Jersey City Public School Technology Plan:

Flipped Learning

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Authors’ Note:

The sections titled Vision, Vision/Mission Revision, Background, Needs Assessment, and Standards and Learning Objectives were prepared by Deborah Nagler.

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Jersey City Public School Technology Plan: Flipped Learning

Jersey City is a vibrant, urban area with a growing school-aged population. With an estimated six-percent growth in registration (National Center for Education Statistics, 2013) over the next two years, the Jersey City Public Schools District (JCPSD) will be building two new elementary schools and one middle school in order to keep pace with the demand for classrooms. Each of these schools will address a specific demographic. As well, all three will be engaged in a pilot program that will disrupt classic school structure and offer significant advances in technology integration, personalized learning, and the inculcation of 21st Century skills within the classroom.

**Vision/Mission**

The vision of JCPS, as stated in the 2014-2017 Strategic Plan is to provide universal, standards-based education that prepares Jersey City’s students for college and career (JCBOE, 2014). The specific mission or mandates of the JCPS relate to “excellence and equity”, “school climate”, “effective staff”, and “engaging parents and community”(JCBOE, 2014, para.1). JCPSD elaborated on this vision in the 2013-2016 Technology Plan (JCBOE, 2013), which states that “The JCPSD has provided its students and staff the foundation on which to build a technologically-enhanced, restructured supportive learning environment, that infuses the most appropriate technologies in the most natural manner into highly effective instructional and administrative applications providing the public school community with equitable access to achieve a richer, more challenging, rewarding educational experience from routine use of technologies “ (p. 5).  The proposed addendum to the recent Technology Plan, recommending the implementation of a Flipped Learning pilot program in JCPS schools, extends the vision of

the current plan to encompass a re-envisioned model for technology-supported classroom

teaching, wherein the full potential of the student can be realized.

**Vision/Mission Revision**

JCPS Technology Plan Addendum seeks to implement a program of Flipped Learning in three new schools. Flipped Learning describes an approach where instruction takes place via pre-recorded videos that are viewed at home, after school hours, and homework, reinforcement, and assessment take place in the classroom (Bergmann & Sams, 2012). This approach creates a technology-supported learning environment that addresses the needs of diverse learners and fosters the development of both college preparatory and 21st Century workplace skills, such as communication, collaboration, critical thinking, and creativity (Partnership for 21st Century Learning, 2011). Moving beyond the original plan, its mission will be to:

* Engage parents as active partners in the learning process,
* Promote personalization of instruction and differentiated learning in the classroom,
* Develop self-actualization and independent learning skills as a foundation for lifelong learning, and
* Cultivate peer-to-peer collaboration skills as a pathway to college preparation and strong future employability.

While this plan addresses the Technology goals and objectives for three new schools in this district, it vision reaches much farther. As a methodology, Flipped Learning is relatively portable. It’s greatest demand is the training of teachers and their disposition to invest time and effort in restructuring their classroom. It is anticipated that the success of this initiative in three new and high profile schools will result in adoption by other schools within the district.

The goals for achievement of this plan are four-fold. The JCPS BOE will:

1. Create the necessary infrastructure and hire requisite personnel,

2. Conduct professional development and facilitate resource preparation

3. Refine and implement learning Goals

4. Conduct formative and summative evaluations gauging both student progress and the effectiveness of the Flipped Learning model for these schools.

**Background**

Jersey City Public Schools District serves a large, diverse, urban population that includes immigrants from all corners of the globe. As of 2013, there were 38 schools in Jersey City serving a pre-K-12 student population of 27,028, roughly 10% of which the students are English Language Learners (National Center for Educational Statistics, 2013). Current statistics show that the Latino-American population of JCPS is over 11,000 students with only four middle schools serving the entire population (JCBOE, 2015).

The recent influx of newcomers to established immigrant neighborhoods, as well as, a spike in the numbers of Jersey City residents commuting to jobs in New York City have inspired predictions that an additional 1700 students will be added to the rolls of K-5 students within the next two years (Urbanomics, 2014). Consequently JCPS is planning to add two new elementary schools and a middle school to their roster. The elementary schools will be designated as the Steve Jobs STEM Magnet School and the Frida Kahlo Bilingual Magnet School. The Steve Jobs STEM Magnet School will address strongly expressed parent interests in the establishment of a school with an emphasis on math and science. The Frida Kahlo Bilingual Magnet School will be a K-5 school and will provide both bilingual and dual language instruction in Spanish and English, as well as instructional support services for ELL students.

The new middle school, to be named the Yogi Berra Middle School, will be opened to address the increased numbers in this segment of the student population. This school, along with the two new elementary schools, will launch a pilot program in Flipped Learning, which seeks to offer JCPS students the opportunity for enhanced technological education and personalized learning. In grades K-4, the school will build the foundations for Flipped Learning in strong technical skills and family engagement in learning. Grades 5-8 will see the introduction of a more formalized Flipped Learning program.

**Needs Assessment**

This proposal is the result of a district-wide needs assessment that was used to develop the current Technology Plan, in which district teachers completed a technology-use survey. In preparation for this addendum, an additional survey was administered to parents whose children would qualify for each of the three new schools, either by virtue of their demographic, interest in STEM education, or proximity to the middle school. As well, focus groups of parents were convened to gather feedback on the availability of computers and Internet access at home and parent interest in and willingness to support the Flipped Learning model.

Overall parent response was extremely positive regarding the proposed program for each of the three schools. A significant percentage of respondents indicated that as working parents, they would take advantage of an extended-day. Consequently, the plan was modified to include a computer supported, after-school program where students can prepare for Flipped Learning lessons.

External resources were also brought to bear in the development of this project. Technology Coordinators of 10 schools already implementing Flipped Learning were interviewed and the Technology Plans of these schools examined.

**Common Core Standards and Learning Objectives**

The 2014 Technology Standards for the New Jersey Common Core Curriculum Standards form the basis for the JCPS Technology Plan and this addendum. The goals of this approach are based on the foundation of the following standards:

* “8.1 - Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
* “8.2 - Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment” (State of New Jersey Department of Education, 2014).

Standard 8.1 breaks down into six learning objectives that will be met with the Flipped Learning approach (State of New Jersey Department of Education, 2014):

8.1.1 “ Students demonstrate a sound understanding of technology concepts, systems and operations.

8.1.2 Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.

8.1.3 Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

8.1.4: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.

8.1.5: Students apply digital tools to gather, evaluate, and use information.

8.1.6: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources” (pp. 1-7).

In application of these objectives, the elementary schools will operate in a manner similar to their counterparts in the district. In grades K - 4, the focus will be on developing the requisite skills for functioning in a Flipped Learning environment. The difference will be in the incrementally increasing emphasis on the use of video for instruction outside of traditional school hours, computer-assisted personalization of learning within the classroom, and 21st Century-critical skills of communication, collaboration, critical thinking, and creativity (Bergmann & Sams, 2012).

For the Frida Kahlo Bilingual Elementary School, ancillary objectives related to language acquisition are present. Here the focused use of Technology is intended to expand the students’ access to personalized instruction, practice, and remediation. Further, it is anticipated that by situating video instruction in the home, other family members may benefit and potentially reinforce the learning by the student.

Beginning in Grade Five and continuing through Grade Eight, Flipped Learning will become the primary mode of instruction. Here students will demonstrate the ability to:

* Access and attend to an instructional videos,
* Generate and discuss questions based on the videos viewed,
* Work independently whether online or offline in the classroom,
* Work collaboratively and communicate well with both the teacher and peers,
* Manage both time and workload (Bergman & Sams, 2012).

Over its first three years of operation, the Yogi Berra Middle School will strive to implement Flipped Learning in the bulk of its educational program.

Standard 8.2 presents five learning objectives that focus on “Technology, Engineering, Design, and Computational Thinking/Programming (State of New Jersey Department of Education, 2014, pp. 9 - 18). While all district schools must, in general, incorporate these learning objectives into their curricula, in the Steve Jobs STEM Magnet School, they will be given particular attention. “Creativity and innovation” (8.2.1) will grow from hands-on experiences with a variety of technical tools. Students will learn to apply design processes (8.2.) as they undertake “systematic approaches to problem solving” (8.2.3). Programming skills will be developed, as well as other applications of computational thinking (8.2.5). All of the above objectives will be grounded in the cultivation of an understanding of the emerging role of technology in society (8.2.2).

**Funding Plan**

The funding plan has been designed to ensure that the technology needs of the district are met in order to successfully implement the administration of the Partnership for Assessment of Readiness for College and Careers (PARCC) and to promote the academic and diverse needs of the students in the Jersey City Public Schools. It was also intended to support the New Jersey Core Curriculum Content Standards, the Common Core State Standards, as well as, various technology initiatives to support college and career readiness. The funds in this plan directly correlate to the budget that has been developed as part of the launch of the three new schools that will be opening in the fall of 2016. The monies have also been broken down to reflect the distribution of funds that have been forecasted in the Three-Year Educational Technology Plan. The budget consists of federal funding, state funding, local funding and miscellaneous monies including grants and donations. (See Table 2).

The proposed budget includes funding for technology equipment at the school level, including but not limited to, 4 desktop computers in every classroom and the availability of Chromebook carts, iPad carts and laptop carts at each of the schools. The costs for the installation of appropriate bandwidth to sustain the capacity of the network are also included in the budget. Monies for curricular software to support teaching and learning, as well as, filtering software for objectionable content have also been taken into consideration. Access to curriculum test-preparation and enrichment software applications aligned to the NJCCCS and the CCSS are readily available. Telecommunication services include high-speed Internet access in every classroom, wireless Internet, access points and cable/electrical services. Staffing allocations for 3 technology coordinator positions have also been included. The function of the technology coordinators will be to assist with the educational and technical support needed at the school level. Funding has also been earmarked to cover the expenditures of the district’s Help Desk which will provide end users with the technical and operational assistance needed from the district level. (See Table 1).

**Table 1. DISTRIBUTION OF FUNDS**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **2016-2017** | **2017-2018** | **2018-2019** |
| **Technology Equipment and Network Capacity** | $123,789.00 | $127, 502.00 | $131,327.00 |
| **Software Used for Curricular Support and Filtering** | $134, 210.00 | $136,236.00 | $140,323.00 |
| **Technology Maintenance Policy and Plans** | $9,868.00 | $10, 164.00 | $10,468.00 |
| **Telecommunication Services** | $94,000.00 | $96,820.00 | $99,724.00 |
| **Technical Support** | $110,526.00 | $113,841.00 | $117,256.00 |
| **Facilities Infrastructure** | $18, 947.00 | $19, 515.00 | $20, 100.00 |
| **Staffing** | $188,325.00 | $193,974.00 | $199,793.00 |

**Table 2. THREE YEAR TECHNOLOGY FUNDING TABLE**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ITEM | Federal Funding | State Funding | Local Funding | Miscellaneous (E.g. donations) |
| Technology Equipment | 10% | 75% | 5% | 10% |
| Network Capacity | 10% | 75% | 5% | 10% |
| Filtering Software | 15% | 80% | 5% | 10% |
| Maintenance Policy and Plans | 15% | 80% | 5% | 10% |

**Technology Acquisition Plan**

This plan focuses on the implementation of the educational technology at the school and district level. It has less of a focus on the business technology aspect, which would include the actual infrastructure of the buildings.

The current status of key processes identified as part of the technology department and systems used include the following: System security protocols, system upgrade protocols, virus protection, software licensing protocols, disaster recovery and data warehouse access. In addition, the school building networks include Novell Servers, computers, laptops, tablets, laser and inkjet printers, copiers and scanners (JCPS, p.5).

In terms of emerging needs, there may be some unanticipated expenditures that were not included in the Three-Year Educational Technology Plan. If the need for additional equipment arises, it will be addressed through the current budget of the fiscal year. In the event that the monies will not be available in time, the district will apply for additional grants. (See Table 3).

**Table 3: ACQUISITION OF TECHNOLOGY, STANDARDS AND FUNDING**

|  |  |  |
| --- | --- | --- |
| **Acquisition of Technology** | **Alignment of Standards** | **Distribution of Funds** |
| **1-to-1 laptop initiative** | 8.1 | Technology Equipment and Network Capacity |
| **Mobile Chromebook Carts** | 8.1 | Technology Equipment and Network Capacity |
| **Desktop Computers, Laptops and iPads** | 8.1 | Technology Equipment and Network Capacity |
| **SMART boards and LCD Projectors** | 8.1 | Technology Equipment and Network Capacity |
| **Video Cameras** | 8.1 | Technology Equipment |
| **Cloud Storage Accessibility**  (for instructional videos) | 8.1 | Network Capacity |
| **Thumb Drives and DVDs**  (for sharing instructional videos) | 8.1 | Technology Equipment |
| **Headphones with Microphones** | 8.1 | Technology Equipment |
| **Moodle Management** | 8.1.3 | Personnel |
| **Curricular Software Programs**  (for content area remediation and enrichment) | 8.1.3 | Software Used for Curricular Support and Filtering |
| **Screen-casting software** | 8.1 | Software Used for Curricular Support and Filtering |

**Professional Development**

In order to successfully launch the Flipped Classroom initiative at the Yogi Berra Middle School (6-8), the Frida Kahlo School (K-8) and the Steve Jobs STEM School (K-8) the district will provide resources for training, in both Spanish and English, which will include tutorials on how to develop content-related videos, as well as, hosting content to transform teaching and student learning. Flipped Classroom training and “best practices” will be shared during district-led workshops, Professional Learning Communities (PLCs) and common planning time. Flipped Classroom experts Jonathan Bergmann and Aaron Sams, the authors of Reach Every Student in Every Class Every Day, will facilitate the district-led workshops*.*

In the lower grades, the focus of the professional development will be on setting the stage by building solid skills and laying the foundational structure to support a Flipped Classroom model. In doing so, strong technology skills will be developed along with communication, collaboration and the ability to work independently in order to promote stamina, increased rigor and higher order thinking skills. In addition, training will be provided to ensure content area expertise across the curriculum.

The focus of the professional development in grades 5-8, in all three schools, will be on content-area instructional practices, student learning and the effective implementation of the Flipped Classroom program. All stakeholders, including parents, teachers and students, will be trained on the model. Translated documents for both parents and students will be accessible in the child’s home language. During the first year of implementation, (2016-2017) the district will pilot the Flipped Classroom program beginning with math content area instruction in grades 6-8 at the Yogi Berra Middle School. Additional grade levels and content area instruction specific to the Flipped Classroom model will follow as noted in the Technology Implementation Plan.

**Professional Development components for the Flipped Classroom program:**

* Provide content area support in all classrooms with a concentration on Science, Technology, Engineering and Mathematics. STEM training will be provided by Liberty Science Center with a focus on inquiry-based methodology using the Next Generation Science Standards (NGSS, 2015).
* Identify a collection of Flipped Classroom resources and “best practices”
  + Demonstrate how to access and utilize the instructional videos
  + Provide tutorials on how to redesign the classroom time and how to design active learning activities involving group work and collaboration (Witt, 2015).
* Train the instructional staff, the Technology Coordinator and the Library Media Specialist on how to create Flipped Classroom videos and how to implement an effective program.
  + Provide strategies for students that do not have computer access at home
* Provide training and tutorials on how to utilize the technology equipment, including but not limited to, Chromebooks, Laptops, SMART boards, iPads and screen-casting software.
* Train the administrative staff on how to evaluate and observe a Flipped Classroom
* Teach students how to watch and interact with Flipped Classroom training videos (Bergmann and Sams, 2012).
  + Promote the use of time management skills
* Provide parent training in order to authentically engage the families and the community while establishing home/school connections
* Create a district blog on effective strategies for implementation
* Assess the effectiveness of the Flipped Classroom program within the classroom
  + Formative Assessments
  + Summative Assessments

**Technology Implementation and Evaluation Plan**

Existing technological initiatives will remain in place. In order to meet the goals of the revised vision, the JCPS district will launch a pilot Flipped Classroom program in the three new schools. The implementation plan will be carried out during the course of three years. The following chart outlines the plan. The goal is to have the Flipped Classroom model fully operating in grades 5-8 by the end of the school year in 2019. The following chart outlines the plan.

|  |  |  |  |
| --- | --- | --- | --- |
| Description of Steps | Responsibility | Evaluation | Timeline |
| Implementation of Flipped Classroom Model in Math classes in grades 6-8 in the Yogi Berra Middle School | Math teachers in collaboration with Technology Coordinator at YBMS | -Teacher self-assessments  -Student/parent surveys | September 2016 |
| Implementation of the Flipped Mastery Model in Math classes in grades 6-8 in the Yogi Berra Middle School | Math teachers in collaboration with Technology Coordinator at YBMS | -Teacher self-assessments  -Student/parent surveys  -K-12 Exemplar Evaluation Tool | January 2017 |
| Implementation of Flipped Classroom Model in Science classes in grades 6-8 in Yogi Berra Middle School | Science teachers in collaboration with Technology Coordinator at YBMS | -Teacher self-assessments  -Student/parent surveys | September 2017 |
| Implementation of the Flipped Mastery Model in Science classes in grades 6-8 in Yogi Berra Middle School | Science teachers in collaboration with Technology Coordinator at YBMS | -Teacher self-assessments  -Student/parent surveys  -K-12 Exemplar Evaluation Tool | January 2018 |
| Implementation of Flipped Classroom Model in fifth grade Math classes in Frida Bilingual Magnet School and Steve Jobs STEM Magnet School | Math teachers in collaboration with Technology Coordinators at FBMS and SJSMS respectively | -Teacher self-assessments  -Student/parent surveys | September 2017 |
| Implementation of the Flipped Mastery Model in fifth grade Math classes in Frida Bilingual Magnet School and Steve Jobs STEM Magnet School | Math teachers in collaboration with Technology Coordinators at FBMS and SJSMS respectively | -Teacher self-assessments  -Student/parent surveys  -K-12 Exemplar Evaluation Tool | January 2018 |
| Implementation of Flipped Classroom Model in fifth grade Science classes in Frida Kahlo Bilingual Magnet School and Steve Jobs STEM Magnet School | Science teachers in collaboration with Technology Coordinators at FBMS and SJSMS respectively | -Teacher self-assessments  -Student/parent surveys | September 2018 |
| Implementation of the Flipped Mastery Model in fifth grade Science classes in Frida Kahlo Bilingual Magnet School and Steve Jobs STEM Magnet School | Science teachers in collaboration with Technology Coordinators at FBMS and SJSMS respectively | -Teacher self-assessments  -Student/parent surveys  -K-12 Exemplar Evaluation Tool | January 2019 |

The implementation process in each school will be comprised of, but not limited to the following strategies, as recommended by Bergmann & Sams (2012):

* Parents will be initially notified of the Flipped Classroom Model by mail.
* “Flipping” Back to School Night in each school the year when the implementation will take place. Parents will have the opportunity to learn about the program through teacher-created videos prior to meeting in school for the event.
* Students will be eased into the program by introducing a regular flipped model in the first semester and incorporating a flipped-mastery model in the second semester.
* The teachers will conduct in-school lessons on how to effectively watch the videos in the first week of school.
* Classroom set up will be modified to reflect a student-centered approach that promotes collaboration and personalization of instruction.
* Each classroom must be equipped with one to four computers for those students that can’t complete the flipped lesson at home.

The three-year Flipped Classroom Model implementation will be grounded in The Framework for 21st Century Learning. The rationale behind this framework establishes that in order for students to gain 21st century skills instruction must be designed around the following support systems: Standards, Assessments, Professional Development, Curriculum and Instruction, and Learning Environments (Partnership for 21st Century Learning, 2011).

The program evaluation will consist primarily of teacher self-assessments, student and parent surveys, once program has started and at the end of each school semester. Teachers in collaboration with their content area supervisor will administer these assessments. An evaluation using the K-12 Exemplar Evaluation Tool (Partnership for 21st Century Skills, nd) will be conducted by the Technology Coordinators of each school by the end of each school year.

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