Technology Plan

July 1, 2019 – June 30, 2022

SEQUOIA UNION HIGH SCHOOL DISTRICT
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Executive Summary

The Sequoia Union High School District Technology Plan for 2019-2022 represents the culmination of an extensive process of investigation and gathering of stakeholder input. Through surveys, reviews of relevant literature, analytics from existing systems, interviews, and face-to-face discussions, information was gathered as to what is working well with SUHSD's technology program, where are the areas of concern, and how we should prioritize resources to accomplish key goals over the next three years. Ideas and views were sought from school and district administrators, teachers, students, parents, professional development staff, technology staff, Trustees, representatives of nearby districts (including feeder schools), the business community, and outside experts on educational technology.

Although ideas and opinions varied on some issues, a remarkable consensus emerged regarding a number of topics warranting strong emphasis in the plan. As a result of this process, the Technology Task Force reached a number of valid and sound conclusions. These key recommendations are summarized in this Executive Summary and appear as guiding considerations throughout the remainder of the technology plan document.

Why?

Engagement

Students shared with the technology task force that they appreciate the engagement value that technology brings to their learning. Specifically, they identified ***polling systems, gamification, quizzing applications, and opportunities to use technology to be creative*** as things that make school more interesting. Students also appreciated having a central online location for information about their assignments and progress.

Accelerated Learning

The technology task force examined current aggregate research that shows where and how technology can accelerate learning. In particular, any technology implementation that allows students to occasionally work independently from their teacher, so that the teacher can then ***engage more deeply in dialog with a small group of learners,*** tends to accelerate learning**.** Technologies that allow learners to master and ***demonstrate mastery of foundational concepts, before advancing,*** also accelerates learning.

Personalization

Students shared with the technology task force the importance of being able to ***move at their own pace*** whenever possible, the value of being able to ***access missed work online***, and their appreciation for opportunities to ***pursue a project of their choosing***. These benefits of personalization are facilitated by a digital workflow.

Twenty First Century Skills

Parents and teachers identified the importance of several skills that are best taught through the medium of technology: ***collaboration and communication independent of time and space, digital organization systems and information navigation, and digital citizenship habits*** (digital citizenship was of significant interest and is discussed further below).

Concerns

Equity and the Opportunity Gap

Of high concern for students, teachers, administrators, and parents alike is a growing opportunity gap in our country and in our community that is further exacerbated by the digital divide. Our stakeholders shared with us that they want ***all*** students to have equitable access to curriculum and to development of digital skills. Specifically, these concerns surfaced in discussions about the **reliability of wifi** at different locations in the district, ***access to Chromebooks*** across the district, and ***home access to student devices with wifi***.

Digital Well-Being

A topic of discussion that occupied more time in the tech task force than any other was the overall *digital well-being* of our students. All stakeholders expressed concern that students spend too much time of low education value in front of screens. Community culture around students' personal mobile devices is a key aspect of this concern. Insufficient instruction supporting digital health was also mentioned. Hence, the Technology Task Force recommends a ***district-wide focus on improving the digital well-being of our community*.** Resources, personnel, and time should be dedicated to collaborating with our families, our feeder schools, and teachers --for all subjects and grade levels -- toward implementing a comprehensive digital citizenship curriculum.

Additionally, personal accounts from many students confirms the observations of external research: there is a strong correlation between mobile phone use and stress levels in teens. The TTF recommends that SUHSD leadership ***offer more frequent family educational opportunities*** regarding this critical topic**.** These findings underscore our recommendation for a task force to establish a digital well-being and curriculum plan, preferably in collaboration with our elementary feeder districts.

Platform Consistency

Teachers need to build their houses of learning on solid foundations. In particular, overly-frequent changes in gradebook software, productivity suites, or content platforms require significant investments of time and intellect. SUHSD's recent conversion from *School Loop* to *Canvas,* and the switch to Google Suite [GSuite] from earlier Novell and Microsoft-centric systems required significant time investments by all concerned. Nevertheless, students and parents participating in TTF's investigations indicated satisfaction with both new system adoptions. **The technology task force recommends that we *continue to support both Canvas and Google Suite for all sites***, and that we communicate a ***district-wide commitment to supporting both of these systems*** for at least the next three years with both ***ongoing professional development and unwavering technical support***. Moreover, this commitment will provide teachers the confidence that they need to commit even more creative energy into curriculum migration and enhancement based on these platforms.

How -- Key Elements of the Plan

After an Introduction clarifying how this technology plan fits into the larger context of SUHSD's mission and strategic plan, this document examines:

- the role of technology in **curriculum and operations**
- our approach to and plans for **professional development**
- the district's existing and planned **technology and infrastructure**
- how we will **monitor progress** against the goals established in this plan

- the **funding and budget** required to implement this plan.

These major sections are followed by multiple **Appendices** containing supporting details.

Curriculum and Operations

A key focus will be addressing concerns expressed regarding ***digital well-being***. The TTF recommends a task force to develop curriculum and guidelines in cooperation with feeders.

Another topic which garnered a substantial interest and discussion, but requires further study, is the role of ***electronic textbooks***, through organizations such as CK-12.[1] TTF members shared that they like both digital and paper text formats. Available research comparing student use of digital versus paper texts seemed inconclusive. Two factors to consider are the physical burden on students who carry many heavy texts back and forth to school, and the potential savings on textbooks with the adoption of state-approved, copyright-free, online texts. Moreover, the TTF recommends that all textbook decisions moving forward consider these and other issues, and that textbook selection committees conduct a thorough examination of digital text options available for each application; a preference for texts available in *both* hardcopy and digital formats may emerge.

Some stakeholders also expressed concerns regarding the district's ***credit recovery*** program, ***CyberHigh***. While CyberHigh offers a plethora of UC A-G approved courses, some students noted challenges with this curriculum in that the district and its teachers do not "own it." Students specifically communicated an impression that some credit recovery facilitators do not seem to be experts in the course material. Therefore, a preferable form of credit recovery might be to use Canvas LMS based on the district's internally adopted curriculum.[2] While this process would require a plethora of work in the beginning stages of the process, it could eventually save the district as much as $60,000 annually.

Professional Development

Ongoing, varied professional development and continuous improvement are recognized best practices within SUHSD. The many educators who can span the worlds of adolescent and adult education is a district strength.

- *The TTF recommends* ***increased support of technology training****, by dedicating 0.8 additional FTE* adding a .2 FTE to each comprehensive site technology coordinator position for this purpose
- *The TTF recommends* ***more closely aligned collaboration between the Professional Development arm and the Technology Services arm*** of SUHSD, so as to bring infused education technology training to as many professional development events as possible.
- *The TTF recommends* ***adoption of the*** **International Society for Technology in Education** ***standards*** *as one metric to help assess district progress for our educational technology efforts.*
- *The TTF recommends* **exploring** ***the possible use of Canvas for credit recovery*** *in place of CyberHigh.*

[1]The CK-12 Foundation is a California-based non-profit organization which aims to increase access to low-cost K-12 education in the United States and abroad. CK-12 provides free and customizable K-12 open educational resources aligned to state curriculum standards. See: https://ck-12.org.

[2]SUHSD would need to apply UC for accreditation for any A-G courses to be offered in this way.

Technology and Infrastructure

- Bandwidth: Most education technologies now rely on the Internet; the system that brings Internet access to all users in our district requires continuous monitoring and maintenance. Fortunately, our prior investments have provided ample bandwidth to nearly all locations; with minor exceptions, our ***WAN and Internet uplink networks are ready to meet our current and growing bandwidth needs*** throughout the three-year life of this plan.

- Reliability: SUHSD uses technology to amplify educational best practices. SUHSD's infrastructure is, for the most part, reliable and modern. However, ***reports of unreliable Wi-Fi at certain locations*** have come to our attention. These are scheduled to be addressed with upgraded cabling, server, and access points within the 2019 calendar year. To continue technology-supported learning amplification, our professionals need to know that they can count on their devices working over a wifi network that is consistent and robust.

- Devices: For teachers and students, personal computing devices are the most significant component of our district technology. SUHSD's commitment has expanded from one-to-one devices for faculty and staff to a strong desire amongst our stakeholders to achieve ***one-to-one equivalent access for our students***, a significant shift from five years ago. By *one-to-one equivalence*, we mean a dual goal of ***in-class ubiquity*** and ***at-home equity,*** so that access limitations are never a barrier to learning. This strategy has emerged as more essential to our community than being able to claim a *literal* one-to-one ratio for students.

  The student device of choice for cost and management efficiency is the *Chromebook;* there is a strong consensus among K-12 educators on this selection. School foundations have stepped up, bolstering Chromebook ratios at most sites. However, Sequoia, Redwood, and EPAA do not have the same foundation resources as Carlmont, Woodside, and Menlo Atherton. For the sake of equity, the *TTF recommends that* ***financial resources be dedicated to further supplement Chromebook ratios****, including replacement of older devices that have "aged out," to ensure both in-class ubiquity and at-home equity* across the entire district. The need for a Chromebook ***cart in every classroom*** was a recurrent theme in meetings with stakeholders. Our teaching professionals must know that sufficient carts and devices will be available, whenever appropriate for instruction, and that families without devices or wifi at home will be appropriately supported.

- Staffing: Given the growing demands for educational technology -- especially end-user devices -- throughout the district, the current staffing level for technology services is insufficient. Approximately 7,500 additional devices have been added to the network over the last five years. *It is the recommendation of the TTF that SUHSD authorize* ***an additional 1.0 FTE in support staffing*** *to further the goals of on-campus ubiquity and at-home equity..*

Funding and Budget

The proposed budget included with this report would *increase the current spending on technology in SUHSD by $841,000*. The TTF appreciates that this exceeds the district's annual average revenue increase and hopes that district leadership recognizes that a *flat* budget would not adequately address the significant increases in computing-anchored educational activities throughout SUHSD. Priority: Given the central role of technology in SUHSD's approach to teaching and learning, *the TTF recommends that SUHSD leadership examine ways to* ***redirect existing spending on lower priority line items*** *in favor of meeting the critical technology needs and concerns described in this plan*.

- Ways to Reduce Tech Spending: *The TTF recommends that schools limit classroom printing**.** This has proven to be expensive, especially in terms of ink/toner and support costs. The TTF recommends a centralized printing model, with high volume printers in departmental offices, common areas, or copy rooms. The TTF realizes this is a shift in current practice and the Director of Technology will work with site leadership to achieve this recommendation. With the expanded use of GSuite, the need to print has been decreasing and should continue to do so. Moreover, increased investment in technology-related professional development tends to reduce support costs or at least slow their growth.*

- Sources of Funding: SUHSD technology is currently leveraged by the Federal E-Rate program, the California Teleconnect Fund, school foundations, grants, and other sources. *The TTF recommends that SUHSD leadership consider additional sources of revenue to support our community's growing commitment to infuse technology into curriculum and instruction.* Increasing costs include increased needs for professional development, additional technology department personnel, and refresh of devices, both for end-users, such as Chromebooks, and the network, such as surveillance cameras, over time. These costs are analyzed in the Funding and Budget chapter of this plan. Historically, bond funds have paid for acquisition of student devices. The TTF recommends that annual budgets include a line item to replenish the number of modern student devices available at each site, in cooperation with key partners, such as ***school foundations*** whose contributions should never be taken for granted.

Introduction

Sequoia Union High School District [SUHSD] annually serves more than 8900 students in grades 9-12, through its four distinguished comprehensive high schools (Carlmont, Menlo-Atherton, Sequoia, and Woodside), dependent charter school (East Palo Alto Academy), continuation high school (Redwood), Middle College (in collaboration with Cañada College), and other specialized programs and services. SUHSD district is also the sponsoring agency for two independent charter high schools (Summit and Everest). The District's Adult School, based in Redwood City, also serves 2000 students annually.

SUHSD's Technology Plan derives from a commitment to the district's mission and strategic plan. In this introductory chapter, we describe our Tech Plan development process, the surveys and other sources of data we used to gather information from the plan's stakeholders, and the guidance emerging from that process. Subsequent chapters translate these findings into measurable goals, organized as follows:

- how we plan to use technology in improving curriculum and operations
- what professional development needs are implied by this usage
- ongoing investments in technology resources and infrastructure
- how we will monitor progress in achieving these goals
- implications for funding and budget.

The technology plan for a large high school district in 2019 is inherently complex with many moving parts. To avoid unnecessary clutter in the main body of this document, many supporting details about the district and its use of technology have been relegated to a series of Appendices, which should be considered an integral part of the plan.

Key Dates

This plan covers three academic years: July 1, 2019 to June 30, 2022.

Mission Statement

The mission of the Sequoia Union High School District is to engage and prepare all students to excel in a global society. The role of technology is to support achievement of this mission.

Strategic Plan

Sequoia Union High School District fosters an appreciation for learning and provides students with the requisite academic and problem-solving skills to become engaged and well-rounded citizens. The guiding principles are equity, environment, and teaching. Additional information about SUHSD's Strategic Plan is available on the district web site:

http://www.seq.org/documents/planninghandbook/plansfor15-20.pdf

As summarized by Superintendent Mary Streshly, "our overarching goal is to fully equip students and help develop well rounded human beings."

Educational Philosophy and Pedagogical Approach

In accordance with SUHSD's Strategic Plan, students will:

- experience a college-preparatory academic program aimed at the completion of the UC/CSU A-G requirements and the development of analytical and communication skills;
- recognize and experience the connections between diverse disciplines;

- have the confidence, understanding, and skills to engage effectively in local, national, and international civic contexts;
- be welcomed, challenged, and supported to take the most rigorous courses possible with consideration for balance and well-being.
- thrive as learners by engaging in experiences driven by intellectual curiosity and discovery;
- choose courses from an academic program comprised of a variety of programmatic options;
- explore the possibilities of connecting personal interests and talents to college and career options;
- have access to courses and programs to promote their development as well-rounded members of society.
- identify post-graduation aspirations, develop a means to attain them, and be inspired to strive towards these goals in the present;
- receive academic, social, emotional, and personal support from peers, mentors, parents, and staff;
- develop the interpersonal skills, confidence and resilience to pursue intellectual and personal goals.

Plan Development Process and Stakeholder Voice

The Director of Technology led the development of this plan. He first established a Technology Task Force [TTF], led by an Executive Committee consisting of three individuals:

Name	Title / Position	Telephone	Email
Fishtrom, Robert	Director of Technology	(650) 369-1411 x22580	rfishtrom@seq.org
West, Jack	Science Teacher	(650) 367-9780	jwest@seq.org
Miller, Mark	Consultant	(650) 598-0105	mlmiller@learningtech.org

The following stakeholder groups were identified as key sources of guidance for the plan:

- School and District Administrators
- Teachers (with representation across schools and disciplines)
- Students (with representation across schools)
- Parents
- Professional Development Staff
- Technology Staff
- Members of the Board of Trustees
- Representatives of Nearby Districts and Feeder Schools
- Representatives of the local Business Community, including SUHSD Vendors
- Outside experts on Educational Technology

Although all interested stakeholder representatives were welcome, specific members of the Technology Task Force were sought out, with a goal to ensure broad representation across the above stakeholder communities. Active contributors are listed in the following table. SUHSD

deeply appreciates these TTF members for their time and effort to ensure the most effective uses of technology in accomplishing the district's mission.

Name	Association/Role
Baird, Kelly	Parent, Sequoia High School
Barret, Clint	Manager of Voice & Data, SUHSD
Bazan, Ken	Information Services Manager, SUHSD
Beaver, David	Parent, Woodside High School
Bigue, Dominic	Instructional Technology Specialist, SMUHSD
Broering, Luke	Student, Sequoia High School
Brumbaugh, Kyle	Director of Technology & Innovation, RCSD
Burkle, Tiffany	CTE Specialist, SUHSD
Camacho, Natalya	Student, Carlmont High School
Chen, Helen	Parent, Menlo-Atherton High School
Chin, Karina	French and AVID teacher, Sequoia High School
Chismar, Keri	Vendor/Associate, Microsoft
Choe, Susie	English Teacher, Menlo-Atherton High School
Chung, Henry	Student, Carlmont High School
Currie, Greg	Vendor/Associate, Technology in Education
Darmanin, Brooke	Biology Teacher / Tech Coordinator, Woodside
Derhacobian, Alexander	Student, Carlmont High School
Dillon, Karina	Student, Sequoia High School
Doney, Jon	Vendor/Associate, Learn Platform
Dye, Victoria	Director of Professional Development, SUHSD
Emmi, Stephen	Administrative Vice Principal, Menlo-Atherton High School
Faith, Lisa	Program Manager, AVID
Fanourgiakis, Nick	Principal, McKinley Institute of Technology (RCSD)
Fishtrom, Robert	Director of Technology, SUHSD
Fu, Jonahan	Assistant Director, Sequoia Adult School
Garcia Ferrari	Regional Manager, AVID
Geirkle, Tom	Vendor/Associate, Google
Giambruno, John	Media Teacher / Tech Coordinator, Menlo-Atherton High School
Gomez, Jennifer	Student, Woodside High School
Harris, Adrian	Student, Carlmont High School

Hero, Melissa	Biology Teacher / Tech Coordinator, Carlmont High School
Huh, Laurena	Student, Carlmont High School
Ken, Anne	Librarian, Woodside High School
Kuliga, Michael	Vice Principal, TIDE
Laine, Alice	Librarian, Carlmont High School
Lipson, Zoey	Student, Woodside High School
Lucia, Stephen	Teacher, Carlmont High School
Mahardja, Berton	Vice Principal, Redwood High School
McHan, Matthew	Art & Media Teacher, Redwood High School
Meyer, Jacob	Director of Technology, Jefferson UHSD
Miller, Mark	Learningtech.org, Co-Facilitator
Mitchell, Jeff	Vendor/Associate, CDWG
Patner, Gregg	Administrative Vice Principal, Carlmont High School
Postlewaite, Kevin	Parent, Woodside High School
Priest, Sean	Principal, Sequoia High School
Reklis, Barbara	Instructional Technology Specialist, SUHSD
Rodriguez, Manuel	Student, Sequoia High School
Sarver, Alan	Member, SUHSD Board of Trustees
Scott, Bill	Parent, Carlmont High School
Smuek, Nayan	Student, Woodside High School
Snow, Elizabeth	Librarian, Sequoia High School
Solera, Shara	Student, Sequoia High School
Strehlow, Susan	Parent, Sequoia High School
Trice, Eric	Manager of Web & Servers, SUHSD
Velazquez, Sandra	Technology Specialist, SMCOE
Velschow, Charles	Administrative Vice Principal, Woodside
Vickery, Mackenna	Student, Carlmont High School
Wearn, Jim	Sprint 1Million Project
West, Jack	Science Teacher / Tech Coordinator, Sequoia + TTF Co-Facilitator

Stakeholder Involvement In Plan Development

Stakeholders representing the various roles convened monthly for planning meetings, from October 2018 through March 2019. Everyone was encouraged to comment on key questions, from their own perspectives, as well as more generally for SUHSD. Stakeholder comments and

concerns, especially where the broad consensus seemed to emerge, were used to guide the preparation of the plan.

- The TTF Executive Team performed outreach activities to recruit students, teachers, parents, administrators, representatives from each of the schools, local business leaders, and colleagues from neighboring districts, to ensure a broad range of perspectives were represented. Students' thoughts about technology use and needs were explicitly incorporated through their direct participation at TTF meetings, as well as implicitly through survey data and observations shared by teachers, parents, and school administrators.
- Active participants were identified as the Technology Task Force [TTF]. A sign-in process was used at monthly meetings to help document levels of participation.
- Each monthly session combined presentations (background information, survey data, readings from the educational technology literature, patterns observed in SUHSD's system analytics, and so on), study of the materials, and group discussions.
- Break-out groups enabled focus on greater detail for key topics.
- A Canvas "course" was created to help guide work on the plan. Participant thoughts and discussions were often captured within Canvas, to help ensure that participants could review the comments of others, and that the Executive Team would not overlook key insights or emerging areas of consensus.
- The TTF Executive Team met weekly to act on this feedback from the larger task force and to plan subsequent monthly meetings.
- The Executive Team then drafted this Technology Plan, following a widely accepted outline, while capturing key insights from the full TTF group; constructive criticism of the draft plan was then sought from all TTF participants.
- Based on guidance from the full TTF, the plan was revised and additional comments were sought, across multiple iterations.
- Stephen Lucia contributed further with a detailed editorial suggestions throughout the document.

Stakeholder Participation in Implementation and Monitoring

Participants in the Technology Task Force, and other interested stakeholders will be encouraged to contribute ideas and effort as the recommendations contained in this plan are implemented. Suggestions for quantitative metrics, to better gauge progress against plan goals, will be sought. The TTF recommends that annually, as part of the budget development cycle, this plan must be updated to reflect progress against goals and the possible need for mid-course corrections. New technologies become available to solve existing problems; new research sheds light on the best uses of technologies for education, and new priorities emerge at a district level. Hence, TTF participants -- and all interested stakeholders -- will be invited to contribute to an annual process of plan review and revision, keeping the document "evergreen" going forward.

Approval Process

This plan was presented to the Sequoia Union High School District Board of Trustees at a study session April 10, 2019. The board unanimously supported the new plan.

Curriculum and Operations

Goals for using technology to improve teaching, learning, and operations

In this chapter, we first summarize how technology is currently being used within SUHSD for teaching, learning, and operations. We then consider areas of concern or possible improvement, as well as anticipated future needs; our goals represent strategies for closing the gap between current practice and desired future practice.

Pedagogy

Certain core pedagogical principles unify all SUHSD schools, which are most clearly evident in the district mission:

> *The mission of the Sequoia Union High School District is to engage and prepare all students to excel in a global society.*

The district strives to ensure that *all* students experience engagement with learning, preparation for college and career, inclusiveness, and rigorous expectations. These experiences are accomplished through a connected community -- an *online village,* including caring adults -- with technology providing the means of connection.

SUHSD supports blended teaching and learning; each of the district's core aspirations are achieved in school contexts where every teacher has reliable, internet-connected desktop or laptop devices. All students have regular -- if not yet ubiquitous -- access to Chromebooks or laptops. All SUHSD community members enjoy fast, reliable access to the internet, GSuite, and the Canvas learning management system.

Current Technology Access

The following table summarizes key elements of currently available technology, its *accessibility* by various stakeholders (teachers, administrators, and students, both during the school day and outside of school hours), and mechanism on how it is being used (by whom and with what frequency).

End User Group	Access to Technology	Use of Technology	Frequency of Use
Teachers	All teachers have classroom computers with internet access. Teachers can access their work off campus through Google Drive or our other network drive Currently, some -- but not most -- teachers have access to a dedicated Chromebook cart *in their classroom*. All teachers have a classroom projection system or similar digital presentation capability. All teachers have accounts on G Suite and Canvas. Some sites feel strongly that dedicated classroom carts need to be brought to parity district-wide.	Teachers use: • School provided email accounts to communicate with staff, parents (schedules, reminders), students (homework help and reminders), and administrators • Chrome browser and Google search for research • GSuite to prepare lesson plans, presentations, reports, correspondence • Canvas for classroom management including lesson delivery to students Examples: • Many teachers use Canvas as a curriculum repository, allowing for significant differentiation in two dimensions: time and choice. • Some teachers also use other educational technologies to deeply engage students with tools, like Quizlet, Flipgrid, and Screencast-o-matic. • Many teachers train students in a cloud-based, digital workflow, complete with feedback cycles and collaboration, using G Suite • Teachers have excellent access to online library resources as well Areas for improvement/investigation: • Some teachers could take greater advantage of Canvas and GSuite • Additional emphasis on digital citizenship and health would be valuable for students	Daily, in many but not all classrooms.
Students	Students have access to Chromebooks in carts, in most classrooms, throughout all campuses. Every student has a personal G Suite account. Every student has a Canvas account	Examples: • Students collaborate independently of time and space with the use of G Suite • Students manage their own learning with regular access to posted curriculum on Canvas • Students have excellent access to online library resources as well • Students use the Adobe Creative Cloud to generate media that is both complex and masterful Areas for improvement/investigation: • TTF statements indicate that access to and use of technology is not equal in all classrooms, and there may be some differentiation that aligns with class rigor. More rigorous classes tend to employ more educational technology • TTF statements indicate that technology is often required in some classroom environments when some students would prefer a low tech approach. i.e. note taking, digital textbooks	Daily, in most classes. However, not all students have fully equitable access at home, yet; and some classrooms do not yet have Chromebook carts. Some students feel less skilled in using technology.

All	Canvas	Areas for improvement/investigation: ● Students and parents indicated that teacher use of Canvas is uneven (some do not use, or use only minimally) and therefore frustrating. ● Stakeholders indicated that some teachers could use technology more effectively than they do, to increase engagement and thereby facilitate learning.	Intermittent.
Administrators	All administrators have access to desktop or laptop computers, all network resources including Canvas and G Suite. Many have access to specialized applications appropriate to their roles.	Examples: ● TTF itself has used Canvas to help drive stakeholder participation in development of this plan ● Many administrators now use G suite rather than traditional MS Office suite for routine productivity tasks Areas for improvement/investigation: ● Some administrators could demonstrate increased priority for use of technology, modeling creative ways to enhance student engagement ● Some administrators could leverage platforms such as Canvas more in carrying out their own functions	Daily.

Recommendations Regarding Technology Access

The TTF recommends that *every* student and teacher have the necessary devices and Wi-Fi access to all district-approved tools for facilitating teaching, learning, and operations. TTF further recommends that all administrators and administrative support personnel be able to carry out their work as effectively and efficiently as possible, with minimal time spent processing information using antiquated or incompatible computer systems, while demonstrating -- through their own usage -- the district's commitment to technology.

With these considerations in mind, the TTF created the following goals and strategies to improve teaching, learning, and operations in several areas.

Ubiquitous Access on Campus; Equitable Access from Home

SUHSD students already…

- Have convenient access to Chromebooks in most classrooms
- Have the opportunity in many instances to check out Chromebooks and/or wifi hotspots if needed for equitable access at home
- Experience technology access essentially equivalent to conventional "1:1" programs
- Are offered opportunities to acquire the technology and information literacy skills needed to succeed in the classroom and the workplace, but not yet as equitably as needed

Educators and school leaders would like to grow practices that encourage…

- An experience of truly ubiquitous access to a device for all students
- Ability to access the internet and district network resources, from home, for all students
- *All* students to gain increased technology and information literacy skills

To reach these goals, the TTF recommends…

- District-wide commitment to Chromebook carts in every classroom where devices would be considered useful
- Availability of check-out devices (including Wi-Fi hotspots as needed) for 100% of students who report limited access at home
- Increased opportunities for skills training around technology and information literacy
- Expanded curriculum regarding internet safety, digital well-being, and ethical use of information technology

Digital Well-Being

SUHSD students already…

- Have an *Appropriate Use Policy* to guide online behavior
- Have some exposure, primarily in the *Life Skills* course, to curriculum materials addressing behaviors that affect digital health

Educators and school leaders would like to grow practices that encourage…

- Voluntarily limiting mobile device screen time in order to improve mindfulness and reduce stress
- Emphasizing educational use of screen time over recreational use
- Respecting intellectual property, such as by honoring copyrights and giving credit to sources
- Thoughtfully considering digital safety and online footprint when sharing information

To reach these goals, the TTF recommends…

- Continued study of the literature on the impacts of "mobile device addiction" and alternative approaches to managing unhealthy use by teens at school.[4,5,6] (Some schools are adopting "Faraday cases" for students to keep their phones in during class.[7])
- Establishing a follow-up task force, including collaboration with K-8 feeder districts, to develop and promulgate a more systematic approach to promoting digital health. With Board approval, TTF would like to contact senior administrators at each feeder district to invite them to appoint a representative to collaborate on this critical need.

21st Century Skills and Preparation for College and Career

SUHSD students in many contexts already…

- Practice professional communication through email when communicating with their peers and teachers.
- Learn to use the preferred learning management platform of choice for colleges and universities - Canvas.
- Collaborate both in-person and remotely with cloud-based productivity tools, like Google Presentations.
- Practice source evaluation in many classes when using the internet for research.

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[4]https://www.pewresearch.org/fact-tank/2019/03/22/how-parents-feel-about-and-manage-their-teens-online-behavior-and-screen-time/

[5]https://katielmartin.com/2019/03/25/lets-talk-about-cell-phone-bans-should-we-limit-access-or-teach-responsibility/

[6]Turkle, Sherry, *Reclaiming Conversation: The Power of Talk in a Digital Age,* Penguin Press (2015). ISBN 978-1-594-20555-2

[7]https://www.usplastic.com/catalog/item.aspx?sku=80280&gclid=EAIaIQobChMIiJGT4cay4QIVuR6tBh0-dQaqEAQYBCABEgILl_D_BwE is one example, costing about $6.00 per unit.

Educators and school leaders would like to grow practices that encourage…

- Student time management with skilled use of cloud based productivity tools, like Google Calendar, Sheets, and Canvas Modules.
- Student digital literacy skills, such as digital footprint awareness, mindful digital publishing, content curation, and respectful group discussions.

To reach these goals, the TTF recommends…

- Growing our district commitment to professional development and technical support. The SAMR model[8] (further discussed in Chapter 2, Professional Development) is a key aspect of SUHSD's approach to technology adoption.
- Leading a community-wide effort, starting with the task force mentioned above, to identify and articulate healthy digital practices for K-12 that we can also recommend for parents managing the digital lives of their children at home, including thoughtful limitations on unproductive, non-educational screen time with personal devices (phone chatting, watching YouTube).

Frequent Assessment and Feedback

SUHSD students in many contexts already…

- Receive formative feedback on their works in progress from teachers using cloud-based commenting functions in both GSuite and Canvas.
- Engage with adaptive software that provides them immediate feedback on their answers. Examples include Google forms, Canvas quizzes, Read 180, and System 44 Math.

Educators and school leaders would like to grow practices that encourage…

- Use of adaptive software to improve skills and knowledge in any area of academics where it is financially feasible and demonstrably effective. Examples include foreign language practice, fact memorization in any subject, and foundational math skills at all levels.
- Opportunities for teachers to work more closely with smaller groups of students; aided by technology that can be engaging large numbers of students in independent practice at the same time as small group work.

To reach these goals, the TTF recommends…

- Growing our district commitment to professional development and technical support.
- Annual administration of a short survey of student skills with educational technology, based on the ISTE Standards for Students[9] -- to help us quantify our progress and ensure equity in the acquisition of these skills, which are critical for academic success, throughout our district
- Regular evaluation and testing of software that might support these goals.
- Adoption of a software licensing and evaluation platform to ensure that software licensing dollars are well spent.

[8] https://www.schoology.com/blog/samr-model-practical-guide-edtech-integration. The SAMR Model is a framework created by Dr. Ruben Puentedura that categorizes four degrees of classroom technology integration. The acronym stands for Substitution, Augmentation, Modification, and Redefinition.

[9] International Society for Technology in Education, https://www.iste.org/standards/for-students.

Progress Monitoring

SUHSD students in many contexts already…

- Experience a *village* of structure and support from teachers, counselors, targeted intervention program personnel, and parents who all have secure access to the ongoing assessment data available in Canvas, Infinite Campus, and other cloud-based platforms that update progress information in near real time.

Educators and school leaders would like to grow practices that encourage…

- Continued improvements in transparency, equitable assessment, and professional collaboration around the academic progress of all students.

To reach these goals, the TTF recommends…

- Growing our district commitment to professional development and technical support.
- Regular evaluation and testing of software to further support these goals.

Creativity

SUHSD students in many contexts already…

- Use digital tools and devices to produce original works of art and to adapt existing works for a specific purpose and context. Examples include digital photography, images and video organized and edited with the Adobe Creative Cloud, and music created with digital tools and instruments.
- Create Google Presentations with content re-mixed and curated from a variety of sources.
- Implement the variety of programs and tools available to them to meet course objectives and standards in more than one way.

Educators and school leaders would like to grow practices that encourage…

- Creative representations of student skills and knowledge that track with and make use of current trends in college and the workplace.
- Adaptations of prior work that adhere to copyright laws and avoid plagiarism and other violations of intellectual property.

To reach these goals, the TTF recommends…

- Growing our district commitment to professional development and technical support.
- Implementing regular evaluation and testing of software that might support these goals. A current example of software that supports creative construction would be the Adobe Creative Cloud.
- Establishing a district-level process for adoption of new content software solutions that is modeled after textbook adoptions, including substantial teacher input, taking into account FERPA and COPPA requirements, support for available hardware and operating system platforms, etc,

Credit Recovery

SUHSD students already…

- Make use of online programmed learning to recover lost credits in order to reach graduation in a timely fashion: *CyberHigh*.

Educators and school leaders would like to grow practices that encourage…

- Credit recovery practice that is standards-based and rigorous.

To reach these goals, the TTF recommends…

- Exploration and experimentation with teacher-generated and facilitated course content to meet student credit recovery needs.
- District leaders *consider* how credit recovery costs might be reduced with in-house generated credit recovery courses, hosted on our own course management platform, Canvas. (This consideration is a "study" recommendation, not yet a proposed change.)

Equitable Grading Practices

SUHSD students in some *contexts already…*

- Experience standards-based grading in classes that are making use of technology to reduce the overhead associated with offering students multiple attempts at a given course standard.
- Receive reports on their progress that specifically identify student progress by standard.

Educators and school leaders would like to grow practices that encourage…

- Implement equitable grading practice and visible progress reporting for learners.

To reach these goals, the TTF recommends…

- SUHSD leadership track current district efforts in equitable grading practice and support the growth of practices that prove effective at supporting equitable outcomes and accelerated learning for all students.

Texts and Textbooks

SUHSD students in many contexts already…

- Have access to digital texts that allow them to interact with content differently. Value-adds include hyperlinks to enrichment material, on-page note-taking, mix-and-match curriculum for special topics, and other extra-dimensional engagement features.
- Have the ability to leave paper textbooks at home and/or school in addition to access to digital texts, so that they can avoid carrying extra weight to and from school.

Educators and school leaders would like to grow practices that encourage…

- Access to text and content in both the digital and paper formats.
- Limited shuttling of heavy paper texts back and forth from home whenever possible.

To reach these goals, the TTF recommends…

- Money-saving practices whenever possible to use copyright-free digital texts.
- Prefer textbook adoptions where materials are available in *both* hardcopy and digital format.
- Creative examination of all textbook possibilities in a process that includes relevant stakeholders.

- Ongoing discussion and data analysis as SUHSD investigates the pros and cons of migration from mostly traditional textbooks toward increasing use of digital media.

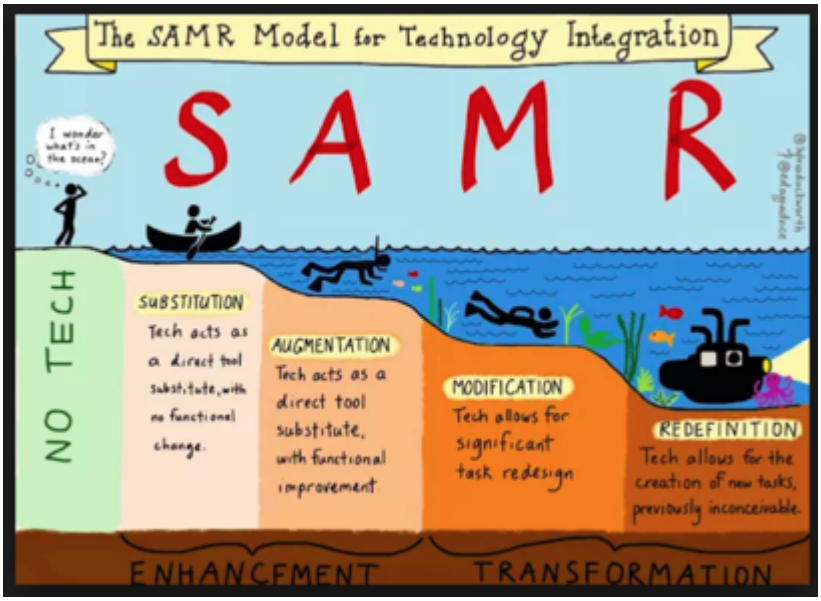
Professional Development

Professional Development Opportunities

Historically, the district used a plethora of methods for staff development. Many of the sessions offered by the district's Professional Development department focus on initiatives the district has engaged in, such as *Constructing Meaning* (more currently), *Quality Teaching for English Learners*, and *Direct Interactive Instruction* (in past years). Ultimately, district PD is related to our instructional focus. District Instructional Coaches are trained to deliver and facilitate many of these offerings.

In terms of professional development opportunities that include instructional technology, the district focuses on tools where we provide access or subscription services. Examples of these tools include *GSuite*, *Canvas LMS*, *TurnItIn.com*, *FlipGrid*, *SchoolCity*, and Adobe's *Spark*. These sessions are typically offered by the Instructional Technology Specialist or the Director of Technology.

Specialized training has been given when needed; for example, when the district rolled out 1:1 Chromebook initiatives for our AVID and Partnership Academy programs, specific training was provided that not only familiarized staff members with the use of Chromebooks, but also sequenced curriculum with desired outcomes at the various grade levels in the respective programs. All professional development opportunities involving technology integration are focused on the SAMR model[10] for technology integration, as well as AVID's Digital Learning Framework.



[10]https://www.schoology.com/blog/samr-model-practical-guide-edtech-integration. The SAMR Model is a framework created by Dr. Ruben Puentedura that categorizes four degrees of classroom technology integration. The acronym stands for Substitution, Augmentation, Modification, and Redefinition.

Key Items Considered:

The district has not regularly surveyed staff members to identify technology professional development needs.[11] This is certainly an area for growth. As previously noted, the district provides professional development based on tools made available to educators.

Given that the district employs over 500 teachers and up to 500 classified staff members, the needs of our end users vary greatly. Given this broad range, efforts have been made to provide individual departments with professional development the department is seeking:

- Maintenance, Human Resources, and Accounting Departments continuously request Microsoft Excel training.
    - Since we have limited resources to provide professional development for classified staff, we have retained firms that provide this specialized training.

The district's Instructional Technology Specialist primarily focuses on professional development for certificated employees.

The district uses a variety of models when implementing new technologies.

- Coaching Model: for programs such as Canvas LMS
- Department Training:
    - AVID and Academy Chromebook Initiatives
    - World Languages Departments: FlipGrid
    - English Departments: TurnItIn
    - Math and other Assessment: SchoolCity
    - Other training provided as needed/requested

For the past two years, all technology-related professional development opportunities have been made available synchronously (both in person and online via Canvas LMS and Zoom Video Conferencing).

The Technology Department works closely with the Director of Curriculum and Professional Development to determine staff development needs; after this process, offerings are created and advertised. In addition to these opportunities, each school site affords teachers time for learning tools during staff and department meetings.

Many teachers engage in learning opportunities from outside institutions:

- CUE (Fall and National Conferences; SVCUE T3)
- The EdTechTeam (Google Summits)
- The AVID Center (The 4A's to Technology Integration)
- Leading Edge Certifications:
    - Digital Educator
    - Online and Blended Teacher
    - Professional Learning Leader

[11] The International Society for Technology in Education [ISTE] provides self-assessment surveys and standards for teachers, students, administrators, and other staff. For example: https://www.iste.org/standards/for-educators.

The district is open to exploring other models for professional development. Attendance in after-school sessions is low. Attendance during the June and August PD Series is far better (and staff members are compensated for participation). Many teachers have stated that they do not like to miss work, therefore do not like being "pulled out" for PD.

The district uses an online system (KickUp) that allows teachers to sign up for training opportunities, record attendance, and evaluate each session.

What The Data Indicates

- Attendance at many after-school PD sessions is comprised primarily of new teachers and teachers clearing their credential via our TIPS program.
- 95% of teachers responded that the technology tools available meet their curricular needs.
- 81% of teachers responded that the professional development offered by the district meets their needs.
- 92% of students are regularly using technology to complete assignments, but only 55% of teachers are requiring students to submit assignments online.
- 94% of teachers indicated that technology support is timely and efficient.
- Only 28% of teachers indicated that the effective use of technology is a topic in staff and department meetings.

Concerns

- The "Digital Health" of students is an enormous concern. Moreover, all stakeholders have asserted that students need more awareness and education focused on Digital Footprint and Digital Literacy. Only 44% of students indicated that teachers discuss responsible online behavior when using technology.
- Late start at each school and traffic have negatively impacted after-school attendance for PD events
- Site admin and classified staff, in general, need time for technology professional development.

Current Proficiencies

Given that staff members have not been surveyed regularly, the district does not currently have an instrument to measure proficiencies in various areas.

Recommendations:

What	Who	When
Maintain 1.0 FTE for Instructional Technology Specialist at District-level and .2+ FTE at site level	District Administration	Ongoing
Administer a comprehensive survey to seek stakeholders' professional development needs and proficiency levels	Technology/PD Departments	by June, 2019
Provide Professional Development Academy focused on Leading Edge Certifications (Digital Educator and Online/Blended Learning) to expose more teachers to instructional technology pedagogy, tools, and implementation	Technology/PD Departments	2019-2020 academic year and beyond

Provide professional development opportunities by content area and departments; consider pull-out days or periods, keeping sessions focused and allowing for quick and easy implementation	Technology/PD Departments	2019-2020 academic year and beyond
Provide resources for all teachers across the curriculum dealing with "Digital Health."	Technology/PD Departments in participation with CommonSense media and KQED	2019-2020 academic year and beyond
Increase portion of PD time allocated to Tech PD	Site administrators	2019-2020 and beyond
Refresher training for Canvas Coaches	Technology Department	Summer 2019
Continue Canvas "coaching" model; focus on teachers being assigned to specific coaches at sites for more consistency and continuity.	Technology Department and Site IVP's	Summer 2019
Develop opportunities for PD for technical staff and classified staff in general. A needs survey should be performed first.	Technology Department and Site IVP's	Fall 2019

The TTF also recommends the following:

- *A needs assessment survey administered each Spring to all staff members; a comprehensive list of professional development offerings will be formulated based on this needs assessment (including but not limited to* ISTE Standards for Educators*)*
- *Incorporation of essential instructional technology questions (focusing on equity, access, and instructional expectations) in the annual "climate" survey administered to students, families, and staff*
- *The possibility of providing professional development during the school day, wherein teachers, individually or collectively by department, are released for meaningful, desired training that can be put to immediate use*
- *Launching of a PD Academy focused on the Leading Edge Certification Digital Educator series (each fall) and the Leading Edge Online & Blended Teacher series (each spring) with incentives for participants*
- *Launching of an Administrators Technology network supported by the Director of Technology, Instructional Technology Specialist, and Instructional Coaches. Quarterly meetings where the discussion would be focused on sharing effective practices.*

Technology and Infrastructure

Infrastructure requirements are derived from our Curriculum, Operations, and Professional Development goals, and the gap analysis of what currently exists and our anticipated needs. Furthermore, the amount of technology throughout the district continues to grow at a very fast rate. As such, we implemented a comprehensive asset management system (TipWebIT) in the summer of 2017 to actively monitor our inventory and allow for proper planning and budgeting.

Below is a high level summary of currently available technology and infrastructure. Within the discussions of existing infrastructure, future needs are identified and described immediately following each topic so they can be discussed within the context of current assets. Future needs are presented in *blue, italicized text*, along with estimated costs; additional details are presented in the *Funding and Budget* chapter.

End User Hardware

Computers

Currently, the district has the following items:

- 2,636 Desktop Computers
  - Make and model vary throughout the district
  - Age of devices vary; about ⅓ of fleet reaching end of life
- 1,818 Notebook (Laptop) Computers
  - Make and model vary throughout the district
  - Age of devices vary.
- 11,813 "other devices"
  - Chromebooks
    - Primarily Hewlett-Packard
    - 2,700 devices reaching end of life June 30,
  - Chromebases
    - Asus and Hewlett-Packard
  - Tablets
    - Mostly Apple iPads and Samsung Galaxy
  - Age of devices vary
- Current district specifications

Currently, all of these devices are able to connect to the internet. We must retire roughly 300 computers, 150 notebook computers, and 2,700 Chrome devices by the end of this school year. Not all aging devices will be wholesale replaced as part replacement can extend life. Moreover, to achieve equity between school sites, more Chromebook carts must be added to Sequoia High School and Carlmont High School. In many cases, obsolete equipment will not meet state testing requirements or could place network reliability at risk, so it is important that we track and budget for timely upgrades.
Though the table below indicates what is needed, a more detailed report is available in the Budget section of this plan.

To accomplish our curricular and operational goals we need:

Item	*Unit Price*	*Qty*	*Estimated Cost*	*Year Needed*
Staff Workstations (District-wide)	*$1150*	*85*	*$97,750*	*2019-2020*
Chromebook Refresh (District-wide)	*$235*	*2700*	*$634,500*	*2019-2020*
Staff Workstations (District-wide)	*$1150*	*85*	*$97,750*	*2020-2021*
Chromebook Refresh (District-wide)	*$235*	*3000*	*$705,000*	*2020-2021*
Staff Workstations (District-wide)	*$1150*	*85*	*$97,750*	*2021-2022*
Chromebook Refresh (District-wide)	*$235*	*2500*	*$587,500*	*2021-2022*

All stakeholders involved on the Technology Task Force expressed the need for equitable access across all of the district's school sites. A way to achieve this access is to ensure a balanced distribution of technology, especially Chromebooks, for student use. For the sake of equity, the *TTF recommends that financial resources be dedicated to further supplementing Chromebook ratios, including replacement of older devices that have "aged out" to ensure both ubiquitous access and equity* across the entire district.

Other Peripherals

Currently, the district has:

- 1,285 printers and copiers
- 744 projectors
- 358 Document Cameras
- 318 video safety cameras (district-wide)

Each district classroom is equipped with the following:

- Teacher classroom computer
- Classroom projection
- Document Camera
- Wireless Access Point
- Classroom printer (where applicable)
- TopCat Distributed Audio System (new construction)
- Chromebook Cart (where applicable)

The use of printers has declined with the adoption of the GSuite in 2014; these printers are typically updated or replaced using annual site refresh funds. The same is true for projectors and other projection equipment. *The TTF recommends discontinuing the support of classroom printers in favor of centralized printing in departmental offices, work areas, and copy rooms.*

Maintaining and expanding the video safety cameras across the district has been quite an endeavor. In addition to needing a regular refresh of these devices, it is logical to consider video server upgrades every five years; these servers can cost as much $19,000 each. *The TTF recommends an increase in general fund spending (highlighted below) to maintain a robust video safety system at all of the district's sites.*

To accomplish our curricular and operational goals, we need the following items:
This area is subject to change, as the district will be migrating from a legacy server-based video safety camera solution to a cloud-based solution. Essentially, the TTF recommends an allocation of $160,000 annually from the General Fund, to keep our video safety system up-to-date.

End User Software

Currently, the district runs:

- Operating System Software
    - Mac - OSX Mojave
    - Windows - Windows 10 Professional (phasing out Windows 7 completely by January 2019).
- Virus Protection Software
    - TRAPS end-point protection from Palo Alto Networks
- Electronic Learning Resources (add need for Learn Platform - add narrative below)
    - Canvas Learning Management System
    - Infinite Campus (Student Information System)
    - Google Suite
    - TurnItIn.com
    - Gale/Cengage CCSS Resources
    - FlipGrid
    - Adobe CS
    - Smart Notebook Software
    - Lightspeed Relay (filtering and monitoring Chromebooks)
    - PearDeck
- Administrative
    - Microsoft Office
    - Others as needed

It is the recommendation of the Technology Task Force that SUHSD adopt the Learn Platform in order to ensure compliance with student privacy issues when various software and apps are used. Moreover, the platform helps the district track software licenses, also helping with compliance challenges.

To accomplish our curricular and operational goals, we need the following items:

Item	*Unit Price*	*Qty*	*Estimated Cost*	*Year Needed*
Learn Platform	*$12,000*	*1*	*$12,000*	*2019*
Adobe CS	*$5/user*	*4000*	*$20,000*	*2019*
Canvas LMS	*$65,000*	*1*	*$65,000*	*2019 and beyond*

Infinite Campus	*$115,000*	*1*	*$115,000*	*2019 and beyond*
Gale/Cengage	*$45,000*	*1*	*$45,000*	*2019 and beyond*
SMART Notebook Software				*2021*
JSTOR (District-wide)	*$10,000*	*1*	*$10,000*	*2019 and beyond*
Destiny Library Software (District-Wide)	*$22,000*	*1*	*$22,000*	*2019 and beyond*

Networking and Telecommunications Infrastructure

The following subsections are intended to align with the categories of eligible services established by the FCC for E-Rate funding:

Category 1

1. Data Communications
2. Internet Services

Category 2

3. INTERNAL CONNECTIONS AND MANAGED INTERNAL BROADBAND SERVICES
4. BASIC MAINTENANCE OF INTERNAL CONNECTIONS

Data Communications and Traditional Telephony

Currently, SUHSD has…

- About 60 POTS for alarms and elevators.
- Avaya branded call routing / message handling
- About 1417 phone lines (includes 741 analog and 676 VoIP), 50 fax lines, 1500 extensions, 963 voice mailboxes
- 9 PBX/T1 PRI circuits - soon to be SIP
- Inter-school communication provide via wide-area-network
- 1000 DID
- Capability for 100 concurrent calls between public and private systems
- The telephone main point of entry is in the MDF at every campus.

The TTF recommends maintaining currently licensing for our voice services in order to eliminate future costs of system replacement.

To accomplish our curricular and operational goals we need the following items:

Item	*Unit Price*	*Qty*	*Estimated Cost*	*Year Needed*
Avaya maintenance and licensing	*$60,000*	*1*	*$60,000*	*2019 and beyond*
Repairs not covered by maintenance	*$15,000*	*1*	*$15,000*	*Ongoing*

Cell Phones

Stipends are provided to staff members who qualify for the use of a cell phone.

Wide Area Network (WAN)

Currently, SUHSD has

- AT&T ASE fiber between all of our campuses
- All WAN connections are 10 Gb capable and have an assigned committed information rate (CIR) appropriate for that site's needs.
- July 2019, we will upgrade our District Office WAN interface to 100 Gb capable.

The TTF recommends maintaining (and expanding) the level of connection available. As the number of devices in use continues to grow, the need for faster, more reliable internet services will increase.

To accomplish our curricular and operational goals we need the following items:

Item	*Unit Price*	*Qty*	*Estimated Cost*	*Year Needed*
AT&T contracted data communications services	*$11,815/mo*	*12*	*$141,782/yr*	*Ongoing*
Zayo contracted data communications services	*$1895/mo*	*12*	*$22,740/yr*	*Ongoing*
E-Rate program supports 50% discount for WAN	*$6855/mo*		*$82261/yr*	*Ongoing*

Internet Access[12]

Direct Internet Access

Currently, SUHSD has:

- ISP: SMCOE and Cogent
- Bandwidth: 4Gb / 10Gb
- Email: Google Gmail
- Web Hosting: Catapult CMS

The TTF recommends maintaining existing services and expanding as needed. Note: GSuite is free to educational institutions. Since the district migrated to Google (July 2014), the district saved $15,000 annually on licensing for email and other old, legacy services.

To accomplish our curricular and operational goals we need the following items:

Item	*Unit Price*	*Qty*	*Estimated Cost*	*Year Needed*
Annual Fees for CENIC Internet Services	*$26,500/yr*	*4Gb*	*$26,500/yr*	*Ongoing*
Annual Fees for Cogent Internet Services	*$2300/mo*	*10Gb*	*$27,600/yr*	*Ongoing*
E-Rate program supports 50% discount for Internet	*$2254/mo*		*$27,050/yr*	

CIPA Compliance and Safety

SUHSD complies with the Child Internet Protection Act.

- The district operates a Palo Alto Network Firewall on each of our internet edges
  - Currently in year 1 of a three-year agreement
  - Staff members use the online support desk to request whitelisting of blocked sites
- The district subscribes to Relay by Lightspeed System for filtering of devices that are taken home by students.
  - Currently in year 2 of a three-year agreement

[12]Internet Access or "Basic conduit access" to the Internet is eligible for E-Rate discounts and can be provided by a telecommunications carrier or any commercial organization.

- The district just entered a three-year agreement with Palo Alto Networks, using TRAPS on every desktop and notebook computer to ensure endpoint security.

The TTF recommends maintaining the current compliance and safety measures that the district has taken.

To accomplish our curricular and operational goals, we need the following items:

Item	*Unit Price*	*Qty*	*Estimated Cost*	*Year Needed*
Renewal and expansion of Relay - filtering and monitoring - 3yrs	*$145,000*	*1*	*$145,000*	*2019 and beyond*

Internal Connections[13] and/or Managed Internal Broadband Services[14]

Local Area Network (LAN)

Our LAN initiates in the data closet. The telephone and Internet main points of entry are in the data closet, which is physically locked (X staff members have keys), air-conditioned, neatly organized, and not used for general or cleaning supplies storage.

Currently, SUHSD has:

- Fiber wiring between MDF and IDFs
- Cat6 wiring from IDFs to classrooms
- Various stand-alone and virtual servers used for: web, email, file, DNS, DHCP; running a mix of Proxmox, VMWare, Debian, and Microsoft operating systems.
- CyberPower and Eaton UPS, Palo Alto Networks Firewalls
- Cisco routers and switches
- Meraki cloud-managed and Cisco controller-based wireless access points.
- Cisco SMARTnet for all critical network equipment.

The district is current with our network switchgear, wireless access points, and firewall. There will be a continuing need to update network wiring from the MDF and IDF at each school sites to classrooms and other areas, as much of the current wiring is old, damaged, or simply in need of replacement.

The TTF recommends upgrades as needed to switching gear, wireless access points, routers, and the district firewall. Though equipment is currently up to date, the TTF recommends budget

[13] Internal Connections consist of the wiring and components that expand data access within a school or library, such as to individual classrooms in a school or public areas of a library. Internal connections can be provided by any commercial organization.

[14] Managed Internal Broadband Services consist of services provided by a third party for the operation, management, and monitoring of eligible broadband internal connections components are eligible managed internal broadband services (e.g., managed Wi-Fi). E-rate support is limited to eligible expenses or portions of expenses that directly support and are necessary for the broadband connectivity within schools and libraries. Eligible expenses include the management and operation of the LAN/WLAN, including installation, activation and initial configuration of eligible components, and on- site training on the use of eligible equipment. In some managed services models, the third party manager owns and installs the equipment and school and library applicants lease the equipment as part of the managed services contract. In other cases, the school or library may own the equipment, but have a third party manage it for them. (SUHSD does not use this approach to WAN services.)

*items in the general fund for **2021-2022** to stay up to date with changes to devices as well as wiring needs that may arise.*

Servers / Cloud Resources

Currently, SUHSD has

- 12 virtual host servers
- 40 virtual servers
- Rack-mounted uninterruptible power supply systems in each MDF and IDF throughout the district to ensure reliable services during power outages.
- GSuite for
    - Staff storage
    - Student portfolio storage

Also see APPENDIX – GENERAL SPECIFICATIONS OF INTERNAL CONNECTIONS, which describes needed components in more detail.

Basic Maintenance Of Internal Connections[15]

Equipment Maintenance

Equipment is monitored regularly. Emerging technologies have allowed district personnel to monitor much of the equipment "in the cloud".

These existing components of our inventory are eligible for E-Rate supported Basic Maintenance of Internal Connections:[16]

Item	Make	Model	Purchase Date	Funding Year Acquired	Installation Date
Firewall	Palo Alto Networks	Current	June 2018	2018	June 2018
Switches	Cisco	Vary	Sept 2017	2017	2017-2018
Router	Cisco	Vary			
WAP	Cisco Meraki	MR53	May 2018, Jan 2019	2018, 2019	2018, 2019
Given the district's network equipment is up to date, many purchases are not anticipated many during the life of this technology plan. The district anticipates the need to update wiring and adding wireless access points as needed.					

As additional components eligible for E-Rate support are added to the school's assets, this inventory will be updated including: make, model, serial number, purchase date, and any E-Rate support details (e.g., funding year acquired, Funding Request Number, installation date). Assets will be similarly tagged with this information for easy identification and inventory control.

Other Necessary Resources

[15]Basic Maintenance of Internal Connections consists of services "necessary to enable the continued operation of the eligible equipment." It includes: repair and upkeep of eligible hardware, wire and cable maintenance, basic technical support, and configuration changes.

[16]Only certain components are eligible for E-Rate support. General tech support costs (e.g., vacuuming out printer, applying virus software updates) must still be borne by the school.

The following subsections are necessary for a reliable infrastructure, and are required for, but ineligible, for E-Rate support.

Technical Support

Currently, SUHSD has:

- Technical Support from District Office:
  - 6 FTE
- Technical Support at School Sites:
  - Carlmont 2 FTE
  - East Palo Alto Academy 1 FTE
  - Menlo-Atherton 2 FTE
  - Redwood (supported by district technician)
  - Sequoia Adult (supported by district technician)
  - Sequoia 1 FTE
  - TIDE Academy (to be determined)
  - Woodside 1.6 FTE
- Technical support is handled through an online help desk where calls are routed to the appropriate individuals. In particular, the technology side of the house will be migrating to GetHelp support desk in July, as it integrates with our asset management system.
- We do not have a student technology support class or program, like Student Tech Corps, Mouse Squad, and Gen TECH.
- When curriculum support is needed [help with integrating technology into the curriculum (such as understanding how to use Web resources in a unit on Egyptian history)], this support is provided by:
  - 1 FTE - Instructional Technology Specialist from district office
  - .2 FTE Technology Coordinator at each comprehensive site
- District replacement policy for obsolete equipment is arranged through through the district warehouse (via the Purchasing department) and removed from the asset management system.
- District backup routines include:
  - Hourly backups of the entire GSuite
  - Daily backups of all servers

The TTF recommends maintaining current staffing levels for technology support, except as noted. The district will take into account any recommendations provided by FCMAT, an organization that recently conducted a study of the Technology Department's overall structure.

The district has established the following technology and infrastructure goals/activities to support the established curriculum/operations and professional development objectives.

What	Who	When
Ongoing refresh of Chromebooks and staff devices	Director of Technology and Site Leadership	Ongoing
Voice Communications – Ensure reliable voice communications between classrooms, buildings, campuses, colleagues, and families.	Manager of Voice and Data Services	Ongoing
Data Communications – Ensure reliable high-speed wireless data communications between classrooms, buildings, campuses, and	Manager of Voice and Data Services	Ongoing

Internet to facilitate end user access to needed resources.		
Technology Safety – Ensure safe and efficient environment for stakeholders via implementation of: - Content filter that utilizes commonly accepted filtering - Gateway level scanning technology to limit spam and viruses - E-mail system that eliminates spam and viruses - Routine backup procedures - Disaster preparedness Annual survey of stakeholders indicates unsolicited email and viruses does not interfere with their work. Quarterly filtering report indicates stakeholders rarely access inappropriate content.	Director of Technology	Ongoing
Basic Maintenance of Internal Connections – Maintain infrastructure equipment for continued operation (e.g., repair and upkeep, basic technical support, configuration changes), such that annual survey of stakeholders regarding performance and availability shows "satisfied" rating.	Manager of Voice and Data Services	Ongoing
Professional Development for Teachers Ongoing, regular sessions that focus on effective implementation of technology in curriculum. Development of Leading Edge Certification PD Academy. Bringing PD to the sites and engage stakeholders by department, content area, grade level, or whatever needs the site may have.	Director of Professional Development, Instructional Technology Specialist, Director of Technology	Ongoing
Maintenance and Expansion of Network	Manager of Voice and Data Services	Ongoing

Monitoring Progress

Evaluation process to monitor progress toward goals and make mid-course corrections

Overall Technology Plan Effectiveness

Sequoia Union High School District's Technology Task Force will submit a 3-year technology plan, for approval by the Board of Trustees with adequate time for discussion and revision before the previous 3-year plan has expired. Upon approval, the newly approved plan will be made available to all stakeholders.

The plan will receive minor updates, annually, so as to remain "evergreen," facilitating coordination with the annual budget cycle and allowing for timely mid-course corrections. Updates will provide evidence of progress against goals, note those areas where mid-course corrections may be required, and support roll-ups of technology spending into the annual budgeting process. Every three years, a more substantial revision may be appropriate since the educational technology landscape tends to evolve rapidly.

Assessment of progress against metrics for educational technology effectiveness will consist of a systematic, on-going process, using both formal and informal measures. Annual or semi-annual reviews of technology status will be prepared by the Director of Technology and presented to the Board of Trustees in the form of a memorandum and/or slide presentation. Systematic review will include assessment of the progress toward the goals established by the plan and recommendations for changes in direction or minor adjustments going forward. The written plan will be updated to match and verified to align with district goals/budget.

Part of this evaluation/monitoring process includes maintaining records of goals, activities, metrics, and progress, both for internal clarity and for compliance with external funding programs, such as E-Rate[17] and state or federal grants for which the district has applied.

Progress Since Previous Plan

Overall stakeholder feedback about the current state of technology within SUHSD has been very encouraging. School foundations have indicated a strong commitment to continuing support of the Chromebook program. For the most part, the surveys indicate that the comments about the Canvas adoption have been favorable. Surveys and other data have surfaced some areas where goals and objectives need adjustment or are not yet fully being met; developing strategies to address these areas of concern has been a major focus of this new plan.

Since the adoption of the previous plan, technology usage has grown tremendously throughout the district. New technologies and platforms have come to our attention and been adopted.
The TTF identifies trends and need that include potentially useful new technologies and emerging areas of concern through several channels:

- Attending educational conferences that highlight technology, such as CUE, AVID, and CETPA

[17] E-Rate Program Record Retention Rule: Starting with Funding Year 2015 and in accordance with FCC's E-Rate Modernization Report and Order (FCC 13-184, released July 23, 2014), both applicants and service providers are required to retain documentation for 10 years after the latter of the last day of the applicable funding year, or the service delivery deadline for the funding request. Electronic records are acceptable.

- Reading publications (periodicals, such as *Education Week* and ISTE's *Journal of Research on Technology and Education* and scientific literature relating to educational technology research)
- Networking with colleagues from other districts
- Surveying our users and stakeholders directly
- Gathering analytic data from our systems, such as G Suite and Canvas

Examples of significant trends that have shaped SUHSD's history in this area include the advent of 1:1 computing, iPads, and the huge impetus of GSuite.

Technology Impact on Student Outcomes

In the past, such as when district technology plans had to be approved by the state Department of Education, the documents included specific, quantitative metrics for student success. Typical examples included:

- Increased scores on standardized tests after adoption of technology-based curriculum materials (Example: Read 180, use of School City assessment software)
- Reduced absences after acquisition of student devices
- Higher graduation rates resulting from tools to provide assignment information online

Unfortunately, sometimes these sorts of effort to quantify the benefits of technology oversimplified the relationship between technology investment and student outcomes. In the past, a school might have been investing in a specific curricular product for a particular subject, for which they could then compare test scores before and after deployment. Current investments, such as standardizing on GSuite and Canvas, represent broader uses of technology, as a productivity enhancer and collaboration/communication tool for members of a learning community. Consensus emerged from the TTF participants that investment in these types of technologies -- along with improvements on many other dimensions of the high school experience -- *do* contribute to student success. Survey data and other instruments, in the context of traditional measures of student outcomes, such as those listed above, can help in ascertaining whether and where the technology is helping or hindering progress, while realizing that technology investment is just one factor out of many.

Early in the series of TTF group meetings, reports such as one from the Organisation for Economic Cooperation and Development [OECD] were discussed. This particular report, even in world-wide meta-data studies, indicated difficulty in demonstrating significant impact of investment in educational technology on student achievement.[18] One reason for this discouraging result is that it is difficult to control for the many factors that affect student outcomes, ranging from class size variations to demographic differences; another is that the types and methods of technology deployment, the levels of professional development and technical support, equity of access, and other factors impact the overall effectiveness of new technologies. TTF participants read a variety of related articles, discussed their beliefs about the role of technology, and the factors improving its effectiveness. Almost all participants agreed that the *type* of technology used, *how* it is deployed, what *professional development* is provided, the responsiveness of *technical support*, and ensuring *equity* are the keys to overall effectiveness.

[18]OECD (2016), Innovating Education and Educating for Innovation: The Power of Digital Technologies and Skills, Educational Research and Innovation, OECD Publishing, Paris, https://doi.org/10.1787/9789264265097-en.

Opportunities for Future Improvement

Several areas of concern have emerged, which the TTF views as opportunities for improvement in the future; these elements include:

- Ensuring equity of access for underserved students
- Ensuring equity of technology fluency for underserved students
- Improving digital health and digital citizenship through policies and increased PD
- Achieving parity of *dedicated* Chromebook cart availability across the different campus
- Implementing long-term commitment of selected systems
- Identifying quantitative metrics to help validate the contribution of educational technology to SUHSD student success, and to identify areas to improve

Looking ahead

The TTF recommends that …

- Technology experience survey should be combined with other district surveys; this process will avoid scheduling challenges that can overload potential responders, thereby improving response rates.
- To the extent practical, the same or similar questions should be asked, year upon year, so that results from previous years can serve as a baseline to assess progress.
- ISTE-inspired questions[19] should be incorporated into the survey of district-wide technology progress and needs, to provide standards-aligned progress data for key stakeholder groups (students, teachers, and administrators).
- For specific milestones, such as "replace damaged cabling at Sequoia High School by the end of the calendar year" and "replace all end-of-life Chromebooks by September 2019," the Technology Department should provide a semi-annual report to the Board of Trustees, detailing progress against milestones.

Measurable Goals:

1. Use of GSuite to increase the frequency of the written word by SUHSD learners.
2. Use of GSuite to increase collaboration between SUHSD learners.
3. Use of GSuite to increase the short-cycle feedback teachers give to students on their work.
4. Use of GSuite to increase staff collaboration.
5. Use of GSuite and Canvas to improve learner access to curriculum during learner absences.
6. Use of GSuite and other applications to decrease the labor required for various tasks; e.g. completing forms, compliance training, meeting time determination.
7. Use of Canvas and other applications to improve the quality of the feedback provided to learners on their work.
8. Use of Canvas to enhance, document and share products of staff collaboration.
9. Effectiveness of supplemental adaptive mathematics programs to build foundational math skills for learners who are below grade-level in math.

[19] https://www.surveymonkey.com/r/SN7BD8M

10. Effectiveness of supplemental adaptive reading programs to build foundational reading skills for learners who are below grade-level in reading.
11. Progress made toward replacing CyberHigh courses with self-paced, online courses created and monitored by SUHSD staff.
12. Progress made toward increasing the frequency of individual and small group attention from teachers in classes with Chromebook carts.
13. Progress made toward increasing student opportunities to learn at their own pace in blended learning classes such as those employing the "in-class flip."
14. Progress made toward implementing a collectively (broad stakeholder) determined set of digital literacy skills.
15. Percentage of students who say they have reliable wifi and a reliable computer for school use when at home.
16. Number of parents reached in parent education opportunities on various topics, including digital health issues, and online information collection and dissemination mechanisms.
17. Number of staff reached with district-goal anchored, technology-infused trainings.
18. Up-time, average peak-use upload and download speeds, as well as qualitative feedback on the reliability of wifi at the sites currently experiencing less than excellent service.
19. Cart to classroom ratios for Chromebooks.
20. Average response times for support calls, and the frequency of support calls.

Methods to collect such data may include expanded all-stakeholders technology survey, sample population surveys, snapshot walkthroughs, interviews, count data, and usage data.

Funding and Budget for Technology

Budget to acquire and support elements of the plan

This chapter highlights current expenditures and proposed future spending resulting from the findings and recommendations of the Technology Task Force. Approximate actuals for two prior years and proposed budget for the next three years are shown. (Projections are less accurate for the "out" years. A 5% increase per year has been used for extrapolation purposes.)

The breakout below illustrates the current funding within the Technology and Information Services department at the district office. The budget is broken into three distinct entities:

1. *DIRECTOR - includes tools used by schools for technology integration*
2. *INFORMATION SERVICES - items related to our student information system and document handling*
3. *TECHNOLOGY SERVICES - items related to the network and maintenance of the network and other technology.*

Director - 7780	**Actual 17-18**	**Actual 18-19**	**Budget 19-20**	**Budget 20-21**	**Budget 21-22**	**Notes / Definitions**
Canvas/ Instructure	$52,714	$65,462	$65,462	$65,462	$65,462	Learning Management System
Catapult	$6,843	$6,900	$7,350	$7,350	$7,350	Website CMS and Hosting (all sites)
Diversified/CompView	$10,294	$0	$0	$0	TBD	Smart Notebook Licenses - 3 yr contract exp 6/30/21
DocuSign	$17,854	$41,000	$45,200	$37,700	$37,700	19-20 migrate to Informed K-12
FlipGrid	$2,100	$0	$0	$0	$0	Software - student voice; integrates w/ Canvas (now free to educators)
Hapara	$9,600	$0	$0	$0	$0	2 yr contract exp 6/30/19
Hayes - Asset Management		$8,010	$8,010	$8,010	$8,010	
Iparadigms/Turnitin	$3,030	$27,743	$27,743	$27,743	$27,743	TurnItIn Plagiarism Checker; 3-year contract
Lynda.com/LinkedIn	$10,000	$0	$0	$0	$0	Didn't renew 2018 and beyond
Quick Permit (Work Permit)/Touchline	$2,107	$2,107	$2,107	$2,107	$2,107	Student Work Permits - covers 7 sites
Easy SSO - Single Sign On	$3,000	$0	$0	$3,000	$0	contact exp 6/30/2020
Survey Monkey	$200	$0	$0	$0	$0	Discontinued services, 2018
WeVideo	$10,607	$0	$0	$0	$0	Discontinued services, 2018
Zoom (Vivo-Comm)	$0	$1,092	$1,092	$1,092	$1,092	Video Conferencing Tool
LearnPlatform	$0	$0	$14,000	$14,000	$14,000	App-vetting, FERPA compliance, software tracking
Total	**$128,349**	**$152,314**	**$170,964**	**$166,464**	**$163,464**	

Function - 2430						
Gale/Cengage	$28,102	$37,168	$50,433	$51,500	$52,000	Added services + EPAA, Redwood, and TIDE
Follet/Destiny	$5,798	$6,000	$6,000	$6,000	$6,000	Library Textbook Services
J-STOR	$0	$0	$10,000	$10,000	$10,000	Academic Publication Search Engine
Adobe Creative Suite	$0	$0	$15,000	$15,000	$15,000	Supplements school sites use; rest funded by Perkins
Total	$33,900	$43,168	$81,433	$82,500	$83,000	
Supplies, Conferences, Mileage, Etc	$44,920	$26,174	$39,420	$40,000	$40,000	
Total - Director Functions	**$207,169**	**$221,656**	**$291,817**	**$288,964**	**$286,464**	

Information Services - 7761	**Actual 17-18**	**Actual 18-19**	**Budget 19-20**	**Budget 20-21**	**Budget 21-22**	**Notes / Definitions**
Content Verse/CompuThink (Doc Handling/ ViewWise)	$9,023	$9,300	$9,300	$9,300	$9,300	
Helios	*$78,865*	*$80,000*	*$0*	*$0*	*$0*	*Ending Contract*
Infinite Campus	$102,092	$105,000	$110,000	$115,000	$120,000	includes POS (20,426) , SIS (80,666), Feeder tool (1,000)
Naviance	$36,794	$36,794	$40,000	$40,000	$40,000	Charged to Sites
SEIS/SIS - San Joaquin COE	*$1,631*	*$1,700*	*$1,700*	*$1,700*	*$1,700*	*Charged to Special Education*
West Interactive Services (replaces Reliance/School Messenger)	$20,250	$22,000	$22,500	$23,000	$23,500	Used by Sites, IS, and Communications
Supplies, Conferences, Mileage, Maintenance Contracts	$82,570	$67,014	$84,120	$85,000	$85,000	
Total - Information Services	**$331,225**	**$321,808**	**$267,620**	**$274,000**	**$279,500**	

Technology Services - 7720	**Actual 17-18**	**Actual 18-19**	**Budget 19-20**	**Budget 20-21**	**Budget 21-22**	**Notes / Definitions**
Amplified It LLC (Backupify)	$11,000	$10,800	$11,000	$12,000	$12,000	Backup of GSuite
Firewall	$0	$0	$0	$0	$300,000	Good through 2021; purchased with eRate $$
Calero Software LLC	$2,000	$1,952	$2,000	$2,000	$2,000	phone call tracking; fully integrated w/ Avaya; records numbers incoming and out going

End Point Security			$38,000	$0	$0	Deployed TRAPS, March 2019
Dude Solutions (SchoolDude)	$4,500	$4,462	$0	$0	$0	Migrating to GetHelp (below)
GetHelp (Technology/IS Help Desk)	$0	$0	$8,000	$8,000	$8,000	New 2019-20
E-Rate	$50,000	$9,733	tbd	tbd	tbd	we pay 7% of what they save us
GoDaddy	$0		$1,000	$1,000	$1,000	400 - 800 budget 1K; Security certificate
KIS		$4,220	$0	$4,220	$0	VMWare licenses expires 2020
Metro Mobile - reported under 7720-5901 except for $325 charged to 7720/5813		$325	*$325*	*$325*	*$325*	*radios - vans*
Microsoft Server Licenses			$10,000	$5,000	$5,000	Upgrades needed
Ojo	$8,000	$7,685	$8,000	$9,000	$9,000	camera licenses
Ojo - Video Camera Maintenance			$160,000	$160,000	$160,000	New Item / Proposal 2019-20
PCMG		$5,138	$6,000	$6,000	$6,000	Micr0soft Office Licensing
ProxMox / Ice Systems		$9,482	$10,000	$10,000	$10,000	Virtual Servers
Open DNS/Umbrella - CDW -CISCO	$25,000	$25,937	$0	$0	$0	
Cloud Lock / Relay			$146,118	$0	$0	Chromebook Filtering (off Campus) and screen monitoring; 3-yr contract
SmartNet (CDW) Cisco	$70,000	$64,227	$70,000	$70,000	$70,000	
SmartNet Acuative		$617	$700	$700	$700	
SmartNet Teracal		$2,264	$2,300	$2,300	$2,300	
Radio Repairs	$5,000	$3,943	$5,000	$5,000	$5,000	radio maintenance
Vox / Comstrat			$5,000	$5,000	$5,000	Phone System Maintenance
Avaya / Altura			$60,000	$60,000	$60,000	Phone System Licensing
Maintenance / Emergency Repairs			$5,000	$5,000	$5,000	
Supplies, Conferences, Mileage, Maintenance Contracts	$84,940	$91,029	$90,000	$90,000	$90,000	
Total - Technology Services	**$260,440**	**$241,814**	**$638,443**	**$455,545**	**$751,325**	

	Actual 17-18	Actual 18-19	Budget 19-20	Budget 20-21	Budget 21-22
TOTAL TECHNOLOGY/IS DEPT	**$798,834**	**$785,278**	**$1,197,880**	**$1,018,509**	**$1,317,289**

Total Salaries - Technology and Information Services

- District Level, including (certificated and classified) benefits, stipends, etc --> $1,917,097.69
- Site Level (.2 Tech Coordinators + Site technician) → $572,130.26
- **TOTAL SALARY + BENEFITS → $2,489,227.95**

Technology and Information Services Budget - Salaries, supplies, contracts, etc

- for FY 2018-19 equates to 0.20% of the district's operating budget
- for FY 2019-20 estimated at 0.23% of the district's operating budget
- for FY 2020-21 estimated at 0.22% of the district's operating budget
- for FY 2021-22 estimated at 0.24% of the district's operating budget

Site Technology Budgets

Historically, the district has provided each comprehensive site (Carlmont, Menlo-Atherton, Sequoia, and Woodside) **$35,000** annually for "refresh and replacement". Redwood High School has received $7,500 for refresh and replacement. ***This budget allocation has not changed in the past 15 years***.

The program at Middle College has *never* received this type of funding, nor has the district office. Middle College provides two Chromebook Labs, with 36 units each, and support for four teachers. Those devices are currently at end-of-life. Refresh and replacement for both Middle College and the district office, in the past, was funded per district department. More recently, the entire district has received bond funds for this purpose, and each site used this funding to bolster its technology inventory. Each site has relied heavily on its respective academic foundations and grant funding to supplement other needs. These allocations are no longer suitable, as technology use has greatly expanded. Technology reliance in SUHSD is no longer an add-on. Every individual in our community is reliant on technology as if it were a utility like water or electricity. For planning and sustainability, we must now fund tech like the fundamental resource that it has become.

The Measure A bond will close at the conclusion of the 2019-2020 school year.

In addition to *the above analysis, the TTF recommends the following expenditures:*

1. A one-time allocation of $110,000 to Sequoia High School for the addition of 11 Chromebook carts, thus bringing its fleet up to comparable levels of the other school sites
2. A one-time allocation of $60,000 to Carlmont High School for the addition of six (6) Chromebook carts, thus bringing its fleet up to comparable levels of the other school sites
3. An ***increase*** of *Refresh and Replacement* funds to each of the comprehensive sites from $35,000 annually to $150,000 annually to keep up with the growing demands of instructional technology use as well as the replacement of antiquated devices. (The TTF also proposes that Redwood High School's allocation increase from $7,500 annually to $20,000; and a $7,500 budget be given to the district office for similar needs). Lastly, the TTF recommends an annual allocation of $5,000 to Cañada Middle College.
    a. Propose that the school sites refresh 20-25 staff machines, annually at each comprehensive site

b. Propose that up to 400+ Chromebooks are refreshed annually at each comprehensive site
c. The remainder of funding used for projection, printer, document camera, and other technology needs

The table below has been replicated from our Infrastructure chapter.

Item	*Unit Price*	*Qty*	*Estimated Cost*	*Year Needed*
Staff Workstations (District-wide)	*$1150*	*85*	*$97,750*	*2019-2020*
Chromebook Refresh (District-wide)	*$235*	*2700*	*$634,500*	*2019-2020*
Staff Workstations (District-wide)	*$1150*	*85*	*$97,750*	*2020-2021*
Chromebook Refresh (District-wide)	*$235*	*3000*	*$705,000*	*2020-2021*
Staff Workstations (District-wide)	*$1150*	*85*	*$97,750*	*2021-2022*
Chromebook Refresh (District-wide)	*$235*	*2500*	*$587,500*	*2021-2022*

Video Safety Systems

In 2008, the district began adding video safety (surveillance) systems at all of its sites. These systems have proven to provide a safer educational environment for all students, staff, and visitors.

For the past 10 years, the district has been using Bond monies to maintain and expand its video safety systems, and district leadership has grown more reliant on these services.

With the Measure A Bond reaching its close, the district must take the necessary steps to maintain these systems; this process includes upgrading cameras and the video servers that coordinate the cameras and record the video.

The TTF recommends the following addition to the technology general fund:

Item	*Unit Price*	*Qty*	*Estimated Cost*	*Year Needed*
Video Safety (Surveillance) Camera labor included	*$2000*	*53*	*$106,000*	*2019-2020*
Video Servers (upgrades needed at three sites)	*$19000*	*3*	*$57,000*	*2019-2020*
Video Safety (Surveillance) Camera labor included	*$2000*	*45*	*$90,000*	*2020-2021*
Video Servers (upgrades needed at two sites)	*$19000*	*2*	*$38,000*	*2020-2021*
Video Safety (Surveillance) Camera labor included	*$2000*	*45*	*$90,000*	*2021-2022*
Video Servers (upgrades needed at two sites)	*$19000*	*2*	*$38,000*	*2021-2022*

These funds will be managed at the district level; camera and server replacement will be prioritized based on device age and anticipated growth.

Annual Impact On General Fund

Item	**Annual Increase**
Increase in technology refresh to comprehensive sites	$460,000
Increase in refresh to Redwood, Middle College, District	$22,500
Allocation for maintenance of video safety equipment (included in	

Technology budget above)	
Additional .2 FTE for Site Technology Coordinator (teacher) at comprehensive sites (.8 total)	$96,000
Additional 1.0 FTE for tech support	$100,000
Estimated Total (yearly)	**$678,500**

One time allocation (2019-2010) to achieve parity at Sequoia and Carlmont: $170,000

1:1 Programs

The Technology Task Force did not find compelling evidence for a conventional district-wide 1:1 Chromebook rollout. The Task Force is concerned about a digital access gap for some students. Given the Task Force's recommendation to achieve Chromebook equity at all sites, the Task Force also recommends the following:

- *Maintaining the 1:1 Program in Partnership Academy Programs across the district for students in need of a device; there is no fiscal impact to maintain this program for the life of the new Technology Master Plan*
- *Maintain 1:1 Program for AVID students across the district in need of a device; there is no fiscal impact to maintain this program for the life of the new Technology Master Plan*
- *Provide devices and internet hotspots (via Sprint's 1Million Project) for students in need*
    - *This provision will be funded by an outside grant the district is currently working towards.*
    - *The district currently has issued 360 wifi hotspots to families in need*
    - *If this grant is awarded, the district will receive an additional 550 LTE-enabled Chromebooks for distribution to students in need.*

Appendix A -- Surveys and Other Sources of Data

This appendix provides background data and summarizes key conclusions from various surveys and other data collected, including both objective metrics and subjective measures such as perceptions and beliefs of key stakeholder groups. Collection and analysis of this information has been a driving force in the creation of this Technology Plan.

Surveys and other sources of data included:

- Background Data
- Student Survey
- Teacher Survey
- Parent Survey
- FCC E-Rate program key data

Background Data

Administrative Codes

The following key administrative codes are captured here, because they are essential for a variety of technology management functions, such as applying for the Federal E-Rate program. E-Rate supports SUHSD's technology program through significant discounts on Internet, wide area connectivity and network infrastructure, as further described in the Budget chapter of this plan.

Item	Number
LEA Name	Sequoia Union High School District
County & District & School Code[20]	41 69062 0000000
Employer Identification Number	xx-xxxxxxx
FCC Registration Number(s)[21]	0008064735, 0001545169, 0023024771
Billed Entity Number[22]	144134
National Center for Education Statistics ID[23]	0636390
Data Universal Number System [DUNS[24]]	xxxxxxxxx

[20] http://www.cde.ca.gov/re/sd/

[21] https://fjallfoss.fcc.gov/coresWeb/simpleSearch.do;jsessionid=PJfTTvHShLX370J4w2SVycV22yyM9Md2Q2j8kLvsb0hJpc2lQWD!63150204!-1105498975

[22] http://www.sl.universalservice.org/Utilities/BilledEntitySearch_Public.asp

[23] http://nces.ed.gov/ccd/schoolsearch/

[24] http://www.dnb.com/duns-number.html

WASC Accreditation

SUHSD has received accreditations with the Western Association of Schools and Colleges [WASC] for each of the following schools, except Tide Academy which is not yet open, with the expiration dates shown:

School	WASC Expiration
Sequoia High School 41 69062 693	2024
Menlo-Atherton High School 41 69062 716	2025
Woodside High School 41 69062 053	2025
Carlmont High School 41 69062 993	2024
Redwood High School 41 69062 687	2025
East Palo Alto Academy 41 69062 118	2025
Sequoia District Adult School 41 69062 636	tbd
Tide Academy 41 69062 xxx	(To open in 2019)

Stakeholder Surveys

The items linked below are from the Technology Surveys administered to all stakeholders in January 2019.

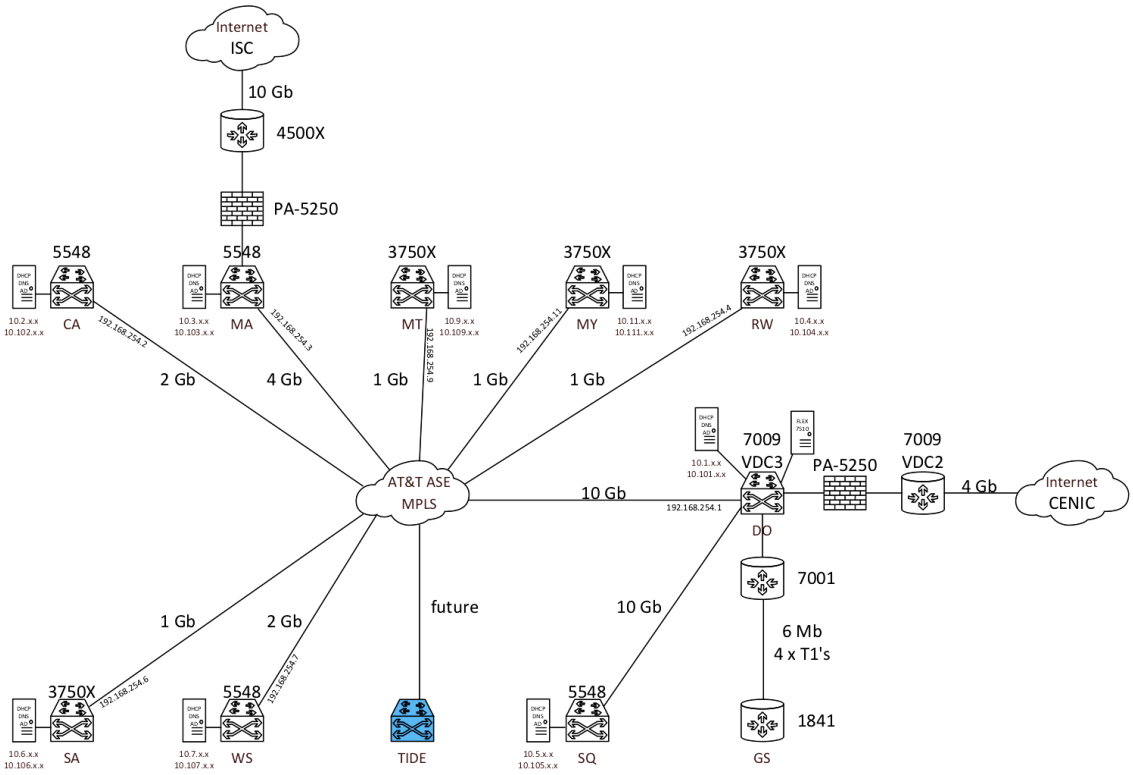
- Student Survey Results
- Family Survey Results
- Staff Survey Results

Appendix B: Network Diagram

Logical Diagram

The figure below is a *logical diagram* of SUHSD's Wide Area Network [WAN] as of January, 2019. As such, it shows the overall topology of the network. It also shows key devices and details, such as those located at the Minimum Point of Entry [MPoE] for each site, such as the district firewall, how and from where the district connects to the public Internet, the major data paths and potential bottlenecks, how and where servers are housed and backed up, and so on.

For security reasons, some details such as internal static IP addresses and passwords are not shown.



A few key points can be observed from the diagram:

- The hub of the network is AT&T-provided ASE MPLS. MPLS stands for "Multi-protocol label switching, a protocol-agnostic routing technique designed to speed up and shape traffic flows across enterprise wide area and service provider networks
- There is a 10 Gigabit per second [10 Gbps] uplink to the Internet originating at the Menlo Atherton site, protected by a Palo Alto 5250 Firewall
- There is a 4 Gbps uplink to the CENIC Internet hub originating at the District Office, also protected by a Palo Alto 5250 Firewall
- Links from various sites to the central hub or District Office range from 1 Gbps to 10 Gbps.
- The new TIDE site will require a link to be added
- Voice communications are managed by a Cisco 7001 located at the District Office

Potential Additional Diagrams

Diagrams for the Local Area Network [LAN] at each site are not being provided as part of this plan. *Physical diagrams,* which provide location details and distances between devices on each network are also not included here. However, for LAN cabling projects, such details will need to be provided to potential bidders, since vendors must comply with industry standard design rules relating to length and trajectory of copper and fiber cable runs, to ensure reliability at specified bandwidths.

One reason that such diagrams and analyses are important is to enable thoughtful planning for future growth in network requirements. In addition to adding connections to new sites, more students and teachers will use technology more regularly, and usage patterns will increasing rely on rich media, such as streaming video. Hence, over time, the district's bandwidth requirements will continue to increase. Although the TTF currently projects that *adequate bandwidth for the duration of this plan is already in place at most locations*, it is anticipated that bandwidth demands will begin to stress the network capacity after a few years. *Moore's Law* is commonly used to extrapolate future demand.[30] As a rule of thumb, requirements and expectations for a given technology tend to ***double*** *about every 18-24 months*, other things being equal.

[30] https://en.wikipedia.org/wiki/Moore%27s_law

Appendix C -- Asset Inventory

Keeping an accurate, ongoing technology inventory is essential in order to keep the district's technology operations functioning correctly and in a timely manner. Inventories of equipment subsidized by E-Rate are required for compliance with program rules; inventories includig serial numbers are required to obtain manufacturer support for equipment possibly still under warranty or covered by maintenance agreements.

During the Summer of 2017, the district implemented TipWebIT, from Hayes Software. TipWebIT is a comprehensive asset tracking software that has allowed the district to account for its entire technology fleet, from classroom technology all the way to Main and Intermediate Distribution Frames.

As SUHSD migrated to TipWebIT, we were able to import 10 years of historical purchasing data; from there, student workers were used to audit every classroom, office, meeting area, and so on. This has resulted in an accurate inventory count.

One of the many strengths of TipWebIT is the ability to run reports that provide detailed information regarding the district's assets. For example, at any time, an administrator or technician can run a report to determine which technology will be reaching *end of life* status within a given time period. This allows for the district and schools to plan and budget for equipment turnover in a strategic and responsible manner.

Appendix D – CIPA Compliance

The Child Internet Protection Act [CIPA] addresses concerns about access to offensive Internet content. Schools, school districts, and public libraries must comply with the following CIPA requirements, and provide periodic certification of compliance. Each section describes the steps take by SUHSD to comply with that aspect of the requirement. The measures here ensure compliance with overall legal requirements as well as the specific requirements of the FCC E-Rate program (a Federal discount mechanism that provides significant support for SUHSD's Internet, Wide Area, and Local Area Network connectivity).

1. Technology Protection Measure ("Filtering Device")

A technology protection measure is a specific technology that blocks or filters Internet access. It must protect against access by adults and minors to visual depictions that are obscene, child pornography, or — with respect to use of computers with Internet access by minors — harmful to minors. It may be disabled for adults engaged in bona fide research or other lawful purposes. For schools, the policy must also include monitoring the online activities of minors.

SUHSD uses a Palo Alto Networks firewall and Lightspeed Relay to comply with this aspect of the CIPA requirements when students access the Internet from on-campus. A combination of generic settings (such as for sexually explicit or violent materials) with blacklisting and whitelisting of specific sites, domains, or subdomains is administered by the Technology and Innovation department. Teachers may request that particular sites be blocked or whitelisted to support their classroom activities. For students who are issued Chromebooks with WiFi *hotspot* capabilities, there is also provision to filter using the district's filtering rules.

2. Internet Safety Policy

The Internet safety policy must address the following issues:

- Access by minors to inappropriate matter on the Internet and World Wide Web
- The safety and security of minors when using electronic mail, chat rooms, and other forms of direct electronic communications
- Unauthorized access including "hacking" and other unlawful activities by minors online
- Unauthorized disclosure, use, and dissemination of personal information regarding minors
- Measures designed to restrict minors' access to materials harmful to minors
- Education of minors about appropriate online behavior, including interacting with other individuals on social networking sites and in chat rooms, and cyberbullying awareness and response
- For schools, the policy must specifically include monitoring the online activities of minors.

The Appropriate Use Policies currently in force for students and staff are available here.[31] The Technology Task Force recommends that, upon approval of this plan, a subcommittee be

[31] http://www.seq.org/Departments/Administrative-Services/Technology--Information-Services/Technology-Standards--Use-Policies/index.html

convened to review these policies and offer recommendations to the Board of Trustees regarding revisions consistent with both technology progress and stakeholder observations about efficacy within the district.

3. Public Notice and Hearing

The authority with responsibility for administration of the school or library must provide reasonable public notice and hold at least one public hearing to address a proposed technology protection measure and Internet safety policy.

SUHSD includes information about the Appropriate Use Policies [AUPs] in public meetings such as "Back to School" nights, freshman orientation, and similar events. The TTF suggests that the Board of Trustees consider also agendizing public discussion of CIPA and AUP expectations, roughly annually. Comments and questions from the public would be welcomed and could aid in family education; broader concerns about teen digital health might be addressed at the same time.

In addition to compliance and certification of compliance with CIPA, E-Rate recipients must retain the following documentation for at least five years after the last date of service for which funding was received. These should be readily available for E-Rate program review:

- Internet Safety Policy (including all points noted above)
- Documentation demonstrating that the "technology protection measure" or filter is in place for all funding service dates (e.g., quarterly logs from the appliance showing blocking of inappropriate sites)
- Documentation of public notice (e.g., newspaper ad, flyer, announcement) and documentation of hearing or public meeting (e.g., board meeting minutes).

These materials are kept on file by the Technology and Innovation Department, in coordination with its E-Rate Consultant.

Appendix E – Recommendations: Implemented & for Future Consideration

The district and members of the Technology Task Force understand that not all recommendations made as a result of the task force are feasible. The district has to remain fiscally solvent and responsible, while ensuring it has the ability to sustain recommendations.

Recommendations implemented as a result of the Technology Task Force

- Increase in Chromebook carts for Carlmont High School and Sequoia High School
  - Fiscal Impact: $170,000 (one-time)
- Adoption of software/hardware approval process
  - Fiscal Impact: $0
- Adoption of Learn Platform
  - Fiscal Impact: $14,000 (annual)
- Creation of Digital Well-Being Task Force
  - In process
  - Fiscal Impact: Unknown
- Increased professional development for instructional technology
  - In process
  - Fiscal Impact: Unknown
- Additional Site Technology Manager for TIDE Academy
  - Fiscal Impact: $100,000

Recommendations for future consideration include:

- Increase annual refresh for comprehensive sites from $35,000 to $150,000
  - This will be implemented during the 2020-2021 academic year
  - Fiscal impact: $482,500 (ongoing)
- Additional .2 Release for Site Technology Coordinators
  - .8 FTE overall; fiscal impact: $96,000+ (ongoing)
- Creation of credit recovery program using Canvas LMS
  - Initial fiscal impact unknown; will save district $60,000+ when subscription with CyberHigh is terminated.