the level of motivation of teachers" and "they want to learn. That motivation is good for any school." The collaboration across schools was also a mentioned benefit. As one principal explained, "we have always talked about doing visits [to other schools] and we're really doing it now" and another mentioned that "we're pushing ourselves and all trying to share and get more feedback. No one is telling us you need to reach out, we're doing it ourselves."

Two eLB principals described the communication between schools and the district as a noted strength of the initiative, and two other principals commented on the resources and support offered to schools as a strength. In addition, one principal noted the value of providing individual

devices the students, stating “The novelty is valuable. Having the devices makes them (students) feel valued.”

SBTS/librarians. SBTS/librarians in both focus groups were in agreement on a number of areas they viewed as strengths. SBTS/librarians listed equal and quick access, teacher networking both in and out of school and between schools, opportunities for student and teacher growth as well as student centered learning as assets. In addition, SBTS/librarians mentioned that teachers were “ready to go the first day of school . . . making connections,” “learning from one another,” and “designing” in the first week. Diversity and multiple resources were also cited as strengths.

Students. During focus groups, students were asked to comment on the things they have liked most about the ways they have learned this year. CP students named the use of videos, having more time for online research, collaborating on projects with the devices, and the use of various learning platforms as ‘likes.’ Most liked aspects of using devices this year included that it makes learning easier, it improves the classroom experience, and students like certain learning platforms. In the first category, students liked being able to use editing features when writing and they felt more organized. Other students commented on improved group work, with one stating that work in groups is quieter and less distracting. Finally, students named several learning platforms that they like such as Google Earth. eLB students most appreciate the time-saving benefit of the devices. They are able to access content and complete their homework assignments quickly which allows them to spend more time with their families. These students also like being able to use the devices to communicate with their teachers.

Parents. During focus groups, parents focused on two things they believed were going well with the FCPSOn initiative this year. The first was the improvement in students’ technological knowledge and skill. Parents noted an increase in creativity associated with this improvement in comments such as “My son has been doing a lot of video editing for classes” and “more use of the creative side of technology.” The second strength if the initiative that was noted was its success in leveling the playing field by providing access to computers to all students.

Challenges. In addition to responding to benefits of the initiatives, participants indicated the challenges experienced during this first year of the initiative. Teachers conveyed challenges through survey responses and focus groups. Students conveyed dislikes of the initiative during focus groups.

Teachers. Teachers offered valuable information on the challenges they faced by being a part of the FCPS initiative. The most common challenges cited by Chantilly Pyramid and eLearning Backpack teachers included adapting technology to curriculum, classroom management, and tech/device issues. An additional challenge mentioned by eLearning Backpack teachers was the need to train students on technology use.

- ***Adapting curriculum.*** Teachers in Chantilly Pyramid schools described the challenge of integrating technology into the existing curriculum. As an elementary school teacher noted, a challenge she experienced is “creating new

lessons to incorporate the technology and align them to our standards. This has been very time consuming." Similarly, another elementary teacher noted the challenge of "coming up with innovative ways to promote blended learning without reinventing the wheel on every lesson that I teach." Further, as one high school teacher noted, a challenge exists in "transitioning plans to increase use of technology in accordance with the expectation. Certainly, simply incorporating technology does not always yield increased learning at higher levels." Several teachers, though, were positive while expressing this challenge. For example, one middle school teacher noted, "It was also a hard-core learning curve on how I was going to adapt my instruction. I feel like I have tackled that beast but am still working towards improving." Another commented, "It has been challenging to learn different new aspects of using/teaching with technology. I've learned a lot this year, and wish that I had known some of these things at the beginning of the year." Ultimately, teachers acknowledged the need for additional time spent adapting existing lessons and learning approaches to effectively integrate and leverage technology.

eLearning Backpack teachers expressed similar perceptions. For example, one teacher noted the challenge of "figuring out where technology is the most impactful for learning versus the traditional method of teaching" and another echoed a similar sentiment, offering the challenge of "learning the new 'dance steps' involved with the technology; in other words, how to transform the mundane of pen/pencil to a vibrant shared experience." Last, an eLearning Backpack teacher commented:

It has been hard to figure out what is worthwhile to do on paper vs. the computer because remaking new lessons from scratch is difficult. Having time for teachers to collaborate and shift their current lessons and units together supports this challenge.

- ***Classroom management.*** The second area that Chantilly Pyramid teachers expressed as a challenge during this first year was classroom management, such as monitoring students for inappropriate use of their devices including gaming, watching, YouTube, and being otherwise distracted from the task at hand. As a high school teacher offered, "the greatest challenge in the FCPSOn initiative has been getting students to use the computers for strictly educational purposes" and another noted, "keeping students on task is the biggest challenge, as they can open multiple tabs and work on unrelated assignments, or play games and such."

  Several teachers described the difficulty in monitoring student focus during class time and their current need to be 'walking the room' to keep students on task. For example, one elementary school teacher noted, "keeping kids on task during independent/group work on the computer," and another stated, "Making sure the

students are using the correct sites when I'm teaching a small group and not able to walk around the classroom." Another elementary school teacher observed,

I am constantly thinking about the challenges and reflecting on how I will change things next year. For me the biggest challenges have been in the classroom management of the 1:1. I've tried some management tools and some have been more successful than others.

Another elementary school teacher stated,

It has been a challenge to keep them all on-task all of the time. Inevitably there is one who tries to surf the internet during a lesson and it is difficult to stay on top of all of them. I would like some kind of global desktop tool where I could see a mini-version of everyone's screen on my computer.

eLearning Backpack teachers also described challenges with managing appropriate device use. One teacher noted, "Many students use them as a better way to watch movies during class. They feel that since the school gave it to them, then it is okay to do this." Other teachers expressed similar sentiments, describing the challenge of monitoring student behavior with devices to ensure all students were on task and using devices to support learning.

- ***Technical issues.*** Both Chantilly Pyramid and eLearning Backpack teachers described the challenge of technical/device issues that they dealt with throughout the year. These issues included devices not being charged, broken devices, and poor connectivity. As several teachers explained, oftentimes students return to school without charging the laptop when used at home the day before. Ensuring that students take responsibility for fully charging batteries was a challenge expressed by teachers in elementary, middle, and high schools. An eLearning Backpack teacher described the issue of "when students don't have their laptops or forget their chargers, and you have planned your lesson through laptops" the entire lesson may be wasted.

  Occasionally, some teachers explained that devices were not working properly. As an elementary teacher stated one challenge is, "laptops that don't work for a variety of reasons. We have fairly good tech support, but it's not immediate. We find ways to adapt (share laptop with another student)." Similarly, another elementary school teacher commented,

  It has been a challenge at times dealing with technological issues, such as a student computer not logging in, not working, needing to be repaired, etc. Our tech support at our school is FANTASTIC and they have been wonderful about helping us with issues, but it still has been challenging at times if we are doing an

activity where the students need to be using their devices and a technology issue has impacted that.

Further, as a high school teacher explained:

They come to school without a fully-charged battery. When students have a computer problem, they immediately disrupt my flow of teaching or planning, and ask me what to do instead of trouble-shooting it themselves. I'd also like a streamlined system for loaner-laptops if a student is having major technical difficulties. Finally, it would be good to have the exact same applications on my computer as the one's on the students' computers, so that I know which programs I can use with students.

Finally, some teachers described issues with connectivity within the school. As a Chantilly Pyramid high school teacher noted, "[Wifi] is extremely slow and taxing to get everyone on the same page." An elementary school teacher commented on the challenge "when the internet goes down and you had planned on using technology for your lesson."

- ***Student training.*** eLearning Backpack teachers noted the challenges they faced in training their students to utilize the technology that had been made available to them. For example, one teacher noted:

  Most of our students have no computer background. They think they are technologically savvy because of their smart phones, but most of them do not know how to type or do simple things such as copy and paste. This has been a great struggle to overcome.

  The time needed to train students may not have originally been accounted for by teachers. As one explained,

  Students never received a technology course for simple tasks such as submitting an assignment on Google Classroom, or how to use a word document so we have had to go back and teach simple technology skills.

  Similarly, another teacher noted the "huge range of computer skills. A quick warm up takes 20-30 minutes if a student doesn't know how to navigate the digital tools, or doesn't know how to type, etc."

Students. During focus groups, students commented on their dislikes about the ways they've learned this year including technology integration. CP students described peers who use their devices inappropriately (e.g., for gaming, surfing, or cheating) and basic technical problems as the two things they like least about using devices for learning. They also listed teachers who are not sufficiently computer savvy, the perception that some teachers use the devices to avoid

teaching, and the nuisance of carrying the device around as downsides to device use. eLB students had no concerns with the initiative, and were overall quite positive.

FCPSOn recommendations. In addition to strengths and challenges, participants were asked during focus groups to provide recommendations to the FCPSOn program for future years.

Teachers. Similar to the challenges teachers described, the most commonly cited issues participants mentioned in focus groups dealt with the need for better classroom management guidance. Teachers across all groups had several comments pertaining to (a) standards for digital citizenship, (b) time management support, (c) technology issues, and (d) parental involvement.

- **Digital citizenship and instruction.** An eLB teacher voiced the need for students to have "some kind of orientation process," with students "bringing devices on day one to class." One CP teacher commented that in her school only kindergarten received technology lessons with a teacher. She felt that all students should receive some instruction as "students are not getting that support from anyone but their classroom teachers right now and it's not enough." Another CP teacher noted that students did not seem to understand the implications of being unprepared with devices or misuse: "There are no consequences right now. We can't take the computer away or they get lost. I have taken it away at times, but it's obnoxious. It's hard to punish misuse." An eLB teacher discussed the difficulty of depending on students to bring computers charged and ready to class. She stated "The kids can use it as leverage. They say they've lost their chargers. We just need a way to ensure that students manage their computers well." Adaptability was another perceived need. Students (and teachers) need to know how to smoothly transition if computer power or Internet connectivity is lost to more traditional classroom instruction.

  Along with classroom management, CP teachers also felt that instruction related to developmental and social levels should be factored. Comments were made that trainers must be cognizant of the youngest students who still need to develop motor skills, handwriting skills, time away from screens, social skills development, and understanding the difference between what's appropriate in person. One teacher stated; "There are still some hands on pieces that need to be happening and let's make sure that we keep that." A second comment addressed developing social skills: "The social aspect is becoming more difficult . . . Kids are behaving in ways they see in video games that aren't appropriate for real life social interaction."

- **Time management.** Teachers from CP schools also discussed the concerns they had of working "24/7" trying to manage the issues above, and the fact that sometimes, "control had to be given up". Teachers also noted that they needed to learn to manage their time regarding lesson planning and testing before "turning in technology at the end of the year."

- **Technology issues**. In addition, teachers from CP spoke to the fact that they realized that "tech glitches are a part of life". It was noted that although some teachers feel comfortable with technology and are able to troubleshoot easily, others are not. One respondent commented on the need for classes to be offered for teachers "devoted to 'simple fixes' that teachers can do or try in their classrooms when the most common tech problems arise." Another teacher noted that "Batteries . . . and a 'lack of spares' are the biggest problem." The teacher explained that if one child's laptop isn't working she has to come up with an alternate activity for them to do while the others work on something. She stated this was "very time-consuming and keeps kids out of the loop". She recommended that every classroom have "two spare laptops and several spare batteries for back-up".

- **Parental involvement.** A final issue noted by CP teachers was the need to better communicate with parents about this initiative. One commented, "Parents were receiving information mainly from teachers." Another two CP teachers noted that parents were "concerned about screen time" Another need remarked upon regarding parental involvement was the need to better involve parents in educating their children about plagiarism and Internet use. One teacher commented: "If information came down from the county it would take pressure off the teachers and the parents might take it more seriously."

Principals. Recommendations during principal focus groups included continued staffing, PD, and curriculum. In terms of staffing, principals explained that "we need a fully-funded SBTS in every building" and another explained "we need a full-time person in the school funded by the county." Another echoed this need, stating that FCPS needs to "keep funding for support personnel for maintenance of devices" while another expressed the importance of the school-based instructional technologist noting this role "is becoming more and more critical to the school and the county needs to be very selective as to who is an appropriate candidate."

PD was the second recommendation offered. Specifically, principals explained that "We want videos of what some of these practices look like. We never got videos on blended learning, personalized learning, and the learning environment." Relatedly, principals expressed the need to offer common PD to teachers next year. As one explained, "We can't just be individually figuring out PD. We need county opportunities for teachers collaborating."

Relatedly, an eLB principal commented that differentiated professional development was a needed change to the initiative. Other changes offered by eLB principals focused on logistics, such as the amount of money spent "on things that hadn't been considered" such as extension cords and the overall infrastructure that needed to be in place. Two other principals questioned the return of devices from students that withdrew from the school. One of these principals noted that "withdrawing students – we don't get their computer back. Letters from legal don't have much bite. We've lost six to seven already. We don't intend to have damage but we need help with collection this spring."

Curriculum was the final area recommended for improvement. CP school principals noted the need for a repository of curriculum resources. Such a repository would capture lessons "so that other teachers don't have to start over" when designing a blended learning lesson.

SBTS/librarians. When asked for changes they would recommend, SBTS/librarians were again in overall agreement that infrastructure was in need of improvement. SBTS/librarians also encouraged continuing collaboration and learning from peers. One SBTS summed this up by stating:

> *Now that Phase One is on, it would be great to bring on a couple of pyramids at a time so they can support and learn with each other. This MUST happen for all, and we need to keep going one pyramid at a time.*

SBTS/librarians in both groups also observed that having more time to prepare would have helped in the implementation of the program.

Parents. The majority of suggestions for improvement offered by parents fell into three general categories: (a) the need to maintain a balance between technology use and other methods of instruction/learning, (b) the need to bring parents into the process, and (c) the need to resolve various technology-related problems. In the first category, parents felt that blended learning needs to be well-rounded and should serve as an enhancement rather than a replacement to teaching. They voiced concern that audio/verbal or multi-sensory instruction might be lost as a result of the initiative, and that student social skills might be impacted. One parent commented,

> *I think we need to be careful as a school system that we don't solely rely on technology. There are so many styles of learning . . . technology is going to require a learning style different than what some students may need."*

When it came to bringing parents into the process, participants said that the initiative has made it harder for them to tell what their child is doing, and how well they are doing it. They asked for ways for them to become more involved in their child's learning and for better communication with the teacher. Finally, participants stated that issues left to be addressed included those that go hand-in-hand with technology, such as excessive screen time, concerns over Internet safety, difficulties in printing from devices at home, and lugging around the weight of the devices on a day to day basis.

Parents were unanimous, though, in feeling that the initiative should continue, with all being in favor of the technological competency that the initiative is providing to students. One parent stated, "Yes, it should be continued, but use it to enhance education, and not just rely on technology." Another parent commented, "It could be a much better experience next year after we've seen what's worked and what hasn't."

Summary. Participants identified strengths, challenges, and recommendations for FCPSOn. Teachers generally agreed that the program has improved their instructional approaches as well as student access to technology, which has resulted in a positive impact on

student learning. Teachers also noted that the infusion of technology has renewed and revitalized them in their careers. Principals viewed collaboration and student engagement as the most visible strengths of the program. Similarly, SBTS/librarians found the program provided opportunities for student and teacher growth. Student and parent groups praised FCPSOn for its improvement in accessibility to technology, and the related increase in personal learning.

Some challenges did exist with the implementation of FCPSOn. For teachers, these challenges resided mostly with learning how to adapt existing curriculum to a technology-based environment, and renegotiating classroom expectations. Further, there were impediments with technological infrastructure as well as student technological competencies, though these have improved. Students echoed these same challenges.

Lastly, there are some recommendations for improving FCPSOn. Each group of stakeholders had a different perspective on what was needed. Teachers stressed a desire for more digital citizenship, and instruction for students as well as for parents; principals indicated a need for funding for more professional development, staffing, and curriculum resources; SBTS/librarians requested an improvement in technology infrastructure; parents recommended a healthy balance between instructional methods and more opportunities for inclusivity. Altogether, FCPSOn is viewed positively by the different groups, who saw value in the initiative.

Conclusion

The purpose of the present study was to gather formative data on the FCPSOn initiative during its first year of implementation in the 2016-17 school year within Fairfax County Public Schools. In the present section, we draw from the comprehensive results of the first-year study to present broader conclusions regarding the main findings and their implications. The evaluation questions that guided the study are used as an organizing framework.

Professional Development

Data from surveys and interviews indicated that through professional development experiences, principals and teachers overall had acquired a solid foundation for implementing FCPSOn. Principals, in fact, conveyed during focus groups that their role during this first year of the initiative was to provide a strong focus on PD. Chantily Pyramid (CP) principals in particular described collaboration with their peers to ensure consistency between schools. Not surprisingly, survey results revealed that overall, CP and eLB teachers felt successful in their role as Phase One schools and that the culture within their schools supports technology-enhanced instruction. Further, roughly two-thirds of teachers conveyed they had received sufficient PD to support blended learning. Given that some teachers felt more prepared than others to properly integrate technology in order to fully leverage tech affordances, future PD may focus on more detailed specifics of blended learning with concrete examples of curriculum support, as well as increasing the understanding of technology integration into teaching practice. Teachers' positive perceptions regarding peer-to-peer learning and collaboration further suggests the benefits of incorporating such opportunities in future PD offerings. Both district-wide and school-based PD operate conjointly to provide a consistent, broad vision of the initiative as well as site-based adaptations to individual teachers' and school needs.

Intermediary Outcomes

A variety of impacts on teaching practices, technology integration, and virtual and physical learning environments were offered by participants. These impacts alluded to changes in teaching practices to support a blended learning approach, particularly in terms of the instruction delivered to students. For example, many CP participants described the use of technology for individualized or personalized learning, and that these technology-enhanced lessons encouraged more peer interactions such as discussion and collaboration. Further, teachers frequently referenced the use of HyperDocs, designed to support student choice during learning, as well as a variety of other programs. Teachers were viewed as becoming more facilitators of student learning and with the increased use of technology, students were strengthening their skills in using technology as a learning tool, such as increased problem solving and improving their communication skills.

Successes included teachers designing learning experiences with technology in order to allow students to work at their own pace or access content outside of the classroom, whether to prepare for the next day's lesson or for review. Students also conveyed appreciation for these changes in approaches to support their learning, such as improved efficiency, access, and communication opportunities. There were, though, areas of opportunities within teaching practices to support a blended learning approach. Not surprising given the varying views on professional development effectiveness, teachers conveyed the need for more focused PD on blended learning and curriculum support in order for them to more fully implement this model.

Most participants viewed a positive impact on student engagement due to the integration of technology. Students were viewed as taking more ownership of their learning and were more engaged due to the variety of options available to them. While SBTS/librarians and principals generally felt student engagement had improved, teachers were less definitive, and expressed some concerns that the devices could be providing a distraction from on-task behaviors. FCPS may consider offering additional supports to teachers to assist with controlling off-task device use.

Portrait of a Graduate Skills

While an impact on *Portrait of a Graduate* skills would not be expected during the first year of FCPSOn implementation, participants frequently observed improvements in students as communicators, critical thinkers, and collaborators. These skills were viewed as improving as a result of the integration of technology, such as using various tools to communicate with peers in other classrooms or even to facilitate collaboration within the classroom amongst students.

Perceptions

Overall, stakeholders viewed the FCPSOn initiative favorably, particularly in terms of the improvement in instructional practices, increased student collaboration, and the positive impact on student engagement and learning. Both parents and students felt the FCPSOn was beneficial in terms of improving access to technology and facilitating student learning.

Though all agreed the FCPSOn initiative has positively affected the classroom, they did offer valuable recommendations for program improvement. Professional development specific to teachers' needs and technological competencies was desired, along with student training on device use and digital citizenship. Additional curriculum resources, such as example blended learning lessons, and improved infrastructure were also recommended. Last, improved communication with parents was an important recommendation.

Summary and Recommendations

This evaluation report has presented findings for schools newly implementing FCPSOn during the 2016-17 school year. Findings indicate an impact to varying degrees on evaluation model components, most notably in teachers beginning to integrate technology to support a blended learning approach which has, in turn, helped to improve student engagement and *Portrait of a Graduate* skills. Based on evaluation study findings, the following recommendations are offered for future FCPSOn implementation:

- **Professional development on blended learning practices.** Teachers may appreciate differentiated, targeted PD offered at the school level on how they may practically incorporate technology to support blended learning. In addition, teachers may benefit from district-wide PD where they may interact and learn from their peers regarding best practices for blended learning instruction. Both district-wide and school-based PD may be beneficial to teachers in supporting the district's vision for blended learning.
- **Curriculum support.** Technology integration takes time to plan effectively and teachers would benefit from example lessons or a repository where they may share vetted example lessons with peers. Beyond PD, these example lessons will assist teachers in creating their own lessons that are consistent with the district's vision for blended learning. In addition, teacher's ability to access exemplar lessons may alleviate perceptions of pressure to create new lessons.
- **Student instruction.** FCPS may consider developing student device training, as well as digital citizenship training for schools to implement with students.
- **Portrait of a Graduate skills development.** Schools may benefit from specific guidance on developing *Portrait of a Graduate* Skills, particularly for the areas dealing with "Digital and Ethical Citizen" and "Goal Directed Individual."
- **Parental communication.** FCPS may consider options to communicate information regarding the initiative directly to parents so as to ensure parents are both informed and involved with FCPSOn.
- **Technological issues.** It may be helpful for teachers to learn about solutions to common device malfunctions. In addition, FCPS may consider ensuring each school has loaner devices for when a student's device malfunctions or when it is returned with the battery depleted, so as to not interfere with the learning experience.

Appendix A: Student Focus Group Protocol

1. How has the use of technology/devices changed your teachers' approaches to instruction and interacting with students?
2. How has the use of technology/devices changed your thinking as a learner/student?
3. How has the use of technology/devices changed instruction outside the classroom (after school/at home)?
4. How has the use of technology/devices affected the way you interact with other students in class? Do you work and talk with others more than you did in the past? If so, describe examples.
5. How has your learning changed from the beginning of the year to end of year? Is it more or less successful? In what ways?
6. Think about the ways you've learned this year. What things did you like? What things didn't you like?
7. What do you like most about using devices for learning?
8. What do you like least about using devices for learning?

Appendix B: Parent Focus Group Protocol

1. Please tell us what you know about the FCPSOn initiative. What are its main purposes and objectives?
2. How did you learn about the initiative? What did your child's school or the district tell you about the program?
3. What are you seeing as different in terms of learning and instruction this year as compared with prior years?
4. How, if at all, is the initiative affecting your child's learning?
5. How, if at all, is the initiative affecting your child's enjoyment of school?
6. What do you think is going well this year with the FCPSOn initiative?
7. What do you think needs to be improved?
8. Overall, what are your reactions to the initiative? Should it be continued? Why or why not?

Appendix C: Classroom Teacher Focus Group Protocol

Preparation and PD

1. Describe the professional development you received in preparation to serve as an FCPSOn Phase One School. How effectively did this PD prepare you in your role?
2. Describe PD specific to technology integration – to what degree has this PD helped you integrate technology into your classroom?
3. Describe PD specific to blended learning - to what degree has this PD helped you in create blended learning experiences for your students?
4. What additional PD, if any, would you like to receive to further support your role as a FCPSOn Phase One School? In what formats would you like to receive additional PD?

Teacher Practice

1. Have you made any changes to your approach to instruction this year? If so, please describe.
2. Describe your use of technology with your students this year. What about for administrative/planning activities?
3. What have been your greatest successes with technology integration in your classroom this year?
4. Have you made progress in creating blended learning experiences for your students this year?
5. What areas would you like to improve upon in terms of technology integration and blended learning for next year?

Student Impact

1. To what degree have students improved their use of technology as a learning tool this year?
2. What impact, if any, have you seen on FCPSOn skills this year such as students as communicators, collaborators, critical thinkers, etc?
3. What change, if any, have you noticed in student engagement this year?

Overall Perceptions

1. What are the overall strengths of the FCPSOn initiative?
2. What changes, if any, do you recommend?

Appendix D: SBTS/Librarian Focus Group Protocol

Role

1. What has been your role in supporting your school through the FCPSOn initiative?

Teacher Practice

1. What sort of changes have you observed in teacher practices this year as compared with last year?
2. Please describe how your school has integrated technology into your classrooms this year. What have been your greatest successes with technology integration?
3. Have you made progress in creating blended learning experiences for your students this year?
4. What areas would you like your school to improve upon in terms of technology integration and blended learning for next year?

Preparation and PD

1. How, if at all, have you been prepared to support your school in its designation as a FCPSOn Phase One School?
2. What additional preparation, if any, do you recommend for future FCPSOn schools?
3. Were your teachers adequately prepared to integrate technology in the classroom? Why or why not?
4. What about blended learning?
5. What additional PD, if any, do you believe your teachers are still in need of to effectively integrate technology and a blended learning environment?

Student Impact

1. To what degree have students improved their use of technology as a learning tool this year?
2. What impact, if any, have you seen on *Portrait of a Graduate* skills this year such as students as communicators, collaborators, critical thinkers, etc?
3. What change, if any, have you noticed in student engagement this year?

Overall Perceptions

1. What are the overall strengths of the FCPSOn initiative?
2. What changes, if any, do you recommend?

Appendix E: Principal Focus Group Protocol

Role

1. What has been your role in supporting your school through the FCPSOn initiative?

Teacher Practice

1. What sort of changes have you observed in teacher practices this year as compared with last year?
2. Please describe how your school has integrated technology into your classrooms this year. What have been your greatest successes with technology integration?
3. Have you made progress in creating blended learning experiences for your students this year?
4. What areas would you like your school to improve upon in terms of technology integration and blended learning for next year?

Preparation and PD

1. How, if at all, have you been prepared to support your school in its designation as a FCPSOn Phase One School?
2. What additional preparation, if any, do you recommend for future FCPSOn schools?
3. Were your teachers adequately prepared to integrate technology in the classroom? Why or why not?
4. What about blended learning?
5. What additional PD, if any, do you believe your teachers are still in need of to effectively integrate technology and a blended learning environment?

Student Impact

1. What impact, if any, have you seen on *Portrait of a Graduate* skills this year such as students as communicators, collaborators, critical thinkers, etc?
2. To what degree have students improved their use of technology as a learning tool this year?
3. What change, if any, have you noticed in student engagement this year?

Overall Perceptions

1. What are the overall strengths of the FCPSOn initiative?
2. What changes, if any, do you recommend?

Appendix F: District Administrator Focus Group Protocol

Program History and Goals

1. What were the main goals for the initiative?
2. What was the vision for implementation?
3. How were school selected for Phase One?

Professional Development

1. Describe the professional development offered to schools.
2. What sort of ongoing support, if any, has been offered to schools?

Early Outcomes

3. What sort of impact have you seen on teaching practices, student use of technology, and student attainment of *Portrait of a Graduate* Skills?

Overall Perceptions

4. What are the strengths of the initiative?
5. What are the challenges with implementing the initiative?
6. What changes, if any, do you recommend?

Appendix G: Classroom Teacher Survey

PD/Preparation

1. I received sufficient professional development to support blended learning in my classroom.
2. I was adequately informed of the expected role of my school as a Phase One School.
3. I feel my school was successful this year in fulfilling its role as a Phase One School.

Strongly disagree	(1)
Somewhat disagree	(2)
Neither agree nor disagree	(3)
Somewhat agree	(4)
Strongly agree	(5)

Teacher Practices

4. I am skilled at engaging my students in higher-order (inquiry, problem-solving, analysis/synthesis) learning activities using technology as a resource or tool.

Strongly disagree	(1)
Somewhat disagree	(2)
Neither agree nor disagree	(3)
Somewhat agree	(4)
Strongly agree	(5)

To what extent did you use the following types of teaching practices this year?

5. Direct instruction/lection
6. Cooperative learning
7. Project-based learning
8. Individualized learning (at desk or computer)
9. Involving students in designing their own learning experiences according to personal goals, needs, and interests
10. Fostering cross-curricular (inter-disciplinary) connections
11. Use of formative assessments to gauge and guide student learning

Never	(1)
Rarely	(2)
Moderately	(3)
Frequently	(4)

To what degree is the use of technology

12. an integral part of your teaching practices this year?
13. part of your instructional planning and administration (preparing lessons, grading, data management, etc.)?
14. helpful in differentiating (personalizing) instruction for students

Not at all	(1)
Minimal	(2)
Moderate	(3)
Fairly strong	(4)

Very strong (5)

Student Impact

15. My students have improved in their mastery of technology skills this year.
16. My students have improved in their mastery of inquiry and problem-solving skills this year.
17. The student behavior in my classroom has improved this year.

Strongly disagree	(1)
Somewhat disagree	(2)
Neither agree nor disagree	(3)
Somewhat agree	(4)
Strongly agree	(5)

Open-ended items:

1. What have been the most positive aspects of being a FCPSOn Phase One School?
2. What has been the most challenging?

Appendix H: Classroom Teacher Survey Descriptive Statistics and Frequencies

I was adequately informed of the expected role of my school as an FCPSOn Phase One School.

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree		
	%	%	%	%	%	*M*	*SD*
Chantilly Pyramid	2.2	6.0	9.7	50.4	31.7	4.03	0.92
Elementary	1.5	6.5	11.1	55.2	25.7	3.97	0.88
Middle	3.6	10.9	6.4	44.5	34.5	3.95	1.09
High	2.4	1.8	9.7	46.7	39.4	4.19[a]	0.87
eLearning Backpack	5.0	12.5	21.0	46.5	15.0	3.54	1.05

[a] High school teachers were significantly more likely to agree than elementary teachers, $p < .05$

I feel my school was successful this year in fulfilling its role as an FCPSOn Phase One School.

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree		
	%	%	%	%	%	*M*	*SD*
Chantilly Pyramid	1.7	1.5	9.1	47.4	40.3	4.23	0.81
Elementary	1.5	2.7	8.8	51.7	35.2	4.16	0.81
Middle	1.8	0.0	7.3	50.9	40.0	4.27	0.75
High	1.8	0.6	10.9	38.2	48.5	4.31	0.83
eLearning Backpack	2.5	6.0	30.0	47.5	14.0	3.65	0.89

The culture of my school supports the use of technology-enhanced instruction to support personalize student learning experiences.

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree		
	%	%	%	%	%	*M*	*SD*
Chantilly Pyramid	1.1	1.5	6.7	44.0	46.6	4.34	0.76
Elementary	0.8	2.3	6.5	45.2	45.2	4.32	0.76
Middle	1.8	1.8	5.5	50.0	40.9	4.26	0.80
High	1.2	0.0	7.9	38.2	52.7	4.41	0.74
eLearning Backpack	1.0	2.5	12.0	53.0	31.5	4.12	0.78

I received sufficient professional development to support blended learning in my classroom.

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree		
	%	%	%	%	%	*M*	*SD*
Chantilly Pyramid	3.7	14.4	16.6	40.9	24.4	3.68	1.10
Elementary	4.2	16.9	17.2	41.4	20.3	3.57	1.12
Middle	5.5	13.6	8.2	45.5	27.3	3.75	1.16
High	1.8	10.9	21.2	37.0	29.1	3.81	1.04

eLearning Backpack	5.0	14.5	16.0	45.5	19.0	3.59	1.10

I am able to use technology to personalize the time, place, and pace of student learning.

	Strongly Disagree %	Disagree %	Neither Agree Nor Disagree %	Agree %	Strongly Agree %	*M*	*SD*
Chantilly Pyramid	1.1	4.3	14.0	51.8	28.9	4.03	0.84
Elementary	1.1	3.8	14.9	55.7	24.4	3.98	0.81
Middle	0.9	6.4	10.0	51.8	30.9	4.05	0.87
High	1.2	3.6	15.2	45.5	34.5	4.08	0.87
eLearning Backpack	3.1	8.2	13.8	48.0	27.0	3.88	1.00

I am able to use technology to engage my students in higher-order (inquiry, problem-solving, analysis/synthesis) learning activities.

	Strongly Disagree %	Disagree %	Neither Agree Nor Disagree %	Agree %	Strongly Agree %	*M*	*SD*
Chantilly Pyramid	1.5	5.6	13.4	53.4	26.1	3.97	0.87
Elementary	1.1	6.1	11.1	58.4	23.3	3.97	0.83
Middle	2.7	5.5	15.5	50.0	26.4	3.92	0.94
High	1.2	4.8	15.8	47.9	30.3	4.01	0.88
eLearning Backpack	1.5	8.7	16.8	45.9	27.0	3.88	0.96

To what extent did you use technology to support the following types of teaching and learning practices this year?

	Never %	Rarely %	Moderately %	Frequently %	*M*	*SD*
Cooperative/Collaborative learning						
Chantilly Pyramid	3.9	16.8	43.1	36.2	3.12	0.82
Elementary	5.4	15.7	43.3	35.6	3.09	0.85
Middle	2.7	20.9	37.3	39.1	3.13	0.84
High	2.4	15.8	46.7	35.2	3.15	0.77
eLearning Backpack	2.6	22.1	43.1	32.3	3.05	0.80
Project-based or other inquiry based approaches to learning.						
Chantilly Pyramid	4.5	23.9	42.2	29.5	2.97	0.84
Elementary	4.2	25.3	44.8	25.7	2.92	0.82
Middle	3.6	26.4	38.2	31.8	2.98	0.86
High	5.5	20.0	40.6	33.9	3.03	0.87
eLearning Backpack	6.2	24.1	38.5	31.3	2.95	0.90
Individualized/Personalized learning (at desk or computer)						
Chantilly Pyramid	1.9	7.8	41.0	49.3	3.38	0.71
Elementary	0.8	6.5	37.5	55.2	3.47[a]	0.65

Middle	1.8	10.9	40.9	46.4	3.32	0.74
High	3.6	7.9	46.7	41.8	3.27	0.76
eLearning Backpack	2.1	9.2	43.1	45.6	3.32	0.73
Involving students in designing their own learning experiences according to personal goals, needs, and interests						
Chantilly Pyramid	10.1	30.8	43.0	16.1	2.65	0.87
Elementary	8.4	31.0	44.8	15.7	2.68	0.84
Middle	10.9	34.5	40.0	14.5	2.58	0.87
High	12.2	28.0	42.1	17.7	2.65	0.91
eLearning Backpack	10.3	32.8	39.5	17.4	2.64	0.89
Fostering cross-curricular (interdisciplinary) connection						
Chantilly Pyramid	9.5	26.4	43.7	20.4	2.75	0.89
Elementary	4.6	18.8	47.1	29.5	3.02[b]	0.82
Middle	11.8	40.9	34.5	12.7	2.48	0.87
High	15.9	28.7	44.5	11.0	2.51	0.89
eLearning Backpack	17.4	41.5	26.7	14.4	2.38	0.94
Use of performance based assessments to gauge and guide student learning						
Chantilly Pyramid	3.9	19.6	46.2	30.3	3.03	0.81
Elementary	3.1	21.1	48.3	27.6	3.00	0.78
Middle	2.7	17.3	40.9	39.1	3.16	0.81
High	6.1	18.9	46.3	28.7	2.98	0.85
eLearning Backpack	2.6	16.4	39.5	41.5	3.20	0.80

[a] Elementary teachers were significantly more likely to agree than high school teachers, $p < .01$

[b] Elementary teachers were significantly more likely to agree than both middle school and high school teachers, $p < .001$

To what degree is technology an integral part of your…

	Not at All	Minimal	Moderate	Fairly Strong	Very Strong		
	%	%	%	%	%	*M*	*SD*
instructional practices this year?							
Chantilly Pyramid	0.6	8.8	26.9	25.4	38.4	3.92	1.02
Elementary	0.0	8.4	25.7	28.4	37.5	3.95	0.99
Middle	0.9	9.1	26.4	20.0	43.6	3.96	1.08
High	1.2	9.1	29.1	24.2	36.4	3.85	1.06
eLearning Backpack	0.0	6.7	20.5	31.3	41.5	4.08	0.94
instructional planning and administration (preparing lessons, grading, data management, etc.) this year?							
Chantilly Pyramid	0.7	7.6	17.9	29.9	43.8	4.08	0.99
Elementary	0.4	9.6	18.4	32.2	39.5	4.01	1.00
Middle	0.9	6.4	18.2	23.6	50.9	4.17	1.00
High	1.2	5.5	17.0	30.3	46.1	4.15	0.97
eLearning Backpack	0.0	4.1	14.4	30.3	51.3	4.29	0.86
classroom learning environment (e.g., online resources, document management, student collaboration sites, etc.) this year?							
Chantilly Pyramid	1.1	12.7	21.9	28.2	36.1	3.85	1.08

Elementary	0.8	13.4	23.8	28.7	33.3	3.80	1.07
Middle	1.8	10.9	19.1	25.5	42.7	3.96	1.11
High	1.2	12.8	20.7	29.3	36.0	3.86	1.09
eLearning Backpack	0.5	9.2	18.5	30.8	41.0	4.03	1.01
supportive of personalizing the time, place, path, and pace of instruction for students this year?							
Chantilly Pyramid	2.8	14.6	27.8	28.4	26.5	3.61	1.11
Elementary	1.9	13.8	29.5	33.3	21.5	3.59	1.03
Middle	4.5	15.5	23.6	25.5	30.9	3.63	1.20
High	3.0	15.2	27.9	22.4	31.5	3.64	1.16
eLearning Backpack	2.6	12.3	28.2	27.7	29.2	3.69	1.10

My students have improved in their use of technology as a learning tool this year.

	Strongly Disagree	**Disagree**	**Neither Agree Nor Disagree**	**Agree**	**Strongly Agree**		
	%	**%**	**%**	**%**	**%**	***M***	***SD***
Chantilly Pyramid	0.7	2.4	13.5	43.6	39.8	4.19	0.81
Elementary	0.4	1.2	8.5	40.0	50.0	4.38[a]	0.72
Middle	0.0	2.7	10.9	50.9	35.5	4.19[b]	0.74
High	1.8	4.2	23.0	44.2	26.7	3.90	0.91
eLearning Backpack	1.0	4.6	17.5	46.9	29.9	4.00	0.87

[a] Elementary teachers were significantly more likely to agree than high school teachers, $p < .001$
[b] Middle school teachers were significantly more likely to agree than high school teachers, $p < .01$

My students have improved in their demonstration of *Portrait of a Graduate* skills this year:

	Strongly Disagree	**Disagree**	**Neither Agree Nor Disagree**	**Agree**	**Strongly Agree**		
	%	**%**	**%**	**%**	**%**	***M***	***SD***
As a Communicator							
Chantilly Pyramid	1.7	4.3	22.2	52.3	19.4	3.84	0.85
Elementary	0.8	4.2	18.1	57.7	19.2	3.90[a]	0.78
Middle	0.0	4.5	24.5	50.0	20.9	3.87	0.79
High	4.2	4.2	27.3	45.5	18.8	3.70	0.96
eLearning Backpack	0.5	8.2	29.9	49.5	11.9	3.64	0.82
As a Collaborator							
Chantilly Pyramid	1.1	3.0	24.5	49.2	22.2	3.88	0.82
Elementary	1.2	3.1	23.1	49.2	23.5	3.91	0.83
Middle	0.0	2.7	27.3	46.4	23.6	3.91	0.79
High	1.8	3.0	24.8	50.9	19.4	3.83	0.84
eLearning Backpack	0.5	6.7	31.4	44.8	16.5	3.70	0.84
As an Ethical and Global Citizen							
Chantilly Pyramid	2.1	6.2	37.0	41.1	13.6	3.58	0.87
Elementary	1.2	6.5	32.7	46.2	13.5	3.64	0.84

Middle	0.9	7.3	41.8	35.5	14.5	3.55	0.86
High	4.2	4.8	40.6	37.0	13.3	3.50	0.94
eLearning Backpack	3.6	8.2	43.3	35.6	9.3	3.39	0.90
As a Creative and Critical Thinker							
Chantilly Pyramid	1.1	4.3	22.8	50.7	21.1	3.86	0.83
Elementary	1.2	3.1	18.5	52.3	25.0	3.97[a]	0.81
Middle	0.0	3.6	24.5	52.7	19.1	3.87	0.76
High	1.8	6.7	28.5	46.7	16.4	3.69	0.89
eLearning Backpack	1.5	7.7	25.3	46.9	18.6	3.73	0.90
As a Goal Directed and Resilient Individual							
Chantilly Pyramid	1.3	5.2	31.2	47.7	14.6	3.69	0.83
Elementary	1.2	5.8	28.1	51.5	13.5	3.70	0.82
Middle	0.0	5.5	30.9	46.4	17.3	3.75	0.80
High	2.4	4.2	36.4	42.4	14.5	3.62	0.87
eLearning Backpack	1.0	9.8	30.4	47.9	10.8	3.58	0.85

[a] Elementary teachers were significantly more likely to agree than high school teachers, $p < .05$

The student engagement in my classroom has improved this year.

	Strongly Disagree	**Disagree**	**Neither Agree Nor Disagree**	**Agree**	**Strongly Agree**		
	%	**%**	**%**	**%**	**%**	***M***	***SD***
Chantilly Pyramid	1.7	3.9	21.5	44.3	28.6	3.94	0.90
Elementary	1.2	2.3	17.7	46.2	32.7	4.07[a]	0.84
Middle	0.9	4.5	24.5	43.6	26.4	3.90	0.88
High	3.0	6.1	25.5	41.8	23.6	3.77	0.98
eLearning Backpack	1.0	6.2	25.8	45.9	21.1	3.80	0.88

[a] Elementary teachers were significantly more likely to agree than high school teachers, $p < .01$