

Fort Bend Independent School District

Educational Technology Master Plan

As of October, 2018

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Introduction

Fort Bend ISD (FBISD) is the seventh largest school district in Texas and one of the most diverse school districts in the state and nation. The vision of the District is to continuously improve teaching and learning by developing effective staff and building scalable systems. The District's mission is to inspire and equip all students to pursue futures beyond what they can imagine. In committing to provide an educational system that will enable all students to reach their full potential, the District also commits to continuous improvement to support students as they prepare for an ever-changing global society.

The Educational Technology Master Plan is intended to be a living document, revised annually to reflect changes in the district, changes in student needs, and to allow for adjustments to the plan based on current implementation of the curriculum and usage of technology. The purpose of the plan is to provide resources that support students and staff through appropriate infrastructure, technology devices, and integrated instruction. By providing greater access to technology as a teaching and learning tool, our goal is to increase student engagement, enhance instructional strategies, increase instructional support, and provide varied learning opportunities for students with diverse needs while also increasing efficiency in productivity for staff.

Full implementation that establishes the classroom standards across the district and reaches the goals set forth in the plan is estimated to extend over a three-year period. The foundation of the plan, established during the school 2017-2018, is a Learning Management System (LMS) that serves as the Curriculum Management System and is the centerpiece of digital usage connected to the classroom. Providing access to digital devices and professional development for teachers are additional priorities of the plan. The Academic Affairs Division and the Information Technology Division are collaborating to develop proof-of-concept models for technology and instructional models that will be deployed, piloted, implemented and evaluated on a district-wide scale.

This updated plan provides details about the district's plans for a proof of concept model, the plans for piloting, evidence of scalability, and the final district-wide deployment plan. Additionally, this plan details the standards for implementation with flexibility for change as needed. It also provides a gradual implementation period to provide management of individual projects within the master plan. Collaboration of stakeholder groups, ongoing feedback pathways, and assessment of progress toward completion are included.

Technologies are "tools" and not the "ends in themselves." Infusing technology into classrooms can and will play a key role in the learning environment.

1 Background

Over the past decade, FBISD has witnessed a tremendous increase in the use of technology across its environment. Technology fills every aspect of the academic and operational environments. Technology can simplify collaboration and communication, empower daily lives, add value to the student experience, and inspire creativity in teaching and learning. In addition, for FBISD to realize its mission and vision, students and teachers need modern classroom technology devices and tools to enhance and complement the curriculum, instruction, and learning.

In May 2016, an Educational Technology Master Plan was presented to the Board, outlining the instructional vision for technology integration and the initial recommendations for the classroom toolset. This updated plan intends to build a framework for technology to support the delivery of instruction, which includes more than simply providing computers and software. The plan's intent is to integrate technology into the day-to-day instruction instead of technology usage being an event for the classroom. Best practices and industry standards will provide the foundation of this master plan; however, student, staff, and community engagement are critical to the development and implementation of the Educational Technology Master Plan. This plan reflects the collaborative efforts and recommendations of the FBISD Academic Affairs Division, the Information Technology Division, and the campus and community representatives.

As a "living document" and as with the 2016 Educational Technology Master Plan, FBISD will review and update the plan each year to keep it current and reflective of FBISD practices. It is flexible with specificity to serve as a guide in decision-making and budgeting. The recommendations contained in this master plan are intended to provide direction for the Board of Trustees, the Superintendent and the Executive Team, departments, principals, teachers, support staff, parents, and students in planning for classroom technology initiatives for the near future. The purpose of the plan is to support increased student learning in FBISD as we prepare students for futures beyond what they can image.

2 INSTRUCTIONAL VISION FOR TECHNOLOGY INTEGRATION

2.1 Teaching and Learning in FBISD

District goals affirm the belief that all students should be enabled to reach their full potential through the delivery of a fully aligned, guaranteed, viable curriculum; systems that provide for advanced learning, and interventions for academic and behavior support. To meet these expectations, the technology systems must increase teaching and learning capacity and capability.

Quality curriculum and instruction in FBISD is designed to address several areas:

- Equity and access to standards-based content that is consistently guaranteed, relevant, coherent, unbiased, and balanced
- Skill development and competencies that promote college and career readiness
- Differentiated instruction to serve the diverse learning needs of all students

2.2 Goals for Technology-Enhanced Instruction

FBISD's diverse student population requires differentiated teaching and learning strategies. Students have a variety of learning styles, and technology can reach and develop multiple modalities. All students, especially Bilingual/English Language Learners, Gifted and Talented, and Special Education students need multiple modalities to acquire deep learning. Students need opportunities to apply their learning using a variety of tools.

Technology innovations will facilitate more personalized learning through a variety of features. Pre-assessments/screeners will allow teachers to efficiently pre-assess students' skills and provide varied starting/mastery points for students. Adaptive programs will allow students to move through learning modules at different speeds, even bypassing lessons by demonstrating mastery via pre-assessment. Programs also extend opportunities for collaborative and individual learning. Each of these strategies has the potential to increase teachers' time for instructional design/planning, one-to-one instruction, and small group interactions allowing for feedback between students and teachers.

To create a fully personalized learning system, teachers need diverse tools. The volume of state-mandated objectives and standards for each grade level/content area has increased over the last decade. The state accountability system demands the tracking of student progress for strengths, weaknesses, and growth. Online resources can expand direct instruction, re-teaching, reassessment, and enrichment capabilities while freeing the teacher to support students. The quantity and quality of online programs and digital resources continues to increase, resulting in a variety of resources for students and teachers.

While digital tools cannot replace classroom-based instruction, they do expand opportunities for students. To provide for this expansion, the Information Technology Department and the Academic Affairs teams are utilizing a proof-of-concept model that will extend to various pilots and evolve into a new learning standard for FBISD.

3 KEY STRATEGIES FOR THE EDUCATIONAL TECHNOLOGY PLAN

The following strategies will be the focus for implementation and continuous improvement in educational technology planning and implementation in FBISD.

3.1 Infrastructure

Completing the infrastructure upgrade is a priority and has been completed at all campuses as presented in the Infrastructure Master Plan and as allocated in the 2014 Bond Program. The wireless infrastructure will provide greater flexibility in choosing correct devices for the classroom. Additional bandwidth to the Internet will satisfy the increase in demand for data in the classroom. Increased reliability of the network will provide continuous computing for FBISD campuses, staff, students, and parents.

3.2 Learning Management System

Why learning management system?

- Almost every student has online textbook resources in at least four subjects and access to at least five other online programs. Each resource typically has its own login protocol. This is overwhelming for students and parents to manage (especially parents with multiple children in the system). An LMS can integrate resources into one platform.
- An LMS includes a robust parent portal with course and communication tools.
- Our district curriculum needs to transition from a content repository into a format that will allow for increased opportunity for students to experience more engaging, personalized, and interactive learning.
- Teachers will have increased capacity for differentiation of assignments and assessments for students.
- An LMS will increase the “size” of the classroom beyond the traditional four walls and enhance creation, collaboration, and communication in 21st-Century-style environments. The majority of post-secondary institutions, such as four-year universities, two-year junior colleges and vocational training programs, use learning management systems. The use of an LMS will prepare students for the transition to college and the work force.

As the data network provides the critical foundation to all infrastructure needs, the LMS provides the essential foundation for the Educational Technology Master Plan. The LMS is a software application that will deliver instructional content and provides integration with other systems such as curriculum management, student information systems, and teacher development. The LMS provides tools that support differentiated learning as well as online and distance learning capabilities. The LMS will provide a seamless integration to textbook publishers by employing current electronic textbooks utilized by the majority of textbook publishers. Other digital content resources can also be integrated into a more centralized setting for student and teacher access. The LMS will not only connect the teachers to the students, but it will also connect the parents to the classroom and provide opportunities to enhance professional learning for all staff members.

During school year 2017-2018, FBISD deployed Schoology, a learning management system, district-wide. Schoology was implemented in three groupings: Blended Learning Proof-of-Concept Implementation, Initial Technology Integration Implementation, and Minimum Implementation.

- Blended Learning Implementation:
 - These are campuses and classrooms that are committed to

- access the curriculum
 - engage in professional learning
 - participate in/ lead collaborative groups
 - utilize the Schoology instructional delivery features to implement blended learning frequently
- These campuses were provided access to the following technology
 - 10 devices per classroom
 - interactive projector in new elementary schools only
- Initial Technology Integration Implementation:
 - These are campuses that will commit to
 - access the curriculum
 - engage in professional learning
 - participate in/lead collaborative groups
 - utilize Schoology instructional delivery features within each unit (when purposeful and technology is available)
 - These campuses were provided with refreshed computer labs
- Minimum Implementation:
 - These are campuses that will commit to
 - access the curriculum
 - engage in professional learning
 - These campuses utilized existing technology

3.3 Universal Access

Universal Access refers to the ability to provide all learners equal access to digital content regardless of their location, financial status, or physical disabilities. (Berning, 2016). The Universal Access strategy will facilitate work with all stakeholders to deliver new instructional strategies, utilizing varied digital devices that provide instruction and/or content inside and outside of the traditional school setting. The Universal Access Strategy will ensure hardware, software, and Internet access for all students and teachers regardless of their locations, socioeconomic status, or disabilities.

- A formal Assistive Technology Program will be developed for students who would benefit from this technology to access District provided content and applications. This technology will include screen readers, note taking applications, word prediction applications, text readers, magnifications, speech-to-text tools, and other assistive technologies.
- Universal Access will include classroom devices that will eventually be replaced with a well-developed Bring Your Own Device (BYOD) strategy, backfilled with a technology lending library program to complement the recommended standard classroom technology configuration. This will ensure that all students will have a device to work with in class and at home. The BYOD program will include teacher training and professional development on classroom management and expectations in a BYOD environment. The FBISD Digital Citizenship course and expectations will be revised to provide the students, parents, and teachers the necessary guidelines for using devices in the new BYOD campuses.
- A Lending Library program will allow students the ability to check out devices if they do not have access to devices at home. The checkout process will resemble checking out a library book.

3.4 Standard Classroom Technology Configuration

As many school districts rush to deploy one-to-one (1:1) computing environment, some of these one-to-one implementation strategies are based on the computing device as the focus of the program,

resulting in a struggle of management and support of the program. As previously mentioned, technologies are “tools” and not the “ends in themselves.” The classroom technology toolset should complement and support the teaching pedagogy that supports a change in the Fort Bend ISD culture of teaching and learning. One-to-one programing requires a well-thought out transition and a dramatic paradigm shift from a learning environment where paper is the main source of storing and retrieving information, to an environment in which most information storage is digital and can be accessed at any time by all stakeholders.

Below is the revised recommendation for classroom technology configuration. The configuration supports the current teaching model and allows the design of an ongoing and embedded integration of technology into the pedagogy, moving away from the treatment of technology usage as an event. As Fort Bend ISD moves toward solidifying the integrated learning experience, the classroom technology configuration will change to accommodate the objectives of the framework for technology’s role in teaching and learning, especially connecting the learner to all resources that are available.

These recommendations will be re-evaluated as curriculum and digital instructional content for the new learning management system are developed. Fort Bend ISD will develop a life-cycle management program to ensure the District’s computing devices remain consistent with current technology. As with all implementations, the support and design of ongoing, embedded staff development that focusses equally on pedagogy and technology will be a key factor.

Through a proof-of-concept, FBISD establishes a classroom standard for digital devices. This standard will be complemented with a bring-your-own device (BYOD) strategy. As BYOD program matures, the reliance on classroom inventory will reduce correspondingly. The recommended classroom standards are as follows:

- Teacher laptop with docking station
- Teacher iPad for managing interactivity and projection (based on grade level)
- Access to shared printing by grade level for both teachers and students
- Interactive projector
- Quality sound system (in addition to the speakers on the projector)
- Wi-Fi to accommodate at least 75 simultaneous connections per classroom, with the capacity to be quickly upgraded
- Adaptive/Assistive technology for special-needs students
- Computer labs in library/media centers to accommodate at least one full class
- Internal Streaming technology for campus announcements
- One H.323 Remote Learning Unit per campus

3.4.1 Specific to Elementary Campuses ¹

- Twelve (12) (or at the ratio of 2:1 students to device) iPads per classroom for grades PK – 1st grade

¹ These are optimal configurations to accommodate the recommendations made in the FBISD Technology Assessment. The type and quantity of mobile devices will vary based on the district’s implementation and the availability of personal devices in the classroom. We strongly recommend the district implement analytics tools to monitor the use of mobile devices to determine quantities needed for each particular campus. It is important to remember that technology changes rapidly. The recommendations are based on current technology standards, and our understanding of emerging technology over the next 1-3 years.

- Twelve (12) (or at the ratio of 2:1 students to device) Windows-based laptops that are ruggedized (industry term, indicating built for durability) and designed for the education market for grades 2 – 5
- Two (2) iPad carts with 30 iPads each cart for classroom checkout from the Library
- Two (2) laptop carts with 30 laptops each cart for classroom checkout from the Library
- A Library Lending Program consisting of 20-40 computing devices and 5 mobile Internet hotspots per 1,000 students. These numbers will vary by location and local access considerations.

3.4.2 Specific to Secondary ¹

- Fifteen (15) (or at the ratio of 2:1 students to device) laptops per classroom
- Four (4) laptop carts with 30 laptops each cart for classroom checkout from the Library for each middle school
- Six (6) laptop carts with 30 laptops each cart for classroom checkout from the Library for each high school
- Two (2) to four (4) centralized computer labs with Wi-Fi enabled computers for every 1,000 students for specific program needs (Career and Technical Education, programming, etc.). These labs are critical for specific computer skills development and online testing.
- A library Lending Program consisting of 20-40 computing devices and 5 mobile Internet hotspots per 1,000 students. These numbers will vary by location and local access considerations.

Why do we need additional devices in our classroom inventory?

- Increasing device availability to a ratio of 2:1 (students to device) classroom increases the amount of online access availability for students.
- Usage rates of digital resources will increase and maximize the value over cost.
- Students will gain more practice in using productivity tools and applications (word processing, spreadsheets, publishing, and presentations).
- Having devices inside the classroom reduces time spent managing devices in other locations.

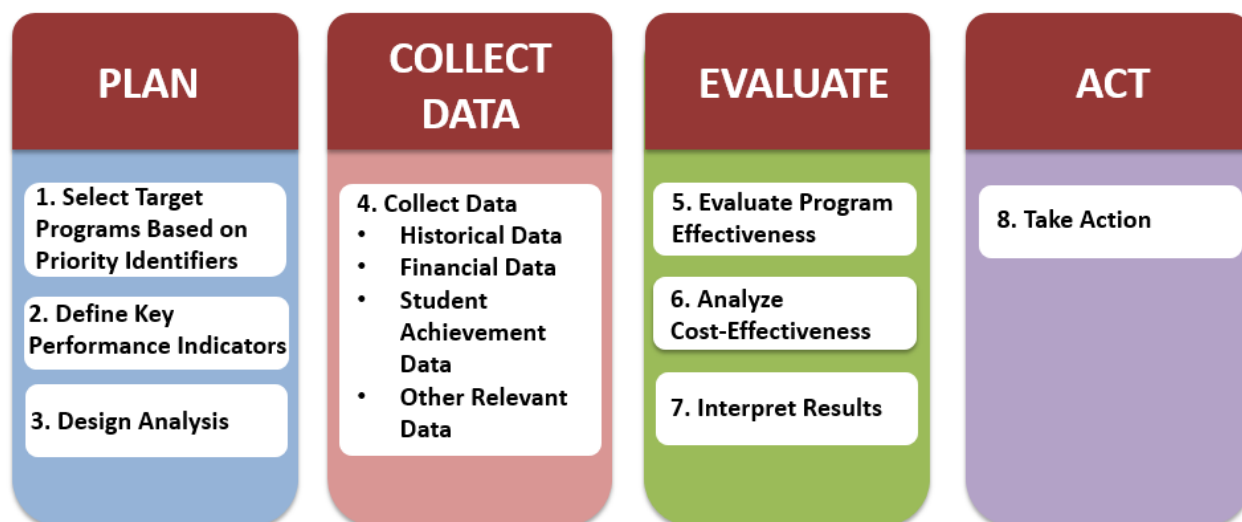
3.5 Evaluation and Accountability of Device Deployment

Accountability refers to the metrics and analytic tools and processes that allow the District the ability to evaluate and monitor progress and effectiveness of the deployed technologies. These data provide valuable feedback on integration efforts and ensure accountability of technology expenditures and life cycle management. Sample metrics may include:

- District-owned mobile technology use
 - Use by campus, by subject area
 - Bandwidth utilization by packet type
- Most commonly used applications on district network
- Learning Management System use and transaction type
- Content and applications used within the LMS

4 PROGRAM EVALUATION

The Program Evaluation Plan presented to the Board in May 2016 by the Department of Innovation and Continuous Improvement will provide a systematic evaluation of each project and program in this master plan. The feedback from the evaluation is essential to continuous improvement and program efficacy. The program evaluation will assist in assessing the extent to which the project or program implemented meets its goals. These results and recommendations will be used to further improve, refine, or change the implemented technology solutions. The evaluation will follow the recommended eight-step program as indicated below:



Program Evaluation Scope and Sequence

Table 3: Program Evaluation

PLAN	Select targeted programs based on priority identifiers	<ul style="list-style-type: none"> Committee convenes to review priority identifiers and select programs Determine the evaluation target areas Define the program owner(s) of the evaluated area Determine evaluation timeline
	Define Key Performance Indicators (KPIs)	<ul style="list-style-type: none"> Determine Key Performance Indicators and measures of success
	Design Analysis	<ul style="list-style-type: none"> Determine the type of evaluation needed Develop instruments or surveys as determined by the evaluation questions Train staff to gather data (e.g., observations, interviews)
COLLECT DATA	Collect Data Historical Data Financial Data Student Achievement Data Other Relevant Data	<ul style="list-style-type: none"> Gather qualitative and quantitative data necessary for the review Complete an interim program evaluation status update
	Evaluate Program Effectiveness	<ul style="list-style-type: none"> Make corrections as needed to the direction of the evaluation
	Analyze Cost Effectiveness	<ul style="list-style-type: none"> Provide preliminary findings to the E-team if required for budgeting purposes Communicate the evaluation agenda with the Board and stakeholders Share evaluation findings with the Board and E-team
EVALUATE	Interpret Results	<ul style="list-style-type: none"> Complete the final program evaluation report Submit the report to the executive team and/or any relevant department director/campus principal Discuss the evaluation recommendations with principals, directors, or E-team
	ACT	Take Action

APPENDIX

Appendix A

Roadmap for Planning

To fully realize the benefits of the technologies that are recommended in this Master Plan, care must be taken in the implementation of the strategies. In collaboration with The Renaissance Institute, staff has established the following roadmap:

1. Complete remaining the network infrastructure upgrades by the start of 2018-2019.
2. Secure funding to implement the standard classroom technology configuration and replacement cycles for all campuses for:
 - a. Expanded blended learning/Schoology implementation for 2018-2019 school year.
 - b. Phase 1 district-wide classroom technology toolset deployment, 2019-2020 school year.
 - c. Phase 2 district-wide classroom technology toolset deployment, 2020-2021 school year.
3. Continue with integration technology into the curriculum, as it is written, revised, and migrated to Schoology.
4. Continue with teacher training and staff development on classroom strategies and technology.
5. Implement IT analytics to monitor progress.
6. Evaluate, monitor, and adjust

Project Management

It is estimated that the master plan will take at least three years to reach full implementation. It is essential that the plan is carefully and intentionally managed to ensure success. Past experience has proven that rapid and broad, district-wide implementation makes it difficult to manage deployment and appropriate use of devices. Furthermore, moving too quickly will not allow for the essential development of supporting educational resources and professional development for teachers, which are essential components to each level of deployment: elementary, middle school, and high school.

To ensure the success of the plan and to avoid pitfalls that may be associated with prior technology plans that were poorly managed; the FBISD Educational Technology Plan is based on gradual implementation of projects that provides for adjustments and improvement during all phases of the process. All projects associated with the plan will contain the following characteristics of the project life cycle:

- An executive sponsor (who owns the project), business owners and subject matter experts have been identified, assigned tasks, and defined timelines.
- All projects will be managed by an assigned project manager.
- New projects will be initiated with a project charter and present to the Demand Management Office (DMO).
- Cross-functional teams will be maintained to determine the scope and needs.
- Input from stakeholders will be sought and included.
- Phases of the overall project will include:
 - Project conception and initiation
 - Project definition and planning

- Project launch and execution
- Project performance and control
- Project close

- The project team will work closely with the Business and Finance Department to plan and manage costs.
- All projects will include a proof of concept phase to demonstrate the feasibility of the solution.
- All projects will include a pilot phase to insure all components have been properly identified, placed and configured, funding requirements have been completely identified, equipment and communications work as anticipated, and the selected technology can be integrated into instruction. During the pilot phase, the solution is deployed in a small, controlled environment to ensure the project scopes and operational details are met before full scale launch of the project.
- All implemented technologies will include:
 - Communication plan
 - Professional development plan for all participants. Participants will include staff, students and eventually parents.
 - Operational plan
 - Life cycle management plan
 - Analytics requirements for measures of successful integration
- The Project team will work with the bond management and reporting groups to insure proper use and reporting of bond funds.

Community Engagement

Community engagement is essential to the planning and developing of an effective technology strategy. The engagement process will serve as the District model for reviewing best practices in classroom technology to ensure maximum awareness and input from the public prior to changing and implementing new classroom technologies. The community was invited to participate in the Instructional Technology Master Plan in January 2016. The project team will continue to solicit the community for input and feedback as it executes the master plan.

Educational Technology Integration Cross-Functional Team

The District created a cross-functional team that includes expertise in teaching, staff selection, curriculum, campus leadership, instructional technology, and technology infrastructure to address several of the recommendations from the Renaissance Institute report. Cross-functional subcommittees are being developed to address specific recommendations. This team will be tasked to:

1. Formalize a Digital Content Management Strategy.
2. Develop an Integration Framework for the role of technology in teaching and learning.
3. Formalize an Instructional Model for use of technology in classrooms that is aligned to the district's curriculum and instruction structures.
4. Implement a Universal Access Strategy to provide hardware, software, and Internet access for all students and teachers regardless of their location, socioeconomic status, or disabilities.
5. Implement an evaluation strategy to ensure accountability of technology expenditures and activities.

6. The district will develop a plan for teacher training and staff professional learning.
7. The district will adopt a standard classroom technology configuration and refresh cycle.

Members	Position	Department
Stephanie Williams	Executive Director	Teaching and Learning
Troy Byrne	Executive Director	Transformational Learning
Ashley Causey	Director	STEM Curriculum and Instruction
Susan Voradakis	Director	Instructional Resources
Michael Ewing	Director	At Risk
Audra Ude	Executive Director	Account and Assessment
Meredith Watassek	Director	Career & Technology
Deena Hill	Executive Director	Special Education
Diana Sayavedra	Chief Academic Officer	Academic Affairs
Mitzi Patin	Executive Director	Information Systems
JoJo Jacob	Director	Information Technology Systems
Long Pham	Chief Information Officer	Information Technology
Anne Howard	Director	Program Management Office
Beth Martinez	Chief of Staff	Chief of Staff
Mary Ellen Eidson	Assistant Superintendent	Department of School Leadership
Joe Rodriguez	Chief of Schools	Chief of Schools
Bryan Guinn	Executive Director	Finance
Steve Bassett	Chief Financial Officer	Business and Finance

Educational Technology Integration Analytics Team

A cross-functional sub-committee of the larger Educational Technology Integration Cross Functional Team has been developed to design and implement a formal Information Technology Analytics (IT Analytics) program to provide evaluation and accountability on technology integration efforts. Analytics data provide valuable feedback on integration efforts and ensures accountability for technology expenditures.

Monitoring the following metrics during each phase of integration will provide valuable feedback on the progress of the integration efforts recommended in this report:

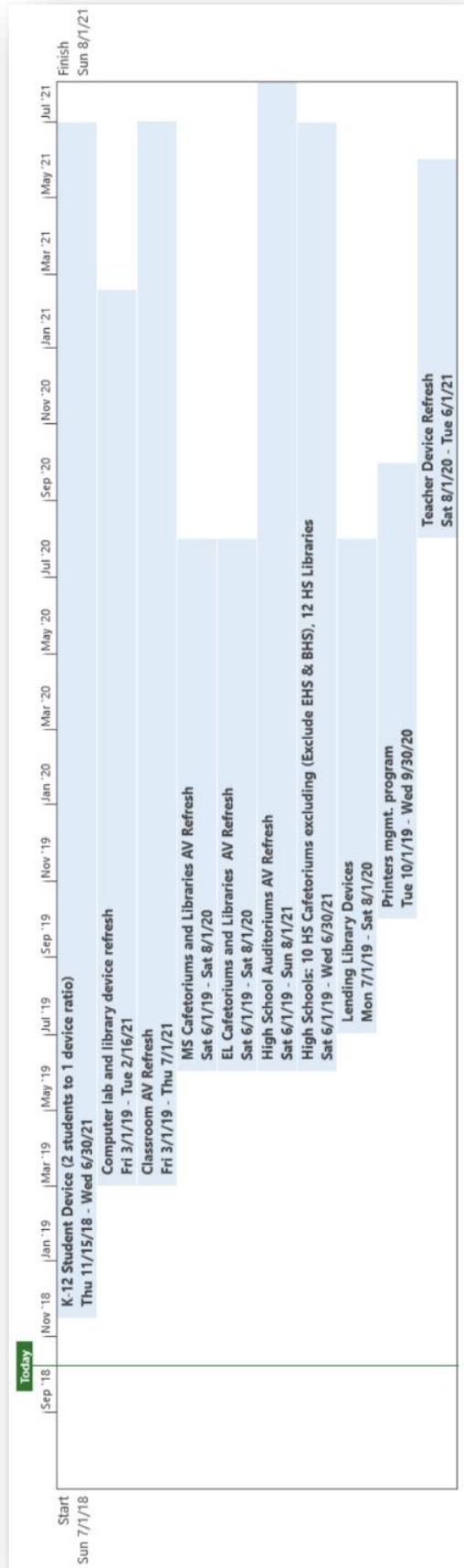
- Bring Your Own Device (BYOD) data traffic
- District-owned mobile technology use
 - Use by campus, by subject area
 - Bandwidth utilization by packet type
- Most commonly used applications on district network
- Learning Management System use and transaction type
- Content and applications used within the LMS

Learning Analytics (LA) is a relatively new science for the measurement, collection, analysis, and reporting of data about learners. Learning Analytics has proven to provide valuable feedback on the learning process as well as to optimize the technology integration process. Data from the LMS, combined with other student data has the potential to provide the district with valuable insight on the learners in FBISD.

Members	Position	Department
Stephanie Williams	Executive Director	Teaching and Learning
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Meredith Watassek	Director	Career & Technology
Deena Hill	Executive Director	Special Education
Mitzi Patin	Executive Director	Information Systems
JoJo Jacob	Director	Information Technology Systems
Anne Howard	Director	Program Management Office
Mary Ellen Eidson	Assistant Superintendent	Department of School Leadership

Estimated Timeline for Classroom Technology Toolset & Campus Technology Refresh

Below is an estimated timeline with anticipated dates associated with classroom technology toolset as well as the overall campus technology toolset implementation.



References

Berning, Andrew (2016). *FBISD Technology Assessment*.

Schlechty, P. (2002). *Working on the Work: An Action Plan for Teachers, Principals, and Superintendents*. San Francisco: Jossey-Bass.