Student Device Phase 1
Evaluation Process and Replacement Plan
Spring 2019

Introduction

The Beaverton School District is committed to learning that empowers all students to achieve post-high school success. This includes safe, smart, and ethical use of technology. Computers, software, the internet, and other new technologies open doors to virtually unlimited opportunities to connect, share, do work, and especially, learn. We aspire to leverage that power and create the best education possible for all of our students.

Because our community approved an eight year, $680 million bond measure for capital improvements in 2014, we are fortunate to be in the position to offer a 21st Century learning experience for our students. A major component of this modern learning experience investment was the allocation of $56 million (of the total $680 million) for the purchase of classroom technology and personal computing devices for students. The decision was made to divide the eight year, $56 million allocation into two, four year phases with the intention of replacing the first phase of student devices once in the eight year period.

To provide guidance to the Future Ready leadership team about what and how many student devices to purchase, a Future Ready Advisory Team (FRAT) consisting of classroom teachers, school administrators, and certified and classified technology support staff was formed. The FRAT's purchase recommendation for Phase 1 was:

Phase 1 Student Device Ratios	Chromebooks	iPads
Grades 9-12	1:1 Take Home	Supplemental Carts
Grades 6-8	1:1 Take Home	Supplemental Carts
Grades 4-5	1:1 Classroom	0
Grades K-3	0	5:1 Classroom

Over Phase 1 of the Future Ready Student Device program, 30,810 Chromebooks and 7,888 iPads were purchased.

Student Device Purchases Review	Chromebooks	iPads
Year 1 (14-15)	1,588	1,670
Year 2 (15-16)	23,658	3,902
Year 3 (16-17)	5,564	2,314
Year 4 (17-18)	0	0

Phase 1 Review and Evaluation Process

Year four of Phase 1 of the student device program was designed to be a review and evaluation year. The FRAT was recovened to complete the review and evaluation and to provide a recommendation for the second (replacement) phase of the student device program.

The review and evaluation process consisted of the following components:
- Student survey
- Staff survey
- Parent survey
- Vendor presentations
- New device evaluation pilots
- Potential device Pros & Cons evaluation
- FRAT Recommendations for Phase 2 Student Device Purchases

Student Survey (Spring 2017)
- 4489 Responses
- Survey Results:

    Trends, themes, and or interpretations to the following survey questions:

1- Please rank the classes in which you are MOST to LEAST likely to use your Chromebook?
- Language Arts - Math
- Most: Language Arts (Social Studies), Least: Math
- Language Arts most, Math least

2- How do you use your Chromebook to support your academic work? Please check all that apply.
- Classroom - At Home Use
- Research, in-class work
- Research, classroom

3- How do you use your Chromebook out of school? Please check all that apply.
- E-mail - Social Media
- Watching videos and email
- Email (but didn't ask about Canvas...or homework, so maybe checking homework?)
- 13% use devices to access ebooks outside of school

4- Do you like your Chromebook?
- 93% Agree it is easy to use.
- 80% 1-3, 20% 4-5
- Happy with CB, but not thrilled due to filter ("EVERYTHING IS BLOCKED")
- Happy with it

5- Are there any classes in which you struggle to complete projects due to limitations of the Chromebook?
- Arts, photography, editing, video creation, math.
- Video editing
- Science, social studies
- In general, activities requiring creativity

6- What annoys you about your current device?
- Blocked websites, restrictions, slowness, battery life, wifi, can't print, camera, freezing, doesn't fit into backpack
- Slowness, filtering, wifi.
- Filtering, battery, filtering, filtering
- Speed/lag, restrictions, battery… and also restrictions plus more restrictions

What annoys you about Chromebook?: Comments		
Count	Words	%
1078	Nothing	24.03%
1094	Block / Website	24.39%
127	Battery / Charge	2.83%
443	Slow	9.88%
307	Connection/Wifi	6.84%

7- Rank the most important options (of your dream device)
- Touchscreen = most important
- Touchscreen - Tablet - Better Camera -
- One: touchscreen, two: inking, third: tablet/rear-facing camera
- Tablet style device and touch screen two most important features- camera doesn't seem important to students (but maybe they don't know what they don't know… if complaint is about creativity then they do probably want the camera)

General Student Survey Summary Comments:
- Overall, the chromebooks are being used. A small percentage mention limitations regarding slow wifi, and the limitation of the device in regards to using the device for design and art.
- We noticed a trend that most students were frustrated with sites and applications that are blocked, but they also appreciated the ease of use with a Chromebook. There were many comments about battery life, but maybe they don't charge it every night? Chromebooks weren't used in specific classes like math, but might be more due to instruction or lack of stylus and applications available than Chromebooks themselves.
- Students dislike the filter. They seem generally happy with what they have, especially from an educational standpoint. Their "wishes" seem to be more related to personal access.
- Having a stylus can expand opportunities but it will be another piece to keep track of
- If students are assessed in math online, how do we create more opportunities for students to do math online?

Staff Survey (Spring 2017)
- 645 Responses
- Survey Results:

Trends, themes, and or interpretations to the following survey questions:

1- What positive impact(s) on classroom instruction and student achievement can you cite?
- Applications like Dreambox, Seesaw, Epic bookshelf, etc. are more accessible to students
- Student independence, empowering students, increased student engagement, ability to self assess
- Differentiation, access to devices at home, access to educational apps.
- Increase in student engagement.

2- What are the concerns and/or limitations you have experienced with devices in the classroom?
- Most responses seem to be from elementary teachers that do not have 1:1 and feel limited
- Off task behavior and improper use of tech in different ways

- Off-task behavior, not enough devices, frequency of use in some classrooms, issues with charging or students forgetting devices, lack of ability to write/graph
- Need more training on how to implement devices to teach curriculum.
- Classrooms/students with Chromebooks need access to iPads too for special projects, carts available for check-out

3- If given a choice in the next technology deployment, which device would you choose?
- Most still prefer Chromebook
- Difficult to interpret responses because we don't know what level the respondents are from
- Chromebooks and iPads seem to be preferred, but we echo the limitations based on level.

General Staff Survey Summary Comments:
- Not having 1:1 at elementary has been limiting to teachers implementation
- In general feedback seems positive, continuing to provide staff with PD around device implementation, digital citizenship as it relates to content/general student life in the 21st century, and also we need more Innostrats.
- Elementary would benefit from 1:1, teachers at all levels seem to <u>need more time/training</u> on use and especially management. Having fewer options until more training/confidence has been established on primary device.
- Elementary wants 1:1 for all grade levels. 2:1 does not allow individual work. Teachers are wanting more curriculum PD and more durable devices.
- In general staff is very positive, but would like 1:1 devices at all levels and more PD around use of devices in curriculum implementation
- More training/discussion with administrators to support staff ability to collaborate around technology and other innovations
- Need to upgrade other tech components such as doc cameras, projectors, Apple TVs
- Access to iPad Pro & Apple Pencil (for teachers?)
- People appreciated Innovation Strategists and LITTs which assisted them to understanding their technology and how to use it in the classroom. Appreciation for support from TSSs too.
- Frustration with wifi and connectivity.
- Access to devices for SPED, ELL, Specialists, and other staff working with students
- Need for explanation of how this work is bond-funded (concern from some about how this is being funded when staff positions could be cut next year)
- Some teachers would take advantage of small sets of iPads to use within their classrooms rather than a cart checkout model.

Parent Survey (Spring 2017)
- 117 Responses
- General Parent Survey Summary Comments
  - Pros -
    - appreciate students having a device they can use at home other than the family computer
    - appreciate students learning to use technology at an early age to be more prepared for high school

- Concerns -
    - increase in screen time, inappropriate content
    - provides another distraction at home
- Creating a parent education course template that schools could use would be helpful

Vendor Presentations (October 2017 & November 2017)
- Acer Chromebook - Carlos D'Angerio
    - Next model beyond the R11
        - Digital Inking
        - More rugged
        - Front & rear facing cameras
        - More memory
- Apple - Steve Nelson (Account Executive) & Mark Johnson (Systems Engineer)
    - New 9.7-inch iPad starting at its most affordable price of $299 for education institutions. The new iPad features a brighter Retina display, powerful A9 chip, and all-day battery life. And, with its thin and light design, cameras front and back, fast Wi-Fi connectivity, and over a million apps in the App Store
- CTL - Sales Team
    - Newest CTL Chromebook Features
        - 10 point IPS Touch screen
        - Protective cover - Whiteboard surface (very durable cover)
        - Drain holes for water
        - Handle for carrying
        - New Intel processors
        - Ruggedized
        - Android apps on all CTL devices
        - World view cameras (front and rear facing)
        - EMR Pen for digital inking (increased cost)
        - Chromeboxes (labs, digital signage)

- HP (MicroK12)
    - HP Chromebook x360 11
        - EE = Educational Edition
        - Digital stylus
            - No battery
            - Responsive eraser
            - Rubber textured grip
            - Pen clip
            - Can be tethered to device
            - Optional protective cases
        - Front & rear facing camera (on left palm rest and above screen)
        - Rugged - Rubber bumper around the edges
        - Battery life over 8 hours (up to 12 hours)
        - Less than 20 mm thick and light
        - Durable screen - Gorilla Glass
- Microsoft
    - Battery life = 1-2 hours less than Chromebooks
    - Simplified educational product imaging via a USB stick

- ○ Windows 10 Pro is being able to run Windows apps (including coding) + G Suite
- ○ Dell = heavy & rugged, but slower
- ○ HP = screen resolution & trackpad not as nice
- ○ Lenovo = has removable keyboard
- ○ Acer = good performance
- ○ Advantage of Windows - engineering applications

New Device Evaluations / Pilots (Spring 2018)
- ○ Meadow Park
  - ○ 2 classes using iPads with keyboards
  - ○ Students really like the iPads and say they prefer them over the Chromebooks
  - ○ They're starting to use them for creative projects
  - ○ The keyboard gets used often
  - ○ Need to add a screen cover that will work with a stylus for digital inking
  - ○ Teachers want students to be able to take handwritten notes and insert pictures
- ○ Raleigh Hills
  - ○ 7th graders were assigned Chromebooks in place of their assigned iPad for a 30 day trial period
  - ○ Students were not overly impressed with the Chromebook after being used to using an iPad for all of 6th grade and the first part of 7th grade. Some liked the fact that the Chromebook had a keyboard and was easier to use with Google applications.
- ○ Westview
  - ○ 1 HP cart with digital inking
    - ■ Math department doesn't want to give it back
    - ■ Windows OS took a little getting used to
    - ■ Can't run Adobe Creative Suite or AutoCAD
    - ■ Students loved 3D Paint and wanted to be able to add more apps
  - ○ 1 Lenovo cart
    - ■ Have never functioned in 6 opportunities to be used in classrooms (sign-in issues)
- ○ Stoller
  - ○ 2 class sets of Windows devices
  - ○ Newer model has an outward-facing camera (they didn't test this)
  - ○ Students love 3D Paint
  - ○ Surface: students said they were too thick & too heavy
  - ○ Battery life doesn't last like they're used to. They couldn't get through the full day. Look into changing to power-saving mode.
  - ○ Some students felt that the trackpad is touchy.
  - ○ Teacher devices - will be available to check out over the summer
  - ○ Student devices are loaners. Pilot will continue in the fall.
- ○ Mountainside
  - ○ iPad Pro with pencil in a cart in a Physics class
    - ■ Keyboards would made it a full-use device
    - ■ Ability to annotate is a plus

  - ○ Acer Spin 11 Chromebook
    - ■ Ability to draw and take handwritten notes with the stylus
    - ■ Digital Avid binder is a possibility with these devices

- Hazeldale
    - Asus Chromebooks with a stylus
        - 5th grade students in the class have tested on them
        - Haven't received any complaints
        - Students haven't started sketchnoting yet
        - Takeaway: w/o doing sketchnoting, haven't seen much of a value add for the stylus
        - Overall Impression and Comments from Teacher
            - The teacher liked how durable the Chromebook was with a nod to the nice casing. He once again praised the inclusion of dual cameras as well as the ability to do more notetaking on the devices with his students. He has used with Spheros and Ozobots with the Chromebooks. There were some challenges based on linking 12 Spheros at a time, but it was not a device challenge. He has not tried Dashes, but users of other Chromebook models have has success with these. The cord of the chargers is thicker than the current R11 or C720 cords. It's a little more effort to wire the cart due to the width of the cord, but I wonder if this would lend itself to greater survivability for middle and high school take-home programs.
- Sunset
    - iPad Pro with pencil in a cart in Digital Photography and Fine Arts classes
        - Students LOVE the ability to take, edit, and produce photos on one device.
- Overall Pilot Project Themes - Device Component Needs by Importance
    - Camera (with video tools)
    - Digital inking
    - Keyboard
    - Tablet mode
    - Portability

Potential Device Pros & Cons Evaluation

Part 1 of Device Pros & Cons Evaluation (September 2018)
- Comparison of Three Operating Platforms: Windows, iOS (Apple), Chrome (Chromebook)
- FRAT members looked at all available survey data, notes from vendor presentations, notes from device trials/pilots and completed a survey asking them for their initial preferences for selection of a replacement device:
    - 87% selected Chrome OS as first preference
    - 8.7% selected iOS
    - 4.3% selected Windows

Part 2 of Device Pros & Cons Evaluation (October 2018)
- Comparison of Two Operating Platforms: iOS (Apple), Chrome (Chromebook)
- FRAT members completed a device exploration protocol and completed a survey to rate iOS (Apple) and Chrome (Chromebook) according to functionality, features, implementation/maintenance, and cost. Features and Functionality was given a higher weight overall (70%) over Costs and Maintenance (30%)

- Results of Rating Survey (3 point rating: 1 Low/Poor - 3 High/Good):

Category		Sub Category	Chrome	iPad
70%	Functionality	Create v. Consume	2.33	2.29
	Features	Battery	2.83	2.57
		Ease of Use	3.00	3.00
		Weight / Portability	2.83	2.86
		Screen Size	3.00	2.57
		Touch Screen	2.17	3.00
		Inking	2.33	3.00
		Trackpad	2.33	2.14
		Camera / Video	1.57	3.00
		Category Total	2.50	2.71
30%	Implementation / Maintenance	Ease of Management	3.00	1.30
		Security / Inventory	2.70	2.00
		Warranty	2.80	2.10
		Durability	2.50	2.30
		Repair Process	2.70	1.30
		Category Total	2.73	1.80
	Cost / Financial	Overall Cost	3.00	1.40
		Extras Needed	3.00	1.30
		Life Expectancy	2.80	2.40
		Category Total	2.94	1.71
Overall			2.63	2.13
Overall Weighted			**2.54**	**2.28**

FRAT Recommendations for Phase 2 Student Device Purchases
- After over one year of research, evaluation, and discussion, the Future Ready Advisory Team is forwarding the following recommendations:

	Chromebooks	iPads
Grades 9-12	Continue with Chromebooks as the 1:1 take home student device. Replacement Chromebooks* distributed fall **2019**.	No additional carts of iPads will be provided.
Grades 6-8	Continue with Chromebooks as the 1:1 take home student device. ACMA, HS2, & ISB will receive replacement Chromebooks fall 2019. Remaining middle schools & K8's will receive replacement Chromebooks fall **2020**.	No additional carts of iPads will be provided.
Grades 3-5	1:1 classroom allocation of Chromebooks for grades **3-5** rather than previous 1:1 for grades 4-5. Schools will receive half of their replacement allocation in fall 2019 and the remainder in fall 2020.	No additional carts of iPads will be provided.
Grades PK-2	N/A	New iPad** classroom allocation ratio of 2:1, an increase from previous 5:1 ratio. Schools will receive all of their replacement allocation in Jan/Feb 2019.

*Chromebook make and model TBD spring 2019
**Apple 6th Generation iPad with STM DUX case

Proposed Device Purchase Plan Estimated Costs

Future Ready Device Phase 2 Timeline   4.10.2019

Two Year Purchase and Deployment Plan

Device	Grades / Ratio	Total	Spring 2019		Spring 2020	
iPads	PK-2 / 2:1	4100	4553	$1,593,550		
Chromebooks	3-5 / 1:1	9724	4862	$1,949,662	4862	$1,949,662
	6-8 / 1:1	10026	1231	$493,631	8795	$3,526,795
	9-12 / 1:1	11545	11545	$4,629,545		
				$8,666,388		$5,476,457

Device Costs	
iPads + Case	$350
Chromebooks	$401

Total	$14,142,845

Selection of Specific Make and Model of Chromebook for Phase 2 Purchase
- The FRAT will convene in January 2019 to review latest models of available Chromebooks to determine specific recommendation for purchase
- Chromebook specification requirements:
  - Dual cameras (front and back)
  - Available tablet mode
  - Rugged outer case
  - 8 hour (min) battery
  - Available stylus / inking (with integrated stylus storage via built in garage)
  - Intel Processor
  - Support and repair coverage that allows for schools to easily fulfill support/repair requests directly.
  - Other Logistics
    - Shipping
    - Etching