ATLANTA
PUBLIC
SCHOOLS

Making A Difference

Three Year Technology Plan

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Atlanta Public Schools

July 1, 2015 – June 30, 2018

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Acknowledgments

Atlanta Public Schools is indebted to students, school District personnel, and community members for their insights and guidance during the development of this Technology Plan. We would specifically like to acknowledge the following individuals:

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SPECIAL THANKS & APPRECIATION

Many sincere thanks to students, Teachers, Principals, Media Specialists, and representatives from each of the following divisions: Curriculum & Instruction, Communications, Operations, Finance, Human Resources, and Accountability & Information Technology who participated in surveys, round table discussions, and group meetings.

About Atlanta Public Schools

Atlanta Public Schools (APS) is one of the largest Districts in Georgia, serving more than 50,000 students at 106 learning sites throughout Atlanta, including two single gender campuses and 17 charter schools. APS is organized into nine high school clusters with distinct feeder patterns. The cluster model allows all students from a particular elementary school to matriculate at the same middle school, and students enrolled at that middle school to attend the same high school. The cluster model also provides greater access to a more equitable distribution of resources and multiple layers of support. To view cluster feeder patterns, refer to Appendix A.

APS Mission

With A caring culture of trust and collaboration, every student will graduate ready for college and career.

APS Vision

A high performing school District where students love to learn, educators inspire, families engage, and the community trusts the system.

Atlanta Public Schools Fast Facts 2014 – 2015

Student Enrollment	52,700
Elementary Schools **Primary Campuses**	5
Elementary Schools K–5 & Intermediate Campuses	47
Middle Schools	12*
High Schools Non–Charter **Open Campus**	18* 1
Alternative/ Non–traditional Programs	4
Evening School/ Adult Education Programs	2
Charter Schools	17
Total APS Learning Sites & Programs *Includes two single–gender campuses	106

Ethnic Distribution of Students

African–American	76.2%
Caucasian	14.3%
Hispanic	6.7%
Multiracial	1.6%
Asian/American Indian/Alaskan/Other	1.2%

Other Facts About our Students

Students Eligible for Free– and Reduced Prices Meals	77.32%
Number of 2014 Graduates	1,905
Scholarships offered to Class of 2014	$100 Million
Number of Title I Schools	91
FY15 General Fund Budget	$657.5 Million
Number of Students Transported Daily	22,000

A t APS, we believe that schools, clusters, and the central administration need to align and collaborate to ensure that every child is college and career ready. To that end, each of these teams is responsible for working together to ensure that student outcomes are improved. Over time, APS will prepare to transition to a new operating model. This means:

□ School leaders and school teams will be empowered through flexible, school–based decision–making including the use of resources to meet students' needs
□ Clusters will collaborate to plan and align instructional programming across neighborhood schools
□ Schools and clusters will have the opportunity to innovate and inform instructional programming and environments that best meet the academic and social–emotional needs of their students;
□ Central administration will manage and provide recommended guidance for standards, curriculum systems, and graduation requirements to ensure excellence and equity across the District.

One of the important mindset shifts APS is making within the organizational culture is putting students at the top of how APS thinks, feels, behaves, and operates. The traditional pyramid of a top–down structure is inverted so students are at the top. We are creating an organizational culture where everyone's primary focus is on students and their educational outcomes, and understand the important role we all have in supporting student learning. At each level of the organization, we are redirecting support to front–line students and staff.

Figure 2 - APS Strategic Goals 2015-2020

ACADEMIC PROGRAM...
Our students will be well-rounded individuals who possess the necessary academic skills and knowledge and are excited about learning.

TALENT MANAGEMENT...
We will retain an energized and inspired team of employees who are capable of advancing ever-increasing levels of achievement for students of all backgrounds.

SYSTEMS AND RESOURCES...
We will improve efficiency (productivity, cost, etc.), while also making decisions (including resource allocations) that are grounded in a strategic academic direction and data.

CULTURE...
We will build trust with the community, and we will have engaged stakeholders (*employees, students, parents, community members, partners, etc.*), who are invested in the mission and vision and who support the creation of student-centered learning communities.

Figure 1 - Organizational Culture, Focusing on Students
APS Strategic Plan 2015-2020

APS five–year strategic plan pairs the strengths of the District with a theory of change that is highlighted in an updated strategy map found in Appendix B. This map organizes the work into four strategic goals: (1) Academic Program; (2) Talent Management; (3) Systems and Resources; and (4) Culture. The strategic goals provide guidance for APS leadership in the development of policies and regulations, objectives, strategies, and initiatives to achieve the vision.

~APS Strategic Plan 2015–2020

Executive Summary

The mission of Atlanta Public Schools (APS) states that "With a caring culture of trust and collaboration, every student will graduate ready for college and career." Being college and career ready in an ever–changing global economy, means acquiring knowledge and skills in academia, through the use of technology, to communicate, collaborate, and solve problems.

The Accountability and Information Technology Department has built this three–year technology plan to align with the District's 2015 – 2020 "Strong Students, Strong Schools, Strong Staff, Strong System" strategic plan. The planning process involved gathering feedback from students, teachers, staff, and community through surveys, group discussions, school site visits, and meetings with all administrative departments. The process also involved extensive research, identifying the best practices for educational technology tools.

The plan is structured by department, with each program summarizing its current access and use of technology, or how it operates to support technological implementations, its future vision to enhance technology access and use, and the challenges that must be addressed to achieve the future vision, or the gap analysis. The seven goals, listed below, emerged in response to the collective current reality, future vision, and growth areas. This plan outlines what is needed to achieve the APS overall vision of being a high–performing school District where students love to learn, educators inspire, families engage, and the community trusts the system.

1. Technology Infused Instruction Facilitating Engaged Learning
- Engages students by enhancing the quality of teaching and learning through the effective integration of technology and instruction.

2. Flexible Academic Options
- Increase flexible academic options and schedules to provide on-time support, increase student retention, and expand curriculum offerings.

3. Provide Consistent and Reliable Service and Support
- Provide a robust infrastructure that features high internet speeds, high resource availability and reliability, maintain a knowledgeable support system, and manage a comprehensive application portfolio to support students, teachers, and staff.

4. Data Integrity with Asset Management
- Protect and manage physical and data assets used for teaching, operations, and decision making.

5. Technological Efficiencies among Administration and Staff
- Increase staff effectiveness through technology, by enabling data-driven environments that streamline managing and maintaining day-to-day operations.

6. Integration through Professional Development
- Provide role base professional development to keep teachers, staff, and administration current on best practices for technology use and integration.

7. Increase Collaboration with Parents and Community
- Fully utilize technology to communicate in a timely manner that is clear, concise and transparent to increase collaboration with parents and the community.

Figure 1 - Technology Goal Summary 2015-2015

The seven goals, accompanied by details on when and how they can be accomplished in the Goals, Strategies, and Benchmarks table found on page 47.

Accountability & Information Technology

The Accountability and Information Technology Department is responsible for the technological implementations for the Atlanta Public Schools District. It is made up of four departments:

1) Infrastructure and Production Support Services

2) Business Applications and Management Support

3) Student Applications, Testing, Assessment, and Evaluation

4) Instructional Technology

The Infrastructure and Production Support Services Team maintains the District's data center, operating systems, workstations, email, network, security, telecommunication, and other technology platforms. The department is also responsible for managing IT assets, providing first level support through the service desk, and desk–side support to the schools through Field Support Technicians.

The Business Applications and Management Support Team maintains and supports the District's enterprise resource planning system (Lawson ERP), and other mission critical business applications, such as SharePoint and Kronos. This team is also home to the IT Project Management Office, which leads the delivery and risk management for technology implementations.

The Student Applications, Testing, Assessment and Evaluation Team provides leadership and support in accountability, planning, performance measurement, reporting, and testing.

Instructional Technology provides job–embedded professional learning that encourages the use of technology to support student learning.

Accountability & Information Technology

Virtual Schools · Instructional Technology · Infrastructure Operations · IT Security · IT Service Delivery · Student Applications · Business Applications · Testing · Assessment · Project Management Office · Evaluation · Research
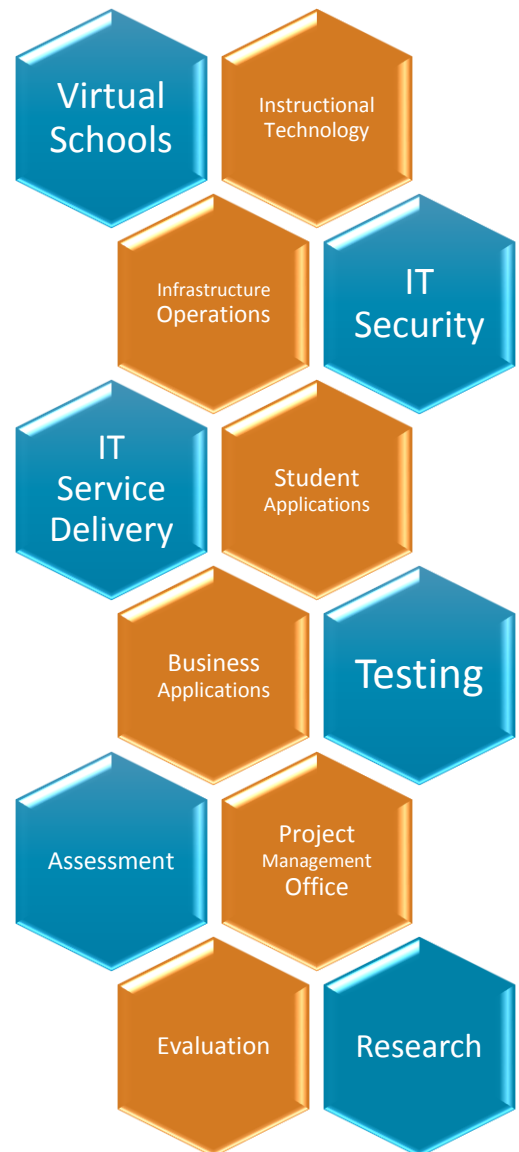
Figure 2 - Breakdown of the Accountability and Information Technology Division

Accountability & Information Technology Mission

Design, execute, and monitor effective and efficient processes that support all levels of technology use for students, teachers, staff, and community. Through state of the art technology, students will have access to 21st Century Classrooms that prepare them for college, career, and beyond.
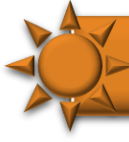
Accountability & Information Technology Vision

To promote a culture of transformative uses of technology where all students, teachers, staff and community use relevant and innovative digital tools.
We will promote, provide and support:

Reliable infrastructure that provides foundation for fully leveraging all technology

Connected classrooms that foster collaboration and communication

Safe online environments and responsible digital citizenship

Equitable access across the disrict to high quality technological platforms

Efficient environment, drivin by sound data, to optimize student achievement and operational decision making

Figure 3 - Accountability & Information Technology Vision Provisions

APS is currently moving towards seamless technology integration throughout the District, not only within the classroom, but also with the classroom support system, at the administration level. The Accountability & Information Technology Department provides the servers, network, hardware, application, integration, and support solutions needed to fully leverage the technologies that allow teachers to deliver a relevant and highly engaging learning experience, in a 21st century classroom.

Through standards–based technology integration practices, APS is creating engaging and empowering learning experiences for all students that reflect their lives and their futures. Teachers employ technology to implement relevant, rigorous, and engaging learning experiences that promote student creativity and learning. APS administrators create, promote, and sustain a shared vision that maximizes the use of digital resources to meet learning goals, supports collaborative and technology–based instructional practices, and enhances the performance of District and school leaders.

With student enrollment at approximately

52,700

APS provides a student to instructional computer ratio of

2:3

*Excludes Charter School Enrollment

District Technology Fast Facts
Atlanta Public Schools 2014 – 2015

Network Infrastructure

Type of WAN Connection	Land Line – Fiber
Core Network	10GB
WAN Speed 85% of APS Learning Sites 15% of APS Learning Sites	100MB 1GB
Wireless Access Points	Est. 1,600+
Classrooms with high–speed internet access	100% (3,180)

IT Support Services

Field Support Technicians Provide level 2 hardware and software support for end users	47
Educational Technology Specialist Work with educators to integrate technology into the teaching and learning process	17
Infrastructure/LAN/WAN Support Provide level 3 network, wireless, server, telecom, email and internet security support	19
Application Support Support the Districts enterprise applications	3
Service Desk Provide level 1 support for end users and document all calls and emails in regards to technology needs and issues	11
IT Logistics Support Manages assets at IT warehouse and provides warranty and break/fix support	6
Technology Administration Executive support for all levels of information technology	6

Student Labs

Virtual Desktop Lab	187
Mobile Carts	280
CTAE Lab	44
Desktop / MAC Lab	24
TOTAL STUDENT LABS	**535**

The full APS Annual District Technology Inventory Survey 2014-2015 can be found in Appendix C.

Network

Current Reality

The APS enterprise network infrastructure runs on both Cisco and HP platforms, with approximately 4,000 switches. The District's backbone network is located at a central data center, and it is connected to the Internet via two Internet Service Providers (ISP), with a total bandwidth of 2.9 GB.

Most of the schools and remote administrative sites connect back to the District data center via the 100Mb Metro–E Wide Area Network (WAN) circuit, with the exception of the 16 schools that have a 1GB WAN circuit.
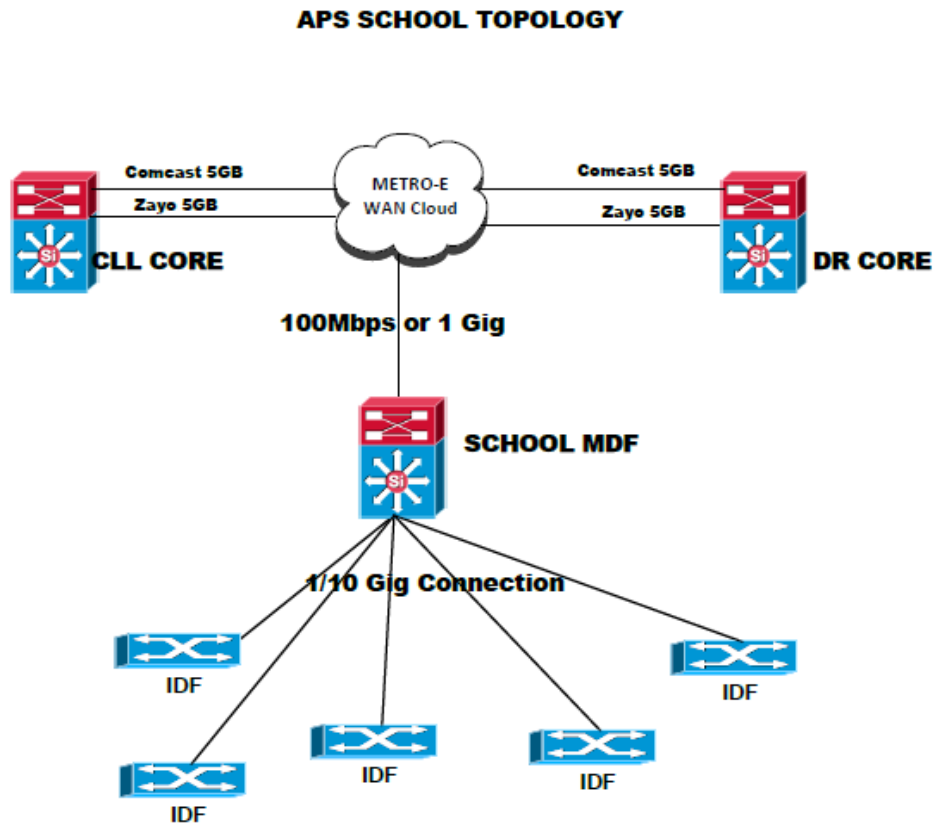
Figure 4

Gap Analysis

Considering the drive towards a "21st century classroom", in which the model of instruction is leaning towards heavy use of online instructional technologies, namely in the areas of video and multimedia content, and online testing, the current 100MB WAN circuit, present in most schools, is inadequate to support the requirements.

Currently, network switches are installed in the classrooms. It is very expensive to support and present multiple points of failure and security vulnerabilities.

Future Vision

It is recommended that connectivity between the data center and all remote sites be upgraded to a minimum 1 GB WAN circuit. Data usage demands support this need as a short–term plan to ensure adequate bandwidth is available for online instructional activities.

The future of instructional technology will be characterized by the ever increasing amounts of multimedia contents traversing the enterprise network. Therefore, it is recommended that APS implement a private fiber ring solution. This will provide direct fiber connectivity between the data center and all remote sites. Future bandwidth demands can easily be fulfilled by simply installing the appropriate fiber optics.

The APS WAN connectivity will be migrated from the current Metro–E circuit to a 10 GB private fiber ring topology. The picture below shows what the future APS WAN environment could look like:
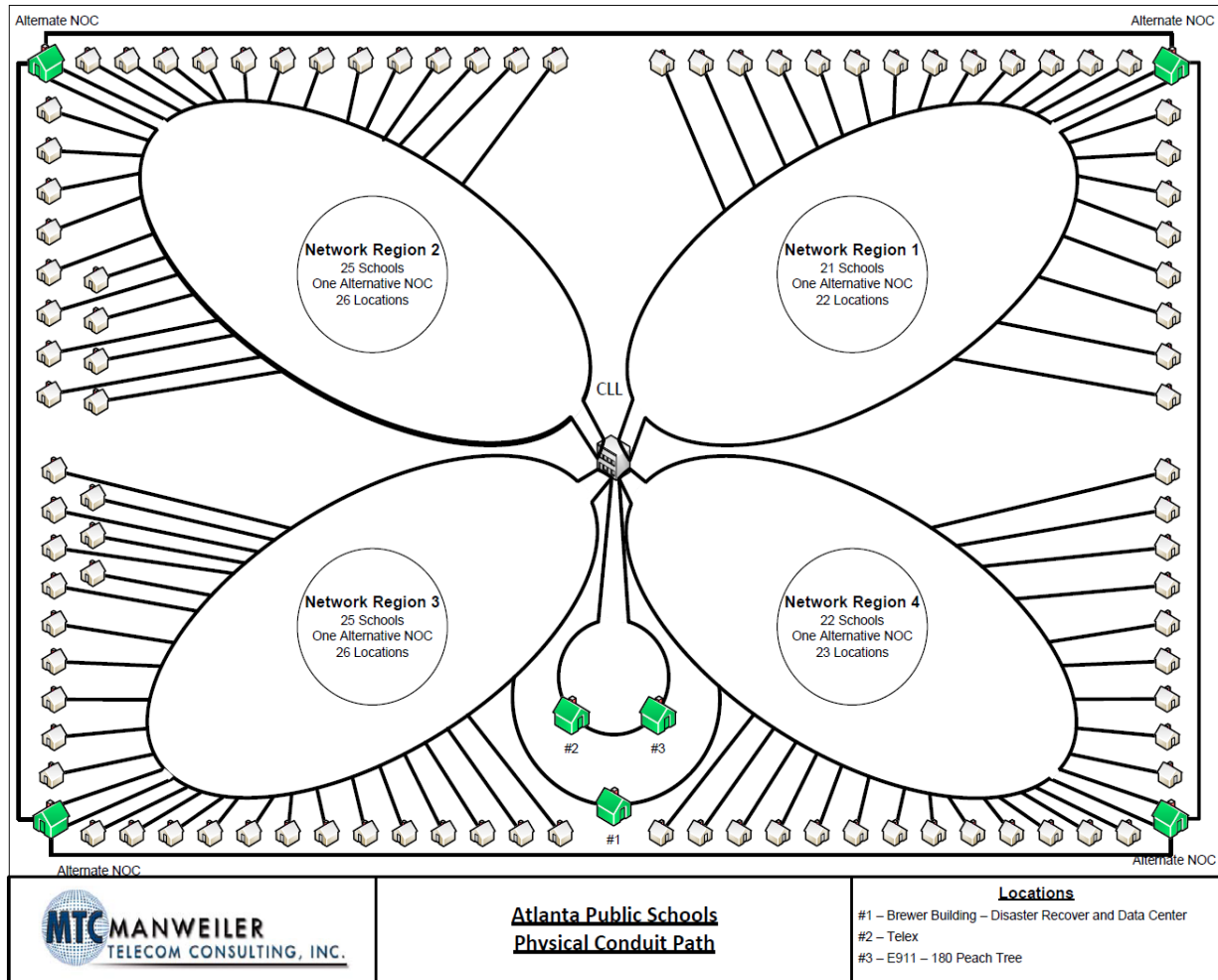
Figure 5

As depicted in Figure 7, APS sites will be divided into four zones, with each zone constituting a ring – 4 rings in total. There will be 1 intra–regional ring at the center, or Data Center. Each ring will have roughly, 21 to 26 sites and 1 Hub–site, the Alternate Network Operations Center. A Hub–site is a school location, or main distribution frame (MDF), that is central to the zone.

All sites will aggregate back to APS's Data Center:

- There will be a single data center at main APS location
- Data Center will have a direct connectivity to each Hub–site over 80 GB.
- Data Center will have a direct connectivity to each school/site over 10 GB.
- Data Center will have a direct connectivity to Telex (disaster recovery) over 10 GB.
- Data Center will have a direct connectivity to the disaster recovery (DR) site over 40 GB.

Data Center

Current Reality

- **Data Centers** – APS currently has two Data Centers
  - Primary Data Center is located at the Center for Learning and Leadership (CLL)
  - Disaster Recovery Data Center is located in the Brewer Building
- **Servers** – 2,700+ servers including 200+ physical servers and 2,500+ virtual servers
  - HP rack–mounted servers
  - IBM PureFlex chassis and blade servers
  - IBM Blade Center chassis and blade servers
  - IBM p–Series AIX servers
  - Cisco UCS chassis and blade servers
- **Storage** – 900+ terabytes of SAN storage, a pair of virtual tape libraries (VTLs), and a physical tape library
  - IBM Storwize V7000s
  - IBM DS3500s
  - IBM DS4700s
  - IBM ProtecTIER VTLs
  - IBM TS3500
  - Whiptail SSD arrays (Cisco Invictas)
  - Nimble Storage
- **Data Center Networking** –
  - HP core and distribution switches
  - Cisco switches
  - Load Balancers
    - F5 Big–IP 3900 (2)
    - Citrix Netscaler 11500 (2)
    - Kemp Virtual Load Master 10GB (2)
  - DNS/DHCP
    - Bluecat Proteus
    - Bluecat Adonis (2)
  - Content Filtering and Mobile Device Management
    - Lightspeed Web Rocket (2)
  - Next Generation Firewall
    - Palo Alto (2)

- **Operating Systems** – APS is predominately a Microsoft Windows Server environment, running on a VMware virtual infrastructure for our production business server environment, and running a Citrix environment on top of Microsoft Windows Hyper–V for our virtual desktop infrastructure (VDI).
  - VMware vSphere 5.5U2
  - Microsoft Windows Server 2003 through 2012 R2
  - AIX 6.x and 7.x
  - CentOS 5.x
  - Citrix XenApp and XenDesktop 7.x
- **Database** – APS is predominately a Microsoft SQL Server database environment, with Oracle as the backend for our Lawson ERP environment.
  - Microsoft SQL Server 2005 through 2012
  - Oracle 10
- **Backups** – APS utilizes IBM Tivoli Storage Manager (TSM) to backup various systems in the District.
  - TSM for Mail to backup Exchange
    - Weekly full and daily incremental backups
    - Currently at 1500 day retention
    - Currently over 567TB in each storage pool (primary and copy)
  - TSM Backup/Archive Client to backup data from selected servers
    - Incremental forever backups daily
    - 31 day retention
    - Currently over 55TB in each storage pool (primary and copy)
  - TSM for Virtual Environments to back up our VMware infrastructure
    - Incremental forever backups on Tuesday and Thursday each week
    - 12 versions retained (approximately 6 weeks)
    - Currently over 53TB in primary storage pool only (no copy pool for this environment)

Gap Analysis

- Retention policies need to be defined for backup data, particularly regarding email backups.
- An email archiving solution would address the need for e–Discovery and open records requests regarding email, eliminating the need to rely on email backups for these requests, allowing for shorter backup retention of email data.
- Additional storage needed to accommodate redirected My Documents for all staff
- Additional storage needed to accommodate increasing mailbox size for users
- Additional storage needed for future growth and expansion of our VMware environment
- Additional infrastructure needed to host a private cloud for providing services to charter schools in the future
- Additional tools to proactively monitor and maintain our virtual infrastructures are needed

Future Vision

- Data Centers
  - APS is in the process of planning the migration of the current Disaster Recover Data Center to a hosted Data Center.
  - Create a new virtual lab environment with enough host server, storage, and network resources to migrate all development, testing, and proof of concept workloads out of the production virtual environment.
- Servers
  - Upgrade VMware environment to VMware vSphere 6.x
  - Upgrade Microsoft Window Hyper–V environment in the VDI environment to Microsoft Windows Server 2012 R2 and Microsoft System Center Virtual Machine Manager 2012 R2
  - Upgrade guest servers to Microsoft Windows 2012 R2 and eventually Microsoft Windows Server 2016 once it is released into the mainstream marketplace
- Storage
  - Expand storage capacity by adding an additional SAN storage to accommodate future growth needs
    - Add fiber channel Nimble Storage array
    - Segment development, test, and proof of concept workloads off of production SAN environment
- Backups
  - Work with the Policy and Governance Team to come up with appropriate retention policies
  - Migrate to an email archiving solution to allow for reduced retention of email backup data
  - Continuously review what is being backed up with the Application Support Team to ensure that all appropriate data is being backed up as needed
  - Schedule regular periodic testing of restores from the backups to ensure our ability to recover in the event of a disaster
  - Upgrade to the newer versions of IBM TSM and also survey more cost effective options for backing up the virtual environment.
- Other Infrastructure Projects
  - Determine the options available for monitoring our virtual infrastructures and implement a solution
  - Implement redirected My Documents for additional staff members
  - Create a private cloud infrastructure for hosting of services that can be offered to charter schools

Virtual Desktop

Current Reality

APS implemented a virtual student desktop environment that runs on a Citrix platform. The District is part of Citrix's partner for life program and we've also partnered with a preferred Citrix partner for assistance with Citrix related issues. The student desktop environment supports approximately 18,000 Wyse zero client endpoints to accommodate approximately 50,000 students.

Gap Analysis

The current infrastructure has the following limitations:

- The current infrastructure does not easily support printing.
- Software requests typically do not follow any type of standard/process.
- The current design/architecture was performed by a third party vendor whose services were terminated during the project.
- Staff resources: Presently, there is one primary resource that supports the environment for the District.
- The initial project was designed for solely for students; however, staff/employees are using the solution.
- Inadequate knowledge transfer, due to the termination of the vendor mid–project

Future Vision

To achieve the future vision of an efficient, reliable and safe virtual computing environment, APS will take the following steps:

- Secure enough human capital to support the Citrix environment fulltime
- Working in collaboration with our Citrix partners, fully document our current architecture to include process flows that detail the routes taken from the end points though the system.
- Develop an effective and efficient printing solution
- Standardize software request process
- Define and communicate for whom the VDI environment is intended. If the VDI solution is to be continually extended to staff, develop a strategy around using VDI to support staff.
- Institute regular meetings with Citrix and our partners to ensure APS is following best practices.

Telecommunication

Current Reality

The current APS telecommunication infrastructure runs on the Cisco platform. The signaling protocol is Session Initiating Protocols (SIP) with Cisco Unified Border Element (CUBE) as the Session Border Controller providing voice and video connectivity. Cisco Unified Communication Manager handles APS' call processing.

Cisco Service routers are installed at each remote site (1 per site) for Survivable Remote Site Telephony (SRST) services. SRST services take full advantage of a remote site's existing network to provide multi–feature redundancy for centralized Cisco call–processing deployments. This is valuable during WAN link failures, because local call processing can continue unhindered, and emergency calls, such as 911, can be processed in the event of an incident.

Gap Analysis

APS telecommunication infrastructure follows industry standard clustering set–up however, all cluster–servers (1 publisher and 2 subscribers) are housed in the same building. This set up constitutes a single–point–of–failure in the event that a disaster makes the building inaccessible for operation. The current Call Manager version is two revisions behind. Old IP Phones need to be upgraded. A great majority of APS' 3,300+ IP phones, are end of life models. Antiquated Cisco Service routers have reached end of life and are currently malfunctioning and failing.

Future Vision

- **Upgrade Call Manager** – To upgrade to the latest version of Cisco Call Manager the hardware must be upgraded. The upgrade process will include:
  - The current Call Manager is appliance based and will be converted to a Virtual Appliance. The latest version can only be installed on a Virtual Appliance.
  - Call Manager will be upgraded to the latest Version 10.5.2.
  - The Polisher Server and one Subscriber Server will be located at the Data Center.
  - One Subscriber Server will be housed at the DR location.
- Upgrade older IP phones to the latest model.
- Upgrade antiquated Service Routers to the latest model.

Collaboration Tools

Current Reality

- **Email** – APS is utilizing an on premise email infrastructure employing Microsoft Exchange Server 2010 running on physical servers for staff. We are taking advantage of Microsoft Office 365 Email for our students.
  - We have over 15,000 mailboxes in our current environment.
  - Mail flow is currently running about 120,000 messages, totaling almost 8GB in size, through the transport layer each month.
  - We utilize Microsoft Exchange Online Protection to filter both incoming and outgoing external emails for spam.
  - We have all student email mailboxes housed in the Microsoft Office 365 cloud.
- **Collaboration** – APS currently utilizes Microsoft Lync Server 2010 for Instant Messaging, Presence, Online Meetings, and Voicemail for staff

Gap Analysis

- Email
  - **Microsoft Exchange Version** – The version of Microsoft Exchange we are utilizing is currently out of mainstream support with Microsoft, meaning there will be no more updates.
  - **Monitoring** – We monitor the Microsoft Exchange environment via Microsoft System Center Operations Monitor (SCOM), which sends out alerts via email. If we have issues with non–delivery of email, alerts will not be received.
  - **Documents and Attachments** – Newer Microsoft Exchange versions integrate better with Microsoft SharePoint for better document handling than our current capabilities
  - **High Availability/Disaster Recovery** – Newer versions of Microsoft Exchange are equipped with self–recovery capabilities and handle disaster recovery more gracefully.

- o **Mailbox Size** – There is an increased demand for larger mailboxes, which newer versions of Microsoft Exchange are capable of supporting.
- ❑ Collaboration
  - o **Monitoring** – We are using the same Microsoft SCOM tools to monitor the Microsoft Lync environment with similar limitations, as previously mentioned.
  - o **Functionality** –
    - ▪ The current infrastructure does not allow connections with Android devices
    - ▪ Group Chat, which provides tighter collaboration among staff members, especially those groups frequently collaborate, is not currently installed
    - ▪ Federation with Skype is not available
    - ▪ Web conferencing is limited and we have no ability to schedule meetings via the web
  - o **Disaster Recovery** – Disaster recovery for the current environment is expensive and difficult to implement and manage

Future Vision

- ❑ Review and implement a monitoring system with a display that allows for more proactive monitoring
  - o A proof of concept (POC) is being planned with the trial version of Enow Mailscape (for Microsoft Exchange) and Enow Uniscope (for Microsoft Lync).
- ❑ Perform migrations to new versions of our applications
  - o Microsoft Exchange from 2010 to 2013 and ultimately 2016
  - o Microsoft Lync from 2010 to the rebranded Microsoft Skype for Business Server 2015 which replaces the functionality of Microsoft Lync
- ❑ Disaster recovery will be built into the design of the new Microsoft collaboration environments
- ❑ Courses are being planned to acquaint the users on the capabilities of Lync/Skype for Business

Wireless Infrastructure

Current Reality

APS wireless infrastructure runs on Xirrus platform, with approximately 1500 wireless access points (AP) installed across the District. The access points are installed in hallways providing wireless connectivity coverage in classrooms. The infrastructure is designed to provide signal strength of –65db.

There are 2 on premise controller servers used in managing and monitoring the wireless infrastructure, each serving half of the APs. The controllers have no load balance capability, each is a standalone controller. Failure of either of the controllers will not cause a wireless connectivity outage, however, it does create the inability of the Wireless Specialist to manage the APs while the controller is down.

Gap Analysis

The current wireless infrastructure has the following limitations:

- ❑ **Capacity & Coverage** – The current deployment model does not provide sufficient coverage or capacity to meet current and future business needs, especially with the ever increasing use of mobile devices for instruction.
- ❑ **Optimized Performance (802.ac Compliance)** – The current wireless infrastructure does not have

the capability to support optimized performance, a feature of the latest wireless technologies, such as 802.11ac/ad.

- ❑ **Ease of Management & Monitoring** – Because the management servers cannot support redundancy and are only available on–premise or over VPN, the current wireless infrastructure does not lend itself to easy management or monitoring.

Future Vision

The District has recently entered into a contract to implement a managed services solution, which is being designed to close the existing gaps. The team plans to implement the following strategies:

- ❑ A new design will be implemented providing the District a wireless infrastructure of a 1:1 model. This will put 1 AP per classroom, in hall–ways, office areas, auditoriums, gyms, conference rooms, and other instructional spaces across the District. This scalable design model will provide adequate coverage and capacity.
- ❑ **Install Optimized Performance Capable APs** – The new upgrade will replace the current Xirrus Arrays with Cisco Meraki APs. The new Meraki APs will be optimized for high performance, and are compliant with 802.ac/ad standards. They also feature backward compatibility with older technologies, such as 802.11a/b/g/n.
- ❑ **Cloud–Managed Service** – The new upgrade will also come with a cloud–managed service that will allow access to manage the infrastructure from anywhere over the internet, 24/7 monitoring, and alerting capabilities.
- ❑ **Student Wireless SSID** – There will be a separate wireless network specifically provisioned for students.
- ❑ **Bring Your Own Device (BYOD)** – The APS board has approved a BYOD policy which will allow APS staff and students to bring in their own devices and connect securely to the APS network.

Application Support

Current Reality

Application Support consists of a four person team that is responsible for application scripting, imaging, and software deployment for the District. The tools that are used to accomplish application support as it relates to software distribution, are LANDesk and Microsoft System Center. The tools that are used to accomplish application support as it relates to application scripting, are AutoIt, Orca, AppDeploy (Kace), and Powershell. Requests for application support services are generally requested via the District's work order system (HEAT), or via projects.

Gap Analysis

Application Support has the following limitations:

- ❑ **Absence of Application Support Request Process** – Oftentimes, requests are made at the last minute via an email, phone call, or hallway conversation. Additionally, requests typically do not have the technical specifications required for the Applications Support Team to successfully complete the request.
- ❑ **Inability to Accurately Monitor Software Licensing** – Information Technology does not have oversight on all software related purchases made by the District.
- ❑ **Standardization of Hardware Platforms** – The District currently allows sites to purchase hardware independently.
- ❑ **Not Fully Utilizing Software Tools** – For example, two systems that the District owns, LANDesk

and System Center, have the capabilities of streamlining and automating several existing processes (e.g., OSD, Provisioning, and Workflow).

Future Vision

The team plans to implement the following strategies:

- Develop and implement software acquisition requests and deployment processes for the District
  - The District should have a standard way of requesting, testing, and deploying software. These processes should be understood and factored into the timelines of associated projects.
- Collaborate with Procurement to develop processes that restrict the purchase of software until vetted by Information Technology
  - Allow Information Technology the ability to manage all software licensing for the District, thus allowing better support from the Applications Support Team.
- Develop, implement, and enforce hardware standards.
  - This will allow for better software and hardware management.
- Pair training with application rollouts.
  - Training given at the appropriate time(s) is a step towards leveraging our tools' full capabilities.

IT Security

Current Reality

Information sharing is vital to carrying out the District's mission to ensure every student will graduate ready for college. Information about students, staff, courses, programs, facilities, and fiscal activities is collected and maintained, so that the District can effectively coordinate services offered to students, measure learning progress, assign and monitor staff responsibilities and resource use, and provide other valued services to our communities.

As the District becomes more reliant on technology and the computing environment for instruction, student assessment testing, educational record keeping and data access, it is essential to have an effective information security strategy that will protect the confidentiality, integrity, and availability of the District's information assets.

Currently, the security infrastructure consists of:
- Palo Alto next generation firewalls detect and block sophisticated attacks, by enforcing security policies at the application level.
- Lightspeed web filter and mobile device manager provides safe internet access for our teaching & learning environment. Different levels of access have been defined for students, teachers, and administrative staff. The tool also allows teachers to control web content for the classroom, while IT maintains centralized control and reporting.
- Trend Micro provides anti–virus and endpoint protection to servers and workstations.
- Tenable Vulnerability Scanner is used to scan devices on the APS network and report vulnerabilities to the operational teams for mitigation.
- Active Directory/Forefront Identity Manager are identity management tools used to manage user digital identity, credentials, and groupings. With the use of Active Directory group policy, the IT Team is able manage users and govern the specifics of how users and computers operate within the APS network, and provide a consistent security configuration in the environment.

APS Information Technology has made great strides to improve the security infrastructure, however more needs to be done in the areas of organization policy and processes to minimize security risks. These risks include but are not limited to:

- Critical system failures
- Unauthorized access to confidential information
- Loss of electronic educational records
- End–point patch management

Gap Analysis

Although APS IT has implemented some cutting edge security technologies, there are still many challenges with managing security risks mainly due to the lack of, or the need to re–engineer organizational and operational policies and processes. Information security policies must be a shared vision that requires input and commitment from the whole organization. IT Security will need to collaborate with other IT teams to develop policies that align with organizational strategic goals. There is no way to effectively deploy, manage, and confirm patch updates to client devices. End point patches are typically pushed out using tools that do not give feedback to the deploying system or tool.

Future Vision

The vision of IT Security is to safely secure the District's assets by establishing an IT Security Framework that will enhance the educational experience. This will be accomplished by building relationships and collaborating with IT leadership and other organizational leaders to provide appropriate security policies, processes, and controls that will incorporate security practices into the daily use of the District's information assets.

This vision includes four strategic objectives and 8 key initiatives necessary to iteratively improve the security posture of the District. Assuming that there will be sufficient resources for people, processes, and tools, it will take 1 to 3 years to fully implement all of the objectives.

- **Proactive Risk Management** – Initiatives that will support this objective will allow data owners and administrators to be more aware of the security risks that their information assets are vulnerable to, identify controls to reduce those risks, and understand what risks remain after any identified controls have been implemented.
- **Data Loss Prevention** – Initiatives that support this objective will help the District reduce the likelihood of data loss or disclosure of confidential or federally protected data.
- **Improved Security of System and Network Services** – Initiatives that support this objective will support a defense in depth architecture and provide increased security of critical services. Many of these initiatives and projects are required to be in place according to Federal regulations and various State laws (FERPA, HIPAA, GLBA, GPIPA, etc.)
- **Crisis and Security Incident Management** – Initiatives that support this objective will help the District recover its information assets in the event of a catastrophic event or service disruption. Additionally, these initiatives will enable the District to manage security events more efficiently and effectively, thereby reducing or minimizing damages.

IT SECURITY

KEY INITIATIVES	KEY BENEFITS
1. Security Regulations, Standards and Guidelines Framework	• Clear Security Baselines for all departments • Policy based foundation to measure results • Consistent application of security controls across the enterprise
2. Information Security Risk Management	• Enables the District to identify and proactively manage risks • Will provide a consistent methodology for identifying and reporting risks • Ensures that risks are being accepted at the appropriate level of management • Ensures data is identified, classified and appropriately secured
3. Operation Continuity and Disaster Recovery	• Enables the District to continue to provide critical services in the event of an emergency or disaster • Ensures that the District is able to recover its systems and services to the user community in an appropriate time frame
4. Identity & Access Management	• Better Security through uniform and repeatable access control processes • Reduced potential for security breaches and fines due to non–compliance with federal /state regulations
5. Vulnerability and Threat Management	• The ability to remediate weaknesses before they are exploited by hackers • The ability to create inventory of all technology assets • The ability to deploy, manage and track patch updates
6. Information Security Education & Awareness	• Better awareness of security threats and their impact on information assets • Fewer security incidents • Common knowledge for all District employees and students
7. Security Incident Management	• The ability to promptly respond, contain and manage security incidents • Reduce the risk of legal infringement (e.g. copyright law and Personal Data (Privacy) Ordinance ("PDPO")
8. Security Information & Event Management (SIEM)	• Improved ability to identify complex cyber attacks • Reduce time and cost to investigate security incidents • Provide a holistic view of IT security

IT Service Delivery

Current Reality

Our current IT Service Delivery Team consists of the Client Support Service Desk (Level 1 support), Field Support (Level 2 support), program and project management, as well as escalation support from the Integrator Team.

The Client Support Service Desk serves as first–level support for all APS staff, contract staff, Charter schools, and students to report technology issues. It currently operates from 7:00AM to 5:00PM and logs all reported incidents in the HEAT ticket management system. Service desk personnel use remote management tools to access client computers to manage software updates, install drivers, and other local system management activities.

Client Support also manages a testing support hotline and sets up other direct support hotlines during high volume call cycles (e.g., 1st Day of school, registration periods, testing periods, etc.).

Field Support consists of 47 technicians, contractors, who perform a wide–range of troubleshooting for both District hardware and software to support our 87 instructional sites and 8 administrative offices. The Field Support Technicians support incident management of approximately 28,000 desktops and laptops and 6,000 promethean boards being utilized by 47,000 students and 4,500 instructional staff personnel.

The Service Integration Team consists of 6 staff persons with management responsibility for the following groups and focus areas:

- Service Desk
- Field Technicians
- Asset Management (IT Warehouse)
- Interactive Technology

The Integration unit also serves internal business units as project liaisons and representatives on cross–functional teams working to ensure that project initiatives are properly transitioned into supportable operational models that will serve our school users. This includes, but is not limited to, working with external vendors for hardware orders, ensuring contract compliance and volume pricing discounts, when possible. Additionally, the Service Integration Team acts as the single point of contact for escalation of all school incidents requiring management insight and strategic decision–making.

Gap Analysis

The current hours of the Client Support Service Desk does not fully support the needs of instructional staff who need to make support contact after 5:00 PM and during after–school activities. In addition, the hours do not lend to full event monitoring in the APS Network Operations Center (NOC).

The existing ticketing system is difficult to manage and requires third–party support to create reports on SLAs, OLAs, other KPI metrics. Greater functionality is needed either via upgrade, or the addition of other support modules to provide more asset management functions. Currently, the very poor line of sight into the mobile hardware investments we have made to support teachers, result in frequent loss of assets.

Charter school support is a grey area, as definitive support models remain undefined. Flexibility will be needed should multiple charter schools decide to purchase their technology services via APS internal resources.

Additionally, if the charter cluster District is approved by the Board of Education, more personnel will be needed to provide more timely and individualized services to our end users.

Field Support operates under a coverage model determined by school size. Currently, all school sites are covered at either a 1:1, 1:2, or 1:3 ratio, with administrative offices being serviced at a 1:4 ratio. These ratios dictate the site rotation schedule, and result in some incidents waiting up to 3 days to be addressed.

The Service Integration Team supports many initiatives and projects without a very clear focus on roles and responsibilities. They perform a wide–range of functions including vendor management, contract compliance, and pricing negotiation. The interactive technology manager provides level 3 support, quotes for replacement parts, and relocations for the 2,600+ interactive boards, at the 89 APS instructional locations, with the support of only 1 dedicated support person. The asset management integrator operates with a fluctuating team of 2–4 persons, and supports parts inventory and handling, the loaner device program, warranty remediation, and hardware deliveries to all APS locations. Hardware deliveries are most frequently handled in personal vehicles, as the IT Department does not have access to a lift gate truck to support large scale hardware deliveries and collections.

Future Vision

The Service Desk will increase staff to provide support hours from 7:00 AM to 7:00 PM ensuring that both instructional and administrative staff have access to high–level phone support throughout the business day. Staff will also be expanded to ensure 24/7/365 event monitoring of the NOC. Proactive event monitoring supports better internal and external communication and would represent a significant improvement in the operational support of the existing District network infrastructure.

A new ITIL–compliant ITSM suite will be implemented, supporting robust event, incident, and problem management ticketing and tracking processes. The ITSM suite will also include key asset management components, such as a configuration management system (CMS), to better support management and tracking of all mobile configurable items (CI). This will result in all laptops and tablets barcodes and serial numbers being tracked and tied to employee records, for better data accuracy and visibility of hardware resources.

Field Support should move to a clear 1:1 (technician per school) support model to better serve the District's technology focus and lessen downtimes of technology incidents that adversely impact the instructional day. Moreover, 1:1 will create better collaborative partnership opportunities with schools, with respect to PTA or Foundation sourced technology purchases. With the increased human resources, we would also be able to better support internal IT infrastructure projects.

The Service Integration Team will have more clearly defined roles allowing for close interpersonal contact with school administrators and staff. The ideal future of Service Delivery includes the following components:

- Expansion of School Integration by at least 1 staff person to flatten the support structure and provide better management of field technicians
- Implementation of a new ITIL service desk application that would replace HEAT and provide improved service management, escalation and customer support with a technical knowledge base component
- Expansion of Client Support Service Desk, by at least 2 persons, to provide the District with support scalability
- Addition of one (1) more dedicated interactive support technician to better service the volume

of interactive incident support tickets and decrease the time to issue resolution

❑ Assignment of one (1) Integrator with responsibility for all administrative locations to better support APS Operations personnel

❑ Assignment of at least one (1) lift–gate vehicle to better support large scale technology pick–ups and deliveries

❑ Assignment of at least four (4) dedicated IT Warehouse personnel and one (1) IT Warehouse lead to better facilitate the warranty management process, parts inventory, and overall asset management activities including annual site inventories

❑ Project management based activities will be transitioned to the IT PMO office to ensure that high–performing service management and integration, in support of APS instructional initiatives, remains the single most important component of the IT Service Delivery division

Business Application Team

Current Reality

The Business Applications Team works alongside other departments and offices in Information Technology by managing, supporting, and administering more than 20 software information systems. The applications and systems include:

- Lawson
- Kronos
- SharePoint

- AiM
- Destiny
- Lenel

The responsibilities of the Business Applications Team include:

- Providing user support and helping users optimize use of applications
- Evaluating new technologies, in partnership with business owners
- Administering system configurations and role authorizations
- Facilitating process improvements
- Providing courses and training solutions for users
- Ensuring integrity and improving accuracy of data and sources
- Deploying new technologies

Lawson, the District's comprehensive enterprise resource planning software, provides financial management, human capital management, procurement, and analysis functionality to APS. Currently, Lawson is an on premise solution. However, beginning in school year 2015–2016, APS will be transitioning the current platform to cloud hosting. This will prove to be a more cost–effective platform that will help APS to lower total cost of ownership. Moving Lawson to the cloud will also allow us to sunset some existing, separate applications, and eliminate many manual processes. This will allow the Lawson Team to improve its support of the District's core business processes, which includes Payroll, Accounting, Budgeting, Procurement, and Human Resources.

Gap Analysis

Currently, the Business Applications Team supports a number of applications and business processes in the District. As the team looks toward the future, the following gaps have been identified:

- Higher levels of integration are needed between applications
- Many manual business processes need to be automated
- There are many applications that house data that would be helpful for the business to access – the team needs to determine how to help the business easily access this data to optimize the business processes
- There needs to be a streamlining and simplification of operational support processes to bring greater efficiencies to operational support, and allow for more focus on projects.

Lastly, the team needs to create a vision for charter school support. There are several business applications that charter schools currently access and may desire to access in the future. Flexibility will be needed should multiple charter schools decide to purchase business technology services from APS. Additionally, if the charter cluster District is approved by the Atlanta Board of Education, more personnel will be needed to provide more timely services to our end users.

Future Vision

The Business Applications and Management Support Team will undertake efforts to:

- Improve integration of applications
- Automate key business processes
- Help the organization access key data housed in the District's applications
- Streamline operational support processes
- Further define support to charter schools.

Project Management Office

The Mission of The Atlanta Public Schools IT Program Management Office is to provide quality program delivery and execution of projects and strategic technology initiatives, throughout the District. This is accomplished by providing a standard program management methodology, standard templates, and a staff of highly trained and certified program managers.

The Vision of the Atlanta Public Schools IT Program Management Office is to enhance the student learning experience by consistently delivering strategic technology initiatives throughout the District. The benefits include:

- Increase *visibility* to project risk(s)
- Increase the ability to leverage District–wide *contracts and agreements*
- Increase *communication* across the District
- Increase organizational knowledge of proper program management *methods*
- Decrease project *delivery time*
- Decrease *project spend*
- Effectively manage vendor relationships

Data Strategist Support

During the 2014–2015 school year, data strategist visits were scheduled by request. 2015–2016 will have a more specific schedule of support. The following process outline is tentative. In the future, each data strategist will tailor their support according to feedback from their aired associate superintendent.

Prior to meeting, principals review the results dashboard. Data strategists review summative school data with principal and leadership team to identify areas of strength and weaknesses. The data reviewed includes Milestones and Benchmark test results, attendance, suspension, CAAS, and climate data. Schools with weaknesses will include these areas for their school improvement plan. The data strategist records notes from the meeting, including the action steps, and shares it with the associate superintendent and principal. The principal uses the notes and action steps for evidence of assessment and data use (LKES standard 3), during LKES process. Schools whose performance is of the lower 50%, are expected to participate, while other schools' participation is optional.

Testing Support

Formative Assessment Specialist – develop assessments that target benchmarks, SLOS, Georgia Milestones, and host of other tests.

Testing Support Specialists, Student Assessment Coordinators, and Research Assistants as a group, work with testing coordinators ensure secure test administration, provide professional learning on Phoenix, CAAS, and design and implement online testing strategies. The testing staff has 1 team member to cover high schools, 1 team member to cover middle schools, and 2 team members to cover elementary schools.

Current Reality

As depicted in Figures 8 and 9, APS currently supports 30,145 instructional computers across 89 traditional learning and administrative sites. A typical classroom is outfitted with high–speed internet access, an interactive whiteboard, and four virtual desktops. With a traditional student enrollment at approximately 43,000, APS provides a student to instructional computer ratio of 2:3.
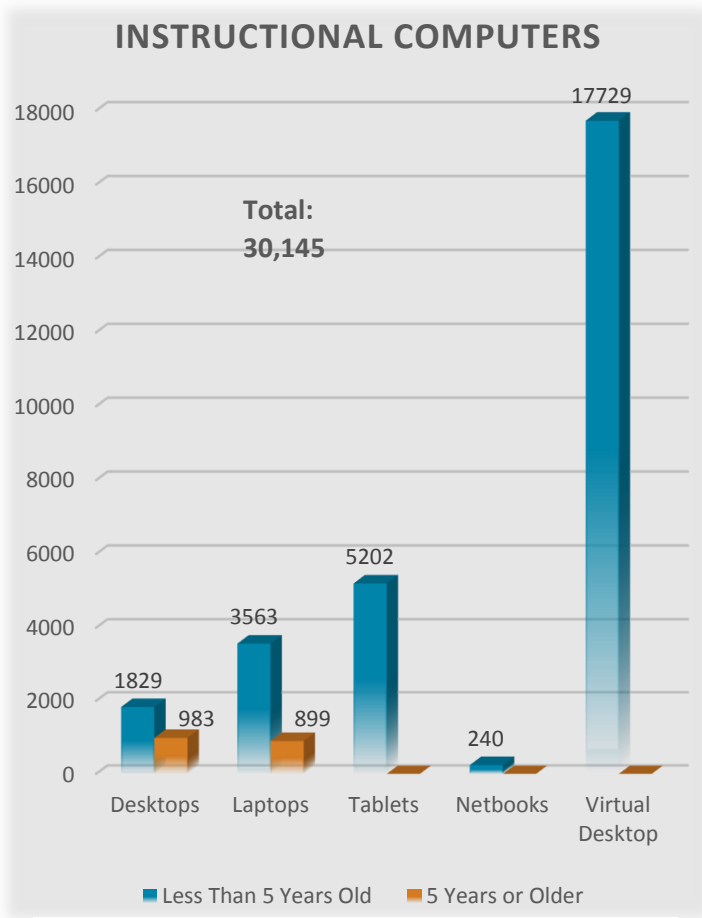

Number of Computers in Classroom

- 10+ Computers
- 6-9 Computers
- 3-5 Computers
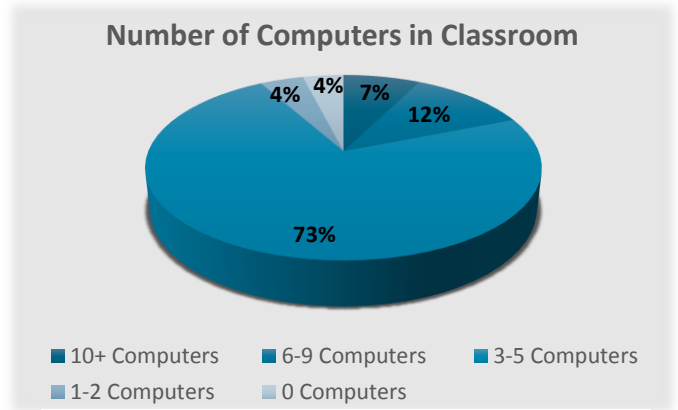- 1-2 Computers
- 0 Computers

Figure 9 - Average Instructional Computers per Classroom

Printers, scanners, document cameras, and student response systems are also available. Current inventory for peripheral equipment is listed below.

INSTRUCTIONAL COMPUTERS

Total: **30,145**

Figure 8 - District Wide Instructional Computer Inventory

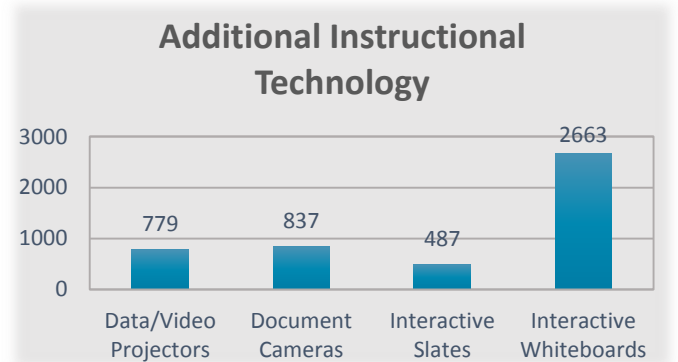**Additional Instructional Technology**

Figure 10 - District Wide Peripheral Instructional Hardware Inventory

APS has implemented a teaching and learning portal, myBackPack, complete with digital instructional resources that aid in collaboration, critical thinking and the creation of products using 21st Century skills and resources. Appendix D and E contains a list of major instructional tools used throughout the District.

Instructional Technology & Common Core

In July 2011 the State of Georgia adopted the National Educational Technology Standards for Students (NETS–S. This standard is defined by the International Society for Technology in Education (ISTE) defines the NETS as "A set standard of excellence and best practices in learning, teaching, and leading with technology in education."
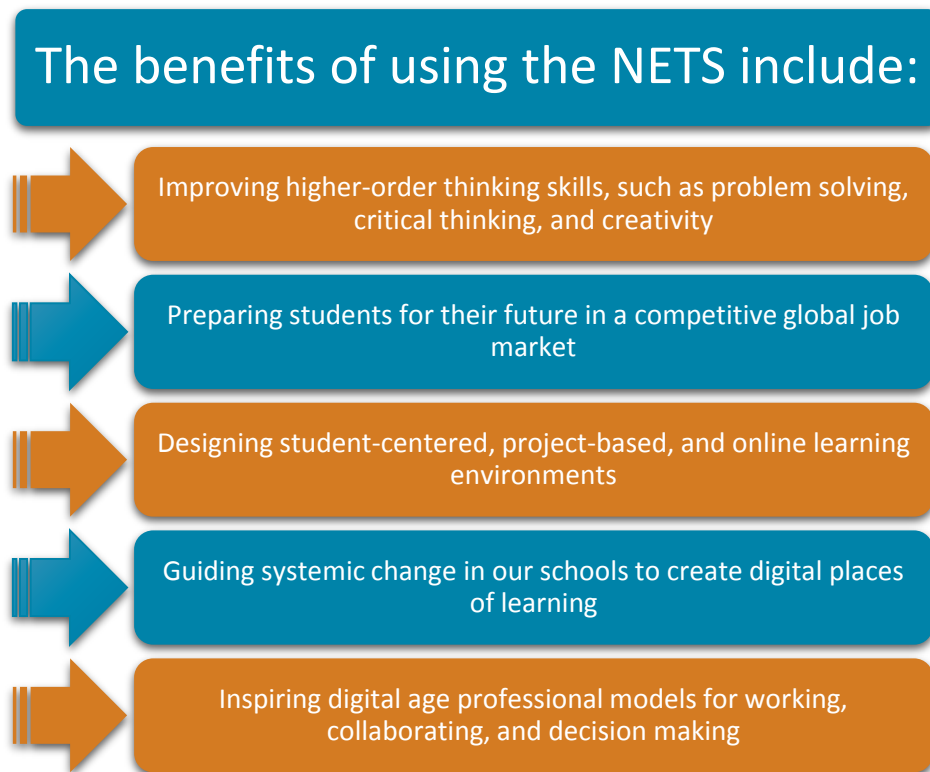
The benefits of using the NETS include:

→ Improving higher-order thinking skills, such as problem solving, critical thinking, and creativity

→ Preparing students for their future in a competitive global job market

→ Designing student-centered, project-based, and online learning environments

→ Guiding systemic change in our schools to create digital places of learning

→ Inspiring digital age professional models for working, collaborating, and decision making

Figure 10 - NETS-S Benefits

According to ISTE, "technology, when used effectively, can help students meet and exceed rigorous learning goals. It can also give educators access to tools and resources that personalize instruction and create relevant, engaging learning environments." Under the Obama administration, education has become an urgent priority driven by two clear goals set by the president:

- By 2020, we will raise the proportion of college graduates from where it now stands (about 41 percent) so that 60 percent of our population holds a two–year or four–year degree (National Center for Public Policy and Higher Education 2008).
- We will close the achievement gap so that all students graduate from high school ready to succeed in college and careers.
- To accomplish these goals, we must embrace a strategy of innovation, careful implementation, regular evaluation, and continuous improvement. The programs and projects that work must be brought to scale so that every learner has the opportunity to take advantage of that success. Our regulations, policies, actions, and investments must be strategic and coherent.

~National Educational Technology Plan 2010

The Levels of Technology Innovations (LoTi)

The Instructional Technology Department performed a Levels of Technology Innovations (LoTi) survey to measure classroom technology use among teachers. The LoTi scale focuses on the use of technology as an interactive learning medium where the challenge is not merely to use technology to achieve isolated tasks (e.g., word processing a research paper, creating a multimedia slideshow, browsing the Internet), but rather to integrate technology in an exemplary manner that supports purposeful problem–solving, performance–based assessment practices, and experiential learning.
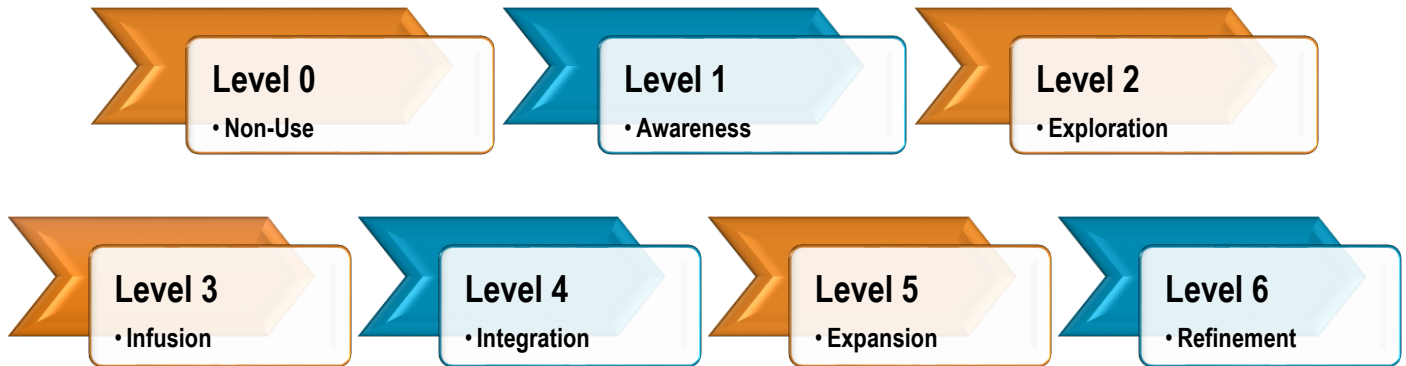
Level 0
• Non-Use

Level 1
• Awareness

Level 2
• Exploration

Level 3
• Infusion

Level 4
• Integration

Level 5
• Expansion

Level 6
• Refinement

Figure 11 – LoTi Level Definitions
The full LoTi Level definitions can be found in Appendix F.

The results from the 1,547 APS participants (responses from all grade levels) revealed that 53% were classified as non–use, Awareness, or Exploration (Levels 0–2) with the other 47% of the participants spanning Infusion to Refinement (Levels 3–6) where the technology use is more student–centered.
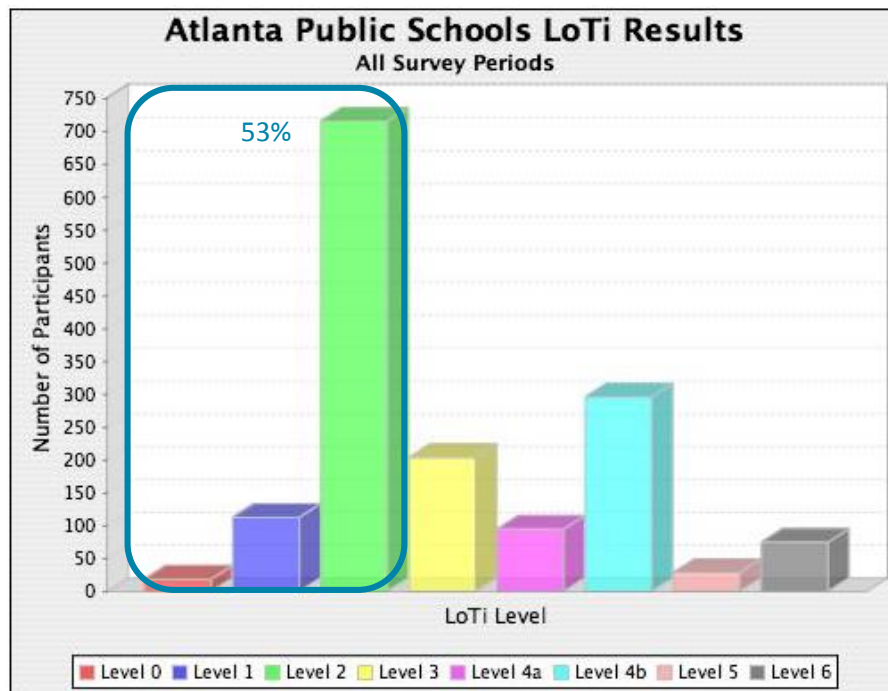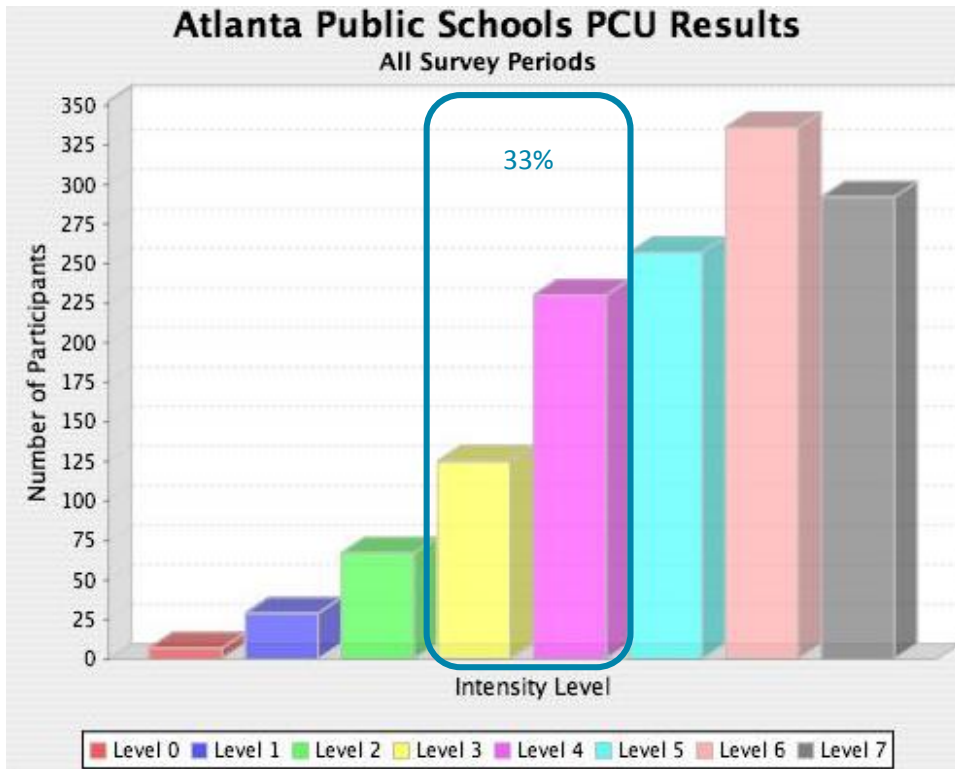

Figure 12

Figure 13

The Personal Computer Use (PCU) results indicate 33% of the participants promote, monitor, and model the ethical use of digital information and technology in their classroom (Level 3–4).

The Current Instructional Practices (CIP) results indicate 66% of the participant's lean toward learner–based instructional approach where teachers facilitate learning rather than just giving information to students (Level 5–7).
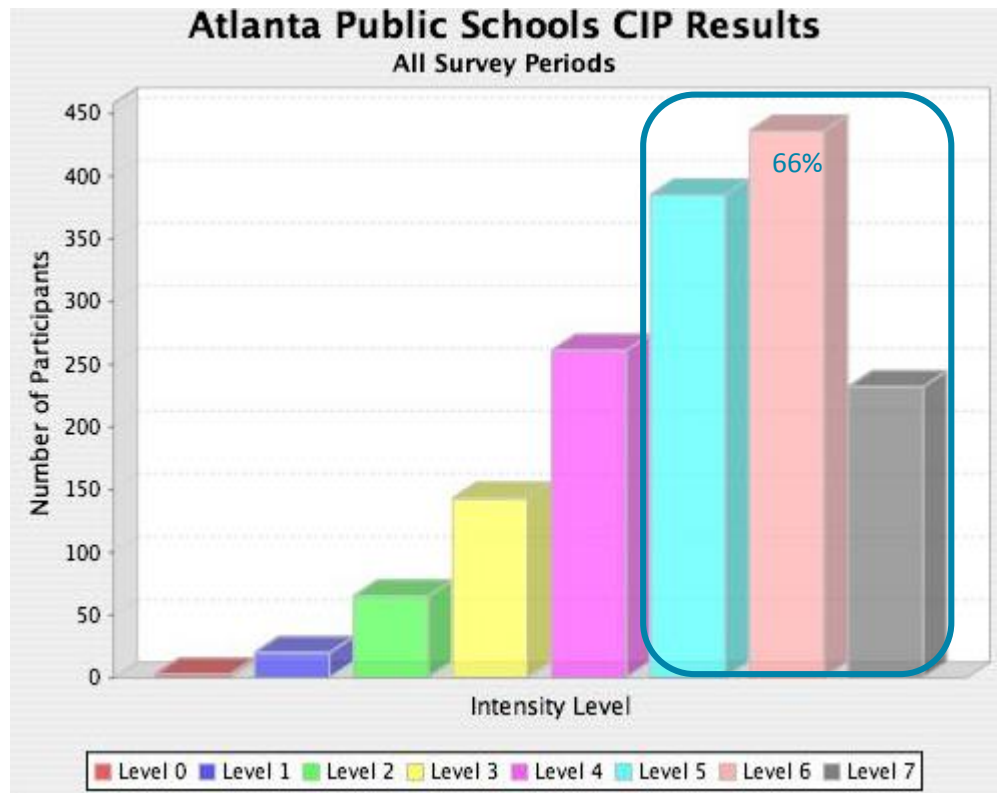

Figure 14

21st Century Skills Assessment

The 21st Century Skills Assessment is used to assess all 8th grade students' level of technology literacy. The assessment provides teachers insight into students' levels of creativity, innovation, communication, collaboration, research and information fluency, critical thinking, problem solving, decision–making, and digital citizenship. Below is the District summary of the APS assessment.
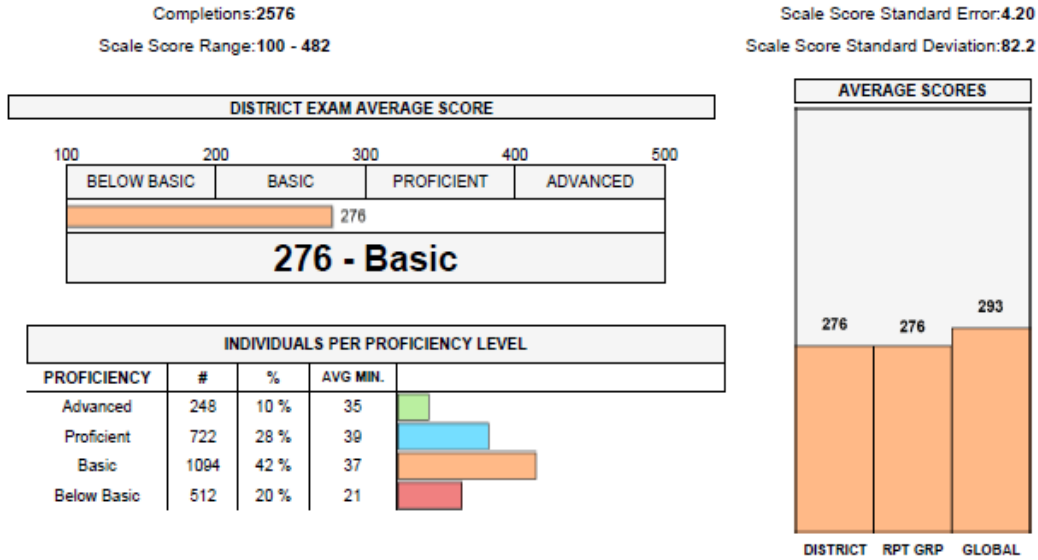

Figure 15 – APS District Exam Average Score

The results in Figure 4 illustrate that APS students have an overall Basic level of proficiency, for each of the 6 ISTE Standards–S strands. Figure 5 portrays the proficiency level for each of the 6 strands, highlighting areas of strength and weaknesses.
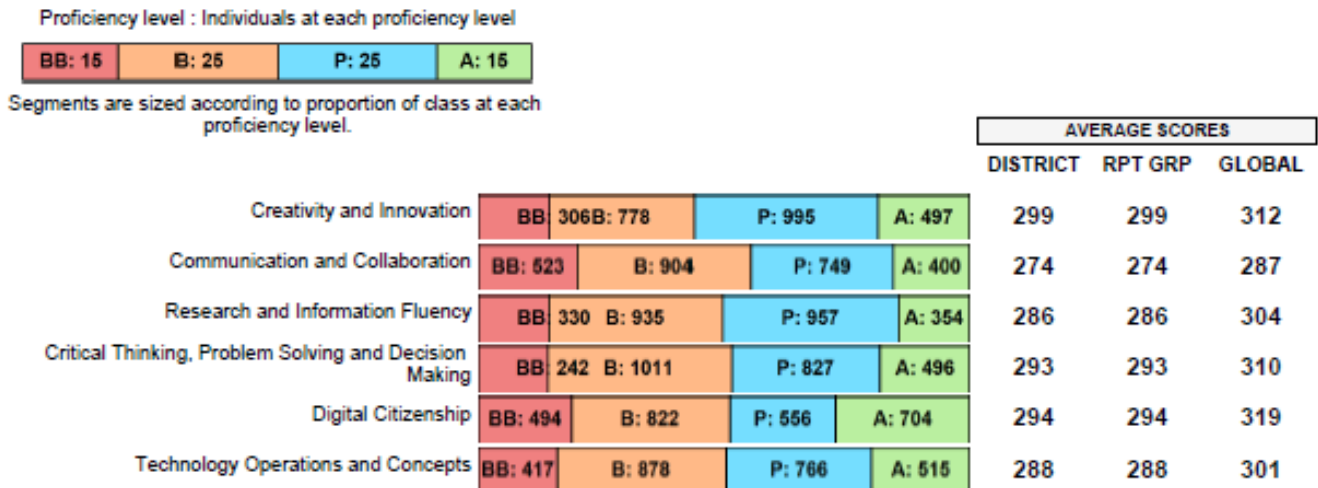

Figure 16 – Number of 8th Graders per Proficiency Level Strand

Atlanta Virtual Academy

The APS Atlanta Virtual Academy (AVA) is a NCAA–accredited program that offers students in grades 7–12 the opportunity to take courses online while enrolled in their current home school.

The program offers highly qualified online teachers and a comprehensive curriculum to ensure that each student's learning experience lives up to the highest standards for academic excellence. The AVA program supports the following options:

- 24/7 access to online courses not offered at the home school
- Flexible scheduling to work around student athletes' busy schedules
- AP courses to help student athletes get a head start on college credits
- Supplemental courses that offer the ability to catch up and graduate on time or accelerate to graduate early

Courses offered also include teacher–led virtual/online courses that allow students a way to earn credit towards graduation. Students are eligible to take any course offered, however all courses must be approved by a local school counselor or designee prior to enrollment. Students can take courses for the first time and for credit recovery. AVA offers the following programs that are designed to allow students and their families' flexible learning options to meet their educational needs. Learning with AVA allows learning that occurs "Any Time...Any Place...Any Device".

AVA provides the following programs:

AVA Program	AVA Program Defined
Advanced Path Program Acceleration for Honors or Gifted Students & Advanced Placement Courses	Provides an option for students to take one course over and beyond their traditional grade level. Students can take their required courses and one additional course beyond the regular school day.
Achieve Program	Allows students who have scored a grade of 59% or below the option to retake the course. This option is also for students who failed the course, but passed the End of Course Test (EOCT). This is a great option for students who also want to get ahead.
Credit Recovery Program For Students Scoring Grade 0%–69%	Alternative option for students to repeat a failed course that is needed for high school graduation. This program allows students to gain mastery in standards in which they are deficient.
Unit Recovery Program	Offers students who are currently in danger of failing a course to receive online remediation of units not mastered through Atlanta Virtual Academy prior to the actual failure of a course.

Educational Technology Specialist

Educational Technology Specialists (ETS) provide support to students, teachers, and administrators, helping to integrate and implement various technology–based learning tools with instruction. They play a key role in identifying the best educational technology for an array of classroom applications. They also frequently collaborate with educators and administrators, and train staff on using the new technologies. As certified teachers, they frequently co–teach lessons and work directly with small groups of students. This form of professional learning helps teachers stay technologically current and seamlessly integrate technology into the curriculum by:
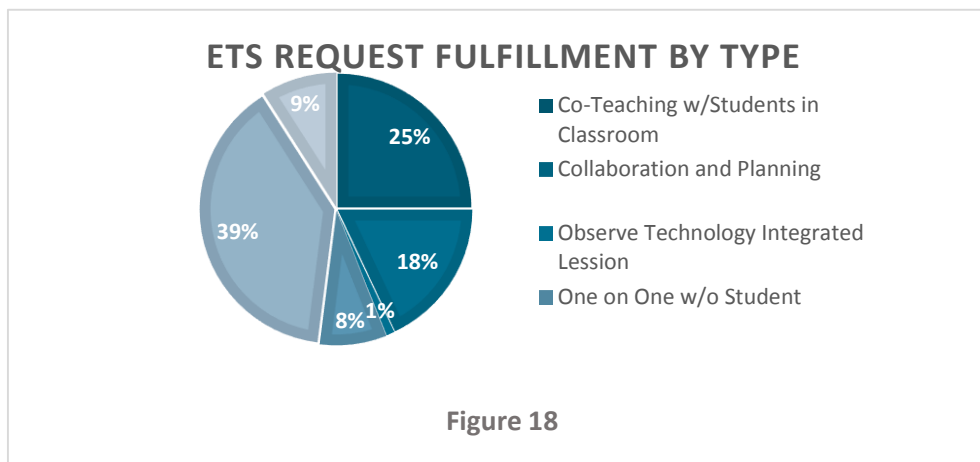
- Identifying and delivering effective technology to support the Common Core Standards.
- Learning the basics of using technology.
- Using technology to support instruction.
- Integrating new technology into classroom practice.
- Focusing on cooperative, project–based, and interdisciplinary work, with technology being just one of many student tools.
- Discovering new uses for technology tools or designing projects that combine multiple technologies.

Student success in the 21st century demands regular access to and meaningful use of technology, embedded into all curricular areas. Through a combination of face–to–face workshops, live webinars, online asynchronous course work, and one–to–one coaching, the Department of Instructional Technology will strive to assist teachers in building digital experiences that truly enrich student engagement and allow for the growth of 21st Century Skills.

The data in the chart reflects the support and collaboration provided by the Educational Technology Specialists during the 2013–2014 school year.

ETS Support Requests 2013–2014

School Level	Request	Feedback
Elementary School	1,692	1,108
Middle School	1,047	543
High School	885	754

Figure 18, compares the amount of requests fulfilled by the various types of collaboration and professional learning, between the ETS and teachers, during the 2013–2014 school year.

ETS REQUEST FULFILLMENT BY TYPE

- Co-Teaching w/Students in Classroom
- Collaboration and Planning
- Observe Technology Integrated Lession
- One on One w/o Student

25% 18% 1% 8% 39% 9%

Figure 18

Digital Content Learning Specialist

Digital Content Learning Specialists provide leadership and 21st Century technology integration, aligned to common core and National Educational Technology Standards that will directly affect instruction and improve student achievement. The team uniquely designs digital resources in collaboration with the Department of Curriculum and Instruction to integrate cutting edge technologies, differentiated learning strategies and methodologies into instructional delivery. The team also develops and provides professional learning regarding digital initiatives and digital curriculum, as well as develops curriculum–specific digital resources and activities for teachers, students, and families, extending teaching and learning beyond the traditional school day. Examples of core content area technologies can be found in Appendix H.

Gap Analysis

The Eighth Grade 21st Century Skills Assessment Report (Figure 4 & 5), revealed that overall students are below proficiency in technology literacy, with the areas for most improvement identified as Communication and Collaboration, Research and Information Fluency, and Technology Operations and Concepts. Every classroom has internet access, equipment and software is readily available to students and teachers, however, the data exposes a lack of student engagement with technology for learning purposes. To that fact, the following have been identified as impediments to accessing and effectively applying technology in the classroom.

Students are familiar with how to manipulate devices by swiping, but typing is not a skill most possess. To support a technological learning environment, foundational skills, like typing, working with word processing and spreadsheet applications, and best practice research methods should be embedded in the curriculum, teaching students to apply technology for productivity.

Although eager to provide a 21st century learning experience, teachers are not aware of the full functionality of many applications, or how to practically apply available technologies in a manner that strengthens instruction and engages students. When teachers are properly trained, often times they are hesitant to rely on technology because when issues arise, resolution is not swift enough to overcome the lag in instruction. More professional development, a simplified user experience, and technical support personnel is required to foster confidence in blending technology with instruction.

Between desktops, laptops, tablets, netbooks, and thin clients, students have acceptable access to instructional computers, with the student–computer ratio at 2:3, but there is resounding call for 1:1 student–computer ratio. Georgia Milestones transitioning to 100% online testing by 2018 amplifies the call for 1:1. The Testing Department of APS plans to accelerate the transition over the next three years until 100% online testing capability is achieved.

Current reality identifies that APS teachers are not optimally integrating technology into the teaching and learning process. This fact testifies to the importance of the support provided by the ETS. They are a critical resource in transforming our District into one that prepares students via a 21st century education. As shown in the ETS Support Requests chart, there was a high volume of requests, of which approximately 34% were not addressed. This illustrates the curiosity and fervor our instructors have for gaining the necessary knowledge to prepare our students, but it also demonstrates the need for more full–time Educational Technology Specialists. Currently, there are only 17 full–time ETS's to cover a student population of nearly 45, 000.

Future Vision

Atlanta Public Schools is aiming towards being a system in which each school builds on each student's strengths, and where every teacher makes students excited about the future. We believe technology is a major vehicle in readying our teachers to excite and engage students. Therefore, we are committed to closing the discovered gaps to accessing and using technology, and to optimally blending technology with instruction. We have outlined some of the strategies we plan to implement as we strive to achieve our vision of each student graduating college and career ready. The complete list can be found in the Goals, Strategies, and Benchmarks table on page 47.

- ❏ Partner with an Internet company to offer a low cost internet program for low income families. Maintain and continue partnership with Computers for Youth –Atlanta (CFY) which works to promote educational equity through a computer program adoption for low–income families.
- ❏ Collaborate with the Partnerships and Development Office to increase collaborative opportunities businesses in the Metro Atlanta area around increased internet access for students. Promote and communicate with stakeholders through various mediums such as radio, TV and print ads participating business partners.
- ❏ Increase the use of technology to include the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.
- ❏ Implement and provide training on specific word processing and keyboarding software. To prepare students for web–based assessments as identified by the Next Generation assessments.
- ❏ Maintain and redesign student instructional portal to include ease of use, single–sign on applications, one–click application access and a variety of instructional tools that meet all areas of the instructional process.
- ❏ Expand the current eBook collection to include interactive Common Core Aligned textbooks for all core content areas.
- ❏ Provide timely and interactive digital content to support all areas of the curriculum and increase teacher's access to digital resources that will facilitate critical thinking and the use of collaboration tools.
- ❏ Support personalized learning efforts throughout the District, with the implementation of blended learning tools that are adaptive to students learning styles and learning needs. Provide ongoing professional learning and implementation plans for each elementary, middle and high school.
- ❏ Increase the number of Educational Technology Specialists, closing the gap between the number of support requests and the number of requests resolved, resulting in one ETS devoted to each school.

Instructional Technology remains an integral part of the teaching and learning process. Through a constructivist approach to teaching and learning, technology integration will occur daily throughout the instructional process in each classroom. The Department of Instructional Technology will collaborate with other departments throughout the District to create efficient processes, procedures and structures that work to provide academic results for students, teachers and staff.

The Department of Instructional Technology will ensure that all students, teachers and staff have access to innovative teaching and learning tools that will increase student engagement, and provide transformative uses of technology that promote student learning.

Cluster Model Instructional Technology

Atlanta Public Schools has decided to implement a Charter system model in which schools will exercise increased flexibility around program options for students to increase student achievement. The Accountability and Information Technology division will work to provide a service–based approach to meeting the needs of each school cluster and local school program models.

STEAM Instructional Model Support:

- The Department of Instructional Technology will provide targeted job-embedded professional learning to assist each school with reaching STEAM certification through the State Department of Education. A dedicated Educational Technology Specialist will be assigned to each school and cluster to support STEAM program initiatives occurring at each school site. Provide ongoing direction on inquiry-based learning using technology tools, digital resources to support science, mathematics and engineering instruction through consistent technology use. Provide professional learning on technology simulations, personalized learning and virtual/augmented reality environments.
- 3 STEAM Clusters with 5 Educational Technonology Specialists dedicated to full time support and job-embedded professional learning: Carver, South Atlanta, and Washington Clusters

International Baccalaureate Instructional Model Support:

- Provide and implement a versatile learning environment that supports the use of innovative technologies through technology inquiry driven instruction. Provide safe and secure social learning spaces to increase global community for teachers and students.
- 8 IB Clusters with 11 Educational Technonology Specialists dedicated to full time support and job-embedded professional learning: BEST, CSK, Douglass, Grady, Jackson, Mays, North Atlanta, and Therrell Clusters

Blended Learning Instructional Model Support:

- Provide a framework for Blended Learning that employs "Best Practices" in the area of blended learning models to support local instructional goals. Work with leadership to develop a solid model of face to face and online instruction, provide a student and community orientation, ongoing support and training for teachers and leaders in the area of blended learning instruction.
- 2 Educational Technonology Specialists dedicated to full time support and job-embedded professional learning: Crim, Forrest Hill Academy, and West End Academy

Figure 19 - Service Based Approach - Charter System Model

The Instructional Technology Department will provide both general (standard of service) and cluster specific support for the three instructional models identified (International Baccalaureate, STEAM, and Blended Learning).

Special Education

Current Reality

The Atlanta Public Schools' Department of Special Education offers a broad continuum of services for students three (3) through twenty–one (21) years of age. Following a comprehensive assessment that may include a psychological evaluation, educational testing, speech–language assessment, audio logical testing and other assessments, a student may be eligible to receive services in one or more of the categories below.
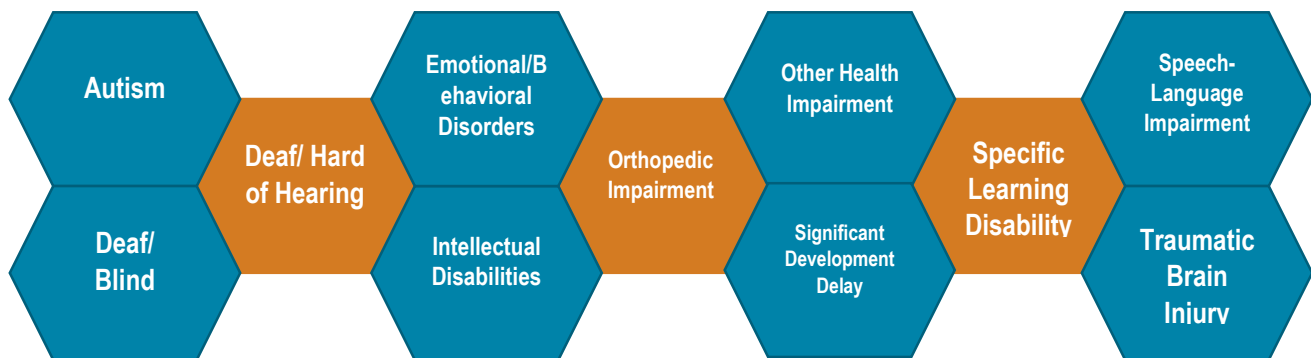

Figure 20 - Special Education Service Categories

Special Education leadership is committed to supporting the District in implementing the latest technologies and innovative learning environments. With the integration of specialized technology tools, learning becomes relevant to students. Smaller, more personalized learning environments have been established as the primary model for special education instruction. In order to achieve such an environment, the Special Education Department has deployed assistive technology tools designed to meet the learning needs of students with disabilities. Dependence upon these tools drives the need for high availability, easy accessibility, and accuracy of information.

The Special Education Department continues to implement assistive technology tools designed to meet the learning needs of students with disabilities and drive availability, accuracy, and agility. Assistive Technology provides APS special education teachers with technology tools and training to meet the goals of the Individualized Educational Program (IEP) for students. These same tools create a 21st Century technology learning experience for the students served by the Special Education Department and allow them to thrive in their classrooms. A table listing the hardware and software currently in use can be found in Appendix G.

Gap Analysis

Attempts to close the achievement gap for students with disabilities continue to be a challenge for APS despite the recent implementation of assistive tools. National and state reports identify technology as the leveler for all learners. The achievement gap is exacerbated by the fact that some students are still unable to access content in the classroom or from a distance that would enable them to master mandated material. Many educators are not yet up–to–date in their use of 21st Century assistive technology tools. Even though requests from parents and the community to provide more assistive technologies to their children have been heeded, there is still more work to be done.

Future Vision

To create the ideal technology–based learning environment, the Special Education Department will continue to implement assistive technology tools designed to meet the learning needs of students with disabilities and drive availability, accessibility, accuracy, and agility. Making the vision a reality requires the continued applied integration of both assistive and instructional technologies aligned with the District's mission, goals, and strategies that incorporate the universal design for learning.

The Assistive Technology project provides APS special education teachers with technology tools and training to meet the goals of the Individualized Educational Program (IEP) for students. The project will increase the overall inventory of the 21st Century technology and software available to students with disabilities and their teachers.

Charter School Vision

The Atlanta Board of Education voted 8 to 1, on November 3, 2014, to send a letter of intent to the Georgia Department of Education declaring that Atlanta Public Schools will pursue Charter System status. APS will spend the next 6 months developing the charter system petition, which will include goals for the school system's governance and operations.

Charter District schools are granted flexibility in adopting the technology standards that the Accountability and Information Technology division sets. The philosophy behind allowing more flexibility, is that schools must be able to operate in different ways to accommodate varied student populations, in order to increase student achievement. Schools will have the option to purchase services that the District currently provides. The District is developing a Buy Back Services Guide that provides a description and pricing for services that are available to charter schools. Charter schools will have the option to buy–back services from APS or seek other solutions

Media Centers

The Atlanta Public Schools library media program provides eBook and physical collections, programs, and services to foster the development of information literate citizens through open and equitable access to resources in all formats. Our mission is to make certain that students and staff are effective users of ideas and information. This mission is achieved by empowering students to be critical thinkers, enthusiastic readers, skilled researchers, and ethical users of information. To carry out the mission, the library media specialist performs the following roles:
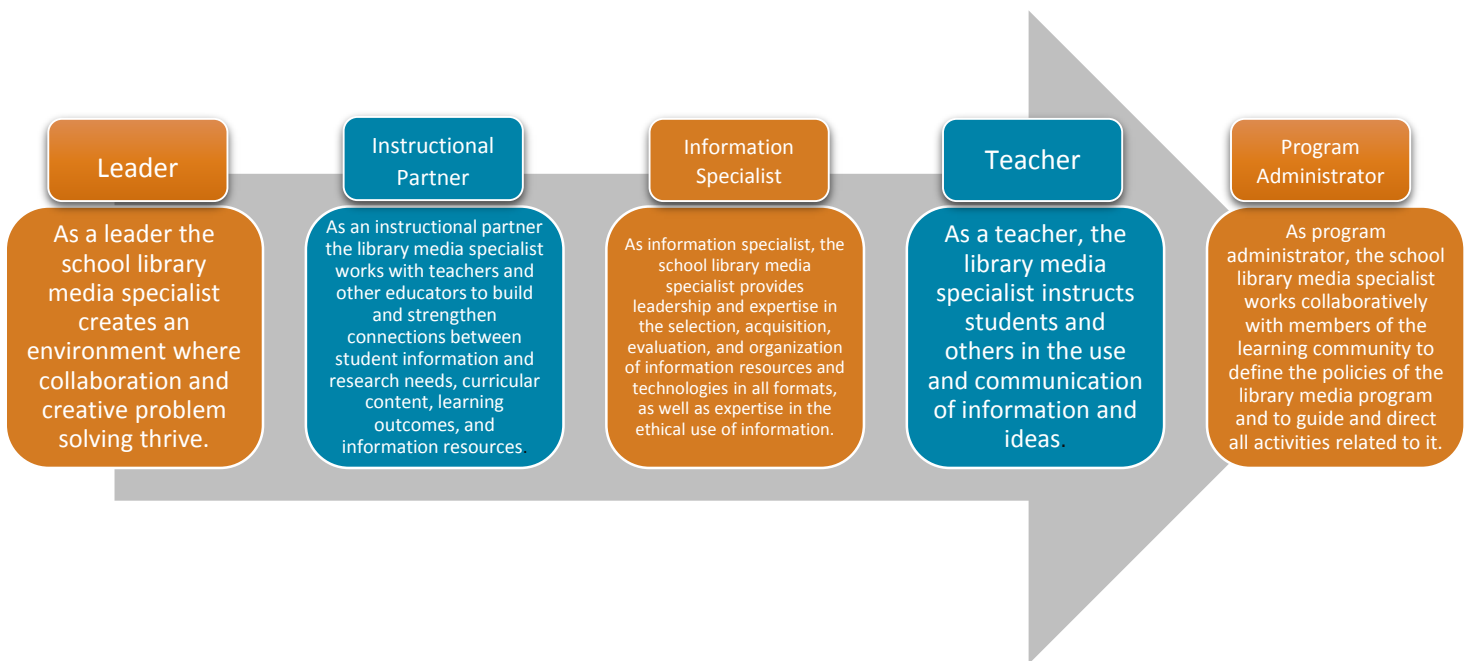
Leader

As a leader the school library media specialist creates an environment where collaboration and creative problem solving thrive.

Instructional Partner

As an instructional partner the library media specialist works with teachers and other educators to build and strengthen connections between student information and research needs, curricular content, learning outcomes, and information resources.

Information Specialist

As information specialist, the school library media specialist provides leadership and expertise in the selection, acquisition, evaluation, and organization of information resources and technologies in all formats, as well as expertise in the ethical use of information.

Teacher

As a teacher, the library media specialist instructs students and others in the use and communication of information and ideas

Program Administrator

As program administrator, the school library media specialist works collaboratively with members of the learning community to define the policies of the library media program and to guide and direct all activities related to it.

Figure 17 - Media Specialist Roles

Nutrition

Current Reality

The main initiative of the APS Nutrition Department is to provide optimal nutrition services to support academic success. The department communicates through three websites, all vendor hosted. School Nutrition & Fitness hosts the main Nutrition Department website, while Heartland School Solutions hosts MySchoolBucks.com and ApplyforLunch.com. The department engages students, teachers, and parents with:

APS Nutrition Website

- ❑ School Menus
- ❑ Nutrition Information
- ❑ Parent Newsletter
- ❑ Harvest & Produce of the Month
- ❑ Prepay Online Options
- ❑ Digital Application for Free or Reduced Lunch
- ❑ Educational nutrition games for students
- ❑ Lessons, presentations, and other resources for teachers
- ❑ Learning tools and other resources to help promote a healthy lifestyle at home for parents

My School Bucks Application for Smart Phones and Tablets

- ❑ Set up recurring, automatic payments for lunch accounts
- ❑ Track and review meal history
- ❑ Create low balance alerts.

Newton Point of Sale (POS) system is used to manage student lunch accounts and take payments. The integrated Franklin Free & Reduced application module digitizes the paper application. The link to apply is on the Nutrition Department website. Menus, inventory, and some external compliance data is managed through Edison Menus & Inventory System. External compliance is completed with an annual review, where the requested data is printed and provided to the appropriate agency. Nutrition auditors use an iPad app to capture and compile internal compliance data.

Gap Analysis

There is a wealth of technological nutrition solutions that the department could leverage to address not the technology gaps, but the nutritional gaps the District has observed. Breakfast is still the most important meal of the day, and proper nutrition is still the cornerstone of a happy, healthy child. If technology can be a partner in improving the nutritional posture of the student body, it is worth the investment.

Future Vision

The future of the Nutrition Department is marked by streamlining processes to increasing the efficiency and quality of the service we provide to students, and using technology as a vehicle for nutrition education. Currently, the department is weighing the options of an incident reporting app for food safety and compliance reporting.

The Nutrition Department sees an opportunity to educate students on good nutritional habits, and encourage them to incorporate that knowledge into their dietary choices. Digital menu boards are a technological vehicle to do just that. The boards digitize school menus making them easier to administer, easier to access for parents and students, and provides nutrition information for students to consider as their making meal choices. The digital menu boards coupled with thin client computer labs will be used to promote nutrition education.

Current Reality

The mission of the APS Safety and Security Department is to keep students, staff, and visitors safe and secure; to support APS schools to enhance teaching and learning with innovative practices, community partnerships, and next generation technologies; and to incorporate internal and external safety components through various outreach programs.

The department works toward the mission using technology such as:

- IP and Analog Security cameras (Grounds coverage and buses)
- Fire and burglar alarms
- Intercom system
- Badge readers
- Robo–calls for notification of emergencies situations protocols

The division is currently working toward expanding security coverage and integrating systems. Cameras, alarms, badge readers, and the intercom system have all been integrated with the network. The goal is for one event to trigger all corresponding systems.

Gap Analysis

The department is constantly working to strengthen security systems. However, security deficiencies exist and must be addressed. Gaps in safety and security technology are of particular concern; they translate into vulnerabilities such as violence, theft, and property damage. It is commonly known that when children feel safe, they are able to perform better academically. The goal is not only to create a safe learning environment, but to also create an environment that is perceived to be safe by all students and staff. In support of student achievement, Safety & Security is committed to addressing gaps, helping to ensure APS is positioned to prepare, prevent, respond to, and recover from emergencies and security breaches.

Major gaps have been identified below:

- **Lack Of Contingency Plans** – The surveillance systems are network based. If an outage occurs, it would render the surveillance system non–operational. There is a contingency plan for power outages to ensure the intercom, badge, and alarm system continue working. However, for extended power outages, those technologies would also be non–operational.
- **Limited Coordination With Local Law Enforcement & First Response Agencies** – Some schools are outfitted with the necessary IP cameras that allow the site to be surveyed remotely from the Atlanta Police Department (APD) Video Integration Center (VIC). More IP cameras and video management systems are needed to extend remote surveillance coverage to all schools and remote sites.
- **Lack of Awareness of New Security Technology** – Collaborate with stakeholders on security needs, increase awareness of the types of security products available on the market, the strengths and weaknesses of these products and their expected effectiveness in a school environment, to make more informed decisions.
- **Cell Phone & Radio Reception Limitations** –At some schools, and administrative sites, cell phone reception is weak or non–existent. In emergency situations, maintaining contact is imperative.
- **Lack of Integration Among Systems** – Data is often stored in multiple disconnected locations, the advantage of being able to apply the data effectively to school management,

isn't present. Schools lack the ability to centrally manage all aspects of school safety and operations.

Future Vision

The vision of the APS Safety & Security Department, with regard to technology, is enhancing District safety and security practices and processes, through the use of next generation technology, customization of services, and building and sustaining strategic partnerships. Below are the solutions that address current gaps to achieving our vision:

- Geo–fencing software
- Cross departmental team including Safety & Security and IT
- Security Hardware Management System for data storage
- All schools monitored through APD video surveillance network system
- Facilities Manager
    - Identifies the most efficient use of facilities
- Social Media Monitoring Software
- Visitor Management System
    - Manages company visitors
    - Provides access to the list of visitors in your building, including contact details and visit reason
    - Tests ID against national offender databases
    - Ease visitor handling , with badge print with barcode or QR code to monitor visitor location
    - Manages Wi–Fi Guest account management, parking spot management
    - Active Directory integration.
- Integrated School Safety and Operations System
- IP Camera
- VOIP Cell phones
- IP directed software
- Back up hardware and software for IP based systems
- Send work orders remotely
- Incident tracking system
- Asset tracking system
- Video surveillance data storage
- Data warehouse

Current Reality

The daily goal of the APS Transportation Department is to get students to and from school as efficiently and safely as possible. To reach this goal the Transportation Department utilizes many different technological tools such as:

- Edulog – routing software
- Zonar AVL– GPS Application
- IP based cameras
- Seon – Onboard Video Surveillance & DVR System
- Stop Arm Camera
- VOIP phone system
- eFT – Electronic Field Trip Program

- Mechanical Diagnostic Software
- Dispatch radios
- Dolphin Fleet Tracker – Documents fleet maintenance
- Maris Maps– Edits and maintains Edulog Routing Map
- Fuel meter readers – manages fuel tank
- Fuel Management System – manage fuel distribution

Gap Analysis

As listed above, the Transportation Department has a variety of software that performs related tasks. However, the software does not share or communicate data well, resulting in inefficiencies. More integration between applications is needed.

Dolphin Fleet Tracker was implemented over seven years ago. Of course, technology has advanced tremendously since then, leaving our current system antiquated. Also, the process of documenting fuel use, using fuel meter readers, is outdated. Leading edge software solutions that provide more effective methods of managing operations is needed.

The existing network hardware was installed several years ago. According to industry standards, network hardware begins to break down after 3 years. The department has experienced VOIP phone outages related to this aging hardware, and the lack of an uninterruptible power source.

Future Vision

The future of transportation lies in obtaining next generation technology that conglomerates tasks, integrates well, and improves the invaluable service it provides to students. Currently in development, is the Bus Tracker App. This android application communicates bus location, allowing parents to track their child's bus in real time. An IOS version will also be explored. The jewel of Transportations' vision is acquiring fleet management software with the following features:

- Fleet Management
- Fleet Maintenance
- Fuel Management
- Driver Management
- Inventory Management

- Trip Management
- Claim Management
- Route Optimization
- Vehicle Trip History
- Dedicated & Responsive Service & Support

Administrative Technology

Current Reality

Administration inspires and facilitates a shared vision of developing, implementing, and communicating technology rich strategic plans for a comprehensive integration of technology into all aspects of learning, teaching, and leading. Currently there are over 4,000 computers designated for administrative staff. Laptops are the predominate hardware provided for administrative support staff to provide mobility throughout the District. Key enterprise systems used include Lawson, Kronos, SABO, Taleo, Horizon, Aesop, and SharePoint. All key enterprise systems currently in use can be found in Appendix I.
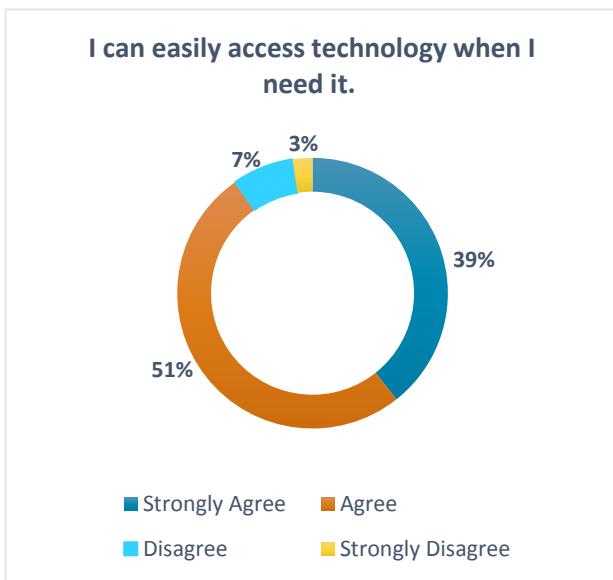
The charts represent results from the 2015 Information Technology Survey sent to all APS users. As the data shows:

- 🖥 90% of APS users agree or strongly agree they can easily access technology when needed.

- 🖥 92% agree or strongly agree the technology used on a daily basis meets the needs.

- 🖥 89% agree or strongly agree they can access the internet when needed.

I can easily access technology when I need it.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

39% | 51% | 7% | 3%

Figure 21

The technology I use on a daily basis meets my needs.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

38% | 54% | 6% | 2%

Figure 22

I am able to access the internet when needed.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
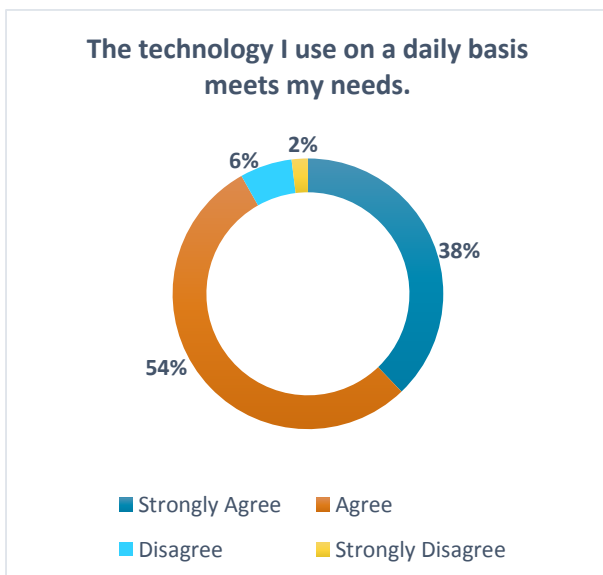
38% | 51% | 9% | 2%
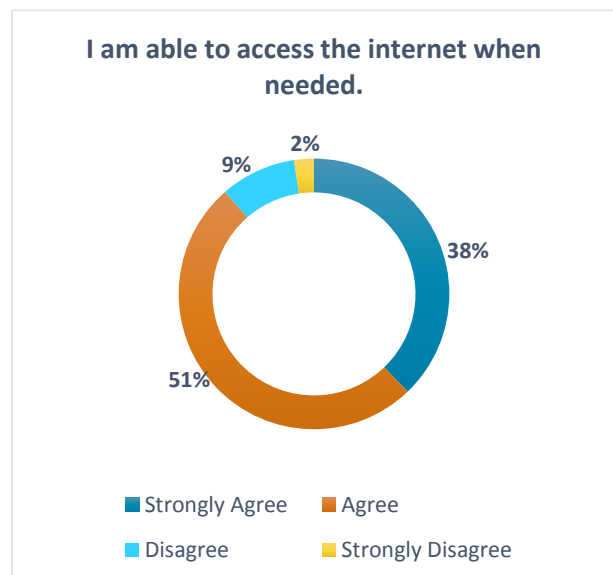
Figure 23

According to the 2015 Information Technology Survey, 95% of APS administrative staff use their desktop or laptop computer daily.

How often do you use a desktop or laptop computer?
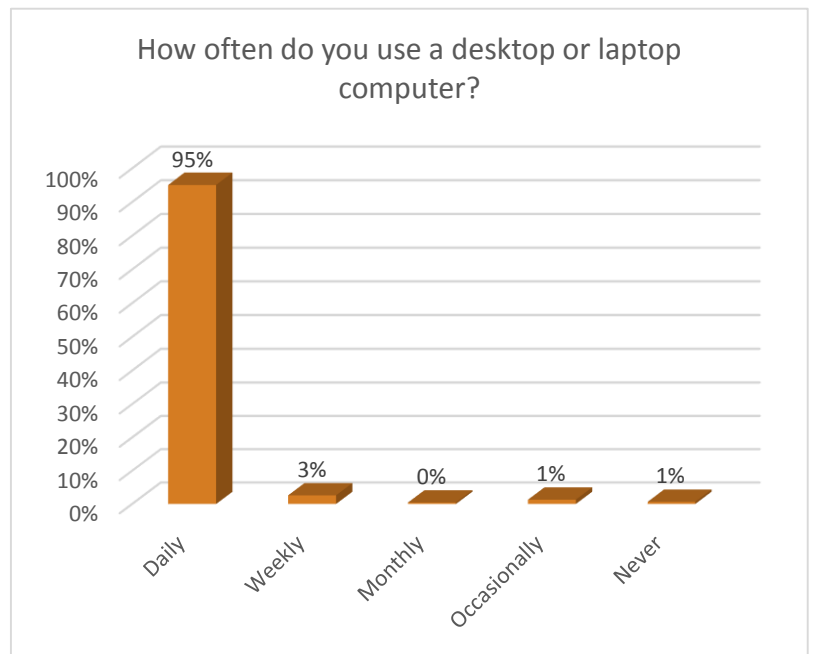
Figure 24

The graph from the IT 2015 Survey shows that there is high daily usage of the internet and web–based applications such as Infinite Campus and Lawson.

How often do you use the following technology?
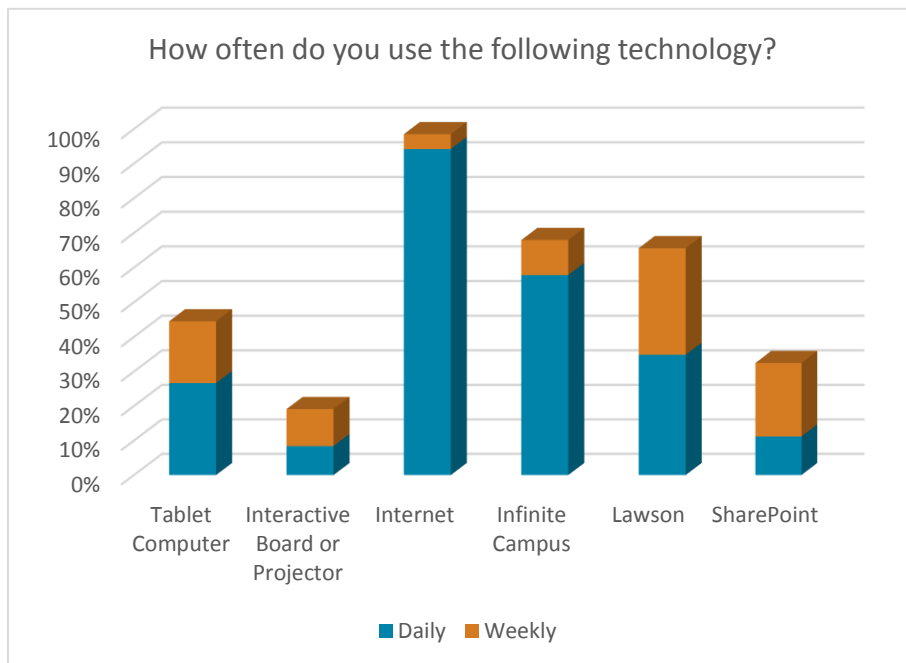
Figure 25

Gap Analysis

The feedback given from Administrative personnel, revealed clear trends on how well technology is applied. Administrative implementations of technology could be strengthened by:

- Utilizing the full capability of applications
  - Often software is used at its most basic level, instead of capitalizing on the range of capabilities to increase efficiency.
- Standardizing the use of applications
  - Administrative staff often develop workarounds to automate their processes, and have various methods to accomplish the same task, some that depart from best practices. Standardization will ensure everyone is operating in the most productive manner.
- Enforcing data integrity
  - Clean, accurate data is the basis of making well informed decisions that impact the District.
- Integrating applications
  - Create more efficient work flows by creating a level of communication between applications.
- Centralizing report information
  - Gathering decentralized information is very time consuming and bleeds into time that could be devoted to other job tasks. Portals that aggregate information based on job roles and responsibilities, is a more efficient method of information delivery.
- Automating tasks
  - In this digital age, automation is necessary to improve the service we provide to stakeholders. It boosts productivity by streamlining work, provides the ability to track the progression of a process, can reduce errors while enforcing data standards, and allows for ease of integration with other applications.

Future Vision

The future vision of administrative uses of technology hinges on adopting technology that increases efficiency and productivity, and professional development to fully leverage the technology currently in use. The vision includes:

- Portals that aggregate information based on job roles and responsibilities
- Automating tasks
- Full deployment of e–Fax
- Enterprise data warehouse
- Document Imaging with e–signatures
- Professional development diversely delivered
- Training Knowledgebase

Parent and Community Technology

Current Reality

Parents are encouraged to participate in their children's learning. Parents are able to monitor student progress via the Infinite Campus parent portal. This online resource is a secure environment that allows parents and/or guardians access to class schedules, grades, and attendance records for their children. Additionally, parents may use the portal to update contact information. APS has established 40+ parent centers throughout the District, where parents have access to computers, the internet, and printers to stay abreast of their child's education or for more practical needs, such as pursuing employment. Access to pertinent information about Atlanta Public Schools students and its partnership with the community is readily available on the APS website.

Family Engagement Technology Workshops

The family engagement technology workshop is a training session for parents, conducted by Educational Technology Specialists, that teaches the utilization of available technologies; cell phones, tablets, touches devices, apps and programs to assist children learning at home. The workshop is designed for parents, grandparents, caregivers and guardians. The training is designed to motivate parents to be active partners in education, familiarize parents with the available free technologies available to them in aiding their students with standards mastery, teach parents specific applications to assist children with schoolwork and homework. This allows parents to stay connected with online resources that provide on–going support for student learning.

Gap Analysis

Presently, the majority of parent–community communication is one way; the District sending out information to parents. APS has a need to develop an online digital community portal nurturing bi–directional communication between parents and community that simplifies connecting with schools and nurtures greater parent involvement. Ideally, the communication portal will allow remote attendance at public meetings and support private parent–teacher videoconferencing, from any location with any device.

Future Vision

Parent involvement is crucial to a child's academic success. APS envisions more parental and community involvement, and APS is committed to fostering an environment that encourages more involvement. APS must develop an online digital community portal nurturing bi–directional communication between parents and community that simplifies connecting with schools and nurtures greater parent participation. Ideally, the communication portal will allow remote attendance at public meetings and support private parent–teacher videoconferencing, from any location and any device.

Another node of the vision is making parents more aware of the resources APS already offers. The Family Engagement Technology Workshop teaches utilization of technologies and how they can be applied at home to support Common Core Standards.

Goals, Strategies, and Benchmarks Table

Goal 1: TECHNOLOGY INFUSED INSTRUCTION THAT ENABLES LEARNING THROUGH ENGAGEMENT				
Engage students by enhancing the quality of teaching and learning through the effective integration of technology and instruction				
Strategy	**Benchmark**	**Evaluation Method**	**Funding Source/Amount**	**Person Responsible**
Incorporate digital resources and technology integration into instruction	Conduct engaging Professional Learning through technology integrated lesson planning, one–on–one workshops, and in classroom lesson modeling. Conduct Annual Teacher 2.0 Technology Conference – Conference workshops are created for teachers, by teachers and incorporate best practices in technology integration. Annual Student Technology Fair – Provide student support for projects that are competitive at the state level.	Educational Technology Specialist daily classroom feedback survey and request form administered to teachers. Professional Learning feedback survey administered to all conference participants. Number of local and state fair technology APS student entries.	General Fund: Instructional Technology Budget $6,000 for Conference & Technology Fair Planning General Fund/Title 1: $1.3 Million (including 17 FTEs)	**District Level:** Executive Director of Instructional Technology, Digital Learning Specialists, Educational Technology Specialists **School Level:** Teachers, Media Specialist, Principals

Goal 1: TECHNOLOGY INFUSED INSTRUCTION THAT ENABLES LEARNING THROUGH ENGAGEMENT

Engage students by enhancing the quality of teaching and learning through the effective integration of technology and instruction

Strategy	Benchmark	Evaluation Method	Funding Source/Amount	Person Responsible
Create 21st Century classrooms to support digital learning through internet access, state–of–the–art hardware and software where students will consistently be connected throughout the learning day to digital resources on any device	Phase 1: Deploy interactive LED panels, wireless slates, document cameras, and microphones to classrooms with no existing interactive technology or non–functional interactive technology Phase 2: Deploy interactive LED panels, wireless slates, document cameras, and microphones to classroom with aging interactive technology Phase 3: Deploy interactive LED panels, wireless slates, document cameras, and microphones to remaining classrooms as interactive technology warranty lapses Ensure single sign–on access through the instructional technology student portal, myBackPack.	Track deployment schedules Monitor break/fix issues from Service Desk cases; and track deployment schedules Convert existing and new software purchases to single sign–on capability.	SPLOST / General Funds: IT $20 Million	**District Level:** Executive Director of Instructional Technology, Digital Learning Specialists, Educational Technology Specialists, Executive Director of Infrastructure and Production Services, Director of Service Delivery, Interactive Technology Support Specialist, Field Support Technicians **School Level:** Teachers, Media Specialist, Principals

Goal 1: TECHNOLOGY INFUSED INSTRUCTION THAT ENABLES LEARNING THROUGH ENGAGEMENT

Engage students by enhancing the quality of teaching and learning through the effective integration of technology and instruction

Strategy	Benchmark	Evaluation Method	Funding Source/Amount	Person Responsible
Increase the current student to computer ratio from 2:3 to 1:1 to maximize student access to reliable technology and ensure consistent use throughout instructional day	Year 1: Install additional computer hardware to create a 1:1 ratio in all high schools. Ratio to include Bring Your Own Device (BYOD) Year 2: Install additional computer hardware to create a 1:1 ratio in all middle schools. Ratio to include BYOD. Year 3: Install additional computer hardware to create a 1:1 ratio in all elementary schools. Ratio to include BYOD.	Student per instructional computer ratio provided in the Annual District Technology Inventory Survey. APS usage reports on number of devices connected to the APS Network.	SPLOST: Budgeted at $1,000 per device	**District Level:** Executive Director of Instructional Technology, Digital Learning Specialists, Educational Technology Specialists, Director of Service Delivery, Interactive Technology Support Analyst, Field Support Technicians **School Level:** Teachers, Media Specialist, Principals

Goal 2: FLEXIBLE ACADEMIC OPTIONS

Increase flexible academic options and schedules to provide on–time academic support, keep students in school, and expand curriculum offerings.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Implement an Instructional Management System (IMS)	Provide ongoing Professional Learning to teachers based on teacher data from the IMS. Manage standards, create and maintain local curriculum; develop learning objectives. Provide teachers with a central place to house course pacing guides, scope and sequence and lesson plans. Develop testing calendars, District, school, common, or teacher–level assessments.	Analyze formative test data, state test data, and usage data through Phoenix out–of–the–box report; and custom Phoenix and dashboard reports; data are exchanged from the SIS. Purposed is to target learning assignments.	General Funds: IT Includes $400,000 for four District data strategist	**District Level:** Director of Research and Evaluation; Associate Superintendent of Teaching and Learning **School Level:** Teachers
Expand integrated, adaptive technologies and technology based programs and training to support tiered RTI/SST interventions, supports, and enrichments.	Implement enhancements to the Student Services System that supports the RTI/SST processes; and online screener and progress monitoring assessments. Ongoing Professional Learning for Student Support Team (SST) Chairs and school Counselors.	Annual State Audit for Compliance Quarterly Dashboard Reporting for Response to Intervention (RTI) Tier 2–4 student data.	Student Support Services Funds: Including $4,000,000 General Funds for 50 school–based RTI Specialists	**District Level:** Associate Superintendent of Student Services **School Level:** Counselors, Teachers, SST Chairs Principals, Assistant Principals

Goal 2: FLEXIBLE ACADEMIC OPTIONS

Increase flexible academic options and schedules to provide on–time academic support, keep students in school, and expand curriculum offerings.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Expand online advanced, credit and curriculum recovery programs	Develop and support local school Virtual Learning Facilitators to provide oversight and support to students with virtual learning options Provide and Support targeted professional learning for School Counselors and Graduation Coaches Increase number of courses offerings for Unit Recovery Program to represent all courses in each core content area. Increase number of Credit Recovery program courses offerings in each content area and electives. Expand online Gifted, Honors and AP Courses to increase enrollment in each of these course offerings.	Survey each virtual facilitator at the end of Fall and Spring Semester to summarize support provided to schools Professional Learning survey for all professional learning provided Measure number of offerings in the course catalog Increased Adjunct teachers to support virtual course offerings	General Funds: IT $515,000	**District Level:** Executive Director of Instructional Technology, Director of Virtual Schools, Atlanta Virtual Academy Program Manager **School Level:** Principals, Assistant Principals, Graduation Coaches, Counselors

Goal 3: PROVIDE CONSISTENT AND RELIABLE SERVICE & SUPPORT

Provide a robust infrastructure with high speeds, high availability, and reliability; maintain a knowledgeable support system; and manage a comprehensive application portfolio to support students, teachers, and staff.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Upgrade existing wireless infrastructure to provide a wireless network that is as reliable as a wired network **Implement managed solution for wireless infrastructure** **Develop a student Wi–Fi solution**	Complete E–Rate filing April 2015 Complete wireless hub upgrades for high schools by Fall 2015 Complete remaining schools by Spring 2016 (upgrade wireless hubs)	Conduct assessment by APS building Weekly/Monthly usage reporting	E–Rate SPLOST $2.7 Million	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Network Manager
Relocate Disaster Recovery to secondary site to replicate servers and applications	Complete redundant WAN circuit by Summer 2015 Complete cutover of internet to new Disaster Recovery (DR) site by Fall 2015 Complete relocation of servers, switches and other infrastructure by Spring 2016	Annual Failover to test successful replication	SPLOST	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Network Manager

Goal 3: PROVIDE CONSISTENT AND RELIABLE SERVICE & SUPPORT

Provide a robust infrastructure with high speeds, high availability, and reliability; maintain a knowledgeable support system; and manage a comprehensive application portfolio to support students, teachers, and staff.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Upgrade Network Operating Center (NOC) to have the ability to monitor real–time system events from all applications and infrastructure systems	Implement automated system to provide real–time alerts and open cases for the APS Service Desk by Fall 2015. Enhance monitoring to integrate system events into a single system for identifying issues by Fall 2016.	Track incident tickets escalated to the Service Desk Track mean time to repair (MTTR)	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Network Manager
Upgrade all Windows XP operating systems	Conduct weekly scans to detect XP OS devices on the APS Network Dispatch Field Support Technicians to remediate	Review weekly reports for non–compliant devices	General Funds: IT/ SPLOST $180,000	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Director of IT Security, IT Systems Manager, Field Support Technicians
Increase WAN bandwidth to 1GB for all APS locations	Review monthly data usage reports for locations trend analysis to determine upgrade priorities Purchase upgrades for all qualifying sites	Trend analysis to identify locations using more than 60% of their current bandwidth Track new orders placed through completion	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Network Manager

Goal 3: PROVIDE CONSISTENT AND RELIABLE SERVICE & SUPPORT

Provide a robust infrastructure with high speeds, high availability, and reliability; maintain a knowledgeable support system; and manage a comprehensive application portfolio to support students, teachers, and staff.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Upgrade all uninterruptible power supply (UPS) at all APS locations	Complete all locations by Fall 2015	Use monitoring tool to validate completion Track alerting and monitoring consoles	SPLOST $550,000	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Data Center Manager
Provide second level of security assurance with a Security VPN Token to authorize remote access to the APS Network	Phase 1: Software, hardware, license purchase and setup by Fall 2016 Phase 2: Token Deployment to users by Spring 2017	Use VPN monitoring tool to validate usage	SPLOST $300,000	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Director of IT Security, IT Systems Manager
Gain complete visibility of software licenses purchased, deployed, and remaining with license tracking software.	Phase 1: Requirements Gathering by Fall 2015 Phase 2: Software Purchase by Spring 2016 Phase 3: Software Deployment by Summer 2016	Monitor software deployed to track licenses purchased, deployed, and remaining	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Director of IT Security, IT Systems Manager

Goal 3: PROVIDE CONSISTENT AND RELIABLE SERVICE & SUPPORT

Provide a robust infrastructure with high speeds, high availability, and reliability; maintain a knowledgeable support system; and manage a comprehensive application portfolio to support students, teachers, and staff.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Deploy Endpoint management system to discover, manage, and control devices on the APS Network	Complete deployment by Fall 2017	Discover, manage and control devices on the APS Network with Endpoint management system	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Director of IT Security, IT Systems Manager
Upgrade VoIP phone system infrastructure	Implement upgraded VoIP phone system infrastructure by Spring 2017	Track phone system failure rate	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Network Manager
Upgrade network switches to enable faster network speeds and create better responses to heavy influxes in traffic and to replace end of life equipment.	Complete all locations by Fall 2015	Review monthly reports on network speeds Review weekly reports on incident tickets opened for network issues	SPLOST / CFC Grant $4.5 Million	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Network Manager

Goal 3: PROVIDE CONSISTENT AND RELIABLE SERVICE & SUPPORT

Provide a robust infrastructure with high speeds, high availability, and reliability; maintain a knowledgeable support system; and manage a comprehensive application portfolio to support students, teachers, and staff.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Develop an enterprise architecture strategy and implement an enterprise architecture system to guide hardware, software, and business process integrations.	Integrate enterprise architecture strategy into change control process. Charge Architecture Review Board with conducting quarterly assessments of hardware, software and business process changes to review cumulative changes across the enterprise and ensure alignment with strategy.	Review documentation and outcome of quarterly assessments.	General Funds $40,000	District Level: Executive Director of IT Strategy and Planning, Executive Director of Infrastructure and Production Services
Increase knowledge management across application and support teams.	Create a knowledge management strategy for application development and support.	Conduct comprehensive audit of application knowledge base to determine if any gaps exist. Present results of findings to Information Technology leadership.	Does not require additional funding.	District Level: Executive Director of IT Strategy and Planning, Executive Director of Infrastructure and Production Services, Director of IT Support

Goal 3: PROVIDE CONSISTENT AND RELIABLE SERVICE & SUPPORT

Provide a robust infrastructure with high speeds, high availability, and reliability; maintain a knowledgeable support system; and manage a comprehensive application portfolio to support students, teachers, and staff.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Automate role–based account provisioning and access	Phase 1: Create provisioning platform to pull users from HR system Phase 2: Organize user access rights based on similar responsibilities Phase 3: Implement role–based account provisioning Complete all phases by Winter 2016	Monitor weekly incident tickets opened with Service Desk for any gaps within the automated system. Monthly reporting to verify all users are getting captured in automated system and validate correct permissions	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Director of IT Security, Identity Management Specialist
Upgrade cabling within APS buildings for faster data speeds	Complete cable upgrades by Fall 2015	Review number of incident tickets	SPLOST	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Network Manager
Obtain a privately owned fiber ring that connects all APS data sites	Complete fiber ring by Fall 2018	Review throughput speeds monthly	$20 Million	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Network Manager

Goal 3: PROVIDE CONSISTENT AND RELIABLE SERVICE & SUPPORT

Provide a robust infrastructure with high speeds, high availability, and reliability; maintain a knowledgeable support system; and manage a comprehensive application portfolio to support students, teachers, and staff.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Protect students, teachers, and staff from harmful content while minimizing interference with classroom learning activities by maintaining an up to date internet safety policy.	Complete quarterly of internet safety policies	Quarterly reviews of best practice internet security policies Monthly reviews of sites trending through incident tickets Weekly reviews of harmful materials getting through policy	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Director of IT Security, IT Systems Manager
Strengthen patch management lifecycle to maintain a secure network.	Complete quarterly external vulnerability scans	Review vulnerability scan results quarterly	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Director of IT Security, IT Systems Manager

Goal 4: DATA INTEGRITY WITH ASSET MANAGEMENT

Protect and manage physical and data assets used for teaching, operations, and decision making.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Support enterprise asset management for increased visibility, life cycle, usage, etc.	Complete asset management solution deployment by Fall 2017	Track savings with asset management solution Meet needs of customers with life cycle review	SPLOST $300,000	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Director of Service Delivery, Asset Lead, Service Operations Specialist
Deploy a Mobile Device Management (MDM) system that will allow educators to manage student devices while IT maintains centralized control and reporting.	Summer 2015: Pilot Schools Summer 2016: Complete deployment and training for all APS locations	Monitor and control mobile devices through MDM system	SPLOST $360,000	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Director of IT Security, IT Systems Manager **School Level:** Teacher, Media Specialist, Principal

Goal 4: DATA INTEGRITY WITH ASSET MANAGEMENT

Protect and manage physical and data assets used for teaching, operations, and decision making.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Provide reliable and standard technologies to all students, teachers, and staff on a three–year replacement schedule keeping equipment under warranty	Complete refresh of all out warranty computers by Fall 2015	Monitor incident tickets Quarterly review of equipment warranty	General Funds: IT $20 Million	**District Level:** Executive Director of Infrastructure and Production Services, Director of Service Delivery, Asset Lead, Field Support Technicians **School Level:** Teachers, Media Specialist, and Principals
Implement system/data validation control points to prevent issues and create standards for data governance and data quality	Complete assessment of all systems by Fall 2016 Implement control points by 2018	Perform risk assessments and provide regression testing	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Executive Director of IT Strategy and Planning, Executive Director of Data and Information

Goal 4: DATA INTEGRITY WITH ASSET MANAGEMENT

Protect and manage physical and data assets used for teaching, operations, and decision making.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Deploy enterprise data warehouse (EDW) to consolidate data from multiple sources into useful analytical reports	Complete deployment of EDW to all APS departments and users by Fall 2016	Daily, Weekly, Monthly review of EDW reports	TBD	**District Level:** Executive Director of IT Strategy and Planning, Executive Director of Data and Information
Acquire enterprise solution for e–signature and electronic forms	Phase 1: Requirements gathering Phase 2: Procure solution Phase 3: Implement solution	Review trends in mean time to resolve (MTTR)	SPLOST TBD	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Director of IT Security, IT Systems Manager

Goal 5: TECHNOLOGICAL EFFICIENCIES AMONG ADMINISTRATION AND STAFF

Increase staff effectiveness through technology, by enabling data–driven environments that streamline managing and maintaining day–to–day operations.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Provide all APS users with access to an APS Self–Service Support portal so access to common support solutions is available 24/7.	Implement initial system and provide access to all users by Spring 2016 Operational: Maintain, update and publish new content for portal	Weekly reporting of user access Customer satisfaction survey	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Director of IT Security, IT Systems Manager
Implement an ITIL–based system for incident, asset, problem, and change tracking for all APS departments.	Phase 1: Implement Service Desk functionality and asset management tracking Phase 2: Implement change management and problem management functionalities	Track closure of ticketed incidents in existing call logging system Track data migration and cutover to new system	General Funds: IT / SPLOST	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Director of Service Delivery, Asset Lead, Service Operations Specialist
Deploy e–Fax solution (electronic email solution to replace legacy Fax machines) to reduce paper, increase efficiency, and responsiveness at schools and central administration.	**Complete deployment and training by Spring 2016**	Monthly reporting of fax usage	SPLOST$35,000	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Telecommunications Specialist

Goal 5: TECHNOLOGICAL EFFICIENCIES AMONG ADMINISTRATION AND STAFF

Increase staff effectiveness through technology, by enabling data–driven environments that streamline managing and maintaining day–to–day operations.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Automate role–based account provisioning to provide access to APS data/tools based on needs defined by the employees role within the organization	Phase 1: Create provisioning platform to pull users from HR system Phase 2: Organize user access rights based on similar responsibilities Phase 3: Implement role–based account provisioning Complete all phases by Winter 2016	Monitor weekly incident tickets opened with Service Desk for any gaps within the automated system. Monthly reporting to verify all users are getting captured in automated system and validate correct permissions	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Director of IT Security, Identity Management Specialist
Develop an enhanced enterprise storage solution for backups and data logging and implement monitor and manage solution	Phase 1: Research solution, identify storage location, and space requirements. Phase 2: Setup and deploy solution	Review space usage monthly Review retention policies	$500,000	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Network Manager

Goal 5: TECHNOLOGICAL EFFICIENCIES AMONG ADMINISTRATION AND STAFF

Increase staff effectiveness through technology, by enabling data–driven environments that streamline managing and maintaining day–to–day operations.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Implement single sign–on (SSO) to permit users to access multiple applications with only one authentication process	Evaluate applications to determine capabilities Implement by 2018	Quarterly review of applications incorporated into SSO	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Director of Infrastructure Operations, Director of IT Security, Identity Management Specialist
Deploy scheduling tool for all resource, collaboration, training and conference rooms across the District	Evaluation of need across the District Obtain by in from schools and central administrative offices Implement by Fall 2016	Monitor process and usage for resource scheduling	$50,000	**District Level:** Executive Director of Infrastructure and Production Services, Director of Service Delivery
Deploy visitor management system to all APS locations to provide real–time access to all visitors in a building.	Phase 1: Deploy hardware and software to every APS location for Visitor management system Phase 2: Train APS users on visitor management system	Review weekly/monthly visitor logs Conduct user surveys to measure and determine effectiveness	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Executive Director of IT Strategy and Planning, Director of Safety and Security

Goal 5: TECHNOLOGICAL EFFICIENCIES AMONG ADMINISTRATION AND STAFF

Increase staff effectiveness through technology, by enabling data–driven environments that streamline managing and maintaining day–to–day operations.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Digitize school menu boards and provide nutritional information to engage students in nutrition choices	Procure and deploy digital menu boards to all APS learning sites by Fall 2018	Review usage reports Conduct user surveys to measure and determine effectiveness	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Executive Director of IT Strategy and Planning, Director of School Nutrition, Nutrition Information Systems Manager
Eliminate mobile phone range limitations by deploying VoIP cell phones to replace hand radios for facility and safety and security staff.	Evaluate potential market options by 2016 Implement by 2018	Survey VoIP phone users	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Executive Director of Facilities , Director of Safety and Security

Goal 6: INTEGRATION THROUGH PROFESSIONAL DEVELOPMENT

Provide role–based professional development to keep teachers, staff, and administrators' current on best practices for technology use and integration.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Develop comprehensive, role–based technology training plan for the District.	Self–paced and/or in person training for identified technology is prioritized and an implementation plan is developed.	Quarterly assessment of District technology needs is conducted.	TBD	District Level: Executive Director of IT Strategy and Planning
Provide targeted professional learning programs to support all levels of the instructional process with technology integration **Promote and support technology integration into daily instruction**	Increase the number of online/virtual professional learning courses that cover a host of instructional technology topics Provide differentiated workshops and conferences based on District wide instructional technology needs Support and Model, through job–embedded professional learning, daily technology integration into the teaching and learning process	Evaluate teacher requests for instructional technology support – Educational Technology Classroom Support Survey Data from District–wide Professional Learning Needs Assessment	General Funds: IT $102,000	**District Level:** Executive Director of Instructional Technology, Educational Technology Specialist, Digital Content Specialist **School Level:** Teachers, Media Specialist, Principals, Assistant Principals

Goal 6: INTEGRATION THROUGH PROFESSIONAL DEVELOPMENT

Provide role–based professional development to keep teachers, staff, and administrators' current on best practices for technology use and integration.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Enhance training for technical support personnel to increase their knowledge base and ensure that they can meet their assigned responsibilities.	Conduct monthly Professional Development course for technical staff Provide yearly vendor training for staff managing systems and applications	Survey success of training through course evaluations Review mean time to resolve (MTTR) incident tickets	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Director of Organizational Advancement, Director of Research & Evaluation for School Improvement
Increase the use of virtual professional learning space for instructional and professional collaboration	Year 1: 20% of staff utilizing online collaboration tool Year 2: 50% of staff utilizing online collaboration tool Year 3: 75% of staff utilizing online collaboration tool	Survey success of peer–to–peer collaboration of effectiveness and value	TBD	**District Level:** Executive Director of Instructional Technology

Goal 6: INTEGRATION THROUGH PROFESSIONAL DEVELOPMENT

Provide role–based professional development to keep teachers, staff, and administrators' current on best practices for technology use and integration.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Develop and provide online, blended and face–to–face professional learning to support blended learning, 21st century skills (communication, collaboration, creativity, & critical thinking), and professional collaboration.	Year 1: Provide Targeted and Differentiated Professional Learning for Teachers and Paraprofessionals in all core content areas (Mathematics, Language Arts, Science, and Social Studies) with technology integration topics. Year 2: Provide Targeted and Differentiated Professional Learning for Teachers and Paraprofessionals in all Elective courses (World Languages, Fine Arts, Physical Education, etc...) that include technology integration topic. Year 3: Provide Targeted and Differentiated Professional Learning for Teachers and Paraprofessionals in Special Education that include technology integration support.	Online & blended: Analytics from the Learning Management System Face to Face: Data reflecting the number of blended learning opportunities provided, sign in sheets, and course surveys	General Funds: IT $102,000	District Level: Executive Director of Instructional Technology, Educational Technology Specialist, Digital Content Specialist

Goal 7: INCREASE COLLABORATION WITH PARENTS AND THE COMMUNITY

Fully utilize technology to communicate in a timely manner that is clear, concise and transparent to increase collaboration with parents and the community.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Centralize information from multiple communication streams for parents.	10% annual increase in parents accessing Parent Portal and/or ParentLink	Review utilization reports for both Parent Portal and ParentLink	General Funds: IT & Operations	**District Level:** Director of Research and Evaluation, Director of School Nutrition, Program Manager **School Level:** Teachers, Counselors, Principals, Assistant Principals
Increase attendance at Family Engagement Technology Workshops that teach the utilization of available technologies (e.g., smart phones, tablets, apps and programs) to aid and assist children with Common Core Standards and the specific strategies that these technologies can support student learning at home	10% annual increase in parental attendance	Evaluate effectiveness of workshops with customer surveys	TBD	**District Level:** Director of Instructional Technology, Education Technology Specialist**School Level:** Principal, Assistant Principal, Teacher

Goal 7: INCREASE COLLABORATION WITH PARENTS AND THE COMMUNITY

Fully utilize technology to communicate in a timely manner that is clear, concise and transparent to increase collaboration with parents and the community.

Strategies	Benchmarks	Evaluation Method	Funding Source/Amount	Person Responsible
Increase two–way communication between parents/community and schools by allowing parents and community more ways to easily, quickly and effectively communicate with teachers, administrators, and others.	Create online digital community portal by Fall 2017	Review participation in portal Review remote attendance to public meetings	TBD	**District Level:** Executive Director of Communications, Executive Director of Infrastructure and Production Services, Director of Organizational Advancement **School Level:** Principal, Assistant Principal, Teacher
Provide an online payment solution for all APS activities and/or student fees	Create online payment solution by Fall 2018	Survey teachers and parents on effectiveness of solution	TBD	**District Level:** Executive Director of Infrastructure and Production Services, Executive Director of Financial Services, Director of Research and Evaluation for School Improvement, Director of Organizational Advancement**School Level:** Principal, Assistant Principal, Media Specialist, Teacher, Registrar

Communication and Marketing

The Office of Communications is responsible for ensuring that the Atlanta Public Schools' brand accurately reflects the core values and mission of our school system. APS effectively targets messages that illustrate the District's technological, learning, instructional, and administrative capabilities and total customer value to students, parents, community members and employees. A variety of strategic communication channels are utilized to tell the APS story, including broadcast media, social media, print publications, media relations, special events, Websites, e–Newsletters and electronic messaging systems.

The APS Office of Communications is committed to developing strategies that clearly demonstrate the District's dedication to providing a vibrant, high–performing learning environment that knows no geographic, racial or economic boundaries. Our students are making a difference – we work every day to share their stories with the world.

Figure 25 - APS Communication Channels

Figure 26 – Long Range Planning Integration Process

Integration/Coordination with Long–Range Planning

With proactive management that strives to align the planning process, the Accountability and Information Technology Division of APS comes together regularly for IT collaboration to ensure the District is on target, or ahead of industry standards.   APS uses avenues such as an IT Steering Committee, round table discussions, teacher leaders, and online surveys to receive feedback from students, staff, and stakeholders on current and future state of technology throughout the District. Under executive guidance, the Accountability and Information Technology division focuses on identifying strategic imperatives to provide an environment of excellence where students, educators, and support staff have access to 21st century technology.

Professional Development

When best practices of technology use is implemented it can enable students, educators, and staff to connect to learning, data, content, and systems allowing them to develop, maintain, and assess not only learning but operational experiences. Professional learning within APS systematically aims to increase educator effectiveness in order to positively impact student achievement through the professional development of administrators, teachers, and non–instructional staff by way of best practices. Appropriate staff development opportunities are provided for major initiatives aligned to our District's strategic plan. Meeting the demand of providing quality education for all students is a task that requires dedication and a passion for continuous improvement. High quality District, school, and faculty professional development is provided face–to–face, online, or in a blended learning setting.

In addition to access to over 1,000 online courses APS employs 17 Educational Technology Specialist. It is understood that the majority of teachers are trained to educate in the 20th century classroom, Educational Technology Specialist strive to expose teachers to the 21st century classroom by going into the classroom and working hands on with educators to merge technology with instruction. Feedback from APS educators confirms technology infused instruction enables learning.

Face to Face Workshops

Blended Workshops

Online Workshops

Flipped Professional Learning

Webinars

Online Learning Communities

Figure 27 - Professional Development Modalities

APS obtains professional development funds from a variety of resources.

In addition to budget appropriated funds, APS received grants through the Georgia Department of Education and the U.S. Department of Education. State funds are distributed to the schools through the APS Learning Technologies Department. Title funds are utilized where possible at the school level to support professional development initiatives.

Innovative Leaders Program (ILP)

The innovative leaders program provides a year–long professional learning program that works to build capacity in local schools. Each ILP participant receives an iPad for the school–year to facilitate use of digital tools and classroom instruction. Face–to–Face and virtual professional learning is offered to this select group of teacher leaders. In addition to receiving ongoing targeted professional learning, ILP participants serve as an advisory member to help guide the work of instructional technology for students and teachers. The program provides professional learning to assist teachers in serving as models for innovative practices in their schools by conducting professional learning opportunities and supporting other teachers' efforts to integrate technology in their respective buildings and District–wide events.

Business Applications Professional Training & Development

Technology continues to play an important role in modern industrial society. This plan seeks to promote meaningful learning and collaboration, provide for the ongoing need for professional development and support, and respond flexibly to change.

Staff development activities will help District staff members become comfortable and proficient with the technology and give them the opportunity to devise ways to efficiently use it when completing their daily tasks. The uniqueness of each learner is acknowledged and used to build specific instructional strategies meant to meet the needs of various learning styles. Technology that is not easily accessed and implemented will not be used. If problems cannot be solved quickly and easily, staff members will return to more traditional ways of completing their tasks.

Professional Development

Professional Development (PD) will be a top priority for the success of all learners, more specifically for Administrative Professionals. PD must be ongoing due to the simultaneous learning of how to use technology and the integration of technology in daily tasks. PD must be differentiated to address the needs, aptitudes, and styles of adult learners. All staff members will be held accountable for professional learning within a PD structure that engages, encourages, and empowers all learners.

PD needs, design, planning, implementation, delivery, and evaluation will be a collaborative effort between various stakeholders. This collaboration will include partnering with various stakeholders in any given PD event or initiative.

Professional development opportunities require flexible and convenient structures to cater to varying interests, aptitudes, preferences, and schedules. Offering continuous synchronous, asynchronous and blended learning options will allow learners to participate in relevant and worthwhile PD.

Increased Online Learning Opportunities	Online Learning will allow for the delivery of, access to, and interaction with content in a convenient way that will promote learning.
Purpose	The purpose of online learning is to allow for the implementation of a more relevant and individualized education for students.
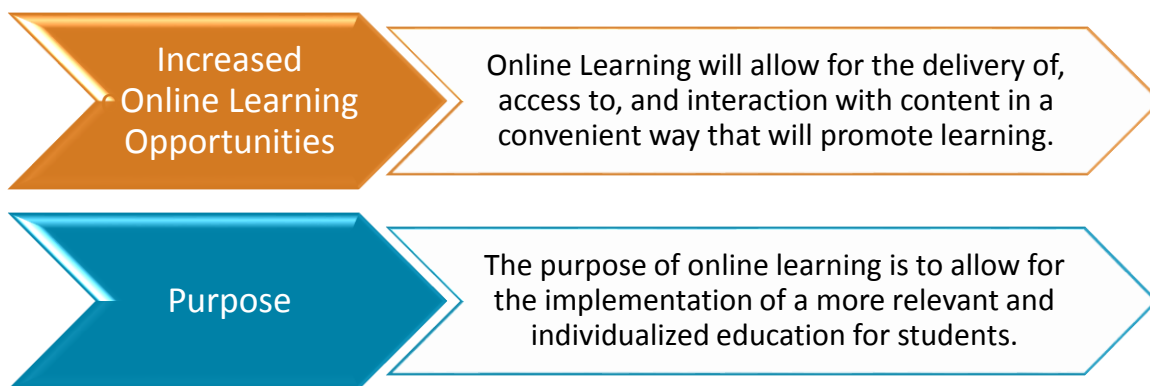
Figure 26 – Online Learning

Appendix A: APS Cluster Model Map

APS associate superintendents provide leadership and oversight to our nine high school clusters.

Cluster Leaders

ELEMENTARY SCHOOLS

Dr. Sidney Baker
Associate Superintendent of Schools
(Clusters: Douglass, North Atlanta, Washington)
404-802-6537

Mr. David White
Associate Superintendent of Schools
(Clusters: Grady, Jackson, Therrell)
404-802-3751

Dr. Danielle Battle
Associate Superintendent of Schools
(Clusters: Carver, South Atlanta, Mays)
404-802-7550

MIDDLE SCHOOLS

Dr. Greg Middleton
Associate Superintendent of Schools
(All Middle Schools)
404-802-3667

HIGH SCHOOLS

Dr. Timothy Gadson, III
Associate Superintendent of Schools
(All High Schools)
404-802-2622

NORTH REGION

DOUGLASS → HARPER-ARCHER → BOYD, FAIN, F.L. STANTON, GROVE PARK INTERMEDIATE (3-5), SCOTT, TOWNS, USHER, WOODSON PRIMARY (K-2)

N. ATLANTA → SUTTON → BOLTON ACADEMY, BRANDON, GARDEN HILLS, JACKSON, RIVERS, SMITH

City-Wide*

B.E.S.T. → B.E.S.T. ACADEMY
C.S.K. → C.S.K. ACADEMY
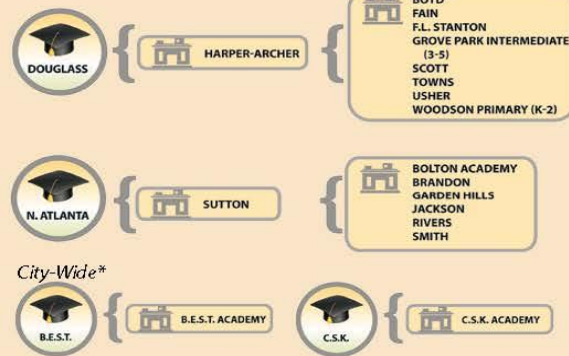
Charter Schools:
Atlanta Classical Academy (K-8)
The Kindezi School (K-6)
KIPP Atlanta Collegiate (9-12)
Latin Academy (6-8)
Westside Atlanta Charter School (K-3)

EAST REGION

GRADY → INMAN → HOPE-HILL, MARY LIN, MORNINGSIDE, SPRINGDALE PARK

M.H. JACKSON → M.L. KING → BURGESS-PETERSON, TOOMER, WHITEFOORD, BENTEEN, D.H. STANTON, DUNBAR, PARKSIDE

CRIM → NO FEEDER SCHOOLS

Charter Schools:
Atlanta Neighborhood Charter Schools (Elementary & Middle School Campuses) (K-8)
Centennial Charter (K-6)
Drew Charter School (K-10)
Intown Academy (K-8)
Wesley International Academy (K-8)

*B.E.S.T. Academy and the Coretta Scott King Young Women's Leadership Academy are single-gender schools open to students citywide. However, enrollment priority and transportation services are granted to students who live in the Boyd, Scott, F.L. Stanton and Grove Park/Woodson attendance zones.

SOUTH REGION

CARVER → PRICE → SLATER, THOMASVILLE HEIGHTS
CARVER → SYLVAN → FINCH, GIDEONS, PERKERSON

S. ATLANTA → LONG → CLEVELAND AVENUE, DOBBS, HERITAGE ACADEMY, HUMPHRIES, HUTCHINSON

FORREST HILL → NO FEEDER SCHOOLS

Charter Schools:
KIPP Vision Academy (5-8)
KIPP Vision Primary Academy (K-1)

WEST REGION

MAYS → YOUNG → ADAMSVILLE PRIMARY (K-2), BEECHER HILLS, CASCADE, MILES INTERMEDIATE (3-5), PEYTON FOREST, WEST MANOR

THERRELL → BUNCHE → CONTINENTAL COLONY, DEERWOOD ACADEMY, FICKETT, KIMBERLY

WASHINGTON → BROWN → BETHUNE, CONNALLY, M. AGNES JONES, VENETIAN HILLS

WEST END ACADEMY → NO FEEDER SCHOOLS

Charter Schools:
KIPP STRIVE Academy (K-8) / KIPP STRIVE Primary Academy (K-2)
KIPP WAYS Academy (5-8) / KIPP WAYS Primary (K)

Appendix B: APS Strategy Map

Strategy Map

APS uses the strategy map below to illustrate relationships between strategic goals, objectives and outcomes. The map visualizes how various components of the strategy align with the mission (what we do everyday) and our vision (what we strive to become).

Every Student: College and Career Ready

MISSION

With a caring culture of trust and collaboration, every student will graduate ready for college and career.

ACADEMIC PROGRAM
Deliver a rigorous standards-based instructional program | Invest in holistic development of the diverse APS student body → **Well-rounded students with the necessary academic skills**

TALENT MANAGEMENT
Recruit and retain the best talent at APS | Continually develop, recognize and compensate staff → **Energized and inspired team of employees**

SYSTEMS AND RESOURCES
Continually improve operating systems and processes | Prioritize resources based on student needs → **Efficient systems and strategically aligned and data-driven resources**

CULTURE
Foster a caring culture of trust and collaboration | Communicate and engage with families and stakeholders → **Supportive stakeholders who trust and are invested in our mission and vision**

VISION

A high-performing school district where students love to learn, educators inspire, families engage and the community trusts the system.

MISSION | STRATEGIC GOALS | STRATEGIC OBJECTIVES | STRATEGIC OUTCOMES | VISION

2014-15 Annual District Technology Inventory Survey - May 2015
Atlanta Public Schools - (761)

Georgia Department of Education

Richard Woods, Georgia's School Superintendent
"Educating Georgia's Future"

Student Population	Total Classrooms
44,398	3,180

Does School have a high-speed internet connection?	Number of Classrooms with high-speed internet access	Percentage of Classrooms with high-speed internet access	Type/Speed of connection between district demark and schools WAN within the school system?	Land Line-Fiber	
Yes	3,180	100.00%	Which best describes the speed of the district WAN?	100Mbps	
School Website			Have you implemented a BYOT initiative in your district? If yes, how many schools?	No	0
http://www.atlanta.k12.ga.us					

Student Instructional Computers

Operating Systems	Instructional Computers						Thin Client/VDI			Total
	Desktops		Laptops		Tablets	Netbooks	Host PC	Clients Served by the Host PC	Clients Served by the Host Server	
	Less than 5 years old	5 years or older	Less than 5 years old	5 years or older	Less than 5 years old	Less than 5 years old				
Android 4.x or newer	0	0	0	0	97	0	0	0	0	97
Android 3.x or older	0	0	0	0	47	0	0	0	0	47
Google Chrome 39 or newer*	0	0	171	0	0	0	0	0	0	171
Google Chrome 38 or older	0	0	0	0	0	0	0	0	0	0
iOS 7.x or newer*	74	41	125	1	4,470	137	0	0	178	5,026
iOS 6.x or older	0	7	8	0	272	0	0	0	0	287
Linux Ubuntu 12.04, Fedora 19 or newer*	0	0	0	0	0	0	0	0	0	0
Linux Ubuntu 12.03, Fedora 18 or older	0	0	0	0	0	0	0	0	0	0
Macintosh System 10.7 or newer*	374	96	993	261	35	0	0	0	75	1,834
Macintosh System 10.6 or older	115	0	117	83	0	0	0	0	0	315
Windows 8*	7	0	98	0	5	63	0	0	0	173
Windows 7*	1,254	789	2,029	254	276	40	3	14	17,459	22,118
Windows Vista	0	0	0	0	0	0	0	0	0	0
Windows XP	5	50	22	0	0	0	0	0	0	77
Windows (older than XP)	0	0	0	0	0	0	0	0	0	0
Total	1,829	983	3,563	599	5,202	240	3	14	17,712	30,145

* Denotes items that meet specifications for Technology Guidelines for Georgia Milestones for Online Assessments.

Students per Instructional Computers	1.47

Georgia Department of Education, Richard Woods, Georgia's School Superintendent   Report Date: 05-15-2015   Atlanta Public Schools - (761)

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Students per Instructional Computers Meeting Specifications for Technology Guidelines for Georgia Milestones for Online Assessments

1.53

Number of Classrooms with the Following Number of Instructional Computers

10+		6-9		3-5		1-2		0	
237	7.45%	366	11.51%	2,318	72.89%	134	4.21%	125	3.93%

Peripheral Equipment	Instructional	Administrative
Data/Video Projectors	779	41
Document Cameras	837	81
Interactive LCDs	50	0
Interactive Projectors	12	6
Interactive Slates	487	3
Interactive Whiteboards	2,651	20
Sound Enhancement Systems	19	2
Student Response Devices	21,363	1

Internet Safety Training	
	Yes/No
Students	Yes
Teachers	Yes
Administrators	Yes

Number of potential online test takers for 2015-16 school year	41,819

Wireless Access Points	
Number of mobile wireless labs?	280

Web Filtering	
What website filtering product and/or method is used by the district?	LightSpeed Web Filter

Indicate the number of FTE performing these duties (optional):	
Computer/End-user Support	47
Infrastructure/LAN/WAN Support	18
Technology Administration	6

	E-Mail is Available for the following	If Free, What Product?
Students	Inhouse	

Administrative Computers	
Computers (less than 5 years old)	4,004
Computers (5 years or older)	229
Total	4,233

Megabits provided to the district by the State through the Statewide K-12 Network:	321		
Does the district procure additional bandwidth in addition to what the State provides? Yes/No	Yes	If yes, what is the total bandwidth allocated for your district to include state provided (Mb)?	2 Gbps
		If yes, what is the total bandwidth allocated for instructional use to include state provided (Mb)?	1.5 Gbps

Appendix D: Student Classroom Tools

Tools	Description
Accelerated Reader	* Software that helps students improves their reading skills through vocabulary, reading, and literacy objectives and quizzes.
Accelerated Math	* Software that helps students improve their math skills through personalized practice assignments to reinforce the objective being taught
Agile Minds	* An online resource offering middle school mathematic services encompassing two complete years of mathematics instruction, assessment, and test preparation. Presents all of the key middle school concepts that prepare students for success in Algebra.
Ascend Math	* An online resource offering students a resource for solving small to very large mathematical models. It can be used to solve systems of non–linear equations, linear and non–linear optimization problems, and dynamic systems expressed in the form of differential/algebraic equations.
Carnegie Learning High	* Online resource offering high school students help in succeeding in math, creating a gateway to graduation, and preparing them for 21st century careers.
Discovery Education	* Digital content library where students can interactively learn about science, technology, environment, health, etc.
EasyTech	* Assists students to efficiently learn technology skills, digital literacy, and higher–order thinking as they study and learn core curriculum.
Edmodo	* Allows students to connect and collaborate, share content, and access homework, grades and school notices
e–Reader Devices	* A hardware device used for reading digital content.
First in Math	* Online resources offering comprehensive content—ranging from single–step addition to complex algebra—in an engaging format. Students' progress at their own pace to master basic and advanced math skills.

Tools	Description
Georgia Online Assessment System (GOAS)	* Enables students in Georgia's public schools to access tests with the same types of questions as appear on the state's assessments in Reading, English/Language Arts, Mathematics, Science, and Social Studies in the Criterion–Referenced Competency Tests (CRCT), the End of Course Tests (EOCT), and the Georgia High School Graduation Tests (GHSGT).
Georgia Virtual School for Math	* Online resource providing students with online math lessons for reinforcement. This resource is not for credit and is free of charge to Georgia public schools.
Google docs	* Free online content storage powered by Google.
Galileo	* Proprietary search engine that provides information not available on free search engines.
Holt Textbook Online for High Schools	* Online text books for high school students
Mobile tablet devices	* A computer system in a sleet tablet format using touch rather than a typical keyboard for input.
Microsoft Office Suite	* Productivity software – word processing, numerical analysis, presentation and peer communication
Pearson's Success Maker for Middle School	* Online educational software designed to accommodate a full array of different learning styles that differentiates and personalizes K–8 reading and math. Providing instruction, practice and assessment that is well–correlated to Common Core Standards for both mathematics and language arts at all grade levels of the program.
Promethean Planet	* An Interactive and collaborative environment developed exclusively for K–12 teachers and includes teaching and professional development resources
Renzulli	* Online tool for conducting individualized strengths–based assessments that identify a student's interests, learning styles, and expression styles
Study Island	* Standards based learning application delivered over the Web.
SRI/Read 180	* Comprehensive system of curriculum, instruction, assessment, and professional development proven to raise reading achievement for struggling readers in grades 4–12.

Tools	Description
Thinkfinity	* Portal where students can find excellent resources for practice and projects. Students may also select from recommended activities, maps, games, reading lists and homework help.
Vimeo	* Video sharing and storage location for APS educational videos
Visual Thesaurus	* Interactive dictionary and thesaurus that creates word maps that expand with meanings and branch to related words.

Appendix E: Teacher Instructional Tools

Tools	Description
Way find	* Assists teachers efficiently learn 21st Century technology skills, digital literacy, and higher–order thinking.
Edmodo	* Provides anytime, anywhere learning. Functionally, it allows teachers to post messages, discuss classroom topics, assign and grade class work, share content and materials, and network and exchange ideas with their peers
Flipchart	* Educator training * Presentation
Galileo	* Proprietary search engine that provides information not available on free search engines.
Georgia Online Assessment System (GOAS)	* Provides a cycle of assessments, instruction, feedback, and communication that allows teachers, students, and parents to be confident with instructional success. * Allows District administrators to create tests using items that are in a separate pool than those available to teachers and can be assigned to an entire District by grade level
Infinite Campus	* Student attendance * Students grades
Interactive White Boards, Interactive Slates, Flip Cameras	* Interactive classroom/administrative use
Internet	* Research * Collaboration
Mobile tablet devices	* Professional development training * Multimedia instructional support * CLASS Keys Observation
LCD Projectors	* Multimedia instructional support
Microsoft Office Suite	* Teacher and student productivity tools – word processing, numerical analysis, presentation and peer communication
Promethean Planet	* An Interactive and collaborative environment developed exclusively for K–12 teachers and includes teaching and professional development resources

Tools	Description
Renzulli	* A lesson–planning tool that differentiates over 25,000 Enrichment Activities — automatically.
Study Island	* Web–based and state standard specific instruction, practice, assessment, and reporting.
Thinkfinity	* Standards–based, online resources that facilitate targeted instruction to each student's level of learning.
Virtual Secondary Teaching Center	* Online instructional support resource for secondary teachers
Vimeo	* Video sharing and storage location for APS educational videos
Visual Thesaurus	* Interactive dictionary and thesaurus that creates word maps that expand with meanings and branch to related words.
WebEx	* Online meeting and training portal

Appendix F: Levels of Technology Innovations (LoTi)

LoTi Level	General Technology Use	Specific Characteristics
0 **Non–Use**		• No technology use • Perception that technology use has no value to learning
1 **Awareness**		• No student use of technology tied to content • Computer is a reward station for non–content–related work • Technology is used mostly by teacher/facilitator
2 **Exploration**	Teacher–centered	• Lower order thinking skills (i.e., knowledge, comprehension) • Focus is strictly on content understanding.
3 **Infusion**	Teacher–centered	• Higher order thinking skills (i.e., application, analysis, synthesis & evaluation) • Focus is on the content and the process • Teaching may be learner–centered
4 **Integration** **4a – Mechanical** **4b – Routine**	Student–centered	• Students are applying learning to real world • Learning becomes authentic and relevant • 4a – teacher experiences management concerns • 4b – teacher is in comfort zone • Teaching is student–centered
5 **Expansion**	Student–centered	• Same as level 4 • Two–way collaboration with community • Multiple technologies in use
6 **Refinement**	Student–centered	• Same as level 5 • Infrastructure and funding are in place

Appendix G: Special Education / Assistive Technology Tools

Tools	Description
* Early Learning Suite	* Software geared toward beginning reading math, etc.
* Kurzweil 3000	* Universally designed assistive technology tool that make content available to students, with the cognitive ability but not the literacy skill, to achieve success at grade level
* News–2–You	* An online newspaper that connects the classroom to the world
* Boardmaker Plus V6	* Allows for easy transformation of paper activities into fun, educational and interactive lessons featuring animation, sound, video and much more
* Lexia District Management	* An RTI model of instruction which immediately places new students into the appropriate *Lexia Reading* level
* Attention Getter	* Made especially for teachers, presenters, and facilitators for different activities! Rather than raise your voice, just push a button and get the attention you need
* Concepts on the Move	* This program is an engaging way for students to learn basic concepts. Give students practice matching and sorting these concepts with Print, Play and Learn activities.
* Solutions for Early Childhood	* Instructional software for teaching basic concepts and test for comprehension.
* Wheels on the Bus	* This new program brings the bus in the children's song to life in gorgeous 3–D graphics and animation. This is a Steps' to Learning Program with powerful changeable format and data collection.
* Puzzle Power	* Puzzle maker programs with multiple variations and types of puzzles
* Mobile Tablet Device	* Use to provide interactive computing through touchpad

Tools	Description
* HP "All–in–Ones" – Preschool	* PCs that use touch screen technology
* Lexmark Printers – Preschool	* Peripherals for printing text and graphics
* Intel–Readers	* Electronic reading devices
* HP ProBook Laptops	* Laptops for computer operation by HP
* Mobile Promethean Boards	* Interactive whiteboards
* Student Reponses (switches–active slates)	* A wireless, fully integrated, notebook–sized tablet that offers the same interactive functionality as the ActivBoard, but can be used from anywhere in the classroom. The ActivSlate enhances teachers' abilities to deliver truly interactive, engaging lessons, while providing the freedom to instruct from anywhere in the classroom
* Microsoft Universal Design and Learning Applications	* An approach to designing environments and products so they can be used by the widest range of users without adaptation

Appendix H: Digital Content Learning Specialist Core Content Area Technologies

Language Arts/Literacy:

The integration of technology with Language Arts instruction allows for differentiation of both content and pace. It assures a foundation on which students can begin to move past the simple recall of skills and concepts and begin to engage in strategic reasoning, and extended reasoning.
Instructional technology strategies and resources to engage students in Language Arts and Literacy through the use of technology include:

1.   Providing support, and training on an extensive eBook library and related resources affords foundational support to District–wide literacy, English, Language Arts, and reading across the content areas of Social Studies, Science, and Math.
2.   Supporting digital tools and resources which allow for individual learning styles, and also allow reading and research on any and all devices including laptops, personal computers, and mobile devices.
3.   The leveraging of digital tools and spaces for research, writing, and presentation. These include tools for brainstorming, research and investigation, editing, keyboarding skills, and active communication via presentation platforms.

Mathematics:

According to the National Council of Teachers of Mathematics (NCTM), technological tools in mathematics education include those that are both content specific and content neutral. NCTM asserts that in mathematics education, content–specific technologies include adaptive, online programs; dynamic web–based environments; handheld computation, data collection, and analysis devices, and computer–based applications. These technologies support students in exploring and identifying mathematical concepts and relationships. NCTM emphasizes that content–neutral technologies include communication and collaboration tools and web–based digital media, and these technologies increase students' access to information, ideas, and interactions that can support and enhance sense making, which is central to the process of taking ownership of knowledge.

Several instructional technologies to help support mathematics instruction in Atlanta Public Schools include:
1. *Adaptive, online programs:* We will provide support and training on adaptive, online math programs (such as ALEKS) which utilize artificial intelligence and open–response questioning to identify precisely what each student knows and doesn't know. Adaptive math programs provide true individualized learning and assessment and the use of adaptive programs to help deliver a personalized learning path on the exact topics each student is most ready to learn.
2. *Online learning platforms:* Online learning platforms assist with intervention, remediation and reinforcement of skills. We will provide training for students and teachers on online platforms to assist with teacher math competencies, as well as, student math understanding. The platforms will be utilized as blended online support which can assist students both during school and beyond the school day.
3. *Digital and web–based tools*: Digital and web–based tools help students explore, process, reason and make sense of mathematics. Examples of digital and web–based tools include: the use of databases and spreadsheets in research; using spreadsheets to create graphs to display data and support problem solving; graphing calculators to assist with discover (in addition to graphing calculators, we will leverage the current popularity of smartphone technology and use it to reinforce numeracy concepts through the use of scientific and graphing calculator applications); the creation of multimedia projects with graphics, text, sound and video to demonstrate math concepts and complex problem–solving techniques; and advanced mathematics courses through the Atlanta Virtual Academy.

Science:

Utilizing technology in science allows for students to use databases and the internet to gather evidence, analyze and graph data through spreadsheets and graphs, use multimedia software to produce reports, review and process observations, and publish documents. In addition, students are able to utilize simulation software for problem solving, be engaged with various instructional resources, and use concept mapping software to brainstorm, collaborate and share ideas.

Instructional technology resources to engage students in science through the use of technology are:

1. *Augmented Reality:* Allows teachers to present information to students in a way they won't forget. Students are exposed to 3D dissections, views of animals and body parts, 360* views of DNA double helices, etc. Students are able to use augmented reality to see the words in their textbooks come to life while being able to manipulate (pull apart and put back together) what they are learning about and looking at.
2. *Robotics and Legos:* Provides a hands on, minds on approach to engaging students. Students take ownership of their learning and develop problem solving skills. They are able to collaborate as necessary to become creators of solutions to real world problems. In addition, teachers are able to provide powerful learning opportunities that motivate students to learn science, technology, engineering and mathematics concepts that give them the skills they need to be successful in a 21st century global society.
3. *Mobile devices:* Mobile devices allow for student engagement during science instruction through real world applications. Some examples of students utilizing mobile device technology in science include taking digital photos, searching the web, virtual dissections, collaboration, and provides for true problem based learning and inquiry to take place.

Social Studies:

Technology can assist with the implementation of the Social Studies Curriculum by:
- Providing real world opportunities for students and teachers to experience and explore other cultures and periods in history through the use of virtual field trips and exploration apps via Stratalogica powered by Google Earth or MAPs101
- Providing opportunities for students to become global citizens by being able to collaborate and communicate with their peers from around the world through the use of collaboration tools such as Google docs and Google classroom as well as through the use of video conferencing tools
- Providing training and support to teachers on the effective use of digital content, resources, and tools that are Social Studies specific and address content literacy, visual literacy, and informational literacy to help increase student engagement, collaboration, and production, while preparing students to be both College and Career Ready through the use of 21st Century Skills

Early Learning Initiatives:

Support Early Learning Initiatives through training on systems for assessment of students, progress monitoring and instruction. In an effort to provide a foundation for meaningful engagement and differentiated instruction in the early years.

Appendix I: Infrastructure Tools

Tool	Description
NETWORK	
* Ethernet Network Metro E	* Network connection service
* LANDesk Enterprise Asset Management	* Core tool used for effective IT asset management
* LightSpeed Content Filtering	* Web content filtering
TELECOMMUNICATION AND MESSAGING	
* Cisco VoIP Microsoft Active Directory	* Carries voice calls over IP network
* IP Contact Centers	* Integrate inbound and outbound voice applications and routing using Internet Protocol (IP)
* Microsoft Lync	* The unified communications platform
* Microsoft Exchange	* Email Server
* Microsoft Unified Communications	* Used to streamline communication processes
* LightSpeed Spam Filtering	* SPAM filter for Internet and email
SYSTEM MONITORING	
* CISCO	* System monitoring and diagnostics toolset
* LANDesk	* Software distribution, mobility management tool
* What's Up Gold	* Network monitoring software
* Solarwinds	* Network discovery and management tool
* Nagios	* Enterprise open source host monitoring
* VMware vCenter	* Virtualization Management tool
* XMS Extended Memory Specification	* An API memory manager
DATA EXTRACTION AND REPORTING	
* School DataBus	* Data extraction tool to retrieve information from unstructured data sources, and from different software formats
* Crystal Reports	
* Lawson Reporting Suite	* Design, manage and deliver reports via the web.
* QI Macros	* Provides **reporting** and analysis via role–based dashboard
	* Excel tool allows analysis of data in a variety of formats
DEVELOPMENT TOOL SET	
* Lawson CASE Tools	* Online Support tool in MyLawson Suite
* MicroFocus Cobol	* Mainframe coding tool
* Lawson Process Flow	* Automation tool that simplifies management of business processes
* Lawson Design Studio	* Design and form modification tool

DEVELOPMENT TOOL SET	
* JAVA Script	* Scripting tool used to develop dynamic web sites and interactivity
* HTML	* Standardized system for tagging text files
* Microsoft ASP/ASP.net	* Active Server Pages used to build websites and applications
* Visual Basic	* Programming language developed by Microsoft
* Harvest Object Version Management	* Software version control tool
* Team Foundation Server	* Collaboration tool used to manage software development projects

MID RANGE PLATFORM	
* IBM P5	* eServer by IBM
* Blade Servers	* Midrange server by IBM
* AIX (version)	* IBM version of UNIX operating system
* UNIX	* Open source operating system
* Websphere	* Java–based tools used to build websites

ENTERPRISE PLATFORMS	
* HP and IBM Servers	* Enterprise Servers branded by HP and IBM
* Windows Server, 2003/2008 R2	* Microsoft Server Operating System
* IBM Tivoli Backup Management	* Enterprise backup tools by IBM

DATABASE PLATFORM	
* Oracle 11G	* Database branded by Oracle
* Microsoft SQL 2005–2008	* Database branded by Microsoft

DESKTOP PLATFORMS	
* HP and Apple desktops and laptops	* Personal computer and laptops branded by HP and Apple
* Tablets	* Mobile computing devices branded by many vendors
* Printers	* Peripheral device used to print text graphics, tables, etc.
* Thin Clients	* Software that rides on top of other software.
* Copiers (MFD)	* Peripheral devices that provide carbon copies of documents

ENTERPRISE APPLICATIONS	
* Lawson v9 (Finance and Human Resource Modules)	* Visibility that leads to improved budget and human capital management
* Taleo e–Recruiting	* Application tools for human resource management
* Horizon Software	* Food service and POS management system
* Kronos	* Time and attendance software tool
* Infinite Campus	* Student Information System

ENTERPRISE APPLICATIONS	
* SchoolWires (District/School Websites)	* District and school websites
* Xperts IEP on–Line	* A decision support system to help teachers and administrators make data driven decisions
* ESRI ArcGIS and ArcIMS	* Dynamic Web mapping and metadata catalog services
* Microsoft SharePoint Portal	* Collaboration and knowledge management tool by Microsoft
* Lawson Reporting Suite	* Enterprise level management reporting tool
* HEAT	* Service Center (Help Desk) Management System
* AIMS	* Facilities Services Management System
* Accelerated Reader	* Daily progress monitoring software user by teachers
* SubFinder	* Software used to find available substitute teachers
* Contract Insight	* Vendor contract management and workflow
* SABO	* School based budgeting system
* BoardDocs	* Board agenda and policy repository
* Destiny	* Textbook Management System
* ESRI GIS	* School maps and zoning system
* Lenel	* Badging and security
* The Library Corporation	* Library management system
DESKTOP APPLICATIONS	
* Microsoft Office Suite	* Application productivity tools by Microsoft
* Microsoft Project Enterprise	* Project management software tool by Microsoft
* LANDesk Anti–Virus Software	* System the distributes software as push to the desktop

Appendix J: Internet Acceptable Use Policy

Board Policy

Internet Acceptable Use

Descriptor Code: IFBGE

The Atlanta Board of Education recognizes that electronic media, including the Internet and electronic mail, enhance the quality and delivery of instruction in our schools by providing access to unique resources and opportunities for collaborative work. Any electronic activity conducted by employees, students or other persons via the Atlanta Public Schools (APS) network or using APS computer resources, hardware or software is subject to inspection and monitoring. There should not be any expectation of privacy. Use of electronic systems shall be in support of and consistent with the vision, mission, and goals established by the Atlanta Board of Education and for the purpose of instructional and administrative support. The use of electronic technology is a privilege which may be revoked at any time.

All data accessed, stored, or transmitted via APS electronic resources shall be used in a responsible, ethical, and lawful manner. Any unauthorized use or any failure to comply with applicable law, policy and rules relating to the use of electronic resources will result in the loss of electronic network access and/or the imposition of disciplinary actions. Unauthorized use includes, but is not limited to, programming vandalism or "hacking" activities; access, transmission, storage, or display of offensive materials or messages including, but not limited to, those that contain: sexually explicit information; ethnic/racial slurs; defamatory, abusive, obscene, profane or threatening language; encouragement of the use of controlled substances; or illegal material.

Internet Safety

In support of student success and safety, the Atlanta Board of Education recognizes the importance of the use of the Internet by students in a manner that will protect their safety and well–being, as much as is practicable. The superintendent, with respect to any computers or wireless devices belonging to the school system and/or having access to the APS network system, shall ensure that student Internet activities are compliant with federal and state law.

The superintendent shall, with respect to access to the Internet by or through computers, networks or other devices belonging to the school system, institute, maintain and enforce procedures or guidelines which:

1. Provide for monitoring the online activities of users to limit, to the extent practicable, access by minors to inappropriate matter, as defined in policy IFBG Internet Acceptable Use, on the Internet and the World Wide Web;
2. Promote the safety and security of minors when using electronic mail, chat rooms, social media forums and other forms of direct electronic communications;
3. Prevent unauthorized access, including so–called "hacking," and other unauthorized activities by minors online;
4. Prevent the unauthorized disclosure, use, and dissemination of personal identification information regarding minors;
5. Prohibit violations of the student code of conduct that may occur via the Internet, such as bullying activities or exposure to sexually explicit material; and
6. Provide a program to educate students about safe Internet use and appropriate online behavior.

Employees who observe inappropriate or potentially dangerous behavior must report such conduct to their supervisor or principal immediately.

Information Security

The Atlanta Board of Education wishes to establish a single, unified information security policy. It is the responsibility of each authorized user to protect all District data, systems and electronic records to address risk management, ensure data confidentiality, and maintain information systems integrity and availability. This information security policy applies to:

- All District employees, students, contractors, consultants, temporary staff, and other authorized users.

- All computer and communication hardware and systems connected to the District network that are owned by and/or administered by the District or its designees.

- All standalone (non–networked) information technology owned by and/or administered by the District or its designees.

- All locations of those resources, whether at a District site or at a remote location.

- All information stored or processed on District networks or those administered on behalf of the District.

The Superintendent or his/her designee shall develop security regulations in accordance with this policy and enforce the policy and the regulations. These regulations shall include a process for classifying information based on its purpose and sensitivity and the appropriate controls to protect confidentiality and unauthorized alternation while making information available for appropriate use. Each user is charged with the responsibility to report any suspected infractions to the appropriate technology official as specified in the corresponding regulation.

Any employee who violates the policy and/or corresponding regulations and procedures may have their system access privileges suspended and shall be subject to discipline up to and including termination of employment. Any student who violates this policy and/or corresponding regulations and procedures may have their system access privileges suspended and shall be subject to further disciplinary action in accordance with the Student Behavior Code. Any contractor, consultant, business partner, or other authorized user who violates this policy and/or regulations and procedures may have their system access privileges suspended and shall be subject to contract termination or any other remedy or action deemed appropriate by the Board.

The board authorizes the superintendent to develop administrative regulations to implement this policy.

Last Revised: 1/27/2016
Revised: 08/2015
First Adopted: 12/9/1996

See also:
Board Policy IC   Curriculum Development
Board Policy JCDA   Student Behavior Code
Board Policy JCDAF Use of Electronic Devices by Students
Board Policy JCDAG   Bullying
Board Policy JR   Student Records

Legal citations:
O.C.G.A. 16–09–0090 Georgia Computer Systems Protection Act
O.C.G.A. 16–09–0091 Computer Related Crime
O.C.G.A. 16–09–0092 Definitions
O.C.G.A. 16–09–0093 Computer crimes defined
O.C.G.A. 16–09–0093.1 Misleading transmittal
O.C.G.A. 16–09–0094 Violations
O.C.G.A. 39–05–0003 Immunity
O.C.G.A. 39–05–0002 Subscriber's control of minor's use of internet
O.C.G.A. 39–05–0004 Internet safety report of certain information
O.C.G.A. 16–11–0037.1 Dissemination of information relating to terroristic acts
O.C.G.A. 20–02–0149 Online internet safety education
O.C.G.A. 20–2–324 Internet safety policies in public schools

Rule 160–5–1–.03 Identification and Reporting of Schools
Rule 160–5–1–.07 Student Data Collection
Rule 160–5–1–.28 Student Enrollment and Withdrawal

20 USC 6777 Internet Safety
47 USC 254(h) Universal Service
15 USC 6501 Children's Online Privacy Protection Act – Definitions
15 USC 6502 Children's Online Privacy Protection Act – Collection and use of personal information from and about children on the Internet
15 USC 6503 Children's Online Privacy Protection Act – Safe harbors
15 USC 6504 Children's Online Privacy Protection Act – Actions by states
15 USC 6505 Children's Online Privacy Protection Act – Administration and Applicability