OTIS Office of Technology & Information Services

OTIS Strategic Plan 2020-2025

Vision

The PPS Office of Technology and Information Services (OTIS), will invest in technologies that help foster supportive partnerships with stakeholders, community partners, schools, and departments.

OTIS will lead through the development of a digital transformation in the district. These efforts will help ensure every student has the opportunity to develop the skills to be a compassionate critical thinker, able to collaborate and solve problems, and will be prepared to lead in a more racially and socially just world.

We will accomplish this vision by providing a successful technology experience that aspires to be unified, secure, integrated, and sustainable.

Summary

We must reimagine learning for our students by building instructional environments that are rich in digital and print resources, deepen engagement, provide social emotional support, expand access to information and content, and cultivate creativity. A digital rich environment provides extensive opportunities for enhanced personalized learning options, anytime, anywhere while supporting students in attaining deep concepts and developing 21st-century skills. It allows educators flexibility to design and differentiate learning experiences based on their students' needs and strengths.

That in order to fully realize our theory of action :

> **IF...** We braid Racial Equity and Social Justice strategies into our instructional core work with our students, teachers, and content, and build our organizational culture and capacity to create a strong foundation to support every student...

> **THEN...** We will reimagine Portland Public Schools to ensure every student, especially our Black and Native American students who experience the greatest barriers, realize the Vision of the Graduate Portrait.

To realize our Theory of Action we must invest in becoming a district that is steeped in effective practices that leverage digital tools and resources as an important strategy for creating individualized, cognitively demanding, and authentic student learning experiences with multiple access/entry points, and opportunities to demonstrate academic achievement. Becoming a fully invested digital district requires us to develop a digitally enhanced guaranteed and viable curriculum that empowers teaching and learning and builds student agency. A digital toolkit is part of the core resources available for every classroom, teacher, and student, at any time, from anywhere. Educators are proficient in effective instructional practices and all staff and families have sound digital knowledge and literacy to fully employ those resources. Equitable and universal access to student learning opportunities is made possible through a robust infrastructure where all students access the Internet at home and school as a basic service.

A system fully invested in technology and digital resources opens doors previously unavailable or unknown to many students and provides access to opportunities that have only been available to affluent or well-connected students. By giving students both agency and access to rigorous learning, they can design experiences, see themselves in their work and the materials they read, and think critically and creatively to solve real-world problems. Providing adequate resources and investments in developing teaching and learning practices that take advantage of the power and flexibility of technology will allow PPS to break down systemic inequities and provide relevant and engaging learning opportunities that empower students, particularly our Black and Native American students, while also serving all students to enable their success in the 21st Century.

Reimagining Portland Public Schools as a digital district means universal access to unlimited opportunities, cultural connections, subject matter experts, through a multitude of digital resources. A digital district allows the classroom to extend to any time and any place in the world, where students and teachers need only to pose an interesting question, problem, or solution, to become part of a global network, to extend learning and provide access to what may be possible. Learners are empowered to analyze, critique, and disrupt racial inequities and racist constructs and systems.

Goals

Over the next five years OTIS will design, deploy, and sustain critical components for realizing a reimagined learning experience; empower students to be compassionate critical thinkers, able to collaborate and solve problems, and be prepared to lead a

more socially just world. Critical components include a reliable and resilient infrastructure with critical tools and systems to support future-ready pedagogy, curriculum, and practices.

1. Integrated learning technologies cross-department and cross-curriculum: The use of digital tools, applications and devices will be integrated and explicit in both curriculum and instructional practices. Standards and best practice strategies will be aligned with the Graduate Profile, Guaranteed and Viable Curriculum (GVC), and considered across all learning departments. Professional development and integration into cross-department content creation will be evidenced in adult and student teaching and learning.
2. Establish and develop a reliable, resilient, and secure infrastructure.
3. Ensure students and staff have reliable devices for digital learning (1:1 grades 3-12, 2:1 grades PK-2, and assistive technology)
4. Improve classroom technology in all schools to enable equity for in-classroom learning for all students across the district.
5. Implement and upgrade critical software and systems for efficiently operating an organization. Ensure robust fiscal, human resource, and performance management as well as access to quality data and technology for comprehensive student services and supports.
6. Implement and upgrade security systems through establishing and developing a reliable, resilient, and secure infrastructure.

Approach

The plan to move forward as a digital first district requires Portland Public Schools to establish and develop a reliable core infrastructure. This foundation includes central networking and technical infrastructure as well as establishing baseline norms for all classrooms across the district. The November 2020 Bond will provide the funds necessary to address both the centralized core technologies needed to be able to think digital first, provide foundational technologies for the classroom, provide access to devices, software, and digitally based curriculum, and develop a security program to protect the digital assets of the district, the students, and the staff.

Portland Public Schools is a large and expansive district stretching across over 89 school campuses. The efforts that will take place to complete these critical upgrades and enhancements will be scheduled and coordinated to impact school sites as little as possible. To this end we will be attempting to complete multiple bond-related projects at the same time, combining efforts of infrastructure upgrades along with classroom modernizations to limit the disruptions at a school site and to create efficiencies in project management and construction.

Each of the critical elements for this plan are described in detail below. In alignment with the PPS Racial Equity and Social Justice priorities, we will focus on schools that serve our Black and Native populations. This means focus will start with district CSI, TSI, and Title I schools as the first priority, then schools that have not seen any previous modernization efforts, and finally schools which have been modernized but also require some upgrades.

Throughout the improvement projects that are scheduled between 2020-2025, OTIS will implement a proactive approach to community communications and will create opportunities for dialogue with the different constituencies including Administrators, support staff, teachers, students and the general public. Communications will focus on giving information about what changes will be implemented, how it will directly affect the community, what steps participants can proactively take, and how each project connects to the overarching strategic plan.

Learning Technology Integration

GOAL 1: Integrate learning technologies: The use of digital tools, applications and devices will be integrated and explicit in both curriculum and instructional practice. Standards and best practice strategies will be aligned with the Graduate Profile, the Guaranteed and Viable Curriculum, and considered across all learning departments.

Digitally-Enhanced Instructional Design

Technology will amplify student learning by supporting and allowing for more personalized and differentiated instruction, while also promoting the development of students as active participants in teaching and learning. In digitally-enhanced classrooms, the learning environments leverage the use of technology to empower and prepare students for college and career, as exemplified in the Graduate Portrait.

- Inclusive and collaborative problem solvers: students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally
- Powerful and effective communicators: students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals
- Inquisitive critical thinkers with deep core knowledge: students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others
- Transformative racial equity leaders: students use digital tools to broaden their understanding of the historical and contemporary racial injustices that impact our communities, collaborate effectively with learners from a variety of

backgrounds and cultures, and build leadership skills to confront those injustices.
- Resilient and adaptable lifelong learners: students leverage technology to take an active role in choosing, achieving, and demonstrating competency in their learning goals
- Positive, confident, and connected sense of self: students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical
- Influential and informed global stewards: Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.
- Reflective, empathetic, and empowering
- Optimistic, future-oriented: students use a variety of technologies to identify and understand problems and create new, useful, or imaginative solutions

The goal of PPS's design and implementation of digitally-enhanced learning is to improve on-level learning outcomes for all students, especially our students of color, that will complement and enhance the core program.

PPS will continuously evaluate and procure tools and resources that support digitally-enhanced learning models. This will allow for adjustments and improvements based on the student instructional needs and the adoption of promising new digital solutions.

Learning Technology Integration							
System Shifts: A. Connected and Transformative School District B. Racial Equity Aligned Systems, Structures, and Culture D. Transformative Curriculum and Pedagogy							
Goal: The use of digital tools, applications and devices will be integrated and explicit in both curriculum and instructional practice. Standards and best practice strategies will be aligned with the Graduate Profile, the GVC, and considered across all learning departments.							
Key Actions	Performance Measures	2020	2021	2022	2023	2024	2025
Adopt/Accept Standards for Technology Integration	Development of a cross departmental work team to review and recommend standards for technology	X					

	integrations. Review International Society for Technology in Education (ISTE) Standards for Students, Teachers, Admin, Coaches, Educators. Petition for Board Adoption of ISTE Standard for technology in education.	X	X X	X			
Develop instructional framework for digitally-enhanced instruction in PPS	Cross-department review of instructional frameworks for digitally-enhanced instruction in PPS. Develop/accept framework for digitally-enhanced instruction in PPS. Cross-department integration into curriculum and content development.	X X	X X	X	X		
Produce and maintain instructional guidance document	Instructional Guidance document to include - Review of Standards - Review of Framework - Defines strategies and practices by grade-level bands of pK-5, 6-8, and 9-12. - Provides exemplars for use of Digital Toolkit applications to engage, enhance, and extend student learning goals	Ongoing development					
Produce, maintain, and assist with	- All instructional staff - Instructional Specialists and Coaches	Ongoing development					

cross-department PD	- Building and Program Administrators - OTL Curriculum and Content designers		
Develop a system that stimulates innovation with digitally-enhanced teaching and learning.		Ongoing development	

Teacher Supports and Professional Development (PD)

The OTIS Learning Technologies team will coordinate and collaborate throughout the district to provide professional development opportunities for educators based on Learning Forward's Standards for Professional Learning conditions for success, which is also utilized by the Teacher Standards and Practices Commission.

- Equity Foundations: Educators establish a vision for equitable access to high-quality professional learning, create structures to ensure such access,and sustain a culture that supports the development of all staff members.
- Culture of Collaborative Inquiry: Educators commit to and drive continuous improvement, engage in collaborative learning, and take shared responsibility for improving learning for all students.
- Leadership: Educators establish a compelling and inclusive vision for professional learning, ensure a coherent system of support to build individual and collective capacity, and advocate for professional learning by making both the impact of professional learning and their own learning visible to others.
- Resources: Educators allocate resources for professional learning, prioritize their use to achieve a vision for equitable outcomes for all students, and monitor the impact of resource investments.

PPS will provide a variety of teacher support to develop and implement digitally-enhanced learning models to improve student outcomes. It's important to note that digital tools are to be used as solutions within professional development (PD) focused on instructional design and personalized learning.

Both technical and adaptive professional development is to be responsive to the immediate and future needs of teachers, ranging from basic technical skills (i.e. technical training on the use of a program), leveraging greater efficiency (i.e. collecting real-time student literacy data to inform instruction) to focused

professional learning on instructional design and educational technology (i.e. continuous formation of flexible instructional grouping based on data). This approach effectively meets teachers' instructional needs while modeling the practices being taught. Those needs and practices pertain to growth mindset, instructional design and strategies, and technical skills.

1. Growth mindset & cycles of inquiry:
    a. Frame the role of the teacher as "lead learner" in the classroom.
    b. Create a supportive climate that will encourage risk-taking and vulnerability as teachers self-evaluate their current skills and set goals to improve and grow.
    c. Recognize even incremental shifts in practice and understand that the community of learners will be expected to show growth along a developmental continuum, which ultimately calls for differentiated and personalized PD.

2. Instructional Design & digitally-Enhanced Learning:
    a. Support teachers in examining their classroom practice for opportunities to design learning that is personalized, responsive, and student centered.
    b. Digital tools can make this efficient and attainable, however, the technology or device should never be the "starting point" or driver of change.
    c. Foster skills for students to own and self-manage their learning by creating a classroom environment that clearly articulates, teaches, and regularly practices meeting expectations in regards to student behavior and self-regulation skills.

3. Technical skills:
    a. Basic skills to log on and navigate the teacher dashboard.
    b. Skills to input student data and access reports.

Critical Infrastructure and Security

System Shift: Connected and Transformative School District		
Goal: Establish and develop a reliable, resilient, and secure infrastructure.		
Key Actions Show ip	• Refresh Network Switches • Replace Wireless Access Points (WAPs)	• Upgrade Phone System • New phone handsets • Data Center Refresh • Security Assessment

	• Replace Fiber Interconnects	• Security Remediations • Security Dashboard

Over the years the core infrastructure of PPS has been neglected from a budgeting and prioritization perspective and left to fall well behind on upgrades and maintenance. The efforts over the next three to five years are designed to address the technical debt we currently have as well as to develop a regular cadence to upgrades and refreshes. Doing so will ensure the district does not accrue technical debt in the future. Defined here are the key elements of the infrastructure upgrades planned.

1. Establish and develop a reliable, resilient, and secure infrastructure.							
Key Actions	Performance Measures	2020	2021	2022	2023	2024	2025
Refresh Network Switches	- Switching devices refreshed -Developing firewall architecture plan -Increased network speed for all the district devices	Network switch refresh as part of Bond 2020 will occur 2022-2024 Developing 22-23 & implementing firewall architecture plan 23-25					On-Going Refresh
Replace Wireless Access Points (WAPs)	- Refresh all existing WAPs and add new WAPs for strong school-wide connectivity and availability	WAP replacement as part of the Bond 2020 will occur 2022-2025, followed by on going refreshed WAPs					
Replace Fiber Interconnects	- Replacing legacy fiber and adding additional fiber interconnects as needed. - Improved network reliability	Fiber Replacements as part of the Bond 2020 project will occur 2021-2025					
Upgrade Phone System	- District-wide switch to VOIP software -Handheld phone refresh -Classroom phones mounted to the wall	x	X	Classroom phone wall mounts	x	x	x
Data Center Refresh	- Server environment replaced (including +200 virtual servers) - Core data center switching elements replaced with firewall upgrades - Storage area network replaced	x	x				
Security Assessment	- Complete network security assessment with security report every three years		x	X			

	- Develop plans with targets to remediate and implement recommendations in reports						
Security Remediations	- Complete remediation and implementation from the Security Assessment - 2 Factor Authentication (2FA) for all staff - Single sign on portal deployed - Longer password enforcement - Enhanced logging to detect and remediate cyber events - Monitors and tools deployed to identify network threats (endpoint detection and response) - Create a security reporting dashboard for visibility -Strengthen security measures on wired and wireless networks -Modernization of core services architecture		x	x	x	x	x

Network Switching

Switches are the core components which allow all network traffic to move throughout the district and provide access to the Internet. They are also key components for providing telephone services throughout the system. Over the coming years in this plan all core and edge switching devices will be refreshed with new versions. Switches also are a critical component of building a strong foundation for a secure computing environment. Ensuring the switching infrastructure is updated and able to run the current versions of the operating system is critical in developing a secure digital environment. For this plan we are also incorporating our firewall deployments and upgrades as part of the switching infrastructure.

Wireless Access Points (WAPs)

PPS currently has 2,000 Wireless Access Points (WAPs) deployed in the district that are 8 years or older. All of these devices need to be replaced and will be as part of this plan. While still operational, they no longer can be replaced with similar items and are also unable to run advanced features that are critical in a network environment the size of PPS. Updated and current WAPs are also a critical element in building out a secure computing environment.

Fiber Interconnects

Fiber interconnects are the means by which the various wiring closets in a building are connected back to the main network wiring closet of switches at each building. The

number of wiring closets at each building varies based on the size of the school. Some buildings have only 2 closets (1 main distribution facility, MDF and 1 intermediate distribution facility, IDF). While others have as many as 8. The fiber interconnects create the backbone of the network and are a critical element in determining the speed of a building's network. Almost all of our buildings, with the exception of the newly modernized schools, need to have the interconnects replaced in order to match the demands being placed on the network, increase the overall speed, and to reduce the risk of network failure due to aging materials.

Phone System

The entire phone system including the handsets are in need of upgrading and replacement. PPS utilizes a VOIP based phone system, which means all handsets are a type of computing device that should be replaced at 4 year intervals. We will take this opportunity to align newly developed standards of handset placement in classrooms which are being deployed in all modernized schools. New handsets will be placed on the wall near the entry door for the classroom. This adheres to best security practices in the event of an emergency situation.

Data Center Refresh

Several years of funding shortfalls and lack of sufficient budget to focus on regular system upgrades and replacements requires a major overhaul of the systems that run in the district's data center. Components that will be replaced include the entire server environment which represents over 200 virtual servers performing critical business processes in the district. All core network switching elements in the data center will be replaced, including adding additional firewalls to secure the district both externally and internally. The storage area network, which servers utilize for storage and operations, will be replaced as part of this work. Uninterruptible Power Supplies (UPSs) will be upgraded and replaced as well.

Security

Building a digital security program has become a critical element for all school districts across the country. While PPS has been working hard to provide a secure environment we are in a position where we need to build a formalized security program to help ensure staff have the awareness required to function in a digital first district.

Security Assessment

We will bring in an outside security expert to provide an overall assessment of the district's security posture. This will be a comprehensive review of all elements in place, policies, practices, and awareness levels of critical staff. Critical staff would

include those offices and departments that are most vulnerable to attacks; technology, human resources, legal and risk management.

This assessment will take 4 months to complete and will lead to a security report. It will include the delivery of a remediation roadmap to address the most critical and critical elements that have been found as a result of the assessment.
We will spend the ensuing 36 months in remediation and implementation of security elements to tighten our security posture as a district. We expect to begin delivering a formal security program and 3-year assessment cycle as a result of this work.

Immediate changes that are planned to be deployed are as follows;

1. 2 Factor Authentication (2F): All PPS employees will need to confirm their identity through a second authentication method. 2FA protects against phishing, social engineering and password brute-force attacks and secures your logins from attackers exploiting weak or stolen credentials. Planned implementation will occur in the spring of 2022.
2. Single Sign On Portal: In conjunction with 2FA we will be deploying a portal where students and staff can launch all PPS software applications. This project will be completed in the spring of 2022.
3. Longer passwords for all staff and students will be enforced in spring of 2022.
4. Restructuring of local admin rights on all PPS devices to proactively reduce the severity of cyber security attacks and ransomware events while still allowing user installation of necessary software.
5. Creation of a guest wireless access network for all non-PPS devices while on-site at PPS buildings.
6. Threat detection and response: Create a cyber security dashboard to help monitor and deploy tools in real time.
7. Decommissioning of legacy applications and infrastructure
8. Modernization of core technology services

Device Refresh

The device refresh plan for the coming years has 5 distinct components to it; Teacher devices, administrator devices, support staff devices, student grades 3-12 for the 1:1 devices, and 2:1 device for students in grades PK-2.

2. Ensure students and staff have reliable devices for digital learning							
Key Actions	Performance Measures	2020	2021	2022	2023	2024	2025

Refresh grade 3-12 student devices	33,000 students with 1:1 Chromebooks		X				
Refresh PK-2 student devices	10,000 students with 2:1 Chromebooks (2 students per device)		X				
Provide assistive technology for PK-2 students	process to identify and meet assistive tech needs - # and % of identified students who have access to the appropriate assistive tech						
Refresh teacher devices	4,400 classroom teachers with PixelBook Go - # and % of non-classroom licensed staff with PixelBook Go	X					
Refresh administrator devices	250 school administrators with refreshed device (3 device choices)		X				
Refresh support staff devices	450 support staff with refreshed work stations (Windows-based desk computer)			X			
Implement 4-year device refresh plan	Year 4 we will contact the vendor to set up the quotes for the next Bond device refresh					X	

Each of these device refresh options will be deployed between 2019-2022. There are known limitations with many schools having insufficient wireless coverage in their building to fully take advantage of 1:1 devices for students that will rely upon the completion of the classroom modernization project to resolve. This will not stop the deployment of devices, but schools with limited wireless coverage will need to be cognizant of the building limitations and how to mitigate those issues when all students, or a majority of students, have a device available to utilize for learning.

The comprehensive nature of this plan has been put together to resolve an issue that has not been addressed in PPS over time. There has been no history of a centralized purchasing process and subsequent refresh of computing resources for schools. This has resulted in schools having to rely on their limited discretionary funds (grants and PTA supported projects) to provide updated computers for many essential positions.

With this plan the goal is to move to a centralized procurement system that sets the stage for regular refresh and upgrade cycles managed from the district office. This will create a system where devices are refreshed regularly and also remove the burden

from schools trying to find resources to purchase new devices for staff and students. In addition, by providing the same devices district-wide the OTIS team can support all device support infrastructure and push software updates effectively to ensure equity.

The 5 components of the Device Refresh are as follows.

- Grades 3-12 One-to-one devices: All students in grades 3-12 will receive a Chromebook for their use. The devices will be used year round so students can use them for classroom work or at home for assignments.
- Grades PK-2 and Assistive Technology: In grades PK-2 Chromebook Carts will be provided for each classroom containing 15-20.Chromebooks with touch capabilities will be provided to schools to ensure a ratio of 1 device for every 2 students. These will be located in the buildings/classrooms for use during the school day. Assistive Technology will be a new process for the district and we will be working with the staff in the Student Support Services to determine what will be needed, as the needs may change based on the assistive needs of different students.
- a. Licensed Classroom Staff: Classroom teachers will receive a PixelBook Go for their instructional use. As a result of the COVID-19 shutdown these devices have been ordered and will be distributed to teachers in January and February of 2021.
  b. Non-classroom licensed staff: Positions in the school but not in the classroom, such as Teacher on Special Assignment (TOSA), instructional coaches, Media Specialists received a PixelBook to use as their primary work device. Those devices were distributed in the fall of 2021.
  C. Non-classroom licensed staff: counselors and psychologists, etc. will also receive a ChromeBook to use as their primary work device. These devices will be ordered in early 2019 and be made available upon their arrival.
- Administrators: School/building based personnel will have their computers refreshed as well. Administrators will have an option to receive the same device as their teaching staff, or they will be offered the opportunity to select an Apple laptop or a Windows-based laptop. These will be distributed in the fall of 2021.
- Support Staff: Support staff at buildings will receive a refresh of work stations at critical office locations. These will be Windows-based desktop computers. These devices will be distributed in the spring of 2022.
- For support positions that need mobile computing devices there will be a supply of Chromebooks made available to each school that staff will be able to access and use for in-classroom support, meetings and professional development.

All of these elements are being planned, built, and organized in a way to create a regular cadence for device refreshes and upgrades. All of the devices will need to be replaced in 4 year cycles. This will create a reliable and usable infrastructure the district can rely upon and utilize to make educational program decisions knowing

there is reliable technology available to students to fully realize the potential of a digital learning experience.

Classroom Modernization

PPS has adopted a long-term school modernization program beginning back in 2012. These are comprehensive efforts which modernize an entire campus and create an updated and modern environment for students and staff. To date PPS has completed 4 full site modernizations: Roosevelt High, Grant High, Franklin High, and Faubion PK-8. These schools have received updated classroom experiences that all schools in the district should have available for their students.

The classroom modernization will create a foundation for all classrooms that will allow for the utilization of technology to become an integral part of the teaching and learning experience for all students.

Classroom modernization will be deployed to all of the primary learning rooms in schools across the district. This will also include band/choir rooms. The following elements will comprise the classroom modernization effort:

- **Desktop computer** - Each classroom will receive a desktop Chrome computer that will remain in the classroom and will be designed as the center of the teaching experience for the room. Having dedicated computers in all classrooms has the benefits of ensuring there is always a device to present from, available to substitute teachers, and available to ad hoc learning situations. It also greatly reduces difficulties which arise from connecting laptops to projectors and diminished disruptions to the instructional process.

- **Mounted projector** - Each classroom will receive a wall mounted projector. This is essential for providing equitable viewing access to all students in a classroom. See image 1 below for the impacts of viewable screen size on a classroom.

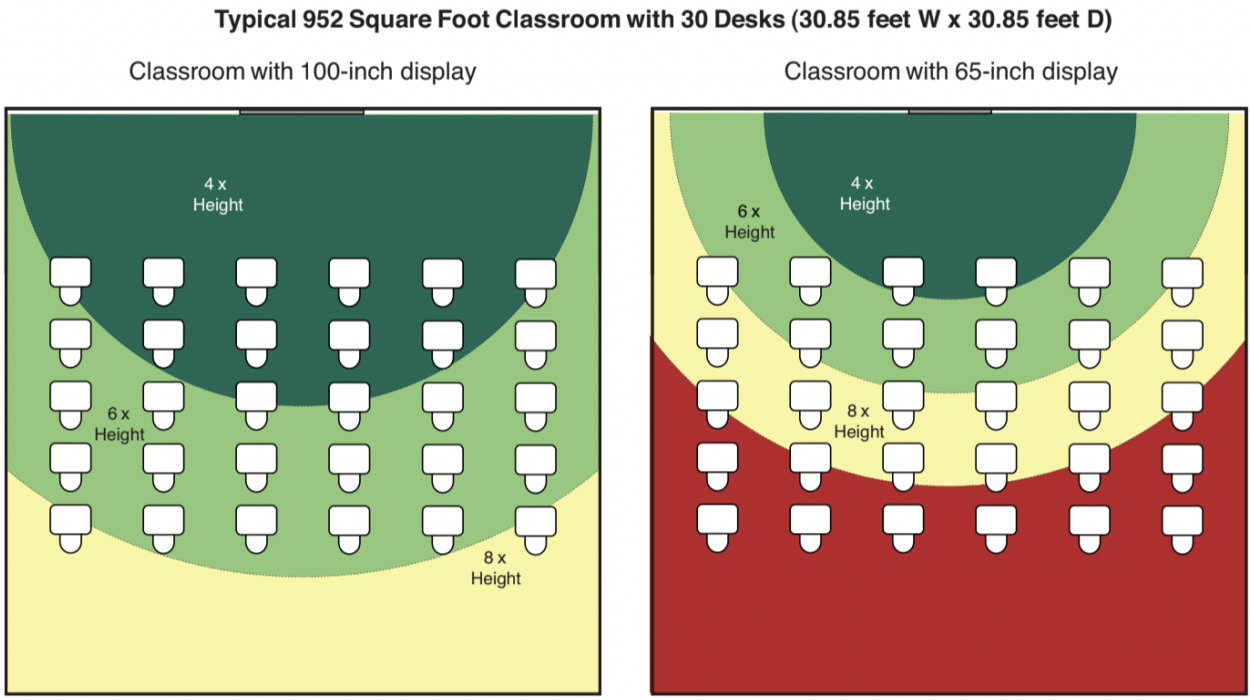

Image 1

- **Projection Surface** - a projection capable glare-free whiteboard will be installed.
    - For those classrooms that do not have a space available for the new wall mounted whiteboard, a NEC backlit LED display will be available on a moveable cart in the classroom.

- **Wireless Access Point (WAP)** - Classrooms that do not currently have a WAP in the classroom will have one installed. Additional WAPs will also be installed in large spaces like gymnasiums, libraries, cafeterias, etc. to ensure that all schools will have sufficient wireless coverage to support a 1:1 student computing program.

- **Voice Amplification** -In-classroom teacher voice amplification will be installed. There is research that shows there is enhanced student improvement as well as reduction in classroom behavior issues. Additionally, it provides equitable access to a teacher's spoken words for hearing impaired and English learning students.

- **Wireless Display** - Along with a mounted projector connected to a desktop computer, each classroom will have an Airtame2 wireless display device installed. This allows students to have access to the projector to share their

thinking and work with the entire class, as well as allowing teachers to utilize their laptop device to project from wherever they are in the classroom.

This project will take multiple years to complete. Schools that are slated for full building modernization include Jefferson, Cleveland, and Ida B. Wells-Barnett High Schools. These schools will require further conversations with the building leadership and the Office of School Modernization to develop reasonable and workable plans that make the most sense and utilize funding responsibility.

Classroom modernizations will occur in phases that will take place over the course of five years to complete. The initial plan deployment will take place in the Winter of 2022 at Boise-Eliot/Humboldt, Lane Middle School, George Middle School, and César Chávez. These four schools will receive both the infrastructure updates as well as the classroom modernizations at the same time. The complexity of these projects will provide opportunities for learning and process improvements that can be employed as we continue to roll out the projects across the district.

Each school will be a critical design partner in the classroom modernization process. Prior to work, the school Principal will be engaged to define the classrooms as well as to define a site wide design for where the teaching wall will be placed in each room. The teaching wall is the location where the projector will be aimed and the projection surface will be mounted. Each school will vary in age and older school buildings will add additional complexity to the project timelines. Therefore each school is projected to take one to four months to complete the classroom modernization.

The webpage, project timeline, the classroom modernization project overview video, and on-going community newsletters will be available in different languages so that all community members are updated in their home language.

Classroom Modernization							
System Shift: A. Connected and Transformative School District B. Racial Equity Aligned Systems, Structures, and Culture D. Transformative Curriculum and Pedagogy							
Goal: All classrooms have the same classroom technology for an equitable experience							
Key Actions	Performance Measures	2020	2021	2022	2023	2024	2025
All classrooms	Increased student			x	x	x	X

have the same classroom technology for an equitable experience	engagement in the classroom and equity with technology will result in increased graduation rates.						
Teacher audio amplification installation in classrooms	Decreased teacher vocal strain, increased comprehension from all students, and increased student participation.			x	x	x	X

District-Wide Business Transformation

The cloud first vision will be utilized for the creation of business transformation best practices district-wide. These will help guide the ERP replacement system, Classlink, data warehouse and will be considered when building additional processes.

Cloud First Vision

PPS needs to invest in cloud based technology to reduce data center costs and enable rapid and scalable response to emergent technology needs. PPS will engage in a migration assessment that evaluates on premise workloads for transition to cloud hosting. This assessment will provide PPS with a long-term, sustainable approach to support students and educators for the next decade and bridge the gap between systems to build a unified experience. All new software, technology processes, and data interchange will be designed and implemented in a cloud native environment.

Modernizing Analysis Platform

The PPS data analysis platform is over 10 years old and requires modern techniques to be adopted in order to answer the questions of the modern school district. During this time the sources and amount of data that requires analysis and storage has expanded tremendously. PPS needs to not only be able to know the trajectory of students' education, but also be able to prescribe remediation plans to students before they fall out of the system. OTIS is committed to partnering with internal stakeholders to provide centralized and standardized platforms for data aggregation and analysis and providing new tools to teachers and administrators that allow for data informed analysis.

Unified Portal Experience

Students, Teachers, and Administrators are using more applications and tools than ever before. The quantity of these systems presents challenges both in terms of user experience and security. OTIS will centralize these tools so that all users have a single portal that eliminates the searching for tools and password recall. This portal allows users ease of access and seamless security. This portal will also enable OTIS to inform teams of the cost-to-value ratio for applications so that we can provide the best education for our students.

ERP Replacement

PPS is running an aging Enterprise Resource Planning (ERP) application that has been in place since 2000. Along with the ERP being outdated, there has been a large amount of turnover of key staff in both the finance and human resource departments which leaves a knowledge gap in process and feature management in the current ERP.

We will partner with an outside consulting firm to help with the business analysis and transformation process documentation for all of the processes and workflows currently in place. The team will then evaluate the current practices with the capabilities of the current ERP, compare current practices against a model of best practices and efficiencies. The output of this effort will be a business requirement report. The business requirement evaluation will inform the development and release of an RFP to replace the current ERP. The posting and acceptance of a request for additional funding for the RFP for a replacement system and implementation will coincide with the Bond 2025 request.

Once the ERP system is in place it will provide an innovative and digital environment through a streamlined ERP that enables the transformation of the student and staff experience. The new ERP will provide an improved user experience, scales comfortably with expected growth, allows for agility over time, lessens the burden associated with manual efforts, and prepares all users to lead PPS towards a student-centric and service-oriented environment.

Gartner Point of View – Why Replace an ERP Solution?

- ERP replacement only occurs when the existing legacy system is beyond even extensive renovation—

  When operational business risks outweigh the benefits of maintaining the current ERP system and processes

- Gartner researches and tracks the typical reasons why both commercial and government organizations replace their ERP solutions—these are listed at right.

After initial discovery activities and interviews, Portland Public Schools is dealing with most of them.

ERP Replacement							
System Shift: A connected and transformative school district							
Goal: Once the ERP system is in place it will provide an innovative and digital environment through a streamlined ERP that enables the transformation of the student and staff experience, improves the user experience, scales comfortably with expected growth, allows for agility over time, lessens the burden associated with manual efforts, and prepares all users to lead PPS towards a student-centric and service-oriented environment.							
Key Actions	Performance Measures	2020	2021	2022	2023	2024	2025
Executive Visioning			x				
Business Case			x				
Formal Kickoff			x				
Detail Design			X				
Procurement				X			
Project and Change Management				X			

Implementation Planning				X			
Implementation					X	X	

Refresh Process

One of the primary goals over the next 5 years will be to put the district on a sustainable and manageable path for the technology infrastructure in the district. When describing infrastructure that includes personal computing devices for both staff and students. Keeping the infrastructure elements updated and refreshed on a predictable timetable ensures that critical functions remain operational, requires less labor and hours to maintain and support, creates greater uptime, costs less to provide updates and upgrades, and ensures the continuity of the instructional processes which depend upon a healthy technical infrastructure.

Through the multiple bonds and scheduled improvement projects over the next five years, the district will be in a position to be able to move forward with regularly scheduled updates and upgrades to all aspects of the technical infrastructure. Whether through future bonds, levys, or from funds in the general fund budget these efforts will need to be funded in the future to ensure the health, safety, and operations of the district. Failure to adhere to this plan will put the district back in technical debt which will require a similar large financial investment and another monumental human effort to update them. So part of the work over the next five years will be to develop a funding model for regular updates.

Refresh Plan							
System Shift: A connected and transformative school district							
Goal: Keep all technology updated through forecasting and scheduling tech refreshes on a proactive basis.							
Key Actions	Details	2022	2023	2024	2025	2026	2027
Device Refresh: Student 1:1 and 2:1 Chromebook	Received devices fall 2021, 5 year warranty					X	
Device Refresh: Teacher Pixelbooks	Received fall 2019, 1 year warranty		X				

Device Refresh: Admin	Received fall 2021 MacBook, HP Elitebook or Pixelbooks					X	
Device Refresh: Support Staff	Received devices winter and spring 2022						X
Wireless Access Point (WAP) (Bond 2012, Bond 2017, Bond 2020)	WAPs should be refreshed at 6 year intervals.				X		
Network Switching (Bond 2012, Bond 2017, Bond 2020)	Switches and firewalls should be refreshed at 6 year intervals.	X					X
Fiber Interconnects	Determined by advancements in fiber technology and ability of current infrastructure.						
Phone System	Core phone system - minor releases updated regularly with major upgrades every 2 to 4 years. Handsets - should be refreshed every 4 years.				X	X	
Data Center Refresh (Bond 2020 - 2021 installation)	Different components will be on different schedules. Server elements should be refreshed on a 4 year cycle. Switches and firewalls should be on a 6 year cycle. The storage area network should be refreshed on a 8 year cycle.				X		X
Teacher Station Chromebox Desktop Refresh	Should be replaced every 4 years				X		

(Bond 217, Bond 2020)							
Mounted Laser Projector	Should be evaluated for refresh every 6 years.						X
Lightspeed Audio Amplification	Replaced as needed due to wear, damage, or technology advancement.						
Wireless Displays	Should be refreshed every 6 years.					X	
Library cart, OPAC Station Refresh, and computer Refresh	*In 2021 they are using 8-9 year old computers for OPAC station and check out computers. Additional funding requests are needed. Bond 2020 will update the Librarian's teacher station computer in 2022-2023	X					
In Classroom Document Cameras	Additional funding request					X	
Gym AV, Auditorium, and Common Space AV	Additional funding request						X

Updates and Refresh Schedule

Library Refresh

- We will add a request into Bond 2025 for additional funding for more carts and more computers that are available in the library.

Document Cameras

- We will add a request into the Bond 2025 for additional funding for document cameras for in-classroom teachers usage to replace the previous ones.

Gym AV, Auditorium, and Common Space AV

- We will add a request into the Bond 2025 for additional funding for the gyms, auditorium and common space av and display systems.

Additional Resources

International Society for Technology in Education

In-Classroom Voice Amplification Research

Portland Public Schools Reimagined
Preparing Our Students to Lead Change and Improve the World

Portland Public Schools Forward Together
2021–2025 Strategic Plan for Racial Equity, Inclusion, and Excellence

OTIS Outcomes and Performance Measurements (all listed above in each section)