Technology Plan

Livermore Valley Joint Unified School District

July 1, 2018 - June 30, 2021

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EXECUTIVE SUMMARY

Why: The California Department of Education (CDE) encourages school districts to develop and implement a technology plan aligned with Local Control and Accountability Plans and in support of a comprehensive strategy to improve teaching and learning. The CDE Technology Plan Criteria (California K-12 Technology Plan Criteria) requires the plan to include:

- A review of relevant literature, research, and survey data
- Curriculum and staff development goals
- Five sections (vision, curriculum, professional development, infrastructure and evaluation).

Who and How: The Technology Planning Team (Tech Team), under the leadership of the Educational Services and Information Technology Departments:

- Evaluated the status of the current technology plan
- Examined current LVJUSD curricular and technology initiatives
- Gathered input from stakeholder groups
- Evaluated District data on hardware, wiring, and professional development needs, and
- Reviewed national technology standards and research.

The ISTE Standards for Students and Educators guided the Tech Team work, along with the California State Standards. The ISTE Standards emphasize student agency and empowerment; they are designed to provide decision-makers with frameworks for establishing enriched learning environments supported by technology. (See ISTE Standards for Students.)

What: The Tech Team drafted four goals after input from stakeholders:

Goal 1: Students will be empowered to utilize technology and resources to master CA State Standards, authentically demonstrate their understanding and acquire lifelong knowledge and skills needed to contribute and thrive in the 21st Century. (Aligns with LCAP goal 1.)

Goal 2: Staff will create and contribute to a technology-enhanced environment that supports learner variability and needs.

Goal 3: The school community, including all staff, students and parents will be safe, responsible, global digital citizens. (Aligns with LCAP goals 1, 2, 3)

Goal 4: All staff and students will participate in training and experiences to support the technology plan goals.

These goals are supported throughout the plan by implementation steps in four growth areas:

1. A shared vision that tightly integrates technology with curricula
2. Device access for students and staff
3. Professional development
4. Updated infrastructure including increased bandwidth.

1. PLAN BACKGROUND, OVERVIEW and VISION

District Vision and Mission

Livermore Valley Joint Unified School District's Educational Technology Plan is guided by the principle that technology must help support student achievement. The Plan is aligned with and supports overall District planning efforts as outlined in the District Local Control Accountability Plan (LCAP). The Board of Education recognizes that technology can greatly enhance the instructional program as well as the efficiency of District and school site administration. The Board also realizes that careful planning is essential to ensure the successful, equitable, and cost-effective implementation of technology-based materials, equipment, systems and networks.

Under the leadership of the Superintendent of Schools, a team of over 1,300 highly experienced and dedicated teachers, support staff and administrators strive to provide a stimulating educational environment built around a shared vision and mission statement:

> *"Each student will graduate with the skills needed to contribute and thrive in a changing world."*

This mission drives our daily work. Our dedicated employees, led by our Superintendent, Dr. Kelly Bowers, and our Board of Trustees, work together to create a nurturing environment for all students to succeed. Throughout the District, we share an unwavering commitment to continuous improvement. We integrate character development in all we do. We teach students the communication and collaboration skills to work as a team, and the creativity, tenacity, and critical thinking necessary to solve the problems of the future.

District Goals

The District Local Control Accountability Plan (LCAP) indicates three overarching goals for all students to achieve the District vision.

Goal 1: Increase the percentage of students who have the skills and knowledge to graduate from high school college and/or career ready.

Goal 2: Provide an engaging, clean, healthy, and physically and emotionally safe environment to support learning at the highest levels.

Goal 3: Enhance parent and community engagement and communication.

Our overall goal is to provide all students with a 21st Century learning experience based on the California State Standards, to prepare students for college, career and contributions in a changing world. We strive to improve student educational performance and eliminate identified achievement and opportunity gaps among students.

District Demographics

The Livermore Valley Joint Unified School District (LVJUSD) is comprised of nine elementary schools, two K-8 schools, three middle schools, two comprehensive high schools, one alternative high school, one independent study program and an adult education program in the Livermore Valley. The District currently serves over 13,500 students. The student demographics are continuously changing and mirror the dynamic socioeconomic diversity in our area. 15% of our students are English Learners, speaking 36 different primary languages, with Spanish being the most prevalent primary language, and 26% of our students are socio-economically disadvantaged. You can find additional information about the LVJUSD on the District website: www.livermoreschools.com/aboutus

Plan Duration: July 1, 2018 June 30, 2021

The goals and timelines in the Livermore Valley Joint Unified School District Technology Plan will guide the District's use of technology, from July 1, 2018 through June 30, 2021. Many of the efforts described in this plan are already underway, but the District recognizes the need to continue to provide effective and efficient responses to student needs and to determine how new opportunities to improve technology integration will supplement and enhance the current program. Due to changing technologies and funding issues at the federal, state, and local levels, the LVJUSD Technology Plan is subject to review, modification and budget revisions. Thus, the technology-related goals identified in this plan, as well as their implementation, will be reviewed and modified, as necessary, on an annual basis by the District Technology Team.

Planning Process

Under the partnership and leadership of the Educational Services and Information Technology Departments, the LVJUSD Technology Planning Team reviewed the previous technology plan and provided comments to develop, revise and update the present plan. The California K-12 Technology Plan Criteria identifies the essential components of technology plans. Google Docs were used extensively for collaboration, creation and revision of the plan. The Technology Planning Team (Tech Team) is comprised of Superintendent Cabinet members, teachers, library media specialists, principals, representatives from Curriculum and Special Projects, Special Education, Information Technology, the Integrated Technology Specialist (ITS), a Board member and interested parent volunteers. Additionally, teacher input was garnered from all sites. Official technology integration partners for grants and special technology projects include the following community partners who are mentioned in various grants and programs in the Technology Plan: Tri-Valley Regional Occupation Program, The Livermore Public Library, The Lawrence Livermore National Laboratory, Sandia National Laboratory, Las Positas Community College, Cisco and The Tri-Valley Teacher Induction Project.

During the revision process, the LVJUSD Tech Team met face-to-face, as well as online through Google Meet. The Tech Team analyzed the student and teacher technology surveys, reviewed input and updates provided by stakeholders and revised this current document. As the plan was drafted, an utmost effort was made to include as many of the stakeholders as possible in the ongoing review process to incorporate their input into the comprehensive 2018 plan. A Google Slides summary of the drafted plan goals was shared at multiple leadership, staff and parent

meetings where attendees were asked to provide feedback through a Padlet (an interactive, online, post-it board). This feedback was carefully reviewed and incorporated into the document draft.

During the planning period and over the course of the past three years, participants have:

- Evaluated the status of the current technology plan;
- Examined the status of current LVJUSD curricular and technology integration initiatives;
- Gathered input from groups they represent;
- Reviewed national technology standards, performance indicators, rubrics and research;
- Evaluated District technology data with regard to hardware, wiring, use of resources, professional development needs and ongoing existing technology initiatives.

Accordingly, the Plan strives to make technology an integral part of curriculum and professional development to meet the changing needs of Livermore's students and staff.

Relevant Literature and Research

After reviewing relevant literature, the Tech Plan Team focused on the notion of students as "Empowered Learners" to guide our draft of goals and implementation steps. In this model, technology is used to support student agency, not just engage learners. The video from educator and author, John Spencer, "Shift from Engaging Students to Empowering Learners," was shared with stakeholders throughout our draft process and aligns with the ISTE Standards for Students.

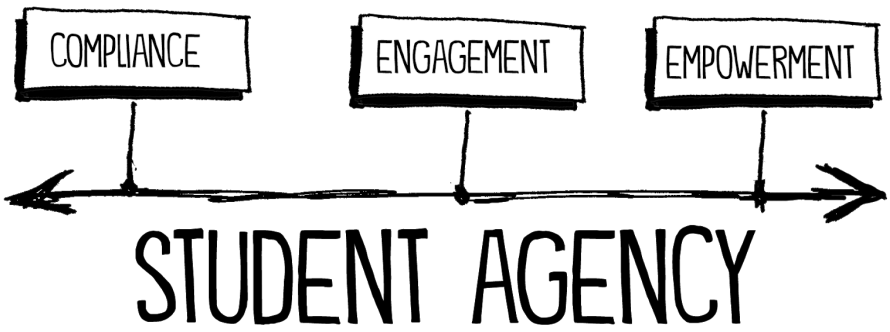


Image from John Spencer http://www.spencerauthor.com/empowerment-shifts/

The LVJUSD Technology Plan is based upon literature reviews and research that provide models of how technology can impact student learning and improve teaching practice. Repeatedly, the "four Cs" were emphasized in articles and research:

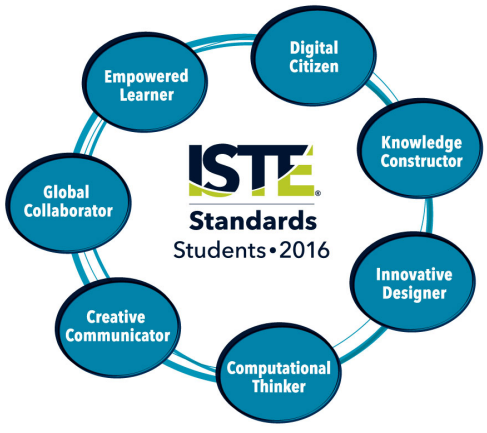
> *The National Education Association (NEA) interviewed leaders of all kinds to determine which of the 21st century skills were the most important for K-12 education. There was near unanimity that four specific skills were the most*

important. They became known as the "Four Cs"— critical thinking, communication, collaboration, and creativity (NEA: An Educator's Guide to the "Four Cs").

A survey from the American Management Association (AMA 2012 Critical Skills Survey) expresses widespread consensus that our students must excel at the "four Cs". Educators must prepare all students with the essential 21st Century knowledge and skills necessary to succeed in life, career and citizenship. Three other seminal studies, one from the World Economic Forum in 2016, one from Bloomberg in 2016, and one from IBM in 2010, support the findings of the AMA report cited above. All four of these studies, spanning over six years, have similar findings in terms of what is needed to succeed in the modern workplace. Clearly there is an essential need for educators to include the Four Cs in the lessons and activities our students experience in the classroom. The District believes it is imperative that we address the changing needs of today's society, workforce, and global economy.

In addition, the Technology Planning Team reviewed The NMC Horizon Report 2017 K-12 Edition on educational technology trends and considerations. The Horizon Report provides a summary of challenges, and important developments in educational technology. The Team was most struck by the notion of a need for a pedagogical shift to deeper, student-driven learning:

> *There is a growing emphasis in K-12 education on deeper learning approaches, defined by the William and Flora Hewlett Foundation as the mastery of content that engages students in critical thinking, problem-solving, collaboration, and self-directed learning. In order to remain motivated, students need to be able to grasp how new knowledge and skills will impact the world around them. Pedagogical approaches that shift the dynamic from passive to active learning allow students to develop ideas themselves from new information and take control of how they engage with a subject (2017 NMC Horizon Report, pg. 3).*



Finally, the Technology Planning Team utilized the NEW 2016 ISTE Standards for Students and 2017 ISTE Standards for Educators to guide our development of goals and implementation steps. ISTE, the International Society for Technology in Education, evaluates the skills and knowledge students need to learn to effectively and productively live in an increasingly global and digital world. The Standards are designed to provide decision-makers with frameworks for establishing enriched learning environments supported by technology. Here is a brief music video of the ISTE Standard for Students defining 7 ways that students can be lifelong learners in the 21st century.

Overview of Educational Technology in the District

The LVJUSD Technology Plan has been designed to support the District's commitment to innovation, connecting students to a variety of technological resources, expanding and

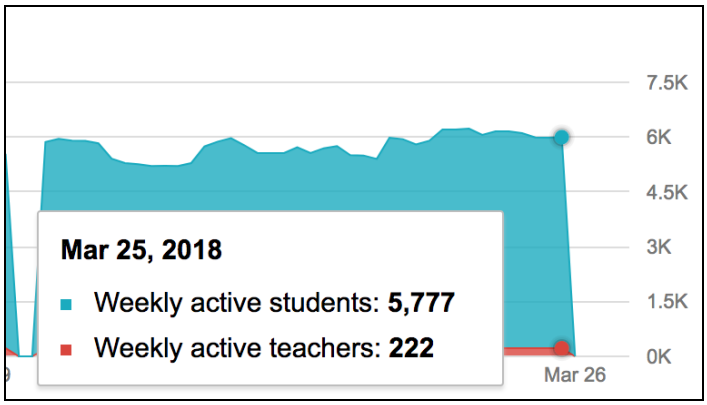
enhancing learning across all content areas and empowering student agency. This commitment not only expands student learning within the content areas but also ensures that students are technology users who have the skills needed to navigate the changing world. The District is dedicated to integrating these technology, information literacy, and 21st Century skills into the curriculum and the content area standards in order to improve student achievement, develop lifelong learners, and prepare our children to successfully meet the demands of 21st Century society and a global economy.

LVJUSD recognizes that every student also needs access to a variety of effective learning tools, including Bring Your Own Device (BYOD), in order to move them to deeper levels of knowledge (DOK). Technology is an essential component of ensuring students are learning 21st Century skills and must be structured so that all students are afforded equal access to the use of appropriate electronic and related equipment. Because technology use now plays an essential role in workforce and in classrooms in the curriculum delivery, all students must be able to use technology-based learning systems and develop information literacy skills. The former regime of textbook lessons and homework has given way to an electronic world in which vast knowledge and resources are available to those who have access, and the ability to analyze and utilize them effectively. This is reflected in the use of technology throughout the District and highlighted as a critical skill in the California State Standards.

G Suite for Education

LVJUSD started piloting G Suite for Education (formerly Google Apps) in the 2012-13 school year with a small group of teachers. During the 2013-14 school year, the District implemented G Suite for Education District-wide. G Suite has been rapidly adopted in classrooms and school culture and all teachers and administrators are now using G Suite for Education. Over the last 6 months 2.8 million emails have been written, 903,208 files have been added to Google Drives, and there have been 326 Google Meets. Teachers are connecting with students via Google Docs, Google Classroom and Google sites. Teachers and students utilize it in the classroom, and other staff have taken advantage of the applications and survey tools. Google Apps for Education have transformed teacher productivity and student support in less than three years in the District.

As of March 2018, over 200 teachers and 5,700 students were actively using Google Classroom on a regular basis.



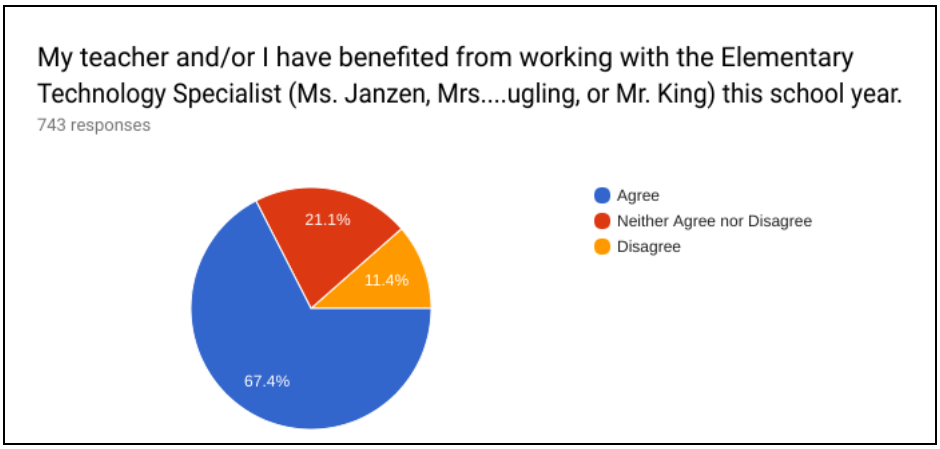
In Google Classroom, teachers can post assignments, link online videos or resources, and share Google Documents. When posting assignments, for example, if the teacher shares a Google Doc template, Google Classroom will make a copy for every student, name the documents with the students' names, automatically create a folder named for the assignment in the teacher's Google Drive and save all student Google Docs to that assignment folder. The Google ecosystem can be a powerful strategy to support blended learning and the paperless classroom.

Bring Your Own Device (BYOD) Instructional Initiative and One-to-One

All school sites have WiFi and a guest network. Our Acceptable Use Policy allows students to use their own mobile devices (BYOD), with teacher permission. Marilyn Elementary was the first site to pilot one-to-one in grades 3rd-5th in 2016. Del Valle Continuation High School is one-to-one through their own site funding along with District provided Chromebooks. Mendenhall Middle School implemented a school wide BYOD adoption at the start of the 2017 school year. The District had 4,240 BYOD devices on the network as of the end of December 2017. There is likely to be a gradual expansion of BYOD as infrastructure is upgraded and more administrators and teachers support implementation. With Bond funding, our wireless system continues to be updated to the newest standards, increasing access points and accommodating the higher bandwidth and speed requirements of online learning, Common Core testing and BYOD.

Coaching and Support of Technology Integration

The District has a unique model of support for technology integration. At the heart of this approach is a coaching and mentoring model based on teacher professional development research. We have one full-time lead District Integrated Technology Specialist and in 2015, three elementary Integrated Technology Specialists (ITS) were added. They are referred to as the Unite Team. The Elementary ITS serve all elementary and K-8 school sites. They support Site



Technology Leads, model lessons, coach teachers, provide monthly professional development and provide other training and support as requested. Site Tech Leads are classroom teachers at each school site that attend monthly meetings, provide feedback to site and District leadership and disseminate current information and training from these meetings. The four Technology Specialists employ technology to continue the transformation of classrooms in becoming

student-centric through increasing rigor, engagement, and efficiency to promote the use of 21st century skills and ISTE Standards that foster independent thinking and lifelong learning. In the 2017 Student Tech Survey, 67% of elementary students reported benefiting from working with the technology specialists.

Additional reading and research can be found in Appendix A, including key research supporting curricular decisions and strategies like The Reading and Writing Project, research from Robert Marzano and Debra Pickering and seminal research on successful teacher professional development models.

2. CURRICULUM

Teacher Access and Current Use of Digital Tools

Every classroom in the District is equipped with at least one computer designated for teacher and/or student use although many have additional computers. In all schools, teachers have access to network connected computers before, during and after the workday.

Classrooms

The LVJUSD Standard Classroom has the following equipment:

- High-end multimedia computer, with DVD Player, connected to a network and with projection capabilities
- Access to a network printer
- Telephone with outside access
- Internet, voicemail, and Exchange/Gmail connectivity
- TV monitor and/or projector screen
- Ceiling mounted LCD projector
- Document Camera
- Teacher amplification/sound system

Many classes go beyond the above standard classroom requirements and may include mini-labs, laptops, thin clients, interactive whiteboards, 3D printers and digital cameras. Some teachers also have interactive whiteboards, tablets, and flat panel televisions instead of a screen on which to project. A variety of peripherals are available for checkout and use at the sites, such as scanners, digital still cameras, and digital video cameras. The demand for these peripherals outweighs the supply.

There are student response options across the school sites and mobile Chromebook carts. Middle and high school classrooms, particularly science laboratories and technology infused courses and electives, may have additional unique technology tools and resources. Through grants and designated funds, all elementary teachers, and all middle and high school science,

math, history/social science, and English language arts teachers have been issued laptops, with LCD projectors and speakers.

Teachers' Current Use of Digital Tools

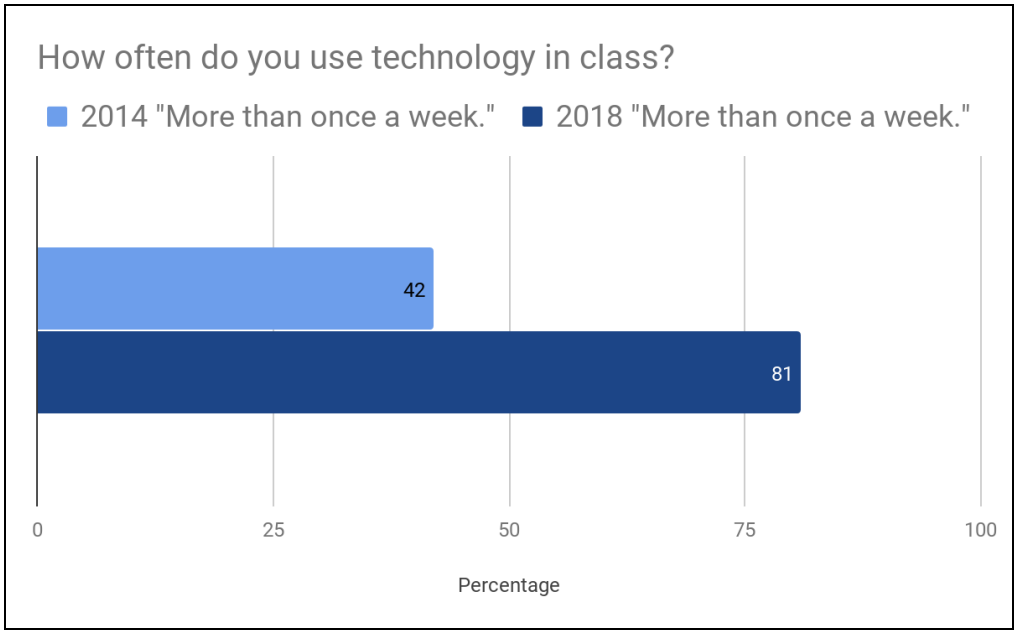
Teachers are using digital tools in a variety of ways. At the elementary level, teachers are providing in-the-moment experiences where they access resources and images via the Internet to support instruction and create equal access to the content. Teachers are also showing videos to expand learning and provide background knowledge as well as enrich and remediate beyond the classroom walls. Teachers work with students to access and utilize word processing and presentation software to communicate their learning. In a few classrooms, student avatars (like Class Dojo) are being used to create and maintain a classroom incentive/management program. Teachers are utilizing a range of G Suite for Education applications, including Google Forms for both formative and summative assessments, Google Docs for collaboration and Google Slides for presentations. Also, in the STEM programs offered across the District, students are beginning to program via various applications, creating simulations, and participating in the Hour of Code.

At the middle school, digital tools are also prominent. They are integrated into instruction to expand learning opportunities, create visuals and provide a platform to ensure equity and access to learning. Teachers are connecting with students via Google Docs, Google Classroom, online grading and webpage programs and social media sites. Students are taking the District's Writing Benchmark on Chromebooks, and teachers are accessing these assignments via various Google platforms. Students are also collaborating via Google Docs and completing assignments using word processing and presentation software, including Prezi. Students in the elective programs, and across the schools, are also coding, in class or during the Hour of Code, and creating simulations using software that is currently utilized in the workplace.

At the high school, digital tools and collaboration are the norm. Students are continuously communicating with their peers and teachers via the Internet, through Google Docs, social media, and other online opportunities. Like K-8 students, high schoolers are completing assignments online and receiving comments and feedback via Google Docs. Students are also completing assignments using word processing and presentation software. They are participating in the Hour of Code and programming, coding, and creating simulations across the elective courses. Online gradebooks, websites, and expanded learning opportunities are ways that both high school students and parents work with the teachers to monitor and address students' needs.

Technology is also used collaboratively by teachers and administrators. With endless amounts of materials available online, documents and resources are shared and recorded in centralized locations. Online collaboration includes the site principals working together virtually via Google Presentation to compose their joint Single School Plans for Student Achievement reports to District staff and the Board of Education. Being able to collaborate virtually maximizes time and resources.

Student Access and Current Use of Digital Tools

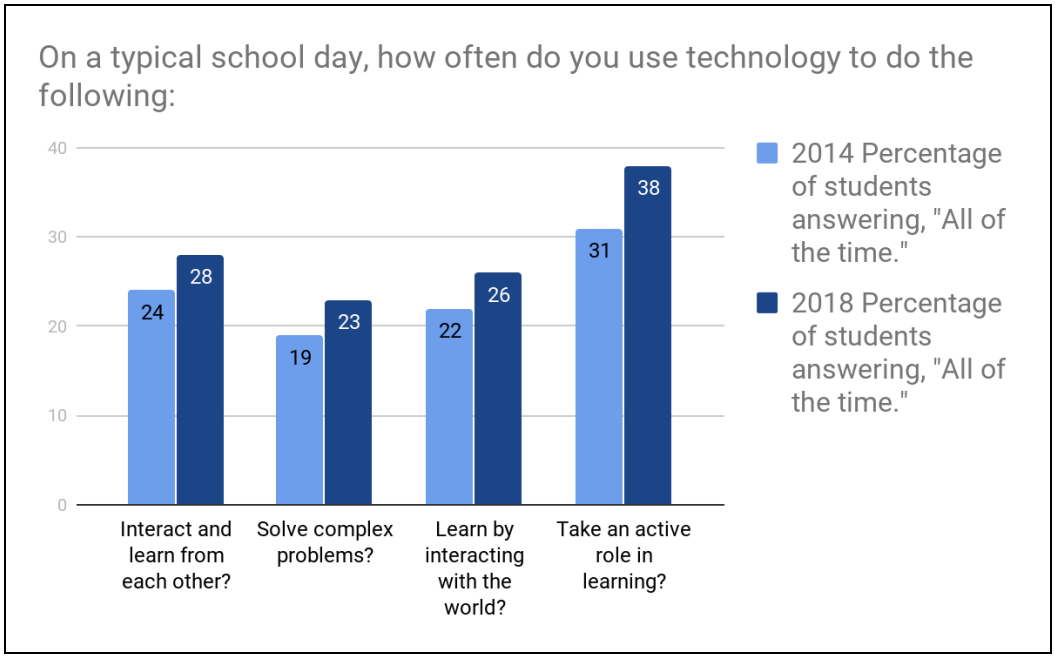


A student survey was created by the Technology Plan Team to gauge students' skills and current use of digital tools and technology. The survey has been given annually since 2013. In 2018, the survey was updated to align with the most recent ISTE Student Standards. A summary of the student survey results from 2014 to 2018 can be found here. Since 2014 there has been a significant increase in the frequency of technology being used in our classrooms. In 2018, 81% of students reported that they are using technology in the classroom more than once a week to support their learning, nearly double the percentage that reported this in 2014. This number has grown proportionately with the number of devices deployed and is expected to continue to grow with an anticipated increase in BYOD and a 1:1 student to device ratio.

64% of students said that they take an active role in learning; "Actively participating instead of listening," most or all of the time. Specifically, students are using their Google Drive for presentations and word processing, search engines for research and finding relevant images and to work indepently. Students are very comfortable using technology to better understand what they are supposed to learn and report a strong understanding of why online safety matters. Students are taught digital citizenship and cyberbullying lessons using Common Sense Media curriculum.

The graph below shows gains from 2014 to 2018 in critical thinking, collaboration, and active learning, however, these deeper applications of technology need to be expanded. This data suggests that our future technology use and implementation should focus on: learning beyond the classroom walls (e.g. publishing online, skyping with other classrooms), learning from and interacting with each other (e.g. blogging, online discussions and screencast tutorials) and solving real-world, complex problems (e.g. analyzing and collecting local data for global

reporting, crowdsourcing data around issues of justice or inequity and serving local community needs).



Special Program Offerings

LVJUSD has expanded course offerings TK-12 to incorporate greater Science, Technology, Engineering, Art, and Math (STEAM) pathways. The Transitional Kindergarten (TK) classes have a STEAM focus using Great Explorations in Math and Science (GEMS) curriculum from the Lawrence Hall of Science and Math Their Way, along with programs for phonics and writing like Zoo Phonics and Handwriting Without Tears. Project Lead the Way (PLTW) is a United States non-profit organization that is the nation's leading provider of Science, Technology, Engineering, Math (STEM) curricula for use by elementary, middle, and high school. Through PLTW Launch, elementary students become problem solvers through structured approaches, such as the engineering design process. The PLTW Gateway curriculum is implemented at the middle school levels in the STEM Exploration I and II elective courses. These classes are comprised of nine to twelve week units for students to explore aerospace, energy, the environment, modeling, robotics, technology, and other STEM-related topics.

Further extending the engaging STEM pathway, comprehensive PLTW Engineering curriculum is offered at the high school level at both Granada High School and Livermore High's Green Engineering Pathway. PLTW Computer Science is being piloted at Granada High School. This new pathway provides opportunities to build student interest and engagement in computer science, offering courses that emphasize computational thinking and engineering processes in relevant problem-solving activities. Across the PLTW pathways, students learn and apply the design process, acquire strong teamwork and communication proficiency, and develop organizational, critical-thinking, and problem-solving skills.

California Career Pathways Trust Grant

In May 2015, the District with the Tri-Valley Educational Collaborative (TEC) was awarded a California Career Pathways Trust Grant. This program establishes new college and career pathways (Public Services/Legal, Networking and Software and Systems Development) and enhances existing pathways through the integration of innovative video conferencing (telepresence) capabilities in the Tri-Valley and participating school districts. TEC evaluates and plans core academics and Career Technical Education articulation through a regional effort among Dublin Unified School District, Livermore Valley Joint Unified School District, Pleasanton Unified School District, Tri-Valley Regional Occupational Program (TVROP) and Las Positas College. TEC has implemented 29 career pathways to date, and through the development of a video conferencing technology infrastructure, TEC members will implement these three new high-demand, high-wage pathways. Through the new pathways, TEC will expand and enhance transitions for all students from feeder K-5 schools to 6-8 middle schools into high school and on to postsecondary education. Over 80% of the grant is being used for the acquisition and installation of state-of-the art telepresence technology at TEC schools. LVJUSD is the fiscal agent for the grant and is managing the purchasing. Each district has funding for an instructional coach for two years, who will help instructors incorporate the use of telepresence technology into their pedagogy.

Number and Location of Computers

The Livermore Joint Valley Unified School District posts an active enrollment of 13,896 students (2018). As of March 2018, there were 11,087 (an increase from 6,888 in the previous plan) instructional computers with 7,384 (an increase from 4,318) of those being chromebooks. We have enough devices to equip 80% of our students, a ration of 1 device to 1.25 students. 85% of the computers reside in the classrooms/mobile carts and 15% of computers are located in computer labs and school libraries. For more detailed information, see the Existing Hardware section.

All schools, including continuation high schools and Independent Study program, have library multimedia centers. One hundred percent of our schools and classrooms have Internet connectivity. In addition, all sites have WiFi and a guest network. Our updated Acceptable Use Policy allows students, with teacher permission, to use their own mobile devices (BYOD) to access the Wi-Fi network for learning.

Student Computers

As student access to computers and devices has increased throughout the District, and with the initial implementation of Common Core and ISTE standards, the use of technology to support instruction has shifted to occur primarily within the classroom setting. All sites now have multiple laptop/chromebook carts, that are shared from class to class. Our elementary schools have class sets of iPads to enhance and support STEM education. Additionally each of our transitional kindergarten classrooms have iPads in the classroom to support their STEM-based curriculum. Mobile chromebook and laptop carts provide the opportunity for a one student per computer ratio at least some of the time. The flexibility of mobile carts are designed to support access to the core curriculum and are now a component of the instructional day. Teachers who

use the mobile carts have students work on projects that are curriculum aligned. Computer carts provide opportunities for remediation or acceleration with diagnostic and skill-building programs, accelerated programs such as Accelerated Reader and Accelerated Math, Khan Academy, and credit recovery programs. Middle and high schools also offer an array of elective classes that build technology and computer skills and/or are programming based, in a computer lab setting.

Library Media Centers

Additional technology to assist learning is available in school libraries in all schools. The District Library Plan has established networked computer stations for students to do research, including Online Public Access Catalog (OPAC) for looking up books. In addition to the traditional roles of the library, the Library Media Specialists provide important support for the District's curriculum goals, assisting students through guided access to the Internet and other online resources for learning. Much of the instruction for information literacy occurs in the libraries, especially at the elementary level. Library sign-up records track teacher and student use. Our library checkout services are automated. In addition, our electronic curriculum and instructional materials inventory system, Destiny Library Manager, is managed through our libraries in coordination with the Curriculum and Special Projects Department.

Access During Non-School Hours

Access to computers before and after school varies from site to site based on specific site level needs and programs offered. The BELIEVES (Broadens and Enriches Lives, Instills Educational Values, Encourages Students) after school program at Marylin Avenue and Junction K-8 Schools, funded through After School Education and Safety (ASES), integrates technology during academic rotations utilizing chromebooks. High schools are currently utilizing online credit recovery/intervention programs. Other schools utilize technology-based programs to provide intervention and extended learning opportunities. This takes many different shapes across the District. Many schools offer coding and robotics clubs and classes after school to enrich student learning experiences. Gifted and Talented Education (GATE) advisory committees sponsor after school enrichment opportunities including Engineering Adventures developed by the Museum of Science in Boston. Technology is also integrated in the District's summer school program in order to continue to provide students with access to programs and the skills needed for success during the school year.

The Livermore Public Libraries are active partners with the District, offering students free access to computers with Internet capability before and after school, on weekends, and during spring, winter and summer breaks. A librarian from the city meets monthly with District library media specialists to collaborate and coordinate to meet student needs. During the instructional day, sites maintain open computer labs or access to chromebooks carts to accommodate rotations of students from specific subject area classrooms.

Equitable Access

Students with Individualized Education Plans (IEPs) are ensured equitable access to appropriate technology within their specialized programs. Students with special education eligibilities are

able to access technology available to their general education peers in addition to specialized hardware and software to meet their unique needs. Under the Special Education Department, the District currently employs AT/AAC, DHH, and Vision specialists to support the technology needs of special education students with both low and high incidence disabilities. These specialists support LVJUSD teachers and staff in their ability to appropriately adapt access to instruction. They also support each student's ability to adequately demonstrate understanding of academic instruction.

The technology available to support learning for students with IEPs includes a variety of tools along a continuum (low, lite, and high tech), as well as highly specialized equipment to meet the needs of special populations of students. Low tech supports include a variety of visual supports (communication boards, visual schedules, picture exchange icons) typically created using specialized software that allow the users to create materials with line drawing and/or colored picture icons with text. Low tech supports also include adapted materials to accommodate visual impairments; these include, but are not limited to, large print materials, high contrast materials, and other materials with tactile adaptations. Lite tech supports may include battery-operated voice output device and battery-operated switches for adapted materials. High tech supports include hardware such as tablet devices, laptop computers, and/or chromebooks.

These hardware devices support a variety of software tools, some of which are accessible on multiple platforms (i.e. 'universal' software that runs on both a tablet device and a laptop). The software provided to students with IEPs can include tools that can be made available to all general education students (LVJUSD's G Suite Domain) in the form of Google Apps and Extensions that run as part of the Chrome browser, and as 'add-ons' available within Google Docs, Sheets, and Slides. Some of the software provided to students with IEPs is made available to them due to needs determined by their IEP teams and often related to their their special education eligibilities. Many different forms of assistive technology software are considered and trialed with students based on their identified needs. Assistive technology is available to support a variety of student needs including organization, note taking, etc. Examples of assistive technology software considered (and made available when appropriate) to support students with reading and writing difficulties include, but are not limited to:

- Audio presentation of textbooks, class novels, and leisure reading (through synthesized electronic voices with synchronized text highlighting) to support students with difficulty accessing printed text
- Adaptation of online or computer based materials (including scanned PDFs) with text-to-speech capabilities to support students with difficulty accessing digital text
- Digital presentation of traditionally paper-based materials (i.e. worksheets/workbooks) to support students with difficulties completing written work or producing legible writing with paper and pen/pencil
- Word processing software with word prediction capabilities, word banks, outlines, speech-to-text or other supports for students with difficulty composing or producing written work.

Special Education also makes computer and tablet accessories available for students with IEPs to use as needed. These accessories include, but are not limited to, lapel microphones for speech-to-text, headphones for text-to-speech and other audio presentation of materials, specialized keyboards, and computer mouse options to meet student needs.

The District, through the Special Education Department, also provides highly specialized equipment, software, and staff consultation to support student use of specific technologies to meet their unique needs. These technologies include, but are not limited to, dynamic display Speech-Generating Devices, eye-gaze equipment, FM Systems (specifically provided in classrooms for students who are deaf or have hard of hearing impairments), sound field systems, Braille writers, and video magnifiers.

Some of the District's students with low-incidence disabilities have their technology needs met through limited funding and tools available through the Tri-Valley Special Education Local Plan Area (SELPA). This support is available through funding provided by the state for low incidence disabilities. These disabilities include blindness/visual impairments, deafness/hard of hearing, and orthopedic impairments.

The District provides additional technological support for English Learners (ELs) and Migrant Education students. Staff is able to access our interpreter/translator phone hotline to facilitate school/parent communications. The District sponsors the Migrant Education Even Start (MEES) Program and technology tools are used to increase literacy and English language acquisition. The Adult School English as a Second Language program also incorporates technology tools into the teaching and reinforcement of the English language.

Additional programs help ensure equal access for all students. Our students regularly cycle through the school libraries, which uniformly provide Internet access and opportunities to work with multimedia equipment. All site Library Media Specialists provide support for information literacy.

Technology Access in the Home

The Livermore Valley Joint Unified School District is acutely aware of the national trend towards a "digital divide" – the growing gap between technology "haves" and "have-nots," which separates different socioeconomic classes of our society. As we strive to close achievement gaps, we must also work to "bridge" the digital divide. As an Alameda County District, in proximity to the Silicon Valley and the Livermore and Sandia National Laboratories, our District has a high percentage of technologically literate parents with regular access to email and the Internet. Like most communities in California, Livermore also has a growing, significant percentage of impoverished families whose children are without access to the Internet and other technological tools to support their education. Currently, one Livermore school has over 75% of students receiving free or reduced price lunch. The Livermore Valley Joint Unified School District has created a partnership between the Lawrence Livermore National Laboratory, Las Positas College, and Comcast to help with computers and Internet access for low income families.

At many sites, students who do not have computer access at home can use school computers in the school libraries before and after school as well as during the lunch hour. Most sites offer a limited number of Chromebooks to be checked out for home use. Additionally, each school provides referrals to other locations that have public computer access including Livermore Public Libraries. The District will continue to explore ways to expand access beyond the traditional instructional day, for example, exploring a chromebook checkout system and/or extending school library media center hours.

Replacement Policy

In LVJUSD, our intent is to refresh computers before they become obsolete, and we acknowledge that this is critical to the success of the educational programs. Given budget constraints, the District's replacement policy is to refresh computers every 3 to 5 years. The Information Technology Department (IT) inventories and evaluate equipment on an ongoing basis. Once a piece of equipment is determined obsolete or no longer meets the District's minimum standards (http://www.livermoreschools.com/it) it will be removed from inventory. The purchasing and warehouse department is responsible for disposal. Recyclers have been identified and obsolete or surplus equipment is recycled with the money going into the General Fund. This is tracked in the asset module in our HelpDesk system and by the Warehouse's asset database system.

Budget Support and Future Funding

Annually, the Board of Education holds a workshop to determine budget priorities. We understand that in order to prepare our students to be successful in a 21st Century global society, we must provide access to relevant technologies, updated devices, applications and Internet and cloud technologies; and this is a high priority to support implementation of these initiatives. Since 2010, the District has benefited from the support of the community through local parcel taxes. Measure M provided approximately $200,000 per year to support student learning through technology. Approximately $100,000 ($18.00 per student) of the Measure M funds were provided to elementary sites to support the use of technology in the classroom. The remaining funds supported local Technology Innovation grants for teachers, computers for specialized programs, infrastructure to support student Internet access and other needs determined on an annual basis. Measure M expired at the end of the 2014-2015 school year and a new parcel tax, Measure G, began in 2015 and continues through 2022. In addition to parcel tax support for technology, $200,000 annually in general or Local Control Funding Formula (LCFF) funds have been allocated to support technology needs and are mostly dispersed directly to sites. This has included computer upgrades for aging devices, Internet access points, professional development and other needs determined on an annual basis. The District utilized a one-time funding source in 2017 to purchase 1150 Chromebooks for Students and allocated $192,000 for staff computers and upgrades as part of our refresh plan. In addition, $175,000 was allocated to support the implementation of the Tech Plan. The District has been fortunate that business, industry and community partners have provided gifts and/or grant opportunities that have been used to meet the technology needs of our Project Lead the Way programs at elementary, middle and high school, STEM-based transitional kindergarten and other programs in the District. Our local Rotary Club provides mini-grants, with in many

instances, matching funds from our Livermore Valley Education Foundation for teachers requesting a special piece of hardware for their classrooms. We need to continue to nurture these partnerships and relationships so that our students can benefit from up-to-date technology.

Learning and Teaching Goals and Implementation Steps

Goal 1: Students will be empowered to utilize technology and resources to master CA State Standards, authentically demonstrate their understanding and acquire lifelong knowledge and skills needed to contribute and thrive in the 21st Century. (Aligns with LCAP goal 1.)				
Goal 2: Staff will create and contribute to a technology-enhanced environment that supports learner variability and needs.				
Year 1	**Year 2**	**Year 3**	**Activities**	**Person(s) Responsible**
			Administer a teacher/administrator survey to assess progress toward meeting goals and staff needs.	Assistant Superintendent of Ed. Services, Director of Curriculum & Special Projects, District Integrated Technology Specialist
			Administer a student survey to assess progress towards meeting goals and student needs that incorporates ISTE Standards and information literacy proficiencies.	Assistant Superintendent of Ed. Services, Director of Curriculum & Special Projects, District Integrated Technology Specialist
			Raise administrator and teacher awareness of the newly released ISTE standards (2017, 2018) and explore how they may integrate the standards within the curriculum.	District Integrated Technology Specialist, Teachers on Special Assignment, Site Tech Leads, Elementary Technology Specialists
			Identify technology-based applications and resources that encompass ISTE Standards including web-based lesson plans, publishers' supplements and primary source materials that will support California State Standards and post to the LVJUSD intranet, team drive and teacher websites.	Director of Curriculum & Special Projects, Teachers on Special Assignment and District Integrated Technology Specialist, Elementary Technology Specialists

			Implement video conferencing applications to enhance curriculum and student learning, including staff professional development and mentorships and student work-based learning and mentoring opportunities.	Director of Curriculum and Special Projects, District Integrated Technology Specialist, Site Administrators
			Continue to develop new or update existing courses, curriculum maps, and pathway designs at the secondary level to include technology integration, resources and skills.	Director of Curriculum & Special Projects, Teachers on Special Assignment
			Further integrate G Suite for Education, such as Google Classroom, to turn in assignments and Google Drive to build portfolios and/or “virtual binders,” especially at the lower grades.	Director of Curriculum & Special Projects, District Integrated Technology Specialist, Site Tech Leads, Elementary Technology Specialists
			Continue to develop/expand/implement STEM course(s) for elementary and middle school students, which include Gateway to Technology and Launch curriculum.	Director of Curriculum & Special Projects, TK-8 Teachers, District Integrated Technology Specialist
			Refine and expand current Career Technical Education (CTE) courses for high school students, which address 21st Century and STEM Skills, such as Project Lead the Way (PLTW) Computer Science.	Director of Curriculum & Special Projects, Site Administrators, 9-12 Teachers
			Integrate STEM activities into core curriculum to create cross-curricular and real world connections and applications. Activities include C-STEM Algebra/Robotics and Programming.	Director of Curriculum & Special Projects, Teachers on Special Assignment, K-12 Teachers
			Expand student opportunities to engage in technology after school programs, such as BELIEVES at Junction K-8 and Marilyn Ave. Title 1 Schools.	Site Administrators, Teachers on Special Assignment

			On a regular basis, all students will use technology applications and resource such as web-based instructional, assessments and electronic primary source materials to prepare for graduation, college, and to develop the 21st Century skills required for success.	K-12 Teachers, Library Media Specialists
			Explore the use of free Web 2.0 tools and G Suite for Education supporting student and teacher collaboration to learn beyond the classroom walls (e.g. publishing online, skyping with other classrooms), learn from and interact with each other (e.g. blogging, online discussions and screencast tutorials) and solve real-world, complex problems (e.g. analyzing and collecting local data for global reporting).	Integrated Technology Specialist, Site Tech Leads, Elementary Technology Specialists -
			Support our earliest learners in STEM-based TK programs with access to relevant technology, expand real-life connections and expand inquiry-based learning opportunities.	Director of Curriculum & Special Projects, Administrator on Special Assignment, Site Administrators
			Expand student access to additional course pathways, such as Biomedical, International Baccalaureate, and Advanced Manufacturing.	Director of Curriculum & Special Projects, Site Administrators, 9-12 Teachers
			Bring the updated 2019 ISTE Standards for students, educators and administrators to the Board for adoption.	Assistant Superintendent of Ed. Services, Director of Curriculum & Special Projects, District Integrated Technology Specialist
			Monitoring & Evaluation: District administrators and school site administrators will continuously track the development and implementation of all activities and accomplishments and provide progress reports to the Technology Team at the monthly meetings. The program will be modified as needed to maintain a cycle of improvement	

			that supports program objectives.
			Evaluation Instruments: Staff technology survey, student survey, purchase orders, training materials, workshop sign-in sheets, workshop evaluations, course catalog, examples of technology-enriched lesson plans posted on Google Drive, login records for subscription services, rubrics, student assessments, SBAC results and examples of student work.

Digital Citizenship

The District recognizes that school library media centers play a vital role in education by providing access to a variety of informational resources. The Board strives to provide comprehensive library media centers with up-to-date books, reference materials and electronic information resources necessary to support a high-quality educational program, promote literacy and enable students to achieve academic standards and become lifelong learners. All schools have Library Media Specialists who support student use of the online library catalog. Specialists at the elementary level teach library and information literacy skills to students, as well as online safety and cyberbullying prevention.

In addition, students have many opportunities to pursue technology-focused electives including career education courses, the Livermore High Green Engineering Pathway, Project Lead the Way engineering and computer applications courses at Granada High, Middle School Gateway to Technology, and elementary Project Lead the Way Launch Program. The Freshman in Transition course helps to ensure a successful high school experience for all freshmen. This course includes study skills, an introduction to high school and cybersafety.

In the fall of 2011, the District formally adopted the ISTE Standards for Students, Teachers and Administrators, which are designed to provide teachers, technology planners and educational decision-makers with frameworks and standards to guide them in establishing enriched learning environments supported by technology. ISTE is the International Society for Technology in Education. In 2019, after the release of the updated ISTE Standards for Administrators, the ISTE standards will again be brought to the Board for consideration for formal adoption.

Internet Safety and Children's Internet Protection Act (CIPA) Compliance

It is our goal that students will become proficient, successful 21st Century learners. Students need to understand how to respect and properly cite the intellectual property of others. In this age of copy and paste, it is important that we educate our students on the implications of plagiarism, copyright and unlawful downloading. It is also important that we train our teachers to craft assignments that require critical thinking, evaluation and creation. When higher order thinking skills and ethical use of information are required elements of student work, plagiarism is not an issue. All staff annually complete online CIPA training to inform and protect them from phishing attacks, social media scams, and other imposter cyber threats.

CIPA and E-rate

The Children's Internet Protection Act (CIPA) was enacted by Congress in 2000 to address concerns about children's access to obscene or harmful content over the Internet. CIPA imposes certain requirements on schools or libraries that receive discounts for Internet access or internal connections through the E-rate program – a program that makes certain communications services and products more affordable for eligible schools and libraries. In early 2001, the FCC issued rules implementing CIPA and provided updates to those rules in 2011.

Schools and libraries subject to CIPA may not receive the discounts offered by the E-rate program unless they certify that they have an Internet safety policy that includes technology protection measures. The protection measures must block or filter Internet access to pictures that are: (a) obscene; (b) child pornography; or (c) harmful to minors for computers that are accessed by minors. Schools subject to CIPA have two additional certification requirements: 1) their Internet safety policies must include monitoring the online activities of minors; and 2) as required by the Protecting Children in the 21st Century Act, they must provide for educating minors about appropriate online behavior, including interacting with other individuals on social networking sites and cyberbullying awareness and response.

The Board of Education has adopted specific District policies regarding bullying and harassment that are applicable to cyber bullying, as well as policies about the monitoring of student use of technology. Student Services annually reviews and updates the Acceptable Use Policy (BP-AR 5131.2) for students and staff to ensure compliance with CIPA and other education code. In addition, the AUP now addresses student use of personal devices to support instruction.

Digital Citizenship Goals and Implementation Steps

Goal 3: The school community, including all staff and students, will be safe, responsible, global digital citizens.				
Year 1	**Year 2**	**Year 3**	**Activities**	**Person(s) Responsible**
			Include Safe School teams, as part of the cybersafety educational partnership effort.	Director of Student Services
			Have all staff complete online CIPA training annually to protect from cyber threats.	Director of Curriculum & Special Projects, Chief Technology Officer
			Continue to implement Common Sense Media digital citizen lessons at the elementary and middle school levels and in high school Freshman in Transition (FIT) classes. 1-2 lessons per topic, as highlighted, are implemented at each grade band.	Director of Curriculum & Special Projects, District Integrated Technology Specialist, Site Administrators

			Teachers fill out a verification form via google forms indicating lesson implementation.	
			Common Sense Media Scope and Sequence found here.	
			Train library media and classroom staff in delivery of the approved digital citizenship curriculum (Common Sense Media), which includes copyright and ethical uses of technology.	Director of Curriculum & Special Projects, District Integrated Technology Specialist, Site Administrators
			Incorporate ethical use questions into the student technology survey, to be administered in goal 1.	Assistant Superintendent of Ed. Services, District Integrated Technology Specialist, K-12 Teachers, Library Media Specialists
			At high school level, continue to use programs such as Turnitin.com, an electronic monitoring system, to discourage and prevent plagiarism through the Internet.	High School Administrators and Teachers
			Students will incorporate appropriate copyright and fair use into their projects across the grade levels and content areas.	Site Administrators, K-12 Teachers, Library Media Specialists
			Annually update, as necessary, and send to the Board for adoption, the Acceptable Use Policy (AUP) to include policies on copyright, file sharing, plagiarism, and other cyber ethics issues. Publish and disseminate the revised AUP in print and online, in multiple languages.	Director of Student Services, Chief Technology Officer
			Create a forum for parent education on digital citizenship, including resources posted on the District's website and parent meetings.	Director of Student Services, Director of Curriculum & Special Projects, District Integrated Technology Specialist
			Links for parents posted online here.	

			As we continue to expand the use of individual learning devices, including BYOD, insure that teachers and students have been instructed in Internet safety and are modeling digital citizenship.	Director of Curriculum & Special Projects, Chief Technology Officer, District Integrated Technology Specialist, Teachers on Special Assignment
			Monitoring & Evaluation: District administrators and school site administrators will continuously track the development and implementation of all activities and accomplishments and provide progress reports to the District Tech Team at the monthly meetings. The program will be modified as needed to maintain a cycle of improvement that supports program objectives.	
			Evaluation Instruments: Student survey, teacher training materials, lesson and class meeting plans, parent/student handbook, samples of student activities and products, Board policies, promotional flyers, parent education materials, parent communication and discipline logs.	

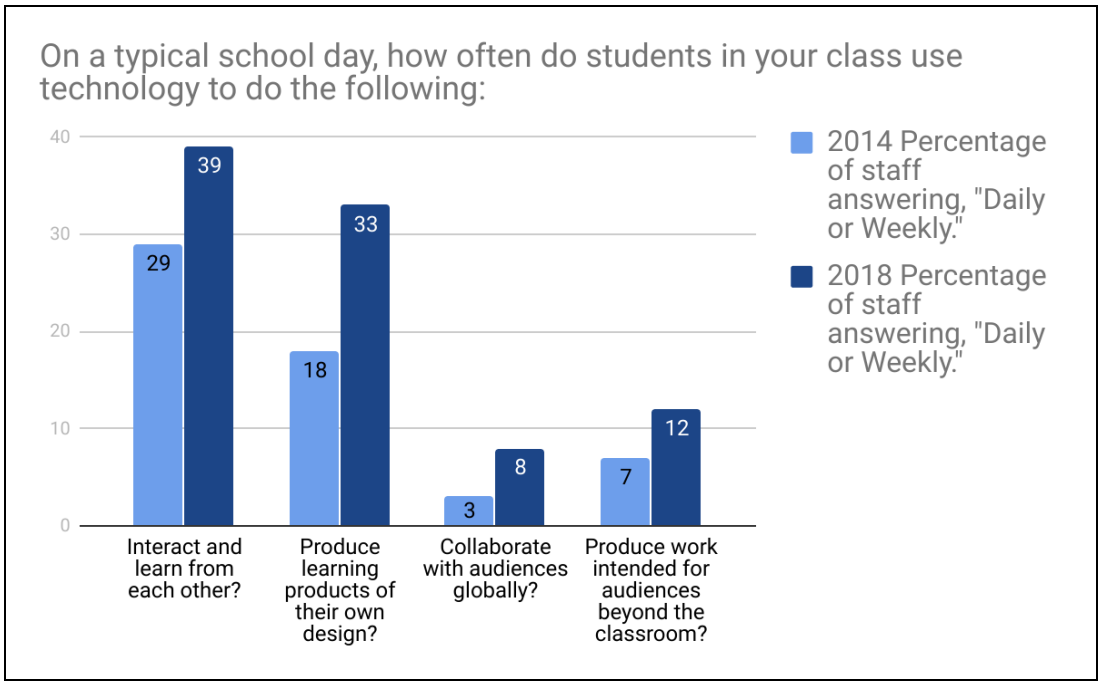
3. PROFESSIONAL DEVELOPMENT

Needs for Professional Development

A teacher and administrator survey was created by the Tech Team to gauge staff's skills and current use of digital tools and technology. Staff members have completed the survey questions annually, since 2014, and the responses are useful in identifying staff development needs. In the 2018 teacher survey results 49% of teachers evaluated themselves as having very good technology skills or being a leader in educational technology implementation.

Teachers

The graph below shows gains from 2014 to 2018 in the use of technology to support local collaboration and creativity, however, global collaboration and authentic publishing beyond classroom walls needs to be expanded. Global collaboration and publishing may seem far-fetched or inappropriate for younger learners, so what could this look like? In primary grades, when students do the traditional Flat Stanley project, the data from different areas of the United States or even different countries could be compared. What did Flat Stanley do when he visited places in the eastern U.S. versus the western U.S? How might geography or weather of these areas affect the data? Further, the locations from Flat Stanley's travels could be pinned to a Google Map and students could investigate and compare the street views of different geographic areas. In these ways, technology could transform and redefine the learning.



Authentic publishing for an audience beyond the classroom, is proven to be much more motivating for student writers and can have many variations as appropriate for different grade levels. When first graders publish their “all about” writing as part of the writing project, final drafts could be read by students, recorded and sent to parents and other close family via a protected link. Families could listen to the story and share positive comments and accolades via a Google Form. In this way, authentic publishing also becomes a powerful school to home connection to communicate student growth and progress. By comparison, fifth graders might record their information writing in a protected, online space like Vocaroo, and then print QR codes for their kindergarten buddies to scan, listen and learn.

Staff survey data suggests that our future staff development should focus on educating staff about the ISTE Standards and the possibilities that learning beyond the classroom walls can create. This should include different avenues for authentic publishing, connecting with other classrooms via Skype or Google Meet, learning from and interacting with each other (e.g. blogging, online discussions and screencast tutorials) and examining real-world data and complex problems (e.g. analyzing and collecting local data for global reporting, crowdsourcing data around issues of justice or inequity and serving local community needs).

Administrators

According to the administrator responses on the staff survey, District administrators are confidently using technology to communicate through email, assist in their meetings, for word processing and presentations and for spreadsheets. 20% of District administrators chose the following statement to describe their level of technology skills, “I am a technology leader. I use technology efficiently, effectively and in creative ways to accomplish my job. I teach others to use technology resources.” In addition, another 40% of District administrators evaluated

themselves with this statement, “My skills are very good. I use a variety of technology tools and I use them efficiently for all aspects of my job.”

District administrators said they wanted more training on audio and video production, video conferencing, spreadsheets, and managing BYOD initiatives. 50% of administrators said that they would like more training to use video conferencing tools, and 43% stated that they would like more training to create podcasts/vodcasts, both of which could be helpful tools when reaching out to parents and community. 33% of administrators said they would like more training on audio and video production and 30% would like more training on spreadsheets and managing BYOD. Training for administrators should focus on communication tools (like podcasts/vodcasts and videoconferencing), spreadsheets, and supporting the District BYOD initiative.

Professional Development Goal and Implementation Steps

Goal 4: All staff and students will participate in training and experiences to support the technology plan goals.				
Year 1	**Year 2**	**Year 3**	**Activities**	**Person(s) Responsible**
			Review survey results along with District initiatives to plan short-term and long-term priorities for professional development.	Director of Curriculum & Special Projects Department, District Integrated Technology Specialist, Teachers on Special Assignment
			Provide District-wide staff development opportunities, addressing different teacher learning styles and providing teachers with training through a variety of technology-based resources, such as chromebooks, mobile devices, video, web-based instruction, discussion groups, and peer collaborations.	Director of Curriculum & Special Projects Department, District Integrated Technology Specialist, Teachers on Special Assignment, Elementary Technology Specialists
			Deliver District-wide professional development trainings focused on creating technology-enhanced student assignments, supporting student information literacy, and addressing digital citizenship and online safety.	Director of Curriculum & Special Projects Department, District Integrated Technology Specialist, Teachers on Special Assignment, Elementary Technology Specialists

			Support site-based collaboration and professional development integrating technology into ongoing core content professional development.	Director of Curriculum & Special Projects Department, District Integrated Technology Specialist, Teachers on Special Assignment, Site Technology Leads, Elementary Technology Specialists
			Develop and deliver workshops and trainings that use technology to enhance the teaching and learning of the Common Core and ISTE standards.	Director of Curriculum & Special Projects Department, District Integrated Technology Specialist, Teachers on Special Assignment, Site Tech Leads, Elementary Technology Specialists
			Continue to provide training for supplemental programs for intervention, enrichment, and extended learning opportunities.	Director of Curriculum & Special Projects Department, District Integrated Technology Specialist, Site Administrators, Teachers on Special Assignment, Elementary Technology Specialists
			Provide teachers opportunities for training on assistive technology that supports the needs of special and diverse learners.	Director of Curriculum & Special Projects, Director of Special Education, District Integrated Technology Specialist
			Train staff on the access and use of materials available on LVJUSD Google Sites, including shared lessons, resources, instructional videos and curriculum maps, which support teaching and learning across all content areas.	Director of Curriculum & Special Projects, District Integrated Technology Specialist, Teachers on Special Assignment, Site Tech Leads, Elementary Technology Specialists
			Provide digital citizenship training for teachers, administrators and Library Media Specialists.	Director of Curriculum & Special Projects, District Integrated Technology

				Specialist, Elementary Technology Specialists
			Provide training for staff and administrators on free Web 2.0 tools and Google Apps to support and extend learning. This may include Google Classroom, Google Drive (Docs, Forms, etc.), Google Sites, applications found in the Chrome Web Store.	Director of Curriculum & Special Projects, District Integrated Technology Specialist, Site Tech Leads, Elementary Technology Specialists
			Provide professional development to increase gamification, badging, and game-based learning opportunities in the classroom.A Badging website was developed in 2016. Currently, Site Tech Leads complete the "Chromebook Pro" badge.	District Integrated Technology Specialist, Site Tech Leads, Elementary Technology Specialists
			https://sites.google.com/lvjusd.org/lvjusdbadging/home	
			Monitoring & Evaluation: District administrators and school site administrators will continuously track the development and implementation of all activities and accomplishments and provide progress reports to the District Technology Team at the monthly meetings. The program will be modified as needed to maintain a cycle of improvement that supports program objectives.	
			Evaluation Instruments: Student and teacher Google survey, LVJUSD Google Sites, training materials, sign-in sheets, workshop evaluations, teacher lesson plans, and examples of student work.	

4. INFRASTRUCTURE, HARDWARE, TECHNICAL SUPPORT, SOFTWARE, AND ASSET MANAGEMENT

Existing Hardware

According to the latest local inventory, there are 11,087 instructional computers, including 7,384 Chromebooks. Of these computers, 100% have a broadband connection to the Internet. In addition to the baseline classroom equipment, many classes have wireless computers, interactive whiteboards, and document cameras. This is tracked in the asset module in our HelpDesk system and by the Warehouse's asset database system.

Student Devices

School Site	Student Count	Total Student Chromebooks Deployed	Total Student Non Chromebook Devices	Total All Student Devices	Chromebooks as % of Students	Total Devices as % of Students	BYOD Devices
Altamont	600	329	269	598	55%	100%	43
Arroyo Seco	667	310	144	454	46%	68%	103
Christensen	718	578	141	719	80%	100%	192
Croce	754	274	135	409	36%	54%	68
Del Valle	111	183	65	248	165%	223%	56
East Ave	648	520	173	693	80%	107%	39
Granada	2260	755	499	1254	33%	55%	799
Jackson	556	390	193	583	70%	105%	56
Joe Michell	798	325	234	559	41%	70%	102
Junction	888	663	222	885	75%	100%	86
Lawrence	316	160	15	175	51%	55%	39
Livermore High	1931	757	647	1404	39%	73%	746
Marylin Ave	418	357	100	457	85%	109%	83
Mendenhall	970	696	197	893	72%	92%	1295
Rancho	603	237	135	372	39%	62%	58
Smith	735	355	231	586	48%	80%	58
Sunset	781	373	224	597	48%	76%	42
Vineyard	142	66	135	201	46%	142%	48
Total/Avg.	13896	7328	3759	11087	53%	80%	3913

Staff Devices and Access Points (APs)

School Site	Staff Count	Total Staff Computers	Teacher Computer Refresh (Year)	Total Access Points Deployed
Altamont	55	54	2015-16	30
Arroyo Seco	42	43	2017	24
Christensen	62	52	2015-16	29
Croce	66	45	2015-16	28
Del Valle	25	28	2015-17	12
East Ave	46	48	2014-15	29
Granada	162	140	2013-14	67
Jackson	51	48	2014-15	20
Joe Michell	70	25	2014-15	29
Junction	75	98	2014-17	32
Lawrence	34	18	2016	19
Livermore High	149	167	2014-15	75

Marylin Ave	51	52	2014-15	25
Mendenhall	60	86	2014-15	35
Rancho	47	33	2013-14	21
Smith	50	57	2013-14	22
Sunset	60	20	2014-15	25
Vineyard	31	29	2014-17	14
	52 (roamers)			
Total	1136	1043		536

Existing Internet Access

All school sites have WiFi with a 1GB WAN connection to the District Office. The District Office has a 2GB connection to the Internet utilizing the Alameda County Office of Education for our ISP. In 2018, budget allowing, this connection will be upgraded to 6 GB. Additional bandwidth needs will be evaluated on an annual basis.

The District uses a fully switched and routed Cisco network with private IP addresses separated by VLANs for performance and security reasons. The switches have Ethernet connectivity available for the computers at 1GB and are connected within the school sites with 1GB or 10GB fiber links. All data Ethernet cabling has been upgraded to CAT5e minimum standard.

All web traffic, Internet virus, spyware and spam control is done utilizing iBoss and Barracuda. The District uses Sophos as a secondary level of spyware and virus scan protection.

A variety of mostly Windows 2012 virtual servers provide file storage and host core applications such as, PowerSchool, Bluebear, Destiny, Nutrikids, Exchange and Voicemail. The District provides an exchange email account for every staff member and Gmail accounts for all student and staff members. There is a phone in every classroom with voice mail. Currently, 100% of the District is utilizing a Cisco Voice Over IP phone system with Singlewire as part of our emergency communications system for digital messages, such as 911 notifications to key personnel when dialed.

Existing Electronic Learning Resources

The following table shows the current electronic learning resources. Computer software suites described below are installed on computers or available via the Internet.

Type	Software
Productivity Suite	Microsoft Office, Keynote, Pages, Numbers, Google Apps

Browser	Internet Explorer, Firefox, Chrome, or Safari
Multimedia, Desktop Publishing	Adobe Acrobat, Photoshop, Indesign, Pagemaker, Illustrator, Premier, Audition, Publisher, iWeb, and a variety of other web-based products
Library Automation	Follett
Instructional Materials Inventory	Follett
Automated Phone/ Email System	School Messenger, Microsoft Exchange, School Loop
Student Information	PowerSchool, InfoSnap
Email System	Exchange, Gmail
Parent/Student Information	School Loop, Google Sites, Iweb, Facebook, PowerSchool
Assessment Management Information System	Illuminate
Teacher Classroom Management Software	LanSchool (ClassHub currently being piloted as possible replacement), Google Classroom

Existing Technical Support

Livermore Valley Joint Unified School District Information Technology (IT) Department is charged with maintaining and building technological systems, and pursuing new and innovative opportunities to work more effectively and efficiently. In addition, the department continues to review instructional technology resources to enhance learning opportunities for our students. Currently, the IT department utilizes a centralized support model. Each school site has at least one technician assigned. District support staff consists of the Chief Technology Officer, Technical Administrative Assistant, Information Support Administrator, Network Manager, five IT technicians, three IT Specialists, one Telecom Specialist, and an Integrated Technology Specialist

for training needs. Outside support is contracted when necessary. An electronic help desk program is utilized for inputting and tracking help and technology troubleshooting requests.

The IT Department processes over 8200 Help Desk tickets each school year, in addition to the many projects that must be completed. These projects included wireless upgrades, computer deployments and refresh, network switches and server upgrades.

The District also uses an intranet for all District employees utilizing a private Google Site. Only District employees have access to the Intranet. It provides them with access to District forms, and other District information. The IT department uses FileWave and Apple Remote Desktop to remotely manage devices, assist teachers and work on their computers.

Asset Management

Device inventory is documented through our Help Desk (SolarWinds Web Help Desk, WHD) asset management module. This tracks device make, model, serial number, and location of use. We have a custom access database that is used by our Warehouse that ties into our financial system Sungard to track assets as well.

The Helpdesk is utilized to show when technology is active or has been retired. The Technicians update the inventory as they take support calls and the warehouse does periodic inventories to verify records are updated, along with scanning in inventory as it is received at the District office warehouse. This is tied in with SunGard our financial system so that if inventory is damaged or theft occurs it can be traced to the purchase order number to get the vendor, date purchased and received, price and who ordered it. We primarily use mobile carts to protect mobile devices and in some cases lockable cabinets are used.

Hardware Needed

It is the goal of the LVJUSD to provide up-to-date hardware for use by all staff and students:

- As budget permits, allocate a defined percentage of the budget to meet a computer replacement cycle goal of 1/5 of teachers each year as is necessary to maintain operational quality. Expand on cost effective options such as Chromebooks and mini-PCs.
- As budget permits, increase student access to individual learning devices, such as chromebooks, towards one-to-one adoption.
- One-to-one and BYOD will continue to be a goal for students to have access to 24x7 learning anytime anywhere.
- School site network servers and storage systems require updates to current hardware/software to handle curricular needs and staff/department file storage capacities.

- Peripherals such as digital cameras, scanners, etc. are not part of the baseline standard; however, they still need to be purchased/replaced as needed to meet specific curricular and data needs.

- Student adaptive learning devices will need to be purchased/updated, as specified in student Individual Education Plans (IEPs).

- Projectors need to be ceiling-mounted or wall-mounted in every classroom with teacher amplification/sound systems to provide a more efficient learning environment.

- Keep our wireless system to the newest standards with enough access points in every area, to accommodate the demands of BYOD as well as the higher bandwidth and speed requirements of online learning/Common Core testing.

- Expand video conferencing/telepresence equipment needs with recording and search capabilities to expand long distance learning and training.

- Expand surveillance cameras and digital signage to enhance school site safety.

Electronic Learning Resources Needed

New electronic resources will need to be selected for the new computers, and productivity software purchased:

- The student information system PowerSchool will continue to be updated and customized to allow for easier and more efficient operation, to facilitate analysis and reporting of data.

- Core curriculum software titles and learning systems will need to be purchased, installed, and maintained, once adopted by the District and as previously identified.

- Productivity software is included as part of the baseline package when computers are purchased, and will need to be maintained and upgraded as needed (Microsoft Office, Adobe, etc.).

- District and School site mobile Apps will continue to be expanded and implemented for easier access to resources and improved communications.

- Single Sign On (SSO) will continue to be expanded and implemented for easier access to resources for staff and students.

Networking and Telecommunications Infrastructure Needed

LVJUSD is dependent on the daily operation of the District-wide area network (WAN) and each individual site local area network (LAN) to communicate and provide resources to students, staff, and parents. The District has made considerable progress in this area by upgrading cabling to CAT5e minimum, establishing a wireless network District-wide, a Voice Over IP phone system, new switches, routers and Optiman. The maintenance, upgrading, and implementation of these

systems are crucial to our daily operations. Below is an expansion of the foundation now in place or planned as budget allows.

- Upgrade servers and software of Voice Over IP phone system.
- Replace older Cisco phones that are approaching end of life
- Upgrade and expand virtual server and storage needs.
- Upgrade data connection to 10GB from District Office and to the ISP.
- Install data caching servers at each school site and monitor WAN bandwidth for future upgrades.
- Upgrade District-wide fiber optic links from the MDFs to the IDFs to 10Gbs along with 1GB minimum ethernet POE ports to expand the centralization and consolidated delivery of applications and streaming video.
- Upgrade and expand our wireless system to the newest standards to accommodate the higher bandwidth and speed requirements of online learning and Common Core testing.
- Upgrade web filtering and email SPAM equipment to the latest technology and speeds available.

Physical Plant Modifications Needed

The District has completed an extensive renovation, remodeling, and long-term maintenance plan that addresses data and voice communications systems.

- Flexible and customizable classrooms designed to promote 21st Century teaching and learning.
    - Maximize student learning space through a variety of products/resources such as mounted projectors/speakers, screens or monitors, electrical drops, portable student devices, maximized living learning walls, teacher voice amplification devices, as needed, etc.
    - Modular furniture is included in all new renovation and refurbishment plans.
- Data and voice communications systems are included in all new growth construction and renovation and refurbishment plans.
- Security cameras are included in all new building construction and modification plans.
- Upgrade the fiber District-wide between the MDFs and IDFs to accommodate 10GB speeds.
- Explore installing dark fiber between school site locations to accommodate higher bandwidth needs.

Technical Support Needed

In the 2017 school year the IT Department began to implement the changes recommended from an outside IT efficiency study. One of the recommendations are to update job descriptions and titles along with expanding IT support to handle the increase in equipment, staff and students. The ISS Department was renamed to the IT Department and the new Network Manager position was filled. We will continue to work on implementing the staffing and other recommendations from the study. The District needs to maintain the current consistent level of quality support and look at additional expansion of the IT department to support the growing demands and needs of supporting technology.

- Two additional IT Technicians, a Help Desk Technician and a Network Technician, are needed to maintain and support the growing demands and critical needs of 24x7 uptime.

- Continue supplemental instructional technology support at all elementary sites through parcel tax funding. At the discretion of each site this may include increased access to hardware, software or additional instructional support in the labs.

5. MONITORING AND EVALUATION

Process

The process for evaluating the Technology Plan's impact on teaching and learning will involve the Technology Team with support from Curriculum Department staff. To aid in the process of tracking plan goals and implementation steps, a project management timeline will be developed, with space to check-off progress steps and record comments from stakeholders. The Technology Team will review and evaluate implementation of the plan on a semi-annual basis using previously specified and any new pertinent data compiled by Curriculum and IT Department staff. Data will be compiled in a comparative structure to facilitate analysis. Upon review of the data, the Team will adjust for necessary modifications or unforeseen needs or circumstances. On an annual basis a technology status report will be provided to the Board of Education. The report will include conclusions reached through survey data regarding technology use and proficiency by staff and students as well as student achievement data such as Smarter Balanced Assessments and common local assessments as indicated in this plan as well as our LCAP.

Schedule

The Assistant Superintendent of Educational Services and the Chief Technology Officer will prepare an annual, formal report and update. This annual report will be presented to the Board of Education and public.

The District Technology Team currently meets on a monthly basis. For our upcoming three implementation years, the Team will continue to meet on a monthly basis in preparation for annual updates, to evaluate our progress, make recommendations for adjustments, and to monitor the plan.

In addition to the District Technology Team's oversight responsibility, each plan component names the position, team or group responsible for monitoring on-going progress and the completion of that goal or implementation step. District staff will convene with members of the current District Technology Team and invite other stakeholders and responsible parties to join with them in assessing progress on the plan and to make necessary recommendations for revisions, especially in light of budget constraints.

The guidelines for the District Technology Team are as follows:

- Review progress on the goals and timelines of the District Technology Plan.
- Make recommendations for revisions to the plan to meet the current site, District, and state budget demands/resources.
- Maintain awareness of new components required by state and federal agencies.
- Recommend modifications of the plan to include consideration of the realities of implementation.
- Keep abreast of up-to-date developments in educational research.
- Make recommendations to adjust the plan to represent recent advancements in technology.

The Assistant Superintendent of Educational Services and the Chief Technology Officer will review District Technology Team recommendations and provide regular updates to the Superintendent and annual updates to the Board of Education, to ensure informed decisions are made.

Information will be shared with District stakeholders in a variety of methods, such as email updates, meeting minutes, postings on the LVJUSD Intranet and in-person meetings. District stakeholders will be responsible for providing input and offering suggested improvements or modifications to the Plan. The IT Department will be responsible for posting any substantive changes to the Plan that occur during implementation. The Board of Education, School Site Councils, and the public will be kept apprised of Technology Plan implementation and progress on an annual basis, for the three-year duration of the Plan.

Appendix A - Additional Reading and Research

Curriculum and Teaching Strategies

Classroom Instruction that Works: Research-based Strategies for Increasing Student Achievement (Robert J. Marzano, Debra Pickering, Jane E. Pollock (ASCD, 2001) In this valuable resource, the authors have examined decades of research findings to distill the results into nine categories of teaching strategies that have positive effects on student learning.

Realizing Illinois…Common Core Teaching and Learning Strategies. When implementing Common Core Standards in English language arts, educators must be mindful of literacy research and continue to use those evidence-based practices within the framework of Common Core. The following strategies have been compiled to connect the Common Core State Standards to best practices and align with research outlined in Appendix A of the California State Standards for English and Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects. To access this complete document visit:

- For K-5: http://www.isbe.net/common_core/pdf/ela-teach-strat-read-text-k-5.pdf
- For 6-12: http://www.isbe.net/common_core/pdf/ela-teach-strat-read-text-6-12.pdf

Teachers' College Columbia University Reading and Writing Project Research Base. TCRWP reading instruction relies on research that emphasises a high volume of high-success, high-interest reading; building a knowledge-base through nonfiction reading; incorporating instruction on foundational skills/phonics within balanced literacy curriculum; and turning students into writers through an emphasis on a high volume of writing and daily protected writing time in which to engage in the writing process.

Shift to Deeper Learning

5 Emerging Trends in Project-Based Learning (Rosie Clayton, BIE, 12 December 2016.) Project-based learning is quickly spreading in schools nationwide. Design thinking, game-based learning, and internships are just some of the trends appearing in learning innovation.

How Is Finland Building Schools of the Future? (Tan Wee Kwang, eGov Innovation, 31 January 2017.) Finland, a global leader in education, insists that rather than focusing on rote memorization skills and algorithms solved easily by computers, students should be developing higher thinking skills. Instilling new, collaborative teaching methods, like co-teaching, leads students to become active members of the learning process.

How Technology Can Support Authentic Learning (Saomya Saxena, EdTech Review, December 30, 2013.) Authentic learning often relies on educational technologies to help develop scenarios that learners encounter in real-world settings. Online learning resources, communication tools, intelligent tutoring systems, concept mapping, immediate feedback, and recorded events are all beneficial tools to support creative projects, simulations, and reflection.

Rethinking the Role of Teachers

Does the Word "Teacher" Still Describe What Educators Do in the Classroom? (Jenny Abamu, EdSurge, 13 July 2017.) Expectations of teachers have changed with teaching practice at an accelerated pace due to technology. Teachers now need a more interdisciplinary skill set and understanding as they learn new tools and cater to students' interests and habits.

Towards Teacher-Led Design Inquiry of Learning (Valerie Emin-Martinez et al., The Open University, 2014.) This paper proposes teacher-led design inquiry of learning as a new model of educational practice and professional development that integrates teacher inquiry into student learning, learning design, and learning analytics.

Moving Education into the Digital Age: the Contribution of Teachers' Professional Development (P. Twining et al., Journal of Computer Assisted Learning, June 3, 2013.) Research indicates that effective models of teacher education require changes at several levels of educational systems, and that technology presents an opportunity to introduce new structures and roles that support these changes. Research targeted on teacher Professional Development and technology integration highlights the importance of group professional learning environments as models to overcome the problem of teaching as an isolated profession.

Integrating Personalized Learning

Crazy or Brilliant: Marriage of Deeper Learning and Personalized Learning (Lydia Dobyns, Huffington Post, 14 June 2017.) Instructors hope to merge deeper, authentic learning experiences with personalized learning. Their wish is one powerful platform that will hold learner profiles and a personalized learning path for students.

Edcamps: Remixing Professional Development (Andrew Marcinek, Edutopia, March 19, 2014.) This article describes how professional development has evolved from a traditionally passive experience to a collaborative culture of shared learning.