

Administration and Supervision of a Planned Growth Program for New Schools in the New York

City Department of Education

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The growing population of New York City (NYC) Geographic District 13 has called for the need to construct two new elementary schools and one new middle school to support the growing population. There are approximately 20,000 students in total within the geographic district, of which there is a majority-minority population (New York State Education Department, 2019). The demographics of the region include 16.3% Hispanics, 43% African American, and 21% Asian (New York State Education Department, 2019). Recently, regentrification efforts in NYC Geographic District 13 have seen an influx in the growth of the area, constituting construction endeavors. The region encompasses Fort Greene, the Brooklyn Navy Yard, Clinton Hill, Prospect Heights, and runs close to the area of DUMBO. The number of students in the K-8 sphere is an approximate 9,600 pupils, and the two new elementary and one middle school would support the 3.1% growth rate projected by the United States census data for the borough (New York City - City Planning, 2018). As a result of a comprehensive needs assessment conducted by District 13 outlining the growth rates, it was determined that two new elementary schools and one new middle school were required to support the projected student population.

The Swong Elementary School, Samb Elementary School, and Mastrandea Middle School have been approved for construction by NYC Geographic District 13 Superintendent Michael Prayor. The schools are slated to open for the 2020-2021 academic school year. The responsibility assigned to the team is ensuring that appropriate technology plans are implemented in conjunction with district, city, state mandates, with a specific proposed plan.

Mission

The New York State Education Department's (NYSED) technology plan mission is to highlight exemplary practices, make policies, create incentives for implementations, and advocate for additional resources. To this effect, NYSED has conceived a mission to provide technology-enhanced, comprehensive, inclusive learning environments to support improved teacher development training that would subsequently impact learning (New York State Education Department, 2010). Thereupon, the New York City Department of Education (NYCDOE) has constructed a mission to incorporate educators, students, and families in a holistic plan to provide mobility, support, use of digital content, and access to and use of data for technology (New York City Department of Education, 2015).

Laws

Per Part 100.12 of the Commissioner's Regulations, all New York State public school districts are required to "develop and maintain a plan, in a format prescribed by the commissioner, for the use of instructional computer technology equipment" (New York State Education Department, 2015). As such, the 100.12 regulation ensures that every child has unbiased access to the highest caliber educational opportunities, utilities, and supports in schools that provide efficient instruction aligned to state standards (New York State Education Department, 2015). An Instructional Technology Plan (ITP) is designed to allow districts the opportunity to compile data related to their technology planning and needs in one location. The data collected in the ITP may be used as the basis for funding opportunities and will satisfy the New York State Education Department's requirement that all school districts submit technology

plans per NYCRR 100.12. Thus, the NYCDOE has developed a strategic technology plan with a vision in mind to establish policies and improve systems over the next several years.

In addition, certain laws exist for protecting student data that can be supported through a federal incentive program in the ITP, as well as the development of policies for acceptable use to ensure a fair balance between security and access for end-users in the district. For example, in order to facilitate E-rate funding, the altered pricing structure for districts, and to be in compliance with the Children's Internet Protection Act (CIPA) (Frazier & Hearrington, 2017), the NYCDOE will use a filtering program called Websense to blacklist and protect students from insecure websites and inappropriate content when accessing data and digital content (Nielsen, 2009). This includes the development and utilization of an Acceptable Use Policy (AUP) from both students and faculty to ensure security and access in compliance with CIPA (New York City Department of Education, 2012).

Moreover, the NYCDOE adheres to the Family Educational Rights and Privacy Act (FERPA), which is a consideration for parents of students under the age of 18 to have an avenue to their student's educational records, the right to have the records revised, and govern disclosure of identifiable information from the records to parties other than the guardians or parents (U.S. Department of Education, n.d.). Furthermore, the Every Student Succeeds Act (ESSA) of 2015 is the key regulation that ensures that elementary and secondary school students are provided balanced opportunities in rigorous academic standards that will assure achievement in college and careers (U.S. Department of Education, n.d. a). Students, educators, and parents are provided greater connections to innovative strategies for teaching and learning, with particular emphasis on disadvantaged and high-need students. In the grand scheme, protecting students from external

threats while online by safeguarding data, and building mechanisms for student success serves as a framework for the Geographic District 13 technology plans.

Furthermore, the Individuals with Disabilities Education Act (IDEA; P.L 101-476) is a statute that frames the final consideration for the Geographic District 13 ITP. Due to the population of students served in the district within Geographic District 13, the technology plan will be inclusive of the methods in how access to quality online programming and infrastructure will occur. The rationale is to ensure that children with exceptionalities have a free appropriate public education (FAPE) that emphasizes related services to meet their needs (U.S. Department of Education, 2004). This includes the ITP's alignment with enhancing student's academic development, supporting specific areas for growth outlined in 504 or individualized education programs, and promoting connections with the world.

Long-term Vision and Goals

The NYCDOE's mission for technology integration offers a strategic approach to the development of a new technology plan for Geographic District 13. The NYCDOE will systematically amalgamate people and processes at the two new elementary schools and one middle school in order to develop the new technology plan that facilitates teaching and learning in the 21st-century. The function of the new ITP by stakeholders is to create a working document that guides both the planning committees and the staff that implement the technology within the three new schools as end-users.

In the long-term vision, educational technologies that alter how, what, and why students learn in order to transform traditional schooling. Technology can be leveraged to afford unique possibilities for fulfilling Geographic District 13's vision that would otherwise be unattainable.

To exemplify, students in both elementary schools and the middle school will have access to digital content that will augment and expand knowledge about subjects in inventive ways, and foster non-cognitive competencies in students.

Moving to learn empowered by technology equates to a shift in the distinct intelligence and competencies required of leaders as well. Teacher-leaders will require additional experience and training with educational technologies to develop a solid foundation for how these tools can be incorporated with teaching, pedagogical, and content knowledge (TPACK). Furthermore, all stakeholders need to clearly understand the role of technology in the curriculum in order to establish technology as an operational expenditure that is pivotal to the progress of academic programs in Geographic District 13. As stakeholders recognize the part that technology plays in multiple facets of teaching, learning, and agency within the district, individuals will appropriate resources more effectively to meet the needs of its population. The three new schools in Geographic District 13 will also make public the plan to encourage community collaboration and transparency as a continuing work in progress to scaffold implementation and make critical adjustments as requisite.

The vision for Swong Elementary and Samb Elementary, and a new middle school-- Mastreandea Middle--as part of Geographic District 13, incorporates three primary goals in the span of a three-year technology plan. Within the NYCDOE Strategic Technology Plan, the focus of short-term goal alignment incorporates trilateral methods to construct these new schools for the future (New York City Department of Education, 2015):

1. Expand device availability as a computing resource and technology for pupils.

2. The deployment of next-generation broadband services through network enhancements and upgrades of extant building electronic infrastructure.
3. Strengthen the platform to reinforce professional learning for educators and support staff.

Goal One

The first goal includes the integration of one-to-one Chromebook devices into instruction. One-to-one computing is the provisioning of an electronic device to school stakeholders, such as students and faculty, that have the intention of improving educational experiences and access to online resources for disadvantaged homes (Frazier & Herrington, 2017). To ensure that the instructional technology will be comprehensively sustained to support rigorous academic instruction for all students and improve performance outcomes, accessible educational materials (AEM) and technologies will take into consideration individuals with disabilities. The inclusion of technology in the ITP does not immediately equate to improved learning outcomes, and the NYCDOE ITP ensures the district technology will address the needs of students with disabilities to ensure equitable access to instruction, materials, and assessments by providing through the district LMS system and website (National Center on Accessible Educational Materials, n.d.). Additionally, the technology is utilized to provide additional ways for students to access key content, such as providing multi-modal forms of expression to supplement verbal or written instructions or increase options for students to demonstrate knowledge and skills.

The NYCDOE has a plan to include substantial contributions over three years to expand the number of devices accessible for student use. Additionally, Geographic District 13 will remove the ban on pupil-owned cellular phones in the middle school to provide opportunities to include more devices in the learning process and facilitate one-to-one integration. Furthermore,

the NYCDOE has an overarching system for funding streams to invest in one-to-one devices that Geographic District 13 will follow over the next three years, which includes backing from the New York State School Technology Voucher Program (STVP) that will assist in subsidizing one-to-one program costs (New York City Department of Education, 2015). The inclusion of assistive technology devices in the one-to-one initiative through the STVP will also be a factor in the funding support structure of Geographic District 13 as well.

Essentially, all students in Geographic District 13, regardless of ability or disability, will have access to learning materials in digital content related to the curriculum of computer science or STEM. The premise for goal one is to allow students the opportunity to develop 3C's framework of collaboration, cooperation, and coordination in a culturally responsive, inclusive manner (Cooperrider, 2014). Using technology, students will collaborate with others from diverse backgrounds and geographic locations that are adherent to NY State academic standards and promote global digital citizenship. Ultimately, students in Geographic District 13 will become problem solvers, creators, and develop digital literacy and fluency using their one-to-one device.

Goal Two

The second goal is to provide efficient and quality infrastructure and access sitewide by all students and staff in the one-to-one device initiative. This will ensure that the first goal can and will be successful as students and staff will be provided high-speed connectivity to leverage the devices fully in order to assist in the teaching and learning process.

Students and staff within Geographic District 13 will have access to protected, stable internet service at rapid speeds. Duplicitous, varied environments will exist for teaching and

learning, unbound by place within the buildings of the time in which learning transpires. All areas within the SWong Elementary School, Samb Elementary School, and Mastrandea Middle School will have access to learning resources through digital avenues, both before, during, and after school through high-speed Internet connectivity, and fiber-optic broadband services to support the needs of users.

In order to actualize this goal, the NYCDOE has developed a Capital Plan to invest heavily in the modernization of all major facets of the internet infrastructure, including network design, bandwidth amplitude, and wireless devices. Furthermore, the new elementary schools and the new middle school will also be subject to the latest upgrades in electrification to facilitate high-speed connectivity and broadband support.

Updates of wireless technology guidelines and installation of fiber optic cables to sustain and support the schools' access to technological tools and applications will also be planned investments as part of Geographic District 13 to reach the second goal of providing quality infrastructure. Amendments to wireless technology guidelines and school infrastructure will help to improve and broaden wireless internet connectivity throughout the elementary schools and the middle school as well. Moreover, the addition of fiber optic cables will help support internet connectivity and allow for more media-rich learning experiences for students. Resultantly, the outcome of goal two will provide the two new elementary schools and one middle school within Geographic District 13 with more brisk and reliable mobile broadband internet utilities.

Goal Three

Lastly, the third goal focuses on the development of professional learning and collaborative opportunities among school staff during technology planning implementation. The third goal will provide teaching professionals in the three new schools the opportunity for relevant, just-in-time training to enable teachers to increase their content knowledge with technology. Through a series of integrated and online underpinnings, educators will cohere with colleagues and material for increased learning opportunities to bolster continuing professional development endeavors in the three new schools.

To increase professional learning and collaboration endeavors for teachers to satisfy the third goal in the ITP, the Geographic District 13 plans on implementing a longitudinal series of intensive workshop sessions and ongoing planning and implementation support for participating educators in computer science or STEM for the three new schools. Moreover, Geographic District 13 will incorporate an anytime, anywhere internet-based hub for resources. The hub can be accessed by educators in order to facilitate interaction among all teaching professionals and support staff in the three new schools in the district.

Ergo, the long-term vision for the NYCDOE is to invest in teachers and students via technical resources and applications as student achievement efforts to ensure that every child will proceed to college or careers prepared to function as a critically-thinking, productive adults. The NYC Public School District identified a pressing need to increase the understanding, skills, and affordances of all students across the district in 21st-century competency development. Emergent technologies have transformed the learning environment for students of all ages, and professional development training will mirror the needs of educators teaching in the digital age across the district.

Ultimately, educational technologies will be seamlessly integrated into teaching and learning to increase student achievement in the ITP for the NYC Public School District. Geographic District 13 will use a solid infrastructure system in its two new elementary schools and one middle school to provide a highly connected experience for technology. Through the ITP, the students will benefit from technology that allows for expanded learning situations, critical thinking, and skill development to ameliorate their lives. Teachers in Geographic District 13 will receive professional development that will enable them to differentiate instruction and increase content learning with the use of technology in a culturally responsive manner and maximize student performance outcomes with the one-to-one device initiative of the ITP.

Required Tech Resources to Implement Tech Plan

The inclusion of technological resources to support the ITP's goals during the implementation of the three-year span incorporates digital libraries that are hubs of information for teachers and support staff, fiber-optic cabling to provide safe and reliable wireless connectivity in the one-to-one initiative, and the use of specialized IT staff to train and manage the system. The most obvious resource in Geographic District 13's ITP is also the need for one-to-one devices that will be purchased through a vendor by the NYCDOE, which includes service, repair, and technical support in a bundled package for all the devices as a capital investment cost (Frazier & Herrington, 2017) in the budget.

In order to meet the district technology plan's second goal of next-generation broadband services through network upgrades of a high-speed communication line such as fiber-optic lines and modification of existing building electrical infrastructure, the utilization of a reference platform housing a compendium of information will be leveraged. Specifically, the NYCDOE

G-Suite Parachute, which provides secure access and setup of Chromebook devices throughout the district in subdomains to create a collaborative network for G-Suite for Education. The G-Suite Parachute will be a resource exercised in the administration, deployment, and spreading of the G-Suite applications safely and effectively. The rationale behind the inclusion of the resource during implementation is to help streamline the process for carefully and accurately connecting and managing the one-to-one devices to the cloud-based, G-Suite applications that will be incorporated into all facets of teaching and learning throughout the elementary and middle schools.

Next, in terms of infrastructure, the G-Suite platform will associate the cloud-computing system to be built on a collective of telecommunications that support fiber-optic speeds and whole-school wireless connectivity. Therefore, the use of local area networks (LANs) in each school will be connected to wide area networks (WANs) through fiber optics for seamless connectivity as both students and staff move within Geographic District 13. The connection type will require fiber-optic cabling which allows for high-speed data and voice transmission (Frazier & Herrington, 2017) and the appropriate firewalls that are supported by a high level of encryption will be embedded into the ITP. The rationale is to ensure that end-users are provided quick and easy wireless access with minimal lag time while considering features of security.

Finally, the Division of Instructional and Information Technology (DIIT), which is the NYCDOE branch for all technology systems, that will be involved to evaluate the current network system and to assist with planning to meet current and future needs. DIIT will be a resource point of contact servicing the three new schools to assign the necessary personnel to handle administration, user account management, user training, all aspects of network

management, and physical security of endpoint devices (Frazier & Herrington, 2017). The rationale behind DIIT's role in the ITP is that network infrastructure is specialized and requires more advanced technical acumen than what a technology coordinator may be equipped to handle (Frazier & Herrington, 2017), and DIIT can effectively expand upon and improve the infrastructure during implementation of the ITP in Geographic District 13 and liaison with the tech coordinator and other administrative stakeholders during the process.

Systematic Approach to Tech Management

The National Education Technology Plan (NETP) calls for digital applications, devices, and supports so students can construct, participate, and allot content with peers to entitle learners to take control of their learning. As such, the district's technology plan calls for the use of a transformative Digital Learning Guide to Implementation based on the NETP (State Educational Technology Directors Association, 2019). This framework follows a definitive array of steps for planning, operations, collegiate practice, equity and access, and stakeholders.

Furthermore, in order to systematically assist stakeholders in creating sound, comprehensive action plans to monitor the implementation of the district's ITP plan and goal initiatives, the use of a Future Ready framework will be included. The framework includes a five-step procedural arrangement for planning teams to measure stakeholder and district needs, gather recommendations and data from stakeholders in the process of one-to-one device initiatives, infrastructure development, and professional learning communities (PLCs), and create an action plan to frame and drive the plan to align to Geographic Region 13's three visionary goals. Stakeholders in the team would then connect, disseminate findings, and repeat the process throughout the three-year technology plan to ensure successful outcomes.

As part of the approach to managing the technology through the Future Ready framework, the district will also adopt an additional Future Ready, Every Student Succeeds (ESSA) Guide to ensure that the district's three ITP goals are in alignment with the Every Student Succeeds Act (ESSA) of 2015 (Future Ready Schools, 2017). The justification is that comprehensive state and district technology plans are fashioned to halt achievement gaps, bolster equity, improve access and condition of instructional content and resources, and enhance scholastic outcomes for students. The Future Ready ESSA Guide will center on accountability in assuring excellent education and assist in surmounting challenges in the effective implementations of the district's ITP plan goals.

Procedures to Coordinate and Control the System

One-to-One Device Purchases

The New York State *Race to the Top Grant* will fund the new device purchases (New York City Department of Education, 2015). As part of the one-to-one ITP implementation, the district will engage in the acquisition of the Chromebooks on behalf of the collective schools involved using the approved vendor catalog (Acer, 2019). Each school is responsible for distributing the devices to every student, instituting a record's management system to account for the distributed hardware, and return any deficient devices under the warranty restoration program. Also, the schools will be required to plan and to budget for resources for the upcoming school year pursuant to the intrinsic needs reflective of their individual sites and relay the information to the rest of Geographic District 13 to be included in consideration of the district's budgeting framework.

System Administration

The G-Suite administrator has the ability to customize Chromebook security settings based on individual school needs, preferences, and security considerations. Also, the administrator uses the console to manage user permissions, to provide appropriate security settings for the applications being deployed, and to grant services that run through the G-Suite. Other roles include activating and deactivating users, creating roles, assigning users to appropriate user groups, prepping of device assignments, and record-keeping of changes in accordance with established change management policies.

Geographic District 13 will include a comprehensive plan for backing up critical files and safeguarding data in the event of a disaster in order to recover pertinent information. In the event of critical system failure, vital data that cannot afford to be irreplaceably lost will follow disaster recovery procedures that include off-site storing of important files from the file server shared throughout the two new elementary schools and one middle school. Essentially, the plan will also include training of users to save copies of important data, files, and related information to the file server so they can be backed up if not stored on the cloud (Frazier & Herrington, 2017).

System Administration Daily Checklist

The following scenarios are taken care of by the system administration:

- **Devices**
 - Report of broken devices
 - Submit repair tickets
 - Follow up with upgrades of devices outdated software
 - Properly dispose of end of life devices
- **Network Infrastructure**

- Reporting of internet outage and connectivity
- Troubleshooting and escalate tickets for vendor service requests
- Monitoring network traffic and analyzing system performance
- **Professional Development**
 - Keeping a track of educators and staff training
 - Provide written documentation of new functionality

Evaluation Tools to Assess the Program

In order to ensure the introduction of these computing devices benefits the overall objectives set forth by Geographic District 13's ITP plan, a multi-step approach will be utilized. Foremost, in alignment with goals one and two for greater accessibility and strong infrastructure, feedback surveys will be used to assess for the quality of the solutions from multiple stakeholders. Students, especially those with Individualized Education Programs (IEPs), will provide their perspective on quality access, highlighting supports or lack thereof regarding the one-to-one Chromebook initiative. Student surveys will provide necessary data about the end-user experience of using one-to-one devices and the impacts on student engagement, interaction and learning with 21st-century digital content. The Friday Institute (2013) has crafted an exemplary survey tool for teachers to assess the impacts of the solution, but can also be modified for student use to evaluate effectiveness in the learning process as well. In addition, teachers will gauge their experiences with one-to-one Chromebook devices as an important tool in gathering data to assess the district tech plan's goals of providing access to quality infrastructure and ongoing collaborative learning networks using digital platforms.

The information received from the surveys will also assist in the evaluation of the third goal, which is a professional development and support for the one-to-one initiative during its implementation with students. Furthermore, the biannual quality review system will support the assessment of school quality in regards to resource allocation (Indicator 1.3) for this investment, as well as the development of teacher pedagogy using new tools (Indicator 1.2) (New York City Department of Education, 2019).

Conduct for Ongoing Data-Driven Decision Making

In order to determine the sufficiency of the implemented solutions, it will be required to analyze the collected survey data to determine if supplemental professional training, needs-assessments, equitable access, or infrastructure considerations need to be conducted. Surveys are administered to faculty and students to verify actions and beliefs regarding the one-to-one implementation, including but not limited to: Ease of use and access, quality of instructional content, perceptions on the enhancement of student learning, the academic impact of digital devices on teaching and learning, and facilitation of professional collaborative networks of support. A quantitative analysis covering topics such as satisfaction, percentage of use, and results on instruction and planning will be utilized as a perception for impact as well. The Quality Review System report on the indicators, coupled with the surveys from teachers and students will provide the necessary information in a comparative analysis for stakeholders to determine how Geographic District 13's ITP plan is aligning to the outlined goals from the district's vision. From these results, it can be determined that supports are sufficient or in a deficit, which will require additional attention for professional development or even further needs-assessment considerations. In addition, data may show that there is a surface-level success

on raising accessibility but could lack the defined level of quality that is considered equitable.

Lastly, testimonials, support tickets, and network statistics will define the caliber of the infrastructure used to support the Chromebooks while at school that could lead to construction remediation.

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