FSUSD Digital Technology Plan

July 1, 2022 - June 30, 2025
In compliance with [FSUSD Board Policy 0440](#) and
[FSUSD Administrative Regulation 0440](#)

Background Information

> **Background Information:** A guide to the district's use of technology for the next three years, including:
> - Specific starting and ending dates of the plan
> - An overview of the district's location and demographics
> - A description of how stakeholders from the district and community were involved in the planning process
> - A description of the relevant research behind the strategies and/or methods in the plan and how the research supports the plan's curricular and professional development goals

Plan Duration

The current *Digital Technology Plan 2022-25* shall provide guidance and a framework for decisions in the area of educational technology. The Plan shall be the operating technology document for both the district and the individual schools within the Fairfield-Suisun Unified School District. The dates for this plan are July 1, 2022 - June 30, 2025.

Education Code Section 51871.5(a) required every school district seeking education technology funding from the California Department of Education to have, as a prerequisite to funding, a local technology plan in place by January 1, 2002. Furthermore, various Federal programs – such as the E-Rate grant program - required school districts to have an approved plan on file as a condition to receive funding. Beginning in funding year 2015, the FCC eliminated the technology plan requirements for category two services. The FCC eliminated the technology plan requirements for category one services in 2010. Most private grant foundations also require some form of written plan. Finally, prudence and professionalism require that we as a district have a comprehensive and coherent local plan in place to guide us in pursuit of educational objectives, and in the wise use of our funding.

Therefore, it is the intent of the Governing Board that this Plan shall meet all legal requirements mandated by the California Department of Education (CDE), the California State Board of Education, and by the United States Department of Education. It is our intent that this Plan shall meet future requirements developed by various State and Federal agencies that may be created to oversee schools and educational grant programs.

Background and Demographics

Fairfield-Suisun Unified School District (FSUSD) is located in the heart of Northern California and is home to a myriad of high caliber educational opportunities. FSUSD's reputation of educational excellence is not by chance, but by careful design. Dedicated parents, a supportive community and our teachers and staff work tirelessly to implement the Board-adopted goals and utilize a road map that puts our students on a direct path to academic achievement. The district's central location provides easy access to numerous higher educational institutions including UC schools and state universities, community colleges and private universities alike.

The community places a high value on education and supports the schools with generous commitments of time and money. Parents, businesses, government agencies, community organizations, and local colleges and universities actively participate in the educational process through collaborative programs, public and private partnerships, and significant volunteer contributions.

FSUSD takes pride in our multi-cultural diversity and serves approximately 21,500 students. Despite coming from different backgrounds, they share an excitement about learning and tend to become high achievers who wish to excel. The district consists of thirty schools, including three high schools, four middle schools, seventeen elementary schools, several alternative schools, and one Adult School.

The district is located in the City of Fairfield, with nearby Interstate 80, Interstate 680, and State Highway 12 providing convenient access to the San Francisco Bay Area and Sacramento regions. Local visitor destinations include the Jelly Belly Factory and Travis Air Force Base, Six Flags Discovery Kingdom in Vallejo, the Napa Valley Wine Country, and premium shopping outlet centers in Vacaville and Napa. There are numerous community-based performing arts organizations, museums, galleries, and festivals. Boating, sailing, bicycling, hiking, and skiing are popular family activities.

Solano County's landscape ranges from rich agricultural land, such as Suisun Valley with its fresh produce and numerous wineries in the north, to rolling hills in the south. Along the southern and western borders are the San Francisco Bay, the Carquinez Straits, Suisun Bay, Lake Berryessa, and the Sacramento River.

The district's central location provides easy access to numerous higher educational institutions within easy commuting distances, including:
- Solano Community College
- U.C. Berkeley
- U.C. Davis
- California State University, Sacramento
- University of Phoenix
- Golden Gate University
- St. Mary's College
- California Maritime Academy
- Brandman University
- Touro University

Stakeholders

We continually involved various stakeholders in the development of all district plans. We have utilized direct input in face-to-face focus groups, solicited input via Google Survey, used collaborative Google Docs, and we have used various educational technology reports and databases that specifically relate to and/or derive from our district. A summary of the stakeholder group meetings and data collections are as follows:

- **Curriculum Council**
    - Input and review at Curriculum Council Meetings

Research-Based Methods and Strategies

Although schools are turning to 1:1 programs, very little research has been published on teaching and learning in the 1:1 environment. However, there are some published reviews of 1:1 programs across the country. Two recent publications highlight major findings from reviews of this research. These reviews include both positive and negative program results, as well as what researchers have observed to be the common factors among successfully implemented 1:1 programs.

Research has found that there are some positive effects of 1:1 programs. A study of 5,000 Texas middle school students participating in 1:1 programs found that those students had fewer disciplinary problems than students not involved in such programs (Shapely, et al, 2009 as cited in Goodwin, 2011). The same study also found that the technology skills of the students improved during their time in the project, resulting in low-income students in the 1:1 schools having the same competence level as wealthier students in the control schools (Shapely, et al, 2009 as cited in Goodwin, 2011). Another study contends that 1:1 programs help control costs in other areas of a school, such as "textbooks, paper, assessments, and paperwork, as well as a reduction in disciplinary actions" (Greaves, Hayes, Glelniak, & Peterson, 2010 as cited in Goodwin, 2011, p. 1). Bebell & Kay (2010) studied five Massachusetts middle schools with 1:1 programs and found variation among schools in both implementation and outcomes; however, they also found "access to 1-to-1 computing led to measurable changes in teacher practice, student engagement and achievement, and students' research skills. Specifically, seventh graders in the second year of the program showed statistically significant gains on state test scores in English and language arts after controlling for prior achievement" (Stansbury, 2010).

Other evaluations of 1:1 programs have found less positive results. The evaluation of Maine's program, the largest 1:1 initiative in the United States, found very little effect on student achievement after the program had been in place for five years; however, there was an effect in writing scores (Silvermail & Gritter, 2007 as cited in Goodwin, 2011). It should be noted that the measure used was the state assessment and as the evaluators stated, "the state assessment does not measure the 21st century technology that laptop initiatives promote" (Goodwin, 2011, p. 1). Two other similar evaluations of programs in Michigan and Texas also found mixed results, including some schools with laptop programs having higher achievement while others had lower achievement than their matched pairs (Goodwin, 2011).

There are numerous barriers to adoption that often makes 1:1 computing programs prohibitive in the eyes of school decision makers. One study cited teacher complaints about their own ability to access computers during the school day; abundant demand of computer carts paired with a short supply leads to negative attitudes for teachers and an unwillingness to make the efforts necessary to integrate computers appropriately into their classrooms (Sicilia, 2005). Another international study found that

accessibility issues made up four of the top ten barriers to adoption. These barriers included insufficient numbers of computers, insufficient numbers of copies of software and insufficient simultaneous Internet access (Pelgrum, 2001). In a recent article outlining the top ten obstructions to technology adoption in schools, Norris and Soloway (2011) listed curriculum as a major barrier, stating that regardless of how good a teacher's training is, or how well supported the teachers are, if there isn't any curriculum that makes proper use of the new technology, teachers become curriculum developers and ones without the proper resources or training to get the job done effectively. Norris and Soloway (2011) also labeled cost, coupled with a lack of vision and leadership, as the perhaps the most common barrier for adopting technology.

Although the reviews of 1:1 programs are quite varied, many studies point to the same factor influencing the success of 1:1 programs: teachers. Bebell & Kay's (2010) study of 1:1 programs in Massachusetts stated that "it is impossible to overstate the power of individual teachers in the success or failure of 1:1 computing (p. 47)" (cited in Goodwin, 2011, p.2). A similar study of 1:1 programs in Texas middle schools also pointed to the teacher factor, noting that in such programs, the teachers are really the ones controlling the use of technology (Stansbury, 2010). To really drive home the importance of teachers, Stansbury (2010) quotes Bebell and O'Dwyer who stated that teacher support and preparation for 1:1 programs will be the main predictor of the success of a program.

There are other factors that contribute to a successful implementation of a 1:1 program. In their study of 997 US schools, Greaves, Hayes, Glelniak, & Peterson (2010) list the features common across schools with both 1:1 programs and high achievement; the top three features are "1) Ensuring uniform integration of technology in every class; 2) Providing time for teacher learning and collaboration (at least monthly); and 3) Using technology daily for student online collaboration and cooperative learning" (as cited in Goodwin, 2011, p.2). Stansbury (2010) quotes Pamela Livingston, an author, professor, and analyst heavily involved in educational technology, who stated that successful programs have nearly all done the same thing: 1) given teachers laptops up to a year ahead of 1:1 implementation so they can begin developing curriculum; 2) analyzed their infrastructure; 3) evaluated practical issues of insurance and other means of protecting the expensive hardware; and 4) developed sound policies and procedures surrounding the technology.

Finally, Stansbury (2010) discussed indicators of success for 1:1 programs apart from the typical measures based on state assessment. Stansbury (2010) quotes researchers Weston and Bain, who describe the classrooms that show these indicators as

> "differentiated in genuine ways for all students, with teachers who gather and mine just-in-time data. ...Further, teachers, students, and parents use [technology] everyday to collaborate about what to do next in their collective pursuit of learning. For them, waiting passively for the results of the big, once-a-year standardized test is not an option. That is why, if asked about the value of using a laptop computer in school, each would struggle to see the relevance of such a question, because computers have become integrated into what they do...laptop computers [would not be] technological tools; rather, [they would be] cognitive tools that are holistically integrated into the teaching and learning processes of their school."

We also struggle with the relevance of the idea that student computing devices must directly correlate to higher test scores. That isn't the point. This is about equity of access to information and equity of access to tools that facilitate communication, collaboration, critical thinking, and creativity. This is about making sure that the learning environment is relevant in the world as it is now and as it will be in the future.

Curriculum

Current Access

As of May 2019, we are functionally 1:1. All students grade 2 and higher have a Chromebook assigned to them. TK-1 classes are provided the devices they requested (either iPad minis or Chromebooks) in the quantity that aligns with their program.

In 2011, FSUSD implemented Google Apps for Education (GAFE) for all district employees and students. All students, TK - Adult School, have access to a GAFE account on the @fsusd.org domain. This account gives the student access to all Google products available in the domain including: email, classroom, docs, sheets, forms, slides, etc. These GAFE tools are all web-based and accessible from any device connected to the Internet.

Outside of GAFE, we try to maintain an agnostic approach to devices and software. We believe it is important for our students to have access to the most current educational resources and as a district, we need to ensure our platform can meet these needs. As a result, our environment encourages the use of web based tools that are not device dependent, fluid student movement between mobile devices and traditional PC computers, and a focus on the skills needed to be able to choose the appropriate tool for the task.

Goals and Implementation Plan

LCAP Goal 2 - Execute high quality instructional programs and provide educational options to ensure every student graduates college and career ready.

SAMR Model

Across much of the district, teaching and learning environments/practices are in various stages of implementation. Transforming new learning practices that are inquiry, investigative and resource-based are needed in order to take advantage of the educational technologies that have been installed throughout the system. We utilize the SAMR model, developed by Dr. Ruben Puentedura, to assist in this transformation. SAMR stands for Substitution, Augmentation, Modification, and Redefinition. All four levels of SAMR serve different purposes and can be used on a continuum depending on the task. Our goal is to support teachers as they continue to push toward the transformation of their teaching to incorporate technology in ways that modify and redefine tasks and learning outcomes for our students.
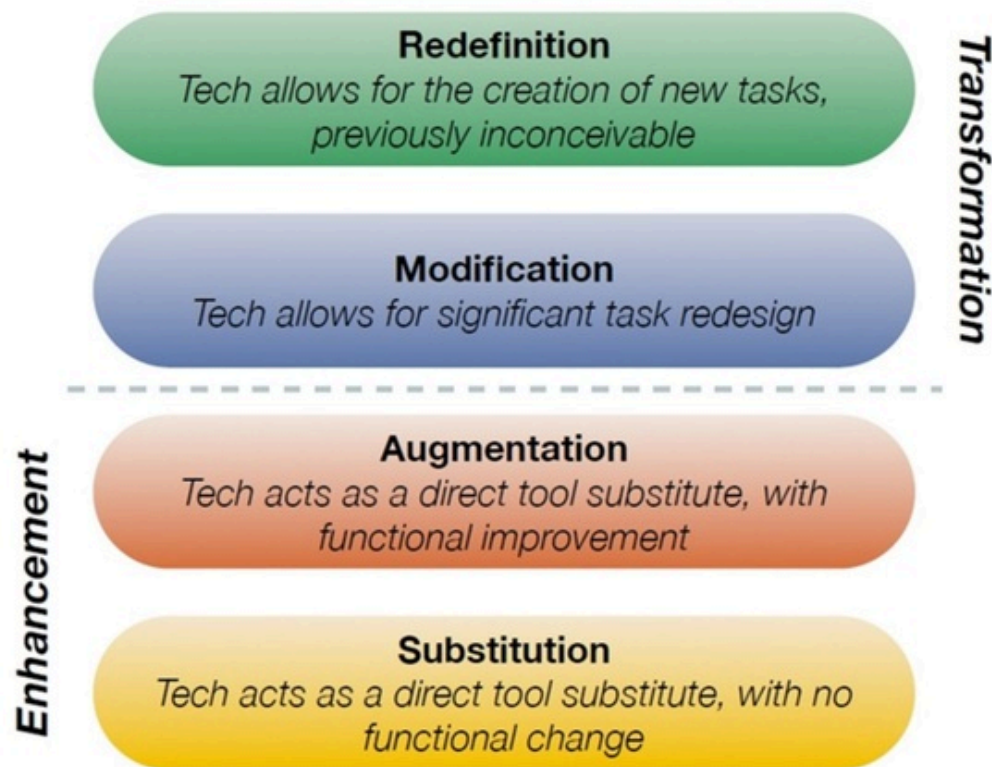

Image is the creation of Dr. Ruben Puentedura, Ph.D. http://www.hippasus.com/rrpweblog/

Digital Citizenship

Digital Citizenship instruction helps students safely navigate the internet while learning about the ethical and acceptable use of technology. Using materials from Common Sense Media, teachers, with support from Educational Technology Specialists and Teacher Librarians, deliver classroom instruction about digital safety, privacy, and the digital footprint our students are creating. We have developed a comprehensive Digital Citizenship Scope and Sequence to support teachers and ensure all students receive these valuable lessons. Ed Techs also conduct and/or support parent meetings to discuss digital citizenship and device use to help parents navigate the ever changing digital landscape.

Professional Development

Professional Development: A professional development strategy to ensure that staff understands how to use new technologies to improve education services, including:
- A summary of teachers' and administrators' current technology proficiency and integration skills and needs for professional development
- Goals and an implementation plan, including annual activities, for providing professional development opportunities based on district needs assessment data and the curriculum component of the technology plan

Goals and Implementation Plan

LCAP Goal 2 - Execute high quality instructional programs and provide educational options to ensure every student graduates college and career ready.

The main goal of all technology-focused professional development is to help teachers learn how to better use tools with students in the classroom, parents and the school community, and to help our students become 21st Century learners. Generally, multiple sessions are held throughout the district each week during the school year, offering teachers a multiplicity of choices. Since these sessions are technology-based, they offer teachers a model for a type of instruction that they may have never experienced before.

Teachers provide professional development and training on an on-going basis throughout the district, both at school sites and at the central office. The topics of professional development vary from new teaching methodologies to digital tool familiarity.

Our goal is to provide ongoing professional development on the full integration of technology. Many staff members are very "tech savvy" and are using educational technology consistently, while others are still learning and a bit uncomfortable. Now that all students have increased and regular access to devices, everyone needs the ongoing training, coaching, and support to assist them. We aim to offer differentiated support for everyone.

Infrastructure, Hardware, Technical Support, Software, and Asset Management

Infrastructure, Hardware, Technical Support, Software, and Asset Management: An assessment of the telecommunication services, hardware, software, asset management, and

other services that will be needed to improve education services, including:
- A description of existing hardware, Internet access, electronic learning resources, technical support, and asset management in the district
- A description of technology hardware, electronic learning resources, networking and telecommunications infrastructure, physical plant modifications, technical support, and asset management needed by district teachers, students, and administrators to support the activities in the curriculum and professional development components of the plan

Single Sign On Network and Resource Access
In order to access network resources in FSUSD, every teacher or student must login with a secure username and password. With the proliferation of multiple cloud or web-based services comes the dilemma of managing multiple accounts. We have simplified our login process and are using tools like Google Single Sign On and Clever to synchronize usernames and passwords. The same username and password required to login to the network while within the district is used to login to cloud services like Google Apps for Education, Edgenuity, Benchmark, Springboard, or our MAP assessment system. The ideal situation (or goal) is one in which users only need to remember a single username and password. This avoids the confusion of managing multiple usernames, passwords and web addresses and minimizes the occurrences of common security risks, such as writing down passwords and storing them in easily accessible places. Network administrators and HelpDesk personnel have a centralized location to manage usernames and passwords. When it is not possible to have a single login for specific software, then user accounts are generated and managed centrally.

Internet Access Speed
We think of Internet access speeds, or bandwidth, in terms of how much we provide per student at the schools and district wide. This way of thinking helps us ensure there is equitable access for all students and makes it easier to identify pieces of infrastructure that need to be upgraded. We currently provide 1 Mbps per student of Internet bandwidth. Each school has a connection of at least 1Gbps from to the district office with larger schools having up to 4 Gbps. Our district connection to the Internet is 40 Gbps, which when divided by the 21,500 students in our district, comes out to roughly 1.75 Mbps per student. We secured a deal with AT&T that will allow us to increase our bandwidth to 100 Gbps during the next 3 years, providing about 4.5 Mbps per student. FSUSD currently provides some of the highest levels of bandwidth per student of any school district in California.

Staff and Student Devices
As of May 2022, the district maintains about 3,500 staff devices and 21,000 student devices. All ChromeBooks, about 90% of the total, are replaced every 6 years. Since the district has reached its goal of every student having a device at school, we transitioned to allow students to take home the devices and keep them during the summer.

Classroom Presentation Infrastructure
The district's standard presentation hardware package for a classroom as of May 2022 consists of a 70" Television, an AirTame device, AppleTV or Vivi, wall or cart mounting equipment, and an optional document camera. Nearly all of our 1,100 classrooms have a modern package similar to what is

mentioned above. The rest of the classrooms have projectors and interactive whiteboards. We have been replacing this legacy equipment in about 100 classrooms per year.

Network Infrastructure
Our network is the single most important piece of technology infrastructure we have. It includes cabling, network switches, wireless access points, wireless controllers, firewalls, Internet filtering technology, network servers, and more. The network is constantly growing and changing. As of May 2022, we have over 1,200 wireless access points that are replaced every 3 years, 600 network switches that are replaced every 7 years, cabling that is replaced every 10 years, 1 firewall appliance that is replaced every 7 years, and 10 network servers that are replaced every 5 years.

Electronic Learning Resources
The district provides certain educational technology programs for students and staff each year. These programs are typically web-based and provide functionality that has been identified as helpful for accomplishing the goals of our Local Control Accountability Plan (LCAP). District electronic learning resources are evaluated in January of every year for usefulness and effectiveness toward LCAP goals by the Educational Services Department. Decisions are made for subtractions and additions by April and communicated to all employees via newsletter. The current list of programs with instructions for how to use them can be found on the district website.

Technology Support Staff
The Technology Support Services department employs 39 people as of May 2022 to support all technology infrastructure in the district. Most of the growth of the department in recent years has been in the Computer/Network Technician I and Computer/Network Technician II positions, who directly support the people using the many thousands of devices that the district has purchased. We use a 500:1 device to technician ratio to justify increases in staff as additional devices are purchased. Technicians in this ratio include Computer/Network Technician I (16), Computer/Network Technician II (6), Help Desk Technician (1), and Senior Help Desk Technician (1). We also hold a 10:1 technician to manager ratio. A full organization chart with all technology support positions can be found on the district website.

Monitoring and Evaluation

Monitoring and Evaluation: An evaluation process that enables the school to monitor progress toward the specific goals and mid-course corrections in response to new developments and opportunities as they arise, including:
- The process for evaluating the plan's overall progress and impact on teaching and learning
- The schedule for evaluating the effect of plan implementation and a description of the process and frequency of communicating evaluation results to technology plan stakeholders

All components of this plan should be seen as supporting the LCAP and LEA Plans as well as site specific Single Plans for Student Achievement (SPSA). The following procedures will be used to monitor and evaluate progress toward our educational technology goals and objectives. The individuals who will be responsible for monitoring and evaluation are listed along with their areas of responsibility. More specific evaluation criteria may be found listed among the goals' benchmarks in the Curriculum and Professional Development sections.

It is important to note, we struggle with the relevance of the idea that student computing devices must directly correlate to higher test scores. That isn't the point. This is about equity of access to information and equity of access to tools that facilitate communication, collaboration, critical thinking, and creativity. This is about making sure that the learning environment is relevant in the world as it is now and as it will be in the future. As a result, the focus of our evaluation measures will center on the implementation of the technology into the classroom curriculum and the increase of the 4 C's; collaboration, communication, creativity, and critical thinking.

Every effort will be made to collect relevant "hard" or objective data that can be documented, referenced and reviewed. In the case of monitoring and evaluating progress of our educational technology plan, such data may include (but shall not be limited to):
- Surveys
- Classroom observations
- Documentation of professional development plans & objectives
- Product use reports

The proposed internal evaluation group shall become a function of the Curriculum Council. Curriculum Council meets quarterly and will provide meaningful input for mid-course corrections. The current Curriculum Council configuration is:
- 1 Director of Curriculum, Instruction, and Assessment
- 1 Assistant Director of Curriculum and Instruction
- 3 Secondary Teachers
- 3 Elementary Teachers
- 2 Site Administrators
- 1 Classified Staff Member
- 2 Community Members (to include parent, business and/or other community representation)

When mid-course corrections are necessary, the Educational Services Department has the authority to request, approve and allocate resources to effect changes in the initiatives. The Directors, Assistant Directors, Assistant Superintendent of Educational Services and the Superintendent bear the responsibility to communicate and replicate successes across the district. Communication may be done via Governing Board meetings, administrative meetings, media and press releases, features on the district website, and public relations videos.

Non-instructional Uses of Technology

Non-instructional Uses of Technology: A description of how technology will be used to improve district governance, district and school site administration, support services, and communications

Telephones

As of April 2019, the district has completed the project to replace the current phone systems of all district sites with a cloud-based voice over IP phone system. The phone system replacement has increased capabilities and is saving the district nearly $500,000 per year in service fees.

Security Cameras

The district has spent over $500,000 on security cameras, their installation and the servers required for video storage. Security cameras have also received funding from the board allocated safety and security money that is managed by the district Risk Manager. As of May 2022, we have installed over 500 cameras and the required hardware for them. Cameras are expected to receive a portion of the annual safety and security allocation in each of the next 3 years.

Business Systems and Data Integration

The FSUSD runs its own human resources, finance, child nutrition, and transportation systems on premises, which provides great control and flexibility when reporting to the federal and state governments as well as the local community. Integrating the data between systems, so that changes in one system are automatically reflected correctly in other systems requires considerable expertise on the technology team and saves thousands of man-hours district wide per year. Data integration services also provide important links between school business systems and student assessment systems, allowing the district to measure the educational impact of business process changes. These kinds of integrations will be a major focus for the technology team over the next 3 years.

Work Request Systems

Work request and workflow control systems include ticket systems for the technology, maintenance, and facilities departments. As of May 2019, maintenance and technology updated their systems and unifed them into one product. Facilities moved to a system that specialized in facilities use and vetted potential clients. These systems save the district money, increase productivity, and provide reports that improve processes over time. The technology department ticket system has been an important factor in doubling the speed of resolution to technology problems over the last 3 years, and the district expects that similar increases in speed and efficiency will be achieved in the maintenance and facilities departments as more modern systems and processes are implemented.

Cost

> **Cost:** An estimate of the cost for each year of the plan and each of its major components

Ongoing Technology Budget and Future Needs

The table below shows the budget allocated for the 2021-22 school year and what the anticipated needs will be in 3 years.

Category	Allocated 2021-22	Anticipated Need 2022-2025
Student Devices	$1,400,000	$1,500,000+
Staff Devices	$256,000	$350,000
Classroom Presentation	$200,000	$250,000
TSS Personnel	$4,000,000	$4,500,000
Network Infrastructure	$450,000	$750,000
Educational Software	$1,120,000	$1,200,000

+ The items with higher amounts anticipated in 2022-25 are representative of a complete 1:1 program for all students TK-12. If these amounts cannot be allocated, program expectations will be scaled back appropriately.